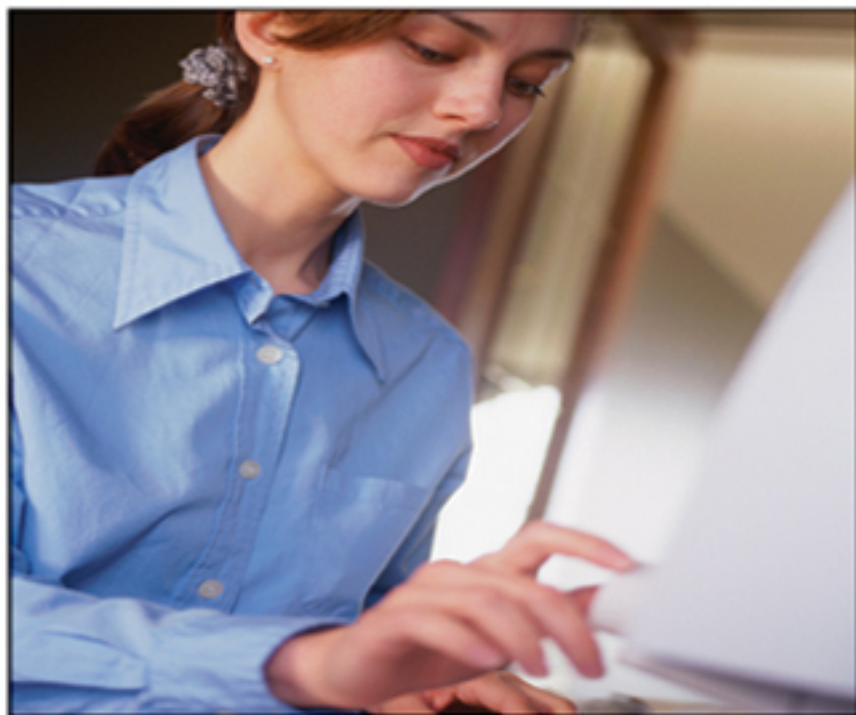


PREMIER REFERENCE SOURCE

Online Education and Adult Learning

New Frontiers for Teaching Practices



TERRY KIDD

Online Education and Adult Learning: New Frontiers for Teaching Practices

Terry Kidd
Texas A&M University, USA



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Section 1 **Introducing New Perspectives on Online Learning**

Section one introduces the audience to the historical developments of online learning within the educational and business context. With more than thirty years of research on the subject of online learning, this section will further present how advances in information and communication technology as well as new techniques for teaching have given new perspectives for teaching in the online environments. This section is well versed with strategies, models, and tools to help manage and sustain an online learning environment for the adult learner.

Chapter 1

The Online Adult Learner: Profiles and Practices.....	1
<i>Judith Parker, Teachers College/Columbia University, USA</i>	

While the online adult learners are growing in numbers, the diversity in what motivates them and what they expect from an online course has grown as well. This paper explores the current literature as well as qualitative and quantitative data from course surveys and student reflections in online courses taught by the author in an attempt to profile these learners, determine why they are taking online courses and investigate their evolving attitudes toward technology. It includes summaries and student quotes to portray the individual thoughts of online adult learners.

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A longitudinal study of students in the Training and Development program at Curtin University of Technology has been undertaken in an attempt to develop a framework which describes the dimensions

of pedagogical effectiveness in online teaching and learning. The research began in 2004, and data have been collected from the sample group of students in the program from 2004–2007. As a result of Analysis and review of the findings, the Online Pedagogical Effectiveness Framework (OPEF) emerged incrementally. The new framework challenges the traditional importance placed on the centrality of teaching skills and the need for student interaction in online teaching and learning, which according to this study, diminished over time. This has ramifications for the interchangeability of the roles of teacher, learner, and instructional designer peers and colleagues.

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A Theoretical Model for Designing Online Education in Support of Lifelong Learning 29

Lawrence A. Tomei, Robert Morris University, USA

The escalating infusion of online education to promote lifelong learning has triggered a re-examination of teaching and learning not witnessed since perhaps the advent of the printed text book. Text books changed the landscape of individualized learning as professors added reading to their inventory of instructional strategies. Today, distance education, in all its manifestations from programmed instruction to Web-based courses, requires instructors to employ new strategies in course design and delivery in order to engage students and promote learner-centered activities. The rapid growth of distance education (especially for the adult learner) serves to challenge traditional methodologies in which education is designed, delivered, and assessed. This chapter introduces a new model for designing instruction using this state-of-the-art venue; an archetype for effective instructional design for lifelong learning.

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A Brief History of eLearning 46

Terry T. Kidd, Texas A&M University, USA

The purpose of this chapter is to explore prior research associated with the history of eLearning. While issues related to the eLearning, technology and innovation adoption, the online environment, the role of faculty in online environments, and preparing faculty for online instruction are important, it is prudent to examine the history of this innovation in order to chart the future of such practices.

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Online Learning: A Transforming Educational Environment for Adults in Higher Education 54

Patsy D. Moskal, University of Central Florida, USA

Charles Dziuban, University of Central Florida, USA

Joel Hartman, University of Central Florida, USA

The authors describe the distributed learning program (Online@UCF) at the University of Central Florida (UCF) that serves a number of adult learners. They present outcomes from several years of research collected by the Research Initiative for Teaching Effectiveness on adults enrolled in online courses. Paradoxically, most educators in online learning focus on millennial generation students, their learning styles, and preference for Web 2.0 technologies. However, research at UCF confirms that online education resonates with adult students because it responds to their lifestyle needs, provides more active learning environments, and empowers their learning beyond classroom boundaries. This chapter

examines the strategic elements required for successful adult online programs and explores components of online student satisfaction. The authors conclude by considering the opportunities and challenges for adults in online distance education.

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The Role of Individual Learner Differences and Success in the Online Learning Environments..... 69

Jozenia T. Colorado, Emporia State University, USA

Dusti Howell, Emporia State University, USA

“Education over the Internet will be the next big killer application,” says John Chambers, President and CEO of Cisco Systems. He also states that online learning will be much bigger than the last killer application of the Internet e-mail (Friedman, 1999). The recent surge in online learning has opened up the eyes of many educators to the growing possibilities of online learning and teaching. As these on-line offerings continue to grow, the educational impact will have far reaching implications for schools, teachers and students. In order to better understand the effectiveness of the online environment as an instructional delivery medium, research needs to be conducted focusing on factors that contribute to the effectiveness of the learning environment. In particular, individual learner differences are an important variable when evaluating online learning success. This chapter will discuss various individual learner differences and how they relate to student success in the online learning environment.

Section 2

New Frontiers for Online Teaching and Adult Learning Practices

As information and communication technologies become ubiquitous, new challenges and opportunities present themselves to the adult learner. Now in the 21st century and with decades of research, Section 2 presents new and innovative solutions to the challenges and opportunities presented for online adult learners. This section is complete with first hand testimonies, strategies, and guides to help the reader understand this new frontier of learning.

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Jane T. Larkin, Merrimack College, USA

The purpose of this chapter is: (1) to examine the interrelationship between andragogy and online learning; (2) to uncover the hidden challenges to successful online learning for non-traditional students; and (3) to uncover hidden challenges in faculty adoption of online instruction. The authors believe that fear is often the biggest factor which can present itself in a variety of ways. A study was conducted to identify those hidden challenges facing students and faculty who choose not to take or teach online courses. This study identifies how institutions can support students and faculty who desire to take or teach online courses. This study also discusses how online learning is aligned with andragogy, which traditionally leverages learners’ experience, independence, and interaction (Gibbons & Wentworth, 2001).

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Factors Leading to a Quality E-Learning Experience..... 101

David Lewis, University of Massachusetts Lowell, USA

Edward Chen, University of Massachusetts Lowell, USA

The Internet became available to the general public in the mid 1990's. At that time, a few institutions starting using the net as a vehicle for providing course credit. Since this early time, the number of institutions offering classes and full degrees online has grown exponentially. At one northeastern institution, the growth has been from 4 courses in 1996 to over 500 courses today. At the same time, most institutions now have updated their classrooms with ever more sophisticated technical capabilities, such as access to the Web for presentations, synchronous videos, and clickers for taking class polls. Others use technology as an add-on to the class room creating hybrid, blended, or e-learning experiences. In the late 90's classes were primarily text based, using either in house developed web pages, and later using self contained course management shells such as WebCT and Blackboard, which required the users to create content, but the linkages and communication tools were self contained. Some authors have developed taxonomies to look at quality [media richness, student interaction, etc.], but not enough has been done to compare online learning and e-learning to traditional classroom based learning. The contribution of this paper will be to report on the findings of previous studies relating to the assessment of online course delivery and the online component of blended learning classes. The results of the research findings should provide significant contributions to the performance improvement of e-learning.

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Anytime/Anywhere Online Learning: Does It Remove Barriers for Adult Learners? 115

Terry A. Morris, Harper College, USA

Even with the convenience of anytime/anywhere online learning, adult learners still encounter barriers and challenges. This chapter explores the growth of online education in higher education and the participation of adult learners. The chapter introduces K. Patricia Cross' research about the situational, dispositional, and institutional barriers faced by adult learners in the 1980s. The relevancy of these barriers to today's adult distance learners is examined. Characteristics of adult learners are discussed. New barriers for learners introduced by online education are explored, including social interaction barriers, technology barriers, student-support barriers, pedagogy barriers, and accessibility barriers. Suggestions for removing and/or reducing these barriers are provided, including providing technical support services, offering online orientations, pre-assessing student readiness, providing professional development opportunities for faculty which model andragogy and online course methodology, and designing online courses to support learning preferences of adult learners. Recommendations are made for future research.

Chapter 10

The Evolution and Influence of Social Presence Theory on Online Learning..... 124

Patrick R. Lowenthal, University of Colorado Denver, USA

The theory of social presence is perhaps the most popular construct used to describe and understand how people socially interact in online learning environments. However, despite its intuitive appeal, researchers and practitioners alike often define and conceptualize this popular construct differently. In fact, it

is often hard to distinguish between whether someone is talking about social interaction, immediacy, intimacy, emotion, and/or connectedness when they talk about social presence. Therefore, the focus of this chapter is on outlining the evolution of the construct of social presence in an effort to understand better its relationship to online learning.

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Building in Constructionist Online Environment 140

Flávia Amaral Rezende, Art Institute of Campinas University (UNICAMP), Brazil

The rapid dissemination and integration of the World Wide Web (also known as Internet), and its related technologies, has resulted in major growth of the educational field through the Internet in such areas as e-learning and e-training. In August 2002, the Ministry of Education established the rules for distance education courses at the university level (Portaria nº 2.253) allowing up to 20% of the total course hours to be administered through distance education. At the same time, the Comitê de Educação a Distância from the Distance Education Secretary – SEED/MEC published the Distance Education Quality Indicators, which presents pedagogical guidelines that are clearly constructionist, consistent with those adopted by the Brazilian informatics in education program developed during the 1980's and 90's. However an important question remains: how to prepare university professors to be able to function in highly interactive constructionist learning environments? How to develop competencies as planning, designing and implementing such constructionist courses? This research has simultaneously investigated two aspects: developing, implementing and evaluating the characteristics of a constructionist environment and, at the same time, the use of this environment as part of an introductory on-line course to prepare a group of professors from Universidade Cidade de São Paulo (Brazil) to be able to function as mediators in the constructionist online learning environment. The findings indicate that it is possible to create a constructionist learning environment and to prepare university professors through online courses based upon Inverted Symmetry concepts and upon the in-service course based on the *estar-junto-virtual* (“virtual being together”) approach, to build what we called *IN-VISIBLE REFLECTIVE NETWORK*, thus allowing the professors to assume new roles not only in the online environment but in the face-to-face education situation as well. This course is the first step for continuous long life learning to be a “ciber teacher”.

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Nishikant Sonwalkar, USDLA and Sonwalkar Consulting Group, USA

This chapter starts with the metaphor of educational slavery to indicate conventional mode of teaching practiced in the class room with a teacher-centric approach and proposes a brain-based synaptic learning approach for student-centric that leads to learning freedom. The chapter describes the basic functions connected with the anatomy of human brain and then crystallizes it to three main functions, namely, perception, cognition and interaction. The three functions are then related to three sides of the pedagogical framework of learning cube. With the learning cube pedagogical framework author proposes an adaptive learning approach that enhances the synaptic activity in the human brain leading to long term

retention for adult learners. A proposal is made to create a five-factored cognitive ability chart based on diagnostics of perception, cognition, interaction, memorization and assimilation. The cognitive ability chart is then used to create individualized prescription for enhancement of adult learning using synaptic learning environment. The chapter concludes by providing a road map for achieving learning freedom for human brain with synaptic learning.

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Empowering the Culture of Quality Research within Ethical Standards in Distance Education 164

J.O. Osiki, National University of Lesotho, Lesotho

Fundamental in today's Distance Higher education (DHE) in the African sub-regions, is how to continue to harness the dividends inherent in the multi-dimensionality of empowerment, for inducing a virile tradition of research, through the shared-benefits of academic/intellectual symbiotism. In such atmosphere, the mentor is less egoistic and willing to provide leadership as a motivator for a value-driven research orientation of the committed protégés. Using the cyclical model, while the novelty of early academic irritants are to be acknowledged, learners' emotionality is identified as raw material for boosting both qualitative and quantitative research skills, within clearly defined workplaces' standards. The acquisition of relevant skills and its benefits is therefore sinequanon for nurturing and sustaining research culture especially in DHE.

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Developing Social Skills through an On-line Learning Environment: A Qualitative Study 183

Niki Phillips, Hellenic Open University, Greece and Bank of Cyprus, Greece

Marianthi Karatza, Bank of Cyprus, Greece

Argiris Tzikopoulos, Agricultural University of Athens, Greece

The rapid pace of social change deriving from technological and financial revolution and globalization, effects greatly people's lives. Adults nowadays need to stay relevant with their environment, to be proactive and to take important decisions that affect their personal and professional future. Thus, they need to be equipped with advanced social skills such as time management, leadership, communication, teamwork, problem solving, flexibility etc. Such skills can be developed through training programs, designed and delivered upon the Adult Education and Experiential Learning theories and principles. A central aim of this chapter is to highlight the methods through which e-learning can contribute to the development of social skills, implementing at the same time the above mentioned principles, in the context of a large organization.

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Mixed Research and Online Learning: Strategies for Improvement 202

Patrick R. Lowenthal, University of Colorado Denver, USA

Nancy L. Leech, University of Colorado Denver, USA

As online education continues to grow, it is becoming increasingly important to understand the nuances of online learning. However, to date, research on online learning has largely been characterized as being

low quality. To increase the quality and promote rigor in online education research, researchers are beginning to argue for the importance of using mixed research. Yet, to date, very little mixed research has been conducted in the area of online learning. Further, the little “mixed” research that has been conducted suffers from a host of problems. Researchers need to be aware of the complexities of conducting mixed research and some of the issues that can be overlooked. This chapter focuses on some important steps and key considerations that researchers of online learning must make when conducting mixed research, in hopes to increase the rigor and quality of online learning research studies.

Chapter 16

Digital Games for Online Adult Education: Trends and Issues 212

Muhammet Demirbilek, Suleyman Demirel University, Turkey

Digital games are a strong motivating and engaging factor in adult learning. When students are engaged in the learning process, they learn and retain more. Engagement can come through emotion, relaxation, and especially through fun. This chapter provides guidance to online adult educators searching for ways to use the digital games more effectively in their practice and give an overview of pedagogical approaches to digital games in online training and learning. In addition, benefits and pitfalls associated with using digital games in online adult education and general attributes of digital games were provided. The purpose of this chapter was to highlight the potential of digital games in online Adult education. Therefore, it will be a useful reference for teachers with an interest in the use of digital game based learning for online Adult teaching and training. It is expected that this chapter helps educators make the most effective use of the electronic games available today, offering expert guidance on digital games to serve the needs of all Adult learners.

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Applying Distance Learning and Structural/Pedagogical Methods to an Adult

Learner Program: The Case of Global Business Management 224

Jeffrey Hsu, Fairleigh Dickinson University, USA

Karin Hamilton, Fairleigh Dickinson University, USA

Adult learner students are becoming a key segment of the undergraduate college market; however adults have a different set of needs, orientations, and approaches to learning. This paper examines the background and characteristics of adult learners, together with various approaches to meeting the needs of these non-traditional students (distance learning, intensive and block scheduling, modular learning, etc.). The application of these methods and techniques are illustrated in the structure and implementation of a real-life adult learner program for business undergraduates.

Chapter 18

A Costume Odyssey a.k.a. Teaching Costume History in a 21st Century Classroom 237

Claremarie Verheyen, University of Houston, USA

Youmei Liu, University of Houston, USA

This chapter will explain how we have integrated the Course Management System-WebCT into the teaching of Costume History at the University of Houston's School of Theatre and Dance. It will focus on two topics, 1) delivering the course in hybrid mode to enhance student learning experiences, and 2) conducting course evaluation to collect student feedback on the course design and delivery for future improvement.

Chapter 19

Project Management for Project-Based Learning: A Case Study of Course

Projects with Small Virtual Instructional Design Teams 247

Shahron Williams van Rooij, George Mason University, USA

This chapter reports the results of a case study in which the final project outcomes of small virtual instructional design teams using Project Management in an online graduate-level course are compared with teams using a less-structured approach. Based on the findings, the author offers the following recommendations for structuring project-based learning in small virtual teams: (a) assess through pre- or in-course questioning individual motivators of success and performance in virtual teams, (b) provide teams with templates with which to document roles, responsibilities, milestones and key deliverables, and (c) offer time and schedule management tips to reinforce/extend entry skills in team project management and participation. This case study can serve as a resource to eLearning practitioners seeking research-based best practices for both managing and participating in project teams that may have limited human and material resources and that may be distributed over a number of geographic locations and time zones.

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Perspectives of Online Doctoral Students in Educational Leadership..... 264

Vicky Gilpin, Richland Community College and Cerro Gordo High School, USA

This study examines the perspectives of adult learners in an online Educational Leadership doctoral program. A qualitative survey research instrument was used to elucidate and explore phenomenological themes connected to student attitudes and perspectives regarding the experience of adult online education, the perceived challenges of an online doctoral program, the perceived benefits of an online doctoral program, student or teacher-connected strategies for success within online graduate education, the on-ground residencies in connection with the asynchronous aspects of the program, the perception of an online doctoral degree within their fields, and recommendations for online doctoral programs in the future. The findings suggest that strategies to increase student success in doctoral online programs should include a recognition of differentiated instruction toward multiple intelligences, increased communication of the dissertation or program timeline, an examination of how online students meet the contact hour requirements through teams, residencies, and individual time management, and an exploration of the social aspect of online learning.

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Impact of E-Learning on Adult Education: A Changing Postmodern Approach 273

Royce Ann Collins, Kansas State University, USA

Jeff Zacharakis, Kansas State University, USA

In the present consumer educational market, educational institutions are rapidly incorporating more online opportunities. The various issues that learners and instructors cope with are addressed from the literature and our adult students. The key issue is creating a quality learning experience for adult students. Not only does the instructor need to incorporate what we already know about adult learning, but they must also approach the course development with a constructivist mindset. The major force in creating a quality learning experience is the discussion generated. Instructors must assist students in creating their own knowledge and develop the ability to discuss in a virtual environment.

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Nontraditional Students and Information Technology: The Siren Call of the Virtual

Classroom and its Impact on Progressive Educational Ideals 284

Xenia Coulter, SUNY Empire State College, USA

Alan Mandell, SUNY Empire State College, USA

The adult college student, caught between the competing demands of work and home, has recently become a valuable commodity in today's fast-changing American universities. The authors argue that the response of the university to the personal circumstances and credentialing needs of adult learners, accentuated by the forces of globalization and the availability of new information technologies, particularly the Internet, has been to focus upon the efficient delivery of information deemed important in our post-industrial society. This response, particularly well exemplified by the virtual classroom, is not conducive to the fluid and open-ended inquiry associated with progressive education. In the end, the authors speculate, adult students may taste the true progressive and constructivist approaches to learning better outside the confines of formal higher education.

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Foreword

Technology supported instruction and its subsequent education has its nascence in the twentieth century. The need for such education has a long and enduring history, developing and evolving over many years. While the previous century put technology supported instruction on the map, the twenty-first century has ushered in a more definitive acknowledgement, appreciation, and ultimate value of education particular online learning. Concomitantly, with the development of e-learning or online learning and the increasing demands by the global community for such education, we have seen the onset of innovative teaching practices geared toward a more mobile information driven society.

The need for this text has become very apparent given the economic interdependence this country and the world currently find itself. With the application of current technology, time and space have become less and less formidable factors in the advancement of education. The editor, Terry Kidd, has accomplished the objective and mission of this book by bringing together multiple perspectives as they relate to adult learning and online instruction. Terry's diligence, persistence, and dedication to educational enlightenment is insightful! This new book truly provides "new frontiers for teaching practices". As one that teaches online and interactive television (ITV) and was fortunate to receive the Online Teacher of the Year Award at the University of Houston-Downtown, I found this text to be a welcomed resource to assist in meeting the challenges of distance learning for adult learners. I enjoyed reading it and found it very informative and expect that you will feel the same way.

Dr. Carolyn Ashe
Director, Institute for Business, Ethics and Public Issues
University of Houston-Downtown
College of Business

Dr. Carolyn Ashe is a Full Professor of Administrative Management and Business Administration at the University of Houston-Downtown, holding advanced degrees in the field of Business Administration. She is also the assistant chair of the Management, Marketing and Business Administration Department and Director of the Institute for Business, Ethics, and Public Issues. Among here many honors and peer reviewed journal accomplishments, she has received numerous awards such as the Information Technology Award as Online Teacher of the Year, Who's Who Among America's Teachers (student nominated) as well as being nationally and internationally recognized regarding her work in ethics. She is also the recipient of the Excellence in Teaching Award given to one faculty who have exemplified excellence in teaching. Dr. Ashe is also the 2007 Minnie Stevens Piper Award. As an excellent educator, Dr. Ashe considers her teaching philosophy a work in progress constantly developing to serve the diverse student population at our university.

Preface

Online and web based courses within the scope of distance education has become popular with both students and educational institutions as the new mediums to deliver educational programs and opportunities. For universities and other educational programs, online learning is an excellent way to reach students in diverse and distant locations. Given their popularity and increased use, it is important that administrators and educators alike monitor teaching practices within this new frontier as this medium become ever more ubiquitous. Hopefully, this type of monitoring and feedback may help in modifying and improving the learning environment and education programs so that online education can function as desired by all parties, including the adult learning population.

With this ideal, the purpose of *Online Education and Adult Learning: New Frontiers for Teaching Practices* serves to identify the factors that affect adult learning in an online educational environment. The information presented in this text will lead to the development and implementation of innovative strategies to promote quality teaching and student learning via online and ICT enhanced learning opportunities. In order to effectively develop a conducive environment for adult learner in an online environment, instructional designers, educators, trainers, and facilitators must pay particular attention to the design of instruction, modes of delivery, instructional and teaching practices, as well as the technologies employed to disseminate the learning to adults. Only then can we as master educators begin to harness the power of online learning.

Concerted efforts in online learning have the potential to generate new patterns of teaching and learning for adult learners. This idea is strongly linked to recent developments in information and communication technologies and new patterns of information access and learning. With current evidence online education and advances in technology may lead to innovation in mainstream education, and may even have effects beyond the realm of education itself. Online education through quality learning opportunities therefore, plays a decisive role in the creation of the global knowledge-based society.

In order to understand this new frontier for teaching practice, *Online Education and Adult Learning: New Frontiers for Teaching Practices* serves to bridge adult learning methods with ICT advancements, pedagogy, and with factors that affect adult learning online. A large component of this text relates to the principles and theories of learning including the adult learning methodology or andragogy, active learning principles, and ICT strategies. Additionally, instructional design, learning communities, learning management systems, web based instruction, and social networking are as equally important to the themes outlined in this text.

As the fascination with online education continues to grow, the World Wide Web will continue to offers a worldwide forum in which to teach courses and empower adult learners. One can assume, for example, that each adult at any time has an excellent resource of information at his or her disposal. Course material from the educator's perspective can be dynamically updated and linked across several related sources. Course text, examples and exercises can be interactive in the sense of immediately il-

lustrating equations with graphs, changing parameters and seeing the results, linking to other web-sites according to the interests of the student. As online educational environments continue, this frontier will essentially free education from the limitations of space and time, while reaching adult learners around the world with great ease.

Online Education and Adult Learning: New Frontiers for Teaching Practices presents learning models that offers educators and students a wealth of information that was never possible in the classical educational model. The possibility of linking these ideals together worldwide in a multitude of formats creates a remarkably rich medium for learning. Online Education and Adult Learning: New Frontiers for Teaching Practices is not merely duplicate of an original discussion, but rather a structured conversation used to spark the burning desire to continue strong teaching practices online. Online Education and Adult Learning: New Frontiers for Teaching Practices represents a new type of discussion that takes full advantage of emerging web and multimedia technologies in order to achieve an effective yet enjoyable learning process. Thus, with Online Education and Adult Learning: New Frontiers for Teaching Practices concepts are introduced in innovative ways – ways that involve the adult learner and integrate them into the learning process online. Moreover, Online Education and Adult Learning: New Frontiers for Teaching Practices links to vast resources available worldwide and introduces new levels of value to online educational opportunities.

Online Education and Adult Learning: New Frontiers for Teaching Practices can be envisioned as a dynamically-evolving resource that will prove beneficial to both adult learner and instructors alike, making it a great source of strategies and content. In the light of this text, Online Education and Adult Learning: New Frontiers for Teaching Practices presents evident that assists in the design of online educational opportunities for adult learning. Thus, Online Education and Adult Learning: New Frontiers for Teaching Practices teaches that online educational opportunities are developed through the efforts of a team of professionals with a complementary range of skills, as opposed to classical course design, which is typically developed by faculty alone. Designer and educators alike will have opportunities to see teaching practices and principles made alive for the next generation of learning. The richness of Online Education and Adult Learning: New Frontiers for Teaching Practices allows for unlimited creativity when it comes to online educational development. Such richness offers educators new opportunities to develop innovative learning material while posing a challenge in that it requires faculty to rethink their own teaching practices online. In order to best serve adult learners and related stakeholders Online Education and Adult Learning: New Frontiers for Teaching Practices takes an active look at effective practices and strategies that inform online education. It is not enough for educational institutions to just give financial resources, hardware and software, however, they should fundamentally equip online educators to effectively teach, engage, extend, and enhance the adult learner's educational experience.

By equipping the all stakeholder for effective teaching practices within an online environment, *Online Education and Adult Learning: New Frontiers for Teaching Practices* offers effective design strategies, content, learning templates, materials, and models to further quality teaching and active student engagement online. It is important to understand that in order to foster an environment conducive to effective learning in the online atmosphere, we must pay close attention to the factors that affect instructional quality as discussed in this new frontier of learning. For such research, the future seems very bright and encouraging. This theme will be repeated as other aspects of online learning come under scrutiny. We know enough at this point to optimize quality in visual aesthetics, however the instructional quality and quality of deliver is more difficult to define and measure; that is why *Online Education and Adult Learning: New Frontiers for Teaching Practices* offers to fill this gap with strategies, process, and procedure effectively engage all stakeholders in the development of online education.

In order to provide the best balanced coverage of concepts and issues related to the topics of this book, current researchers from around the world were asked to submit their chapter describing their

unique coverage of online education and adult learning and the new teaching practices associated with such innovation. Each chapter submission began with the proposal phase. Following the submission phase, each proposal was submitted for blind reviewed by a team of reviewers who indicated the accepted or rejection of the chapter proposal. Following the proposal review phase, each author was then given permission to complete their own chapters for the book.

After completing their respective chapter, the chapter was then submitted once again for blind peer review once more. After a two round rigorous referred processed of two reviewers, the chapters that were strong and favorable from the reviewers were chosen as entries for this book. The ideas presented in this book were assembled by the best minds in the online learning field. Further, the chapters authored were selected based on the author's expertise and leadership roles within the field as well as their unique perspective they tell relating to the subject.

As a result of the double blind submission process, *Online Education and Adult Learning: New Frontiers for Teaching Practices* highlights current concepts, issues and emerging trends relating to online education and adult learning. To this end, *Online Education and Adult Learning: New Frontiers for Teaching Practices* offers twenty two chapters that highlights the history of online learning, transition strategies from face to face learning to online learning, hidden challenges to online education, strategies for instructional quality, how to empower adult learners through online education, the use of educational games in online learning, theoretical model for designing online education, online pedagogical effectiveness in adult contexts, impact of e-learning on adult education, and the impact of online education on progressive educational ideals.

With the mix of educational perspectives outlined in this book, a wide range of perspectives are covered to meet the needs of everyone. This book highlights online education and new associated teaching practices as a growing field of study which uses ICTs are a means to solve online educational and learning challenges. The chapters are not organized by industry; instead, they are divided into three major themes: introduction to online education, new frontiers for online and teaching practices, and finally case studies for online education.

For all practical purposes *Online Education and Adult Learning: New Frontiers for Teaching Practices* discusses various methods and tools for assessment, testing and evaluation of effective online educational practices. For the future developments of online education and associated teaching practices, this book presents information concerning the history, trends and major issues facing online teaching and learning. In the end, this book contains a wide range of ideas, examples, guidelines, stories, models, and solution all with the basic premise improving teaching practices online.

As online education continues to grow in order to meet the needs of adult learning *Online Education and Adult Learning: New Frontiers for Teaching Practices* will continue to serve the purpose of supporting quality instructional and teaching practices online. As advancement in ICT's reach a diversity of people and online educational opportunities reach new territories, we can help and support to empower adult learners and related stakeholders throughout the world.

With the diverse and comprehensive coverage of multiple perspectives in online education and its associated teaching practices, this authoritative book, *Online Education and Adult Learning: New Frontiers for Teaching Practices* will contribute to a better understanding all topics, research, and discoveries in this evolving, significant field of study. Further, the contributions included in this book will be instrumental in expanding of the body of knowledge in this vast field. The coverage of this book will provide strength and support as a reference resource for both online education and their associated teaching practices. Not only will *Online Education and Adult Learning: New Frontiers for Teaching Practices* provide support for better decision makers in obtaining a greater understanding of the concepts, issues, problems, trends, challenges and opportunities associated with online education, however

Online Education and Adult Learning: New Frontiers for Teaching Practices will continue to provide all stakeholders with the curiosity to seek better ways of teaching online

It is my sincere hope that this publication and the amount of information presented will assist all major stakeholders in enhancing their understanding of this adult learning and online education as well as to effectively design and implement strong yet high quality online educational opportunities for our global society. Perhaps this publication will inspire its readers to contribute to the current body of research in this immense field, tapping into possibilities to assist educational institutions in making all educational opportunities open to participants.

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Section 1

Introducing New Perspectives on Online Learning

Chapter 1

The Online Adult Learner: Profiles and Practices

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ABSTRACT

While the online adult learners are growing in numbers, the diversity in what motivates them and what they expect from an online course has grown as well. This chapter explores the current literature as well as qualitative and quantitative data from course surveys and student reflections in online courses taught by the author in an attempt to profile these learners, determine why they are taking online courses and investigate their evolving attitudes toward technology. It includes summaries and student quotes to portray the individual thoughts of online adult learners.

INTRODUCTION

The past 7 years have afforded me the opportunity to teach the same two courses on campus and online during alternating semesters at Teachers College/Columbia University in New York. Qualitative and quantitative data has been gleaned from pre and post course surveys and reflections on on-line assignments in traditional on campus classes. My personal experience and data collected from the documents mentioned above

indicate many differences from commonly held assumptions about on line learning and on line learners. This chapter will attempt to provide a profile of this group of online learners. Through a longitudinal and comparative study of the online and on campus students in my classes over the past 7 years, I attempted to answer questions such as the following: Who are adult online learners demographically? Do they differ from their counterparts who take the same courses on campus? If so, how? What motivates adult learners to select

an online class? What is their attitude about the online learning experience at the end of the class? How have the educational needs and expectations of online learners changed over the past 7 years? How might these trends guide future decisions about online learning made by those who develop and teach courses and students who participate in them? Since e learning is likely to continue to impact the educational landscape, this information could inform the future development of and participation in e-learning activities.

BACKGROUND

Today's popular media and many practitioner journals suggest a rather homogeneous picture of today's online adult learner as a busy professional, stay at home parent or part time student. Yet the literature and my experience indicate a population with very diverse backgrounds and expectations. Li and Irby (2008) profile online learners as "busy working people, often on shift who want to advance their career, frequent travelers, those who physically find it difficult to attend college and parents who want to or have to spend more time at home with their children" (p.451). They note that online education has become the "vehicle to help access to the underserved populations, but also expands student access to universities that are not in their geographical area including international locations" (pp.450-1). White and Bridwell (2004) also see new technology as expanding the "learner's capacity for access" (p.273). In contrast, Merriam, Caffarella, and Baumgartner (2007) voice the concern that potential online learners have limited access to technology which is increasing the digital divide and widening the gap between the haves and have-nots. They cite a 2005 study that estimates that only 14.6 % of the world's population has internet access. Another concern is mentioned by Piskurich (2006) who cites statistics that report that 60 – 80% drop out of elearning courses and by Li and Irby (2008)

who mention concerns for lower student performance and the rate of retention and note the need for enhanced specific skills such as writing, communication, time management, organization, and the ability to work independently.

Many authors agree that online learning is not for everyone. Jeong and Lee (2008) note that "reflective learners have a tendency to reflect and test information more often than active learners but their research found that there was no significant differences in the number of replies posted per student per debate but that the exchanges between reflective learners produced more critical discourse. In a research study conducted by Pratt, (1999) he found that introverted persons were often more successful online. Student reflections from the author's courses indicated that often students for whom English was a second language indicated the preference for online learning. They appreciated the fact that asynchronous online discussions allowed them the time to study another student's posting, craft a thoughtful response, possibly check its English correctness with another student, then post the response. With a fast paced in class discussion they often were lost in attempting to translate the comments and their own thoughts back into English. Another advantage is explored by Sandmann, Reischmann and Kim (2007) who see a role for asynchronous e learning in broadening and deepening the global perspectives of the learner but also caution that educators need to recognize differences in motivations and expectations of learners in different cultures. They also noted marked differences in the participation patterns of students from different cultures.

For adult learners, Malcolm Knowles (2005) sees technology as providing learning opportunities in the "andragogical tradition" (p.237) and as consistent with the adult learning idea of self-directedness. Nilson (2003) profiles the students as learning best when they are actively engaged, when learning evokes emotional not just intellectual involvement. As Palloff and Pratt (1999) suggest, "when teaching and learn-

ing leave the classroom, many elements are left behind” (p.10). However it is just as important to realize that classrooms with their constraints of time and space offer their own set of limitations. There are students (and instructors) who always get a brilliant thought about a class discussion on the subway after class and it is lost to the discussion. In an online asynchronous discussion with a week or more to contribute to the discussion, that comment can be posted and contributed to the dialogue.

In this new environment, new models emerge and new roles develop for both the instructor and student. White and Bridwell (2004) see a change of the traditional instructor role from teacher-centered to one of “facilitator, broker, and interpreter of information and education” (p.273-4). Just as the instructor is responsible for setting the tone in a classroom, the instructor is also responsible for setting the tone online. If discussion is important then discussion must be encouraged and nurtured. Brookfield (2006) makes a statement about classroom discussions that just arranging the chairs in a circle will not guarantee a good discussion. The online analogy is also true. Just setting up a thread for a discussion or a space for a blog will not ensure a good discussion. Brookfield (2006) devotes two chapters of his text on being a skillful teacher to discussion techniques. While they specifically address face-to-face discussions, many of them can be adapted to an online environment.

Nafukho (2009) suggests that instructional strategies, not technology, are what really make a difference in how adults learn online. Yiu and Parker (2005) provided a strategic model which integrated numerous distance learning elements (electronic forums, video/phone conference meetings, email, and even a virtual graduation) into an action learning model program on leadership. Conrad and Donaldson (2004) stress the importance of engaging the learner and the challenge of creating “exhilarating learning experiences when you lack verbal and visual cues” (p.16) available

in the traditional classroom. Carr and Ponton (2003) see that “creating collegial environments conducive to autonomous learning is the quintessential goal of the facilitator of learning in the asynchronous e-learning platform” (p.151). “Key to the learning process are the interactions among students themselves, the interactions between faculty and students, and the collaboration in learning that results from these interaction” (Palloff & Pratt, 1999, p.5). Cranton (2006) emphasizes the importance of empowering the student by interactions in the learning environment and being aware of power relationships. “The creation of a learning community supports and encourages knowledge acquisition. It creates a sense of excitement about learning together and renews the passion involved with exploring new realms in education” (Palloff & Pratt, 1999, p.163). Jochems, Merrienboer and Koper (2004) stress the importance of addressing the pedagogical, technological and organizational aspects in order for online learning to be successful. (p.199) Palloff and Pratt (1999) emphasize that learning is an active process in which both the learner and the instructor must participate. Students must actively participate by posting their thoughts and ideas to the online discussion. A student who had taken one of my courses on campus and another online commented to me that the online course took more effort because it was possible for the instructor to check the number and content of the students online and hold the student more accountable for contributing to the online discussion. The student admitted that it was easier to slide by in classroom discussions because it was more difficult for the instructor to evaluate each student’s contribution in a fast paced classroom discussion.

The exploration of this new learning landscape in the literature and online venues will likely continue. As is obvious to many and as addressed later in this chapter, we have only scratched the surface of possibilities. As Kasworm and Londoner (2000) advise, “the challenge for adult education is to accept and embrace the possibilities of technology (p.225).

MAIN FOCUS OF THE CHAPTER

Overview of Student Population

Less than 5% of my students come to my graduate classes directly after their undergraduate education. My students are either working professionals in every aspect of business and industry, non-profit, health-care, or educational organizations or ones who have interrupted their careers in these fields to study full time for an advanced degree. Therefore I believe that this chapter is relevant to the focus of this book on career and technical education.

This chapter profiles students in two graduate level courses in the Organization and Leadership Department. The Introduction to Adult and Continuing Education course (4050) is taught on campus each fall and online each spring. The Staff Development and Training (5055) course is taught on campus each spring and online each fall and summer. The Introduction to Adult and Continuing Education course focuses on the philosophies of adult education and their application in practice. The Staff Development course is more pragmatic in nature and only introduces theory to support practice. Teaching the same two courses both online and on campus over an extended period of time allows for a tracking of the online students in each course over time, a comparison of students in each course taught on campus vs online, a comparison of the online students in the Staff Development course taught during the academic year with those in the compressed summer session, a comparison of the academic online students in the Staff Development course with those in the Intro course, an analysis of student reflections on an online assignment in a traditional on campus class for both the introductory course and a cohort of practicing nurses studying to be nurse educators

My students have many commonalities with other adult online learners; they want real life applications and value the opportunity for exper-

iential learning and reflection. However, they are unique in that they are not only interested in the content being taught but in analyzing the actual methodology in terms of its effectiveness in their own field of practice. This makes their reflections particularly rich with data. As online courses have become more prolific in academic and organizational settings over the 7 years, there has definitely been an increase in the number of students who openly express that their motivation for enrolling in an online course is curiosity about its effectiveness and their comfort level with the methodology. Student comments in answer to: “Why are you taking this course” in the pre-course survey indicate a growing awareness of and concern about ineffective staff training in their organizations. One student’s summary was “our professional development offerings are a joke”. Concerns are across survey categories of business, K-12, higher education and non-profit as well as those selecting “other” and later specifying health care, religious education and government. There has also been an increase in cross registration from students in graduate programs in business, engineering and public health. On a positive note, they also voice a commitment to improving existing programs or beginning new ones.

Online Learner Characteristics

Using research data as a framework for this section, I looked for differences and trends over the 7 year period. While class sizes increased dramatically in my online courses, no significant increase or decrease over time occurred in the characteristics of the students themselves. However differences between courses and differences between the academic year and summer offerings for staff development were evident. These are summarized in Table 1.

Because of the more philosophical nature of the course, 64% of the students in the Introductory 4050 class were working in the field of adult education compared to only 48% in the staff

Table 1.

	4050 SPRING %	5055 FALL %	5055 SUMMER %
Working in adult ed	64	48	42
Taking additional courses	85	83	68
Taking additional online courses	21	21	13
Taking additional on campus courses	65	63	55
Taking 3 additional sem hours	46	37	32
Taking 6 additional sem hours	20	25	23
Taking 9 additional sem hours	15	11	7
Taking 12 additional sem hours	2	16	6

development 5055 course during the academic year and 42% during the summer. The areas of practice with the largest percentages were higher education for the introductory course but business and K-12 for the staff development course during the academic year. The staff development course taught during summer session had large percentages of students from business, higher education and K-12. The health care and non-profit sectors drew the lowest percentage of students for all the courses. The summer session of the staff development course consistently had the largest number of students from outside the US. Many were on campus during the academic year and had returned to their home country for the summer but wanted to continue with their coursework online.

It should be noted that a very large percentage (83-85%) during the academic year) of these online learners are also taking additional courses both on campus (63-65%) and online (21%). Over 60% of the online learners are enrolled in 1 or 2 additional courses during the academic year. So not only are many of them balancing work and family responsibilities but additional course work as well. The picture for summer is somewhat different with only 68% taking additional courses. These variations should lead us away from the generalizations that often describe the adult online learner and require us to take a closer look at the individuals.

Why Students are Taking Online Courses

While the quantitative data yielded some interesting information, the richness of the findings was in the analysis of the qualitative data. Analysis of the answers of students in the online 5055 course as to why they were taking an online course could be categorized as follows:

- They were interested in the course content and the fact that it was offered online was superfluous to their decision to enroll.
- From past experience, they loved learning online.
- They had no experience with online learning but were curious about how they would react to the course and how it could help them with current responsibilities.

Some representative student comments for each category are included below.

Several students mentioned that they wanted or needed to take the course during a particular semester or they needed or wanted to take that particular course. It just happened to be online and that made no difference to them in their decision to register.

Students with positive past online experiences made the following statements. One student's

reflection on a past online course led him to comment that he “really enjoyed the flexibility and the communication between the professor and students. I actually felt I was more participatory in that class than in a real time course.” Another said “I feel that I am able to express myself more effectively when I have more time to think about the issues and questions. I know that I will be able to contribute more to the class and to the discussions.” Student’s positive experiences often included comments about the flexibility of online learning fitting into a particular lifestyle or geographic location. Comments included: “I live in China with my family...” “I will be working at a summer camp this summer...” “I’ll be on vacation for two of the weeks and this enables me to take a course over the summer and draw a little closer to completing my degree.” Students have participated from China, Japan, Korea, Taiwan, Pakistan, England, India, Iceland, Bosnia-Herzegovina, Canada, South Africa and 16 states. The varying viewpoints add to the richness of the discussion which would be limited if it only included people who could travel to campus.

Students are curious about online learning experience on many levels. One student working for a national non-profit stated that “we keep considering online mediums. I thought it might be helpful if I took a course online myself to see to what extent I found it as useful as a face-to-face class”. Another saw the value in experiential learning. “I am intrigued to experience taking a class online because I have never done so before and it seems that on-line learning may be an important (and increasingly common) delivery system for education/training. Therefore, the experiential piece is important to my personal understanding of what online learning is.” While one student admits that with her hectic summer schedule, “an on-line course should be a natural fit”, she adds that “I’m quite anxious about what its effectiveness might be”. Several students admitted to the role of critical reflective practitioners. One suggested, “I am very skeptical of how universities will use it

and how it will affect education. I want to experience it to learn the potential benefits but also to sharpen my critique as an educator.”

In contrast, students taking the same course on campus had three very different reasons why they preferred on campus classes: personal preferences, personal experience, and friends’ personal experiences. One indicated that she had never taken an on-line course before and was a bit skeptical and another just indicated that she preferred the interaction of a face-to-face course. One shared that he had tried an online course but “did not have the discipline” to successfully complete it. Yet another noted that “friends have found that such classes lack the personal engagement that is needed to learn most effectively” However, in the most recent semester, one third of the on line course participants indicated that this was their first online class.

Post Class Reflections

Students’ post class reflections revealed thoughts that were similar to those with previous on-line experience but also revealed some serious analysis of the experience and their learning. One reflected, “I was more focused in a self-led learning environment. The lack of dependence on face-to-face communication allowed me to think in abstract ways and make me push myself to work hard and innovate in order to understand the information the professor provided.” Another noted that “the extent of learning was totally reliant on my self-discipline and initiative and that in itself can be a great development experience for individuals!” Another student indicated that she had started the course on campus but “felt that the course needed more time to respond to questions in a more thoughtful manner and I am the type of learner that needs more time to think about questions and be able to respond to them in a way that I may see my responses”. Other students using Blackboard’s discussion board for threaded discussions often made similar comments. Sometimes students for

whom English is a second language commented that this methodology gave them the added time to translate a posting, reflect on it, structure a response and check for proper English. It gave them the opportunity to be more confident in their posting. Yet another comment addressed the personal relationships that can be difficult to mitigate on line. "Given the really challenging group dynamics that surfaced (without the possible feeling of accountability that may be a product of face-to-face) I much prefer a classroom based course."

Even though students in my classes have a special interest in educational methodology, I believe this curiosity exists in every sector today. Every adult is faced with a constant wave of ads for online courses. They surely have similar questions, curiosity and skepticism about what the online learning experience will feel like in their respective disciplines.

Evolving Student Attitudes toward Technology

I also gleaned data from reflections of one particular sample that I taught over 3 continuous semesters. These were practicing nurses who were enrolled in a cohort masters program with plans to transition into nursing education. They were a more homogeneous group than those involved in the classes above and I was able to track them over 3 contiguous semesters. Over this time, they experienced online learning through a number of online assignments that were embedded in their on campus class. Their initial reluctance evolved into an openness and acceptance of online learning and eventually into an eagerness to experiment with various technologies. The first assignment using threaded discussions in Blackboard was met with a great deal of reluctance and concern about the technology. For their final online group assignment one group asked if they could experiment with web conferencing. Consistent with adult learning theory, I have always thought it important to

provide adult students with choices. So as long as the learning objective could be met, I encouraged their experimentation, reflection, and evaluation of various methodologies.

In an end of course reflection, one student admitted almost apologetically that one of the most important things she had learned from the online class was that she never wanted to do that again. I assured her of the value of that realization and that it was important that she understand that online learning is not for everyone. I repeat her story often in my on campus classes with the commentary that the students in these classes will be the adult learning professionals and with all the momentum in many organizations to deliver courses online, there needs to be a voice of reason that suggests that online learning has many advantages for many people but it is not an effective delivery method for everyone. It is this same reasoning that drives me to integrate an online assignment into my on campus Introduction course. It is important for these future professionals to know what it feels like to attempt to learn online and to see in debriefing discussions how other students seem the same experience in a different light.

FUTURE TRENDS

Processes and methodologies often occur for years/decades before they are formalized with a label. Once a label is attached, the meaning begins to evolve. As a new professional decades ago, I attended a workshop on the use of new technology in education. Its focus was the use on the new overhead projector (yes, that big bulky piece of equipment that sits on a cart collecting dust in many classroom corners), its proper use in the classroom and the preparation of transparencies. Over the decades, this methodology morphed into the use of power point presentations with embedded video and website links. It brings resources into the classroom and links to resources outside of it. More technological sounding labels

emerged: “smart boards” and “smart classrooms” beg the question of whether all this has produced smarter students.

Traditional classroom methodologies have always focused on enhancing leaning and making teaching more efficient and effective. Only recently have we not been satisfied with the “e” already embedded in learning but felt compelled to attach it as a prefix to the existing term learning. Has learning changed? We have action learning and active learning and experiential learning but until recently learning stood on its own proceeded by the appropriate adjective. We never called it overhead projector learning or 35 mm slide learning or videotape learning. What makes this technology able to change the word learning itself? Traditional adult education models have involved traditional student expectations and behaviors. But what about e-learning and these new e-learners?

These new e-learners are as diverse as those in our classrooms. But it might require a more proactive communication between instructor and student to uncover them. I have found that asking for simple personal introductions to be posted at the beginning of an online class and frequent reflections throughout keep me in touch with students.

The future will include a breadth of opportunities to accommodate different learning styles. This seems consistent with a future that will offer multiple technological solutions to our problems on every front. Experts suggest that there will no longer be one dominant energy source for a major segment of the planet but various geographical locations will utilize their local resources. Technology and online learning will offer educators and learners the opportunity to utilize their personal strengths and preferences for more effective and efficient learning.

White and Bridwell (2004) see the 21st century as an “age of convergence” (p.287) between networks and within networks demonstrating a multiplier effect and integration. They also suggest

that new technology is “significantly altering the social role of learning” and that distance learning is only an intermediate step toward a “telelearning environment” in which distance and location become arbitrary (p.287).

Barab, Kling and Gray (2004) see this as an “exciting time in which pedagogical theory and technological advances have created an opportunity to design innovative and powerful environments to support learning” (p.13). Nilson (2003) makes an important point in mentioning that she expects the low-tech instructional tools such as the black or white board or overhead projector to be around for years while the high tech tools will become obsolete very quickly. Parker (1996) includes examples of high and low-tech delivery methodologies as effective tools for teaching and learning.

CONCLUSION

As the field of online learning evolves, it presents a unique opportunity and challenge for those of us teaching online to influence the next generation of online instructors and course developers. Similar to the findings of Parker’s study of 3M (1992) employees in technical degree programs, students engaged in learning are confronted with numerous internal and external factors that motivate them to enroll and achieve their goals or pose overwhelming burdens that prevent their success. As she found that ongoing personal support within the workplace played a significant role in success, this will continue to be important in online learning. Online learning eliminates some burdens and presents new challenges. A recent article in *e>training* entitled “Conversation 2.0” describes an interactive, socially connected Web 2.0 in which Learning 2.0 empowers the learner to connect, create, find, share and master conversation (Schlenker, 2008, p.32). The online learner now needs to develop and enhance the skills required to take fuller advantage of this empowerment.

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KEY TERMS

Action Learning: A methodology which involves reflecting on and analyzing real life problems and directing one's learning in order to achieve a specific goal or solve a specific real problem.

Adult Learning: "The process of adults gaining knowledge and expertise." (Knowles, 2005, p.174)

Asynchronous E-Learning: Learners access information at anytime and communicate with others in the class and/or the instructor in a delayed communication format.

Critical Reflection: The process of analyzing and questioning experiences and assumptions.

Distance Education: "...the provision of learning resources to remote learners and involving both distance teaching (the instructor's role in the process) and distance learning (the student's role)." Key elements include a separation of teacher and learner in space and time, two way communication between teacher, tutor or educational agency and learner, the use of educational media to unite teacher and learner and carry course content. (Palloff and Pratt, 1999)

E-Learning: Learning in which technology plays a major role in the delivery of content and the communication between instructor and students and between students.

Learning Community: A group of students learning collaboratively (Barab, p 3).

Learning Style: The preferred style by which a person learns best.

Online Learning: Students engaged in learning are not in same physical location but are separated by some physical distance.

Synchronous E-Learning: All learners are online at the same time and engaged in the learning at the same time with the instructor. (Piskurich, 2006)

Transformative Learning: The process of becoming critically aware of our assumptions which may result in a change in perspective and acting upon these new understandings.

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Chapter 2

Online Pedagogical Effectiveness in Adult Contexts

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ABSTRACT

A longitudinal study of students in the Training and Development program at Curtin University of Technology has been undertaken in an attempt to develop a framework which describes the dimensions of pedagogical effectiveness in online teaching and learning. The research began in 2004, and data have been collected from the sample group of students in the program from 2004–2007. As a result of analysis and review of the findings, the Online Pedagogical Effectiveness Framework (OPEF) emerged incrementally. The new framework challenges the traditional importance placed on the centrality of teaching skills and the need for student interaction in online teaching and learning, which according to this study, diminished over time. This has ramifications for the interchangeability of the roles of teacher, learner, and instructional designer peers and colleagues.

INTRODUCTION

This chapter reports on a longitudinal research project into online learning practices that has been conducted in an Australian university over through the use of the learning management the past three years. The sample for the research comprised adult learners who have been enrolled in the Training

and Development Program at Curtin University of Technology. Training and Development has been delivered fully online system WebCT since the late 1990s and is currently the only fully interactive online program in the Faculty of Education. The average age of the student cohort is 39 years, and they are attracted to participate in part time study as most are in full employment as educators in

the public sector, industry, or private enterprise. The skills and knowledge gained through the undergraduate and postgraduate components of the course enable participants to qualify for training positions and to enhance their career prospects in their various workplace contexts.

As part of an overall evaluative approach towards the delivery and content of the Training and Development Program, the researchers decided to focus upon elements of pedagogical effectiveness and, in doing so, searched for available models and frameworks that shed light upon potential good teaching and learning practice in online environments. The study began in 2004 and used as its conceptual framework the Effective Dimensions of Interactive Learning on the Web model (Reeves & Reeves, 1997). The survey which was administered to the sample group (n=42) mapped the dimensions of philosophy, learning theory, goal orientation, task orientation, motivation, teacher role, metacognitive support, collaboration, cultural sensitivity, and flexibility on a five-point Likert scale against 15 principles of pedagogical effectiveness expressed in the Australian report authored by Brennan (2003) and funded by the National Centre for Vocational Education and Research (NCVER). These principles included the need for a learner-centred environment, constructivist approaches to teaching and learning, high quality materials design, teaching and learning strategies that develop cognitive skills, high levels of interactivity between all participants, guaranteed and reliable forms of access to the technology, engagement with online materials and learning experiences that encourage synthesis and analysis. It also incorporated the need to present opportunities for deep learning, consistent levels of feedback, and thoughtful matches between materials, learning styles, and learning contexts. Furthermore, the report indicated a need for a model of delivery that includes thorough planning, monitoring, reviewing, and evaluating course materials and student progress and a range of navigational

choices for students. Finally, it extolled the necessity for teachers who are imaginative, flexible, technologically sound, committed, responsible, and expert communicators.

The sample group contributed to three stages of the research from 2004–2007. At each stage, both quantitative and qualitative data were gathered and analysed through the administration of the instrument that was based upon the emergent Online Pedagogical Effectiveness Framework (OPEF). This new framework developed as a result of combining the work of Reeves and Reeves (1997) and the effectiveness dimensions outlined by Brennan (2003). One of the main objectives of this chapter is to describe the process that began in 2004 which has helped to illuminate various strengths and weaknesses of the online environment which is produced by the Training and Development Program. The research has helped to articulate an enhanced alignment of the units of study to improved pedagogical practice.

Currently, in Australia, the higher education sector is becoming increasingly scrutinised by both federal and state governments in terms of educational content as it relates directly to graduate outcomes. Increasingly, teaching and assessment practices in higher education have come under scrutiny as needing to be improved. Universities in Australia, and indeed in other western countries, such as the United Kingdom, the United States, and Canada, are now operating with reduced government funding (Currie, Thiele, & Harris, 2002). As a result, exploring alternative ways to boost traditional revenue sources has become imperative. International full fee-paying students have become a key source of alternative funding. Australian universities have been successful thus far in enticing overseas students onto their campuses. With university education reported to be the third highest service export industry in Australia, worth in excess of \$5 billion, it is not surprising that the ‘quality of university teaching and learning’ is the subject of much debate in many sectors including government (Tilbrook,

2003). The stakes are indeed high if the tertiary sector is to maintain its market share, especially now that other institutions such as technical and further education (TAFE) are able to compete with universities in offering degrees. The establishment of a national body aimed at encouraging and scrutinising teaching quality in the Australian higher education sector (the Carrick Institute) and the allocation of a significant funding pool aimed at rewarding those institutions that best demonstrate excellence in learning and teaching is evidence that the government is keen to promote engagement with learning and teaching in Australian universities (DEST report, 2004).

Most universities are therefore undergoing structural and curriculum review in order to streamline course offerings and increase productivity and, by doing so, enhance funding opportunities. The study which is described in this chapter has allowed the researchers to interrogate the content and delivery of the Training and Development Program as part of the university review process that is underway and has brought about changes to the learning materials, assessment expectations, instructional design, the use of technology, and the role of both teacher and learner as they engage in the online environment.

A second main objective of this chapter is to focus upon the OPEF and the dimensions which have become more closely aligned to successful online learning over time as well as those that appear to have a diminishing influence on student engagement and learning outcomes. The OPEF was tested with students who were studying in the program in 2004, 2005, and again in early 2007 in order to map changes in attitude towards the materials and approach and patterns of interaction. It is interesting to consider the changing approaches that the students have made to their study over time as they become more familiar with the online delivery. The research that follows in this chapter reveals a number of findings that seem to contradict the perceived value of various online pedagogical characteristics that are

accepted in the literature as being important to learning such as the need for teacher skill and high levels of interactivity. As learners become more sophisticated in their use of online environments, it seems that their dependence on others such as teachers and peers diminishes in favour of direct and timely access to high quality learning systems and instructional materials. It is hoped that the study will provide a clear picture of the changing needs of adult learners in online environments over time. The longitudinal research which is reported upon in this chapter has an advantage over other investigations into online learning environments as it really does begin to search out the changing nature of the relationships which are developed between the adult learners in the sample and the environment in which they operate. As with all relationships, the terrain shifts as time moves on. A process of maturation occurs which enables the participants to interact in developing ways with each other as students, with the instructor responsible for the unit of study and with the materials themselves.

BACKGROUND

Curtin University of Technology in Western Australia has been at the forefront of innovation for flexible, online delivery of its Training and Development Program, with the course having been fully online since the late 1990s. A number of reviews and evaluations of the program have taken place since then, with changes being made in direct line with academic research, which pointed to ways of improving the quality of delivery and therefore student learning. Reeves (1997) rightly criticised a general lack of systematic evaluation of computer-based education (CBE). He indicated that CBE was being fallaciously accepted by education consumers on the basis of innovation alone, that effectiveness of CBE had been reduced to quantitative studies, which missed the complexities of implementation, motivation, and

learning. Furthermore, he outlined the lack of utility of evaluations and the paucity of “useful” evaluations. Having posed the problem, he suggested that to make systematic evaluations which compare programs on an equal basis, pedagogical dimensions of CBE could serve as the appropriate conceptual framework, where pedagogical dimensions: “refer to the capabilities of CBE to initiate powerful instructional interactions, monitor student progress, empower effective teachers, accommodate individual differences, or promote co-operative learning” (p. 2). Pedagogy in an online or CBE program, according to Brennan (2003, p. 10):

covers the function, work or art of a teacher or trainer. It includes the process of teaching and instruction. It is useful to think of pedagogy as being reflected in the arrangements made to enable someone to learn something for a specific purpose influenced by the general orientation of the teacher or trainer, the kind of knowledge to be developed, the nature of the learner and the purpose the learning is to serve.

Heiner, Matthias, Scheckenberg, Dirk, and Johannes (2001) suggested there are three dimensions in the field of online pedagogy: pedagogical principles, pedagogical functions, and pedagogical variables. These form a triangular axis of interactivity. Heiner et al. (2001) argue that the pedagogical principles reflect the shift away from teaching to learning and towards a student centred approach. This has meant that traditional instruction is replaced by the construction of learning environments, where students play an active role in learning and learning strategies, where they are expected to be self-organised, self-directed, and independent learners. Furthermore, there has been a shift from the acquisition of knowledge towards generic competencies and learning outcomes. Interactivity and cooperative and collaborative learning have become essential. As a result of the global nature of CBE, a dimension of interna-

tional and intercultural communication has been introduced. Authentic situated learning in the virtual classroom has evolved. Problem-oriented, case-oriented, and enquiry-oriented learning are favoured by the online environment.

A model for the pedagogical dimensions of Web based learning (WBL) postulated by Khan (2004) referred to teaching and learning issues by listing content, goals/objectives, design approach organisation, methods and strategies, medium, and evaluation as key components in virtual learning environments. This model acknowledges similar influences to the cited study (Heiner et al., 2001) in online environments, adding a comprehensive framework including the technological, interface design, online support, and management, resource support, ethical and institutional components in an attempt to understand design issues in flexible and distributed learning systems.

However, the effective dimensions of interactive learning (Reeves & Reeves, 1997) with its basis in research, theory of instructional technology, cognitive science, and adult education remains a seminal study and provides the most appropriate model which the authors have chosen as a basis for examining the pedagogical effectiveness of the Training and Development Program. Its strength lies in the “wholeness” of its structure, the open-ended continuum of its dimensions, and the complexity of its capture of the issues relating to online teaching and learning.

The Training and Development Program

The program from which the sample has been drawn comprises both undergraduate and post-graduate components. The Bachelor of Arts and the Graduate Diploma in Training and Development are offered to educators, university lecturers and industry trainers. The main aim of the program is to improve the teaching skills of participants and other competencies associated with the establishment and management of

quality learning environments for students. The participants represent the broader educational community and therefore focus upon adult education. From the total sample of 42 students, 20 were enrolled in the Bachelor of Arts program and 22 were working in the Graduate Diploma. The Bachelor of Arts program comprises 24 units of study. On a full-time basis, the program spreads over three years. The student cohorts are all engaged in the program on a part-time basis as most are in full employment and usually enrol into one or two units per semester. The first year of the program which consists of eight units is awarded to the participants upon enrolment in recognition of their prior learning. Recognition of prior learning (RPL) is a common process in place in Australian universities as higher education recognises the equivalence of workplace expertise and experience, and as a result, the components of experience gained in the workplace can be mapped against the outcomes of units of study. Years two and three of the degree each consist of eight units each. In order to graduate with the award, students must successfully complete 16 units. These units focus on effective teaching and learning strategies, program and curriculum development, and adult learning principles, including educational psychology and teaching practice. The assessment requirements for all units range across individual essays, reports, short answer applications, portfolio work, reflective journals, group work, and presentations. The Bachelor of Arts is considered a basic teaching and training qualification for those who work with adult learners in industry and technical and further education.

The Graduate Diploma in Training and Development builds upon the work completed in the undergraduate program and comprises eight units of study. As this is a higher level program with increasingly complex and more in-depth assessment requirements, students are expected to utilise skills of analysis and synthesis when navigating new materials. The aim is to locate the unit content within the context of each participant's work

environment and, by doing so, comply with the principles of adult learning as espoused by Burns (2002). The program seeks to prepare students for not only effective teaching practices but also aims to equip participants with the qualities and skills required by training personnel to manage and lead educational improvement and reform in a number of settings such as public service, business, and industry. Students in this program typically engage in units which focus upon instructional design and development, effective communication skills, technologies for flexible and open learning, professional practice, organisational change, and reflective practice.

Each unit of study is constructed upon desired student outcomes. In other words, each unit needs to be clear with regard to exactly which skills and knowledge the students should be able to demonstrate as a result of having completed each unit in the program. As part of the overall Teaching and Learning Plan, Curtin University has developed a set of nine generic graduate attributes. All Australian universities have similar attributes which are stated overtly in teaching and learning documentation, and academic staff must ensure the student outcomes for their programs reflect these. The graduate attributes are clearly linked to the needs of external organisations such as potential employers and accreditation bodies. All units of study in the Training and Development Program reflect the nine attributes that the university has identified as satisfying the external environment. Table 1 displays the relationship between the overall requirements of the university and those outcomes of the Training and Development Program at both undergraduate and postgraduate level.

Main Focus of the Chapter

The main focus of this chapter is to describe the research which has taken place at Curtin University of Technology over the past three years that has had as its major concern the evaluation of

Table 1. University and training and development program graduate attributes

Graduate Attribute	A graduate of the Training and Development Program can:
Apply discipline knowledge, principles, and concepts	Recognise, create, and implement sound curriculum practices in their discipline area that include innovative and appropriate assessment processes, which are also current and foundational.
Think critically, creatively, and reflectively	Foster sound educational practices and effective tertiary teaching through leadership, ethical practice, and creative and innovative approaches to maximise the development of student skills and knowledge within the unique characteristics of their discipline.
Access, evaluate, and synthesise information	Research, evaluate, and synthesise scholarly and professional information relevant to tertiary teaching in a creative and professional manner.
Communicate effectively	Communicate effectively with students, as well as with peers and the wider community, by synthesising and evaluating a range of instructional and communication models appropriate to tertiary teaching and be able to apply them in both face-to-face and online environments.
Use technologies appropriately	Formulate, prepare, and assemble effective and appropriate creative instructional resources that incorporate leading edge principles of visual learning and using current information and communication technology tools.
Utilise lifelong learning skills	Systematically analyse and evaluate a range of learning interactions to foster feedback and self-development as a reflective practitioner and lifelong learner.
Recognise and apply international perspectives	Compare and contrast international approaches to what are considered best practices for tertiary teaching and implement appropriate standards and practices into their own discipline.
Demonstrate cultural awareness and understanding	Appreciate and value the variety and range of cultural backgrounds of tertiary students and provide considered programs and materials which are sensitive to student needs and beliefs
Apply professional skills	Demonstrate a thorough theoretical and practical knowledge of tertiary teaching and adult learning through the application of research and the presentation of this research in a scholarly manner.

the online Training and Development Program in terms of its pedagogical effectiveness.

Surveying students in the Bachelor of Arts and the Graduate Diploma in Training and Development (n=42) using Reeves and Reeves (1997) Effective Dimensions of Interactive Learning on

the World Wide Web model as its starting point began in 2004.

Stage one of the research had as its first priority an evaluative function with the view to establishing a model for testing which may provide a useful framework to determine possible principles

of pedagogical effectiveness in the future. The instrument consisted of the 10 dimensions of Reeves on a continuum using a five-point Likert scale. Item banks were developed for each of the dimensions, and these were designed to reflect the 15 pedagogical principles as outlined by Brennan (2003). It was agreed by the researchers that the pedagogical principles could be aligned with Reeves (1997) dimensions in order to provide a full picture of the relationships between both in the creation and maintenance of effective online learning environments. The sample (n=42) completed the survey in 2004 and also contributed to open-ended items on each of the dimensions. This approach allowed for the collection and analysis of both quantitative and qualitative data and therefore enhanced the depth of the findings. The survey data were analysed using the Statistical Package for Social Science (SPSS) in order to locate and use a descriptive statistical approach, and the open-ended responses were subjected to a content analysis in order to illuminate the emergent themes. Late in the second semester (2005), the same sample (n=42) was again involved in stage two of the research and engaged with the survey which was based upon the Online Pedagogical Effectiveness Framework. The instrument was used again in the first semester of 2007 with the same sample that had engaged in stages one and two of the research. The sample for stage three was only slightly reduced (n=38), as two students had graduated from the program and two had taken leave of absence.

The research is interpretive and focuses on a specific social setting or phenomena, which in this case is the Training and Development Program and the reaction of students in the sample towards the online delivery of learning. As noted by Erickson (1986), by Patton (1990), and by Denzin and Lincoln (2000), within the interpretive approach, there are many methods. However, they all share the same philosophical assumption, which is that reality is constructed by individuals interacting with their social worlds

(Merriam, 1998). If an online environment can be considered as representing a social world, it was hoped that by combining Reeves' dimensions and Brennan's indicators into a single instrument and testing it over time with the same student sample, a picture would emerge of the changing nature of engagement with online environments and the importance of characteristics long held by educators to be essential to successful learning.

Results of the Research

The results of stage one (2004) of the application of the survey instrument were encouraging because students placed the Training and Development Program in the area of the dimensions that indicated high level and successful design and planning. According to Reeves' (1997) application of effective dimensions model, the design enabled for the students satisfaction by, for example, facilitative teacher role, open flexibility, intrinsic motivation, and integrated metacognitive support. From an evaluative point of view, the model indicated that the program was primarily viewed as constructivist and in the cognitive domain of learning theory. The program offered a more general goal orientation, but importantly, the tasks offered were considered to be authentic and contextual rather than merely theoretical. Students perceived themselves as mostly intrinsically motivated and their tutors to be facilitative and guiding. The portfolio projects intrinsic to the program facilitated a strong sense of integrated metacognitive support, especially with regard to the reflective practice iterated in the readings and activities. Disappointingly, students rated the degree of cultural sensitivity as neutral. It may be that unit developers and facilitators in the Training and Development Program need to be more aware of and sensitive to the multicultural construction of Australian society in general and the perceptions and backgrounds of students in particular when creating learning materials. Finally, the interactive environment was considered by the sample to

be flexible, open, and conducive to independent learning and the time constraints, which are typically important to adult learners.

The 15 pedagogical characteristics postulated by Brennan (2003) were used as the basis for the questionnaire items in the instrument. Students were asked to respond to these items by indicating their level of strong agreement, through to strong disagreement with regard to the Training and Development Program. The mean scores on the five-point Likert scale are summarised in Table 2.

Once again, the figures in Table 2 were encouraging for the program designers, with the notable exception of the level of interactivity between students. Initially, it appeared that the unit designers and facilitators needed to consider ways in which students could be encouraged to interact with each other in the online environment. There may also have been a need for lecturers in the program to increase their online teaching skills in order to encourage improved levels of student engagement in the communication process. The

relatively high level of perception that the course was learner centred, constructivist, with a range of appropriate strategies, was satisfying. The sample indicated that the interface was easily navigated, deep learning was taking place, the quality of feedback was excellent, that accordingly materials and learning contexts matched and the quality of the teachers was perceived as being high. Areas for improvement included a need to enhance the quality of the design of the materials, the range of learning strategies, reliability of access, and the level of engagement with online materials needed to be reconsidered. The sample also indicated that they believed there was a need for greater attention to synthesis and analysis within the structure of the units. Finally, the quality of planning, monitoring, reviewing, and evaluating needed to be improved.

Analysis of the qualitative responses to the survey instrument supported the empirical findings and offered a range of specific suggestions for inclusion in an updated and improved online learning model. As a result of the study, a potential

Table 2. Pedagogical dimensions, stage 2 of the training and development program

Pedagogical Characteristic	Mean	Std. Dev.
Learner centred environment	4.2	0.72
Constructivist approach to teaching/learning	4.0	0.66
Quality of material design	3.8	1.02
Range of appropriate teaching strategies	4.0	0.78
Range of appropriate learning strategies	3.4	0.67
Level of interactivity between students	2.9	0.99
Reliability of access	3.7	0.70
Ease of navigation	4.1	0.81
Level of engagement with online materials	3.9	0.98
Learning experiences that encourage synthesis and analysis	3.9	0.77
Opportunity for deep learning	4.1	0.91
Quality of feedback	4.3	0.75
Match between materials, learning styles, and learning contexts	4.1	0.80
Quality of planning, monitoring, reviewing, evaluating	3.9	0.61
Skill of teachers	4.1	0.84

Online Pedagogical Effectiveness in Adult Contexts

Table 3. Potential online pedagogical effectiveness framework

Reeves Dimension	Concept	Pedagogical Effectiveness Indicator
Philosophy	Instructivist vs. Constructivist	<ul style="list-style-type: none"> • Learner centred environment • Constructivist approaches to teaching and learning
Learning Theory	Behavioural vs. Cognitive	<ul style="list-style-type: none"> • Teaching and learning strategies • Thoughtful matches between materials, learning styles, and learning contexts
Goal Orientation	Sharply Focused vs. General	Model of delivery <ul style="list-style-type: none"> • Planning • Monitoring • Reviewing • Evaluating
Task Orientation	Academic vs. Authentic	<ul style="list-style-type: none"> • Learning experiences that encourage synthesis and analysis • Opportunities for deep learning
Source Motivation	Extrinsic vs. Intrinsic	<ul style="list-style-type: none"> • Engagement in online materials
Teacher Role	Fixed vs. Flexible	Teachers who are: <ul style="list-style-type: none"> • Imaginative • Flexible technologically competent • Committed • Responsible • Expert communicators
Metacognitive Support	Unsupported vs. Integrated	Consistent levels of feedback
Collaborative Learning Strategies	Unsupported vs. Integrated	Levels of interactivity
Cultural Sensitivity	Insensitive vs. Respectful	Thoughtful matches between: <ul style="list-style-type: none"> • Materials • Learning styles • Learning contexts
Structural Flexibility	Fixed vs. Open	<ul style="list-style-type: none"> • High quality materials design • Range of navigational choices • Reliable, easy access

online pedagogical effectiveness framework has emerged (Table 3).

Students in the sample group were surveyed again in the second semester of 2005. The instrument was based upon the OPEF that had emerged earlier in 2004. In response to the results of stage

one of the research, academics working in the Training and Development Program had developed a series of interventions regarding learning materials and delivery as part of the university's curriculum review process. In this way, the development of the OPEF and the investigation into its

effectiveness as a way to chart student interaction with the Training and Development Program has proved to be useful to those academics whose task it was to engage in curriculum review and renewal. The research has provided a clear picture of what appeared to be working and what was problematic for the learners. Particular attention was paid to quality of planning, monitoring, reviewing, and evaluating components of the program.

The results of stage two provided a number of interesting insights into how adult learners in the program had altered their levels and range of interactions with the online learning environment over a period of two semesters. The overall impressions of the sample towards the learner centred nature of the program held steady along with reactions to the constructivist mode of delivery. The opportunities for deep learning were seen to be available; however, the open-ended responses indicated that as the students became more familiar with the online format, they became far more strategic in their approach and only engaged at certain points throughout the semester as assessment requirements were initiated. The quality of learning materials saw a slight increase as staff had worked to provide increased and more effective links to source research material, and a number of the units had been updated to include more recent readings reflective of the current political and workplace environment. The learning materials were also designed in such a way as to encourage the learners to take on a more active role by selecting to engage only with those objects that were deemed authentic and could therefore be contextualised to their work worlds. In this way, the students were encouraged to become emancipated and more independent, and in doing so, they appeared to take more control over their learning journey through each unit of study. However, the level of interactivity reduced as students became more empowered with the online process. This was a surprising result as the researchers had expected group collaboration and the use of discussion boards and chat rooms

to increase over time as students became more adept at navigation.

The open-ended data revealed that students believed once the initial introductory phase concluded where they were asked, for example, to describe their work environments, they believed their time was better spent concentrating on the assessment tasks instead of furthering relationships. It must be remembered that the sample represented adult learners with the average age of 39 years. Early negotiation of the online assessments suggested that these students preferred to work alone. Group work in a collaborative sense was not viewed as being attractive or effective, as 42% of the sample was situated in offshore or interstate settings thus making the alignment of time frames difficult. Of the remaining 48%, a significant number were engaged in shift work and caring for young families and again, this militated against flexible online interaction.

As expected, ease of navigation and reliability of access increased over time as the sample became more familiar with the associated protocols. The level of engagement with the online materials increased slightly, but as with the result for the pedagogical characteristic *opportunity for deep learning*, the open-ended data suggested that students had become used to accessing information quickly and only targeting sites and links that would assist in the development of assessment pieces in a strategic sense. Therefore, the sample engaged less over time as they learned to increase the speed and accuracy of their interaction.

Slight increases in the quality of the learning experiences and the perceived match between learning contexts and materials was expected as the curriculum review carried out in late 2004 and early in 2005 attempted to further place learning and assessment protocols within the reality of the students' worlds in terms of their life and work. The students indicated that the selected unit materials had more relevance to their work environments and that they had encouraged deeper analysis of the relationships between theory and practice in

their own contexts. As a result, there was the suggestion that the learning experience had resulted in an ability to add value to their workplace and allowed them to implement enhanced interaction with their own students and colleagues. The quality of feedback remained important for the sample as a number of them worked and studied in extremely isolated geographic regions of Australia, and swift and effective feedback from the university via the online environment was deemed essential for these students to successfully progress through the program.

Perhaps the most interesting result was the sample's reduced need for teacher skill as identified by the framework. The open-ended responses seemed to indicate that with the progression of time and the likelihood that the materials themselves had improved in quality, relevance, and ease of access due to an ongoing cycle of curriculum review, the actual discussions with the academic in the 'teacher' role were perceived to be of lessening

importance. The boundaries between 'teacher' and 'learner' had started to blur along with the traditional perceptions of the role played by each. A number of responses indicated that the 'students' saw themselves on an interchangeable footing with the 'teachers' associated with each online unit of study. As adult learners, the participants had come to trust their own skills and knowledge-building capacity and had therefore become far more independent while engaging directly with the learning environment online.

Refinement of the Online Pedagogical Effectiveness Framework

In order to gain comprehensive longitudinal insights into the interaction employed by students in the Training and Development Program with the online environment, the sample was again accessed in semester one of 2007. At the time of the

Table 4. Pedagogical dimensions, Stage 2 of the training and development program

Pedagogical Characteristic	Mean	Standard Deviation
Learner centred environment	4.3	0.78
Constructivist approach to teaching and learning	4.0	0.77
Quality of material design	3.9	0.92
Range of appropriate teaching strategies	4.0	0.66
Range of appropriate learning strategies	3.7	0.86
Level of interactivity between students	2.3	0.94
Reliability of access	3.9	0.88
Ease of navigation	4.2	0.75
Level of engagement with online materials	4.0	0.84
Learning experiences that encourage synthesis and analysis	4.0	1.02
Opportunity for deep learning	4.0	0.66
Quality of feedback	4.3	0.72
Match between materials, learning styles, and learning contexts	4.2	0.79
Quality of planning, monitoring, reviewing, evaluating	3.9	0.54
Skill of teachers	3.4	1.01

data collection, two members of the original group had taken leave of absence from their study while a further two students had graduated from the Graduate Diploma course. The 2007 sample therefore comprised 38 remaining students (n=38).

Accessing the sample over time has allowed the researchers to investigate the changing nature and extent of student online interaction, study management, and navigation in terms of the OPEF as they progress through their course of study. This has provided an interesting view of the overall maturation of the relationship that the sample has developed with their online environment. The change over time may provide us with a picture of what Ulmer (2003) refers to as the ‘new millennium learner.’ These are the new generation of learners for whom the technology is the environment and for whom the process of learning means different things. The OPEF that was used in stage three of the study continued to use as its basis the dimensions originally posited by Reeves (1997) in combination with Brennan’s

(2003) pedagogical effectiveness indicators. The framework was applied to further components of study in the Training and Development Program as the sample progressed through the suite of available units, defined as a period of study comprising a semester in duration and resulting in 25 credit points towards a degree or diploma. The sample (n=38) was asked to respond to items on a Likert scale as per the instrument utilised in stages one and two. They were also encouraged to respond to the open-ended items in order to provide ongoing qualitative data (see Table 5).

Stage three of the research provided a number of interesting findings, not the least of which was the continuing perceived decline of the importance of teacher skill in facilitating a successful online environment. This, coupled with the reduction in the level of interactivity between students, reflected the growing independence of the learners and the increased quality in instructional design. The results show a decline in the need for teacher skills and peer interaction while indicating that

Table 5. Pedagogical dimensions, stage 3 of the training and development program

Pedagogical Characteristic	Mean	Standard Deviation
Learner Centred Environment	4.4	0.61
Constructivist approach to Teaching and Learning	4.0	0.77
Quality of Material design	4.2	0.78
Range of appropriate teaching strategies	4.0	0.62
Range of appropriate learning strategies	4.0	0.61
Level of interactivity between students	2.0	0.89
Reliability of access	4.0	0.80
Ease of navigation	4.3	0.73
Level of engagement with online materials	4.3	0.92
Learning experiences that encourage synthesis and analysis	4.0	0.91
Opportunity for deep learning	4.1	0.73
Quality of feedback	4.3	0.71
Match between materials, learning styles and learning contexts	4.4	0.84
Quality of planning, monitoring, reviewing, evaluating	4.0	0.61
Skill of teachers	2.9	0.92

the quality of the material design, the learner-centred environment, and the range of appropriate learning strategies had increased. The open-ended comments suggested that the sample perceived an improvement in learning materials and overall design of each unit of study, and this resulted in a feeling of having more control over their learning activities and 'space.' This is not unusual as Burns (2004) in his research into adult learning approaches has indicated that experiencing a firm locus of control over engagement with learning activities and experiences is crucial for adults who are engaging in both online and traditional learning contexts. Burns' work also suggests that adults bring a substantial context and valuable experience of their own to new learning. This has been acted upon by the instructional designers and the academics working in tandem, in that the content of each unit has been situated within the work context of the Training and Development student cohort. Assessments have been varied, negotiated with the learners, and scaffolded in levels of difficulty to reflect reality, therefore offering the students a more authentic experience. In a number of units, self-assessment tools have been embedded, and these have met with student approval as they align themselves with a constructivist approach, which has at its core the development of fully independent learners who are key players in their own progress. Student comments indicated that their increased levels of interaction with the materials themselves was influenced by their ability to utilise new learning and assessment requirements in the workplace in a practical sense. They had begun to take control of their learning, and rather than talk to fellow online students about their progress, they were more likely to instigate a process of reflective practice with colleagues in their various workplaces. Their comments suggested that they apparently viewed this as more of a 'value-adding' process.

The sample also indicated that their opportunity for deep learning had been further enhanced. The increased use of problem solving and case-

oriented learning tasks in all units seemed to impact on the students' engagement with the materials. The comments suggested that there was more of a perceived link between the quality of planning, monitoring, reviewing, and evaluating and deep learning opportunities. In other words, the materials represented a more authentic and therefore worthwhile experience. They were not seen to be merely an 'academic exercise.' Practical components such as reliability of access and ease of navigation had increased, and the open-ended comments suggested that this was due largely to the redesign of a number of units. The increased use of graphic and interactive learning materials, along with links providing easy access to reading and pictorial materials that explained difficult concepts, had resulted in the students feeling that they were not 'wasting time searching around the unit for what to do.' This increased their sense of being strategic in their approach to study; given that as adult learners there were a multitude of other demands upon their time, not the least of which was full-time employment.

FUTURE TRENDS

Much has been written regarding the importance of interaction and collaborative learning models in both online and face-to-face contexts (Brown & Palincsar, 1989; Guzdial, Hmelo, Hubscher, Newstetter, Puntambeker, Shabo, et al., 1997; Totten, Sills, Digby, & Russ, 1991), and yet the findings, particularly from stages two and three of the research, seem to indicate a significant shift in the conceptualisation of what we understand as crucial elements of pedagogically sound online practice. It may be that Heiner et al. (2001) have been correct in their assumption that learning is the domain of the learner and that there has been a shift from teaching to learning, particularly for adult learners. The actual learning environment may have superseded the importance of collaboration with peers and teacher skill as we strive

to provide authentic and situated learning opportunities for our students. As a result of stage two of this research, the Training and Development Program was reviewed and further changes and improvements were made to the overall instructional design of the units of study. Funding was sought and professional designers were employed to work alongside the academics who were teaching in the program to increase the quality of the materials, ease of navigation, and supply of reliable links to subgroup information and extension work. A number of the units have become, in a sense, 'teacher-proofed' with increasing opportunities to interact with online materials in a vivid and very real way while still adhering to the overall graduate attributes insisted upon by the university. There has been an increased use of animations, audio, and video in the majority of units to supplement traditional textual information. The results seem to indicate that while overall instructional design has become more detailed and interactive, the need for interaction with fellow students and teachers has declined.

Given the findings of this research, the question of the ongoing importance of teacher role and student interactivity in online learning environments emerges as a factor to be considered in the development of instructional materials and learning spaces in the future. As educators, we need to ask ourselves the question: what will be the emergent role of 'teachers' in online learning environments? The results of the research described in this chapter seem to indicate that a change in our perceptions of what a teacher actually *does* while engaging with online learners is no longer on the horizon but is upon us. It may be that the models for online pedagogical effectiveness such as those posited by Reeves and Reeves (1997) and Brennan (2003) and indeed others need to be revisited and tested again with cohorts of learners who are engaged in online courses of study to ascertain whether or not these two dimensions are in fact central to successful learning. This chapter therefore challenges

the traditional understandings of educational thinking in that learners are dependent upon the ongoing relationships with peers and teachers in order to succeed and experience deep learning. Well-organised learning systems and student-centred instructional design that focuses upon empowerment may well take precedence over these dimensions in a reconceptualisation of the OPEF that has emerged from this study.

A refined framework may need to be further developed that does not in fact include *Teacher Role* and *Collaborative Learning Strategies* as dimensions of high importance or at the very least perhaps the effectiveness indicators for both these dimensions need to be redefined to reflect the new roles that learners, teachers, and designers are able to create in the new millennium. Sims and Jones (2003) have written extensively about the changing roles of designers, teachers, learners, and technicians in the educational process. They stress that we need to reassess these roles and their relationships with online contexts. As opposed to face-to-face environments where course design can occur quite independently from actual delivery, teachers and learners can begin to blur their roles in online design and by doing so enhance the overall process. The framework that has emerged clearly requires further testing and refinement as the roles of teachers, learners, peers, and designers are interrogated to assess their interrelatedness and overall impact on learner interaction in a collaborative sense. It could be that our future understandings of the two dimensions *Teacher Role* and *Collaborative Learning Strategies* will be enhanced by combining the two as a single dimension of *Interchangeable Collaborations* where teachers, learners, designers, peers, and colleagues all interact to create optimal environments for learning. It would follow then that *Collaborative Metacognitive Support* such as consistent levels of feedback should also occur between the key players mentioned (see Table 6).

Online Pedagogical Effectiveness in Adult Contexts

Table 6. The online pedagogical effectiveness framework

Dimension	Concept	Effectiveness Indicator
Philosophy	Instructivist vs. Constructivist	<ul style="list-style-type: none"> • Learner centred environment • Constructivist approaches to teaching and learning
Learning Theory	Behavioural vs. Cognitive	<ul style="list-style-type: none"> • Teaching and learning strategies • Thoughtful matches between materials, learning styles, and learning contexts
Goal Orientation	Sharply Focused vs. General	Model of delivery <ul style="list-style-type: none"> • Planning • Monitoring • Reviewing • Evaluating
Task Orientation	Academic vs. Authentic	<ul style="list-style-type: none"> • Learning experiences that encourage synthesis and analysis • Opportunities for deep learning
Source Motivation	Extrinsic vs. Intrinsic	<ul style="list-style-type: none"> • Engagement in online materials
Interchangeable Collaborations	Fixed vs. Flexible	Between: <ul style="list-style-type: none"> • Teachers • Learners • Peers • Designers • Colleagues
Collaborative Metacognitive Support	Unsupported vs. Integrated	Consistent feedback between: <ul style="list-style-type: none"> • Teachers • Learners • Peers • Designers • Colleagues
Cultural Sensitivity	Insensitive vs. Respectful	Thoughtful matches between: <ul style="list-style-type: none"> • Materials • Learning styles • Learning contexts
Structural Flexibility	Fixed vs. Open	<ul style="list-style-type: none"> • High quality materials design • Range of navigational choices • Reliable, easy access

CONCLUSION

The mixed method approach to evaluating a CBE program has yielded some interesting and useful data in the ongoing pursuit of excellence

in online delivery in the tertiary sector. Reeves (1997) model established a strong overview of the program within the results on his continuum. Brennan's (2003) suggestions for pedagogical indicators formed key pieces of information

as to the perceptions of students undertaking the program in terms of providing valuable feedback for improvement. The combination of these notions, integrated with the data collected from open-ended questions seems to provide a balanced understanding of the needs of students in the current context of online delivery and, in particular, the changing learning approaches and needs of the adult learner engaging with an online environment over time. The Online Pedagogical Effectiveness Framework that emerged as a result of the three stages of research conducted in 2004, 2005, and 2007 has incorporated two enhanced dimensions and associated effectiveness indicators that more appropriately reflect the changes to online educational theory as we understand it. Dimensions of *Interchangeable Collaborations* and *Collaborative Metacognitive Support* have been developed as a result of student reactions to the importance of the 'teacher' in online learning habitats and the increasing interchanging roles played by members of an online learning initiative. Supporting the work of Heiner et al. (2001) is the finding that over time the students in the sample became less reliant on teacher skill. This reflects a paradigm shift away from a teaching to a learning discourse facilitated by a student-centred design of materials.

As the students in the sample became more emancipated and empowered in their own learning and as the design of the materials improved in quality, their dependence upon the 'teacher' in the traditional sense clearly diminished. So too did their perceived need to interact with fellow students. High quality online programs which have at their core situated and authentic learning opportunities may well be creating a new generation of learners who are becoming truly independent and proactive. This indicates a shift in educational thinking where teachers and designers must accept that the learner is empowered to be in control of their learning, and as such, he/she is able to use personal preferences to contextualise experience. It may also be that online learning 'worlds' are

emerging in their own right. They are no longer likely to be pale imitations of the traditional face-to-face classrooms we have been accustomed to. According to Sims (2006), independence from specific times and places is a major characteristic of the new generation of learners. This is likely to impact upon the way education is provided and also upon the interchangeable roles played by the key protagonists.

We now need to consider new models and frameworks that integrate the pedagogies of online, learner-centred environments. In some instances, we may need to unlearn tried and tested pedagogical beliefs, as these are only useful in a predictable and regular social world (McWilliam, 2005). These new models will need to redefine the roles of key participants such as teachers, learners, designers, peers, and colleagues as they collaborate in the overall learning journey. Using the refined OPEF, future research efforts will refocus on the dimensions of collaborative interchangeable roles and collaborative metacognitive support rather than the more simplistic notion of 'teacher skill' and feedback per se. The online environment is far more complex, and as such, it presents us with an opportunity to actualise its transformative potential in education in the 21st century.

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KEY TERMS

Online Learning: The use of the Internet to access learning materials; to interact with the

content, instructor, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning, and to grow from the learning experience (Ally, 2004).

Learning Management System: A learning management system (LMS) is a software application or Web-based technology used to plan, implement, and assess a specific learning process. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. A learning management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums. (Schlack, 2007)

Training and Development Program: The program is delivered at tertiary level and comprises undergraduate and graduate components. Students are able to enroll into either the Bachelor of Arts, Graduate Certificate, and/or Graduate Diploma in Training and Development. The BA consists of 24 units of study, 8 of which are awarded in recognition of prior learning. The Graduate Certificate and the Graduate Diploma consist of four and eight units of study, respectively. The program is delivered in a fully online mode and the course content emphasizes the development of professional knowledge and skills through the practical application of theory to teaching and instruction. The program attracts educators from the broader community who are engaged in working with adult learners, and these students come from technical education, industry, and business as well as the government sector.

Unit of Study: A unit of study at Curtin University of Technology is usually considered as a 12-week program over the duration of a semester. Students are expected to contribute at least four hours a week to reading and research per unit in order to successfully complete the requirements of each unit.

Adult Learners: Adult learners are people who bring a great deal of experience to the learning environment. They expect to have a high degree of influence on what they are to be educated for, and how they are to be educated. They are active learners and participants who need to be able to see the application of new learning. Adult learners expect to have a high degree of influence on how their learning is evaluated, and they expect responses to be acted upon when requesting feedback.

Pedagogical Characteristics: The importance of interactivity in the learning process, the changing role of the teacher from sage to guide, the need for knowledge management skills and for team working abilities, and the move towards resource-based rather than packaged learning.

Effective Pedagogical Dimensions: “‘Pedagogy’ covers the function, work, or art of a teacher or trainer. It includes the process of teaching and instruction. It is useful to think of pedagogy as being reflected in the arrangements made to enable someone to learn something for a specific purpose. These arrangements are influenced by: the general orientation of the teacher or trainer; the kind of knowledge to be developed; the nature of the learner; the purpose the learning is to serve” (Brennan, 2003). Effective pedagogical dimensions are those assessable characteristics or dimensions of pedagogy which illustrate effective learning outcomes.

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Chapter 3

A Theoretical Model for Designing Online Education in Support of Lifelong Learning

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ABSTRACT

The escalating infusion of online education to promote lifelong learning has triggered a re-examination of teaching and learning not witnessed since perhaps the advent of the printed textbook. Textbooks changed the landscape of individualized learning as professors added reading to their inventory of instructional strategies. Today, distance education, in all its manifestations from programmed instruction to Web-based courses, requires instructors to employ new strategies in course design and delivery in order to engage students and promote learner-centered activities. The rapid growth of distance education (especially for the adult learner) serves to challenge traditional methodologies in which education is designed, delivered, and assessed. This chapter introduces a new model for designing instruction using this state-of-the-art venue, an archetype for effective instructional design for lifelong learning.

INTRODUCTION

The rapid growth of technology now enables delivery of lifelong learning in ways that increase access and overcome traditional barriers of geography and time normally associated with conventional classroom instruction. The emergence of video and Web-based courses has thrust educational institutions into newer and more complex distance learning environments in order to link their students and instructors in

cyberspace. The potential for sharing information, engaging in collective learning, and participating in reflective thinking has provided, according to Van Dusen (1997), opportunities for supporting “collaborative learning, heterogeneous groupings, problem-solving and higher order thinking skills—educational processes that a lecture format cannot facilitate” (p. 45). Such focus on student-centered teaching requires more than simply learning to use technology; it also requires learning new and different ways of teaching that

engage the student in a virtual learning environment (DeNigris & Witchel, 2000; Kearsley, 2000; Knowlton, 2000; Ko & Rossen, 2001; Palloff & Pratt, 2001; Simonson, 2000; Young, 2000). Some would say such reorientation requires an entirely new model for designing and assessing such new instruction.

The objective of the chapter is to propose a new model for designing online instruction that incorporates state-of-the-art technologies. The research-based methodology presented in this chapter describes a process for designing effective online education that involves a simple five-step process. The model is offered to assist educators in developing online instruction for lifelong learning.

REVIEW OF THE LITERATURE

History of Instructional Design: Problems and Their Solutions

The word “model” is often used to represent theoretical or abstract concepts that exist in the real world. A model may be a prototype of a real-world object (e.g., an architect’s model of a building) or merely represent an object with no real-world counterpart (e.g., a UFO spaceship). In the context of education, models have often presented fresh perspectives for educators seeking to construct a vision of new concepts or representation of experiences too large, too small, too dangerous, too distant, or, in the case of educational applications, too fragile for human experimentation. For the innovative educator, models have often served to provide the conceptual framework to pose solutions to practical problems.

Instructional System Design (ISD)

Designing instruction experienced its first taste of immediacy during the ramp-up of World War II. Military instructors needed a systematic, me-

thodical, organized schema to produce training courses—and they needed it in a hurry. For the thousands of military instructors and the tens of thousands of their recruit-students, ISD was the answer to the problem quickly of creating results-oriented lessons.

ISD models have enabled would-be developers to tackle new lessons or curriculum in a systematic, methodical, organized manner. ISD models help visualize the interrelated tasks associated with the sequencing of discrete, manageable instructional units. Educational psychologists would ascribe behavioral learning styles to the ISD approach; that is, designers who prefer sequential, logical, hierarchical, and chronological instruction tend to steer towards using the ISD paradigm.

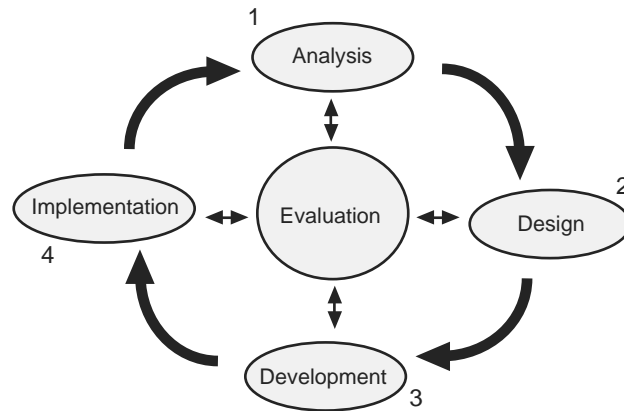
A variety of ISD models have been developed since the initial military ISD model came into wide spread acceptance in the 1940s. The Inter-service Procedures for Instructional Systems Development (often called the military ISD model) was approved by the Joint Chiefs of Staff in 1975 and remains the governing prototype for all military education and technical training.

The ADDIE model (Figure 1) represents the five basic phases of most ISD models, although terminologies may differ. Most ISD models propose an analysis phase followed by design, development, implementation, and evaluation. They begin with the analysis of tasks to be performed, content area learning objectives, timelines, and priorities and constraints. Designing lessons via ISD demands an understanding of the target learner and a hierarchy of instruction from simple to complex, least to most important, past to present—basically, the behavioral approach to learning.

The development phase examines questions such as who will be responsible for the instruction, what resources will be needed to deliver the lesson, when the instruction will be delivered, where the lesson will be delivered, and how the instructor will know learning has occurred.

Implementation encompasses a critical distinc-

Figure 1. ADDIE instructional systems design model



tion among the various target learners: traditional, adult, and distance learners. Traditional lessons are most often found in the classroom and employ more static learning materials such as textbooks, manipulatives, and workbooks. Lessons targeting the adult learner seem to favor group or collaborative activities with a healthy dose of experiential learning materials as instructional resources. Distance education integrates a wealth of multimedia materials to enhance learning with an inventory of technologies that is increasing geometrically every year.

Finally, the evaluation or assessment phase of the model ensures that instructional objectives have been met and a process of continuous improvement is in place to continually update and revise the lesson based on learner feedback that may take on a variety of forms such as traditional paper and pencil quizzes, authentic projects simulating real-world situations, or online tests that provide immediate reinforcement to the learner.

A half-century later, the ISD model remains intact and its standards for implementation still serve to address the time-honored problems of technical training and adult education.

Lesson Design Models

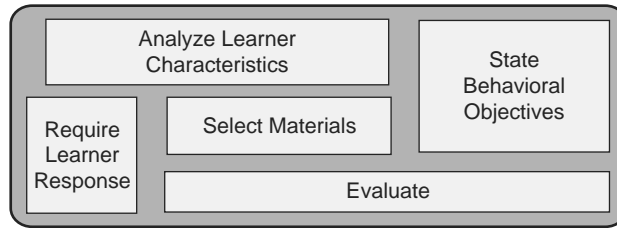
Lesson design models differ from their ISD relatives with respect to the educational psychol-

ogy they espouse and the problems they seek to address. While the ISD approach is focused on behavioral principles, lesson design models find their strength in cognitive learning strategies.

In contrast to the behavioral perspective, cognitive psychologists focus on the learner (rather than the environment) as the active component of the teaching-learning process. They uncovered serious shortcomings when seeking to explain all learning as a simple response to environmental stimuli. Behaviorism, they conceded, offered an adequate explanation when designing a lesson for multiplication tables, for example. But, the psychology seemed to fall short when explaining how new knowledge was acquired apart from environmental stimuli without the requisite S-R-R experience. Understanding how prior knowledge is constructed and new information processed and structured in an individual's memory demanded a new model for lesson design.

The ASSURE model (Figure 2) is a popular prototype for designing lessons. The model assumes that instruction is delivered using a variety of media and has been found to be especially helpful when designing technology-based lessons. It encourages incorporation of out-of-class resources and technology into its learning materials (Heinrich, Molenda, Russell, & Smaldino, 1996). Although critics (at least of the acronym) find the letters ASSURE somewhat contrived,

Figure 2. ASSURE lesson design model



the acronym conveys the importance and inter-relationship of the six major steps in the design of cognitive-rich lessons: analyze learners, state objectives, select media and materials, utilize materials, require learner participation, and evaluate/review. Most discussions of the ASSURE model offer additional, specific criteria for selecting media that considers key features when infusing technology into successful lessons.

Universal Curriculum Design Models

The final school of educational psychology provides the foundation for the third generation of instructional design models. As educational learning theories evolved, the limitations of both behaviorism and cognitivism became more obvious. Neither psychology could satisfactorily portray how affective knowledge was mastered. The teaching of values, social interactions, or personal relationships required yet another paradigm. The new archetype attempted to take into account how a person feels about learning, how learning contributes to growth and individual satisfaction, and how all manner of instructional strategies combine to form a more effective universal curriculum.

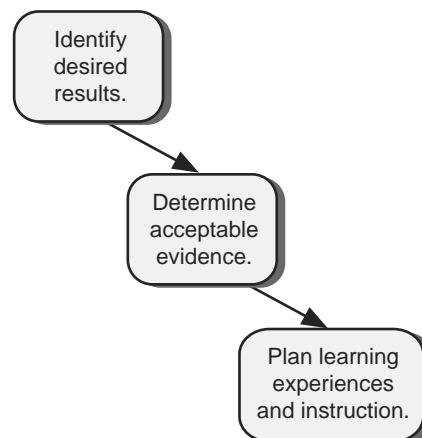
The backward design model (Figure 3) is the foremost archetype of the universal curriculum design model. The backward design process begins with the end in mind. As the authors relate the concept: “One starts with the end—the desired results (goals or standards)—and then derives the curriculum from the evidence of learning (performances) called for by the standard and the

teaching needed to equip students to perform” (Wiggins & McTighe, 2000, p. 8).

The design process involves three stages, each with a focusing concept. First, what is worthy and requiring of understanding? In this first stage, teachers focus on the learning goals and “enduring understandings” that students are to develop by the completion of the lesson. Guiding questionnaires are formulated and universal skills that focus on larger concepts, principles, or processes are devised.

Stage 2 examines the requisite evidence of understanding, deciding ultimately how students will demonstrate their understanding. The assessment tasks created in this step ensure that students develop an understanding of the content presented and demonstrate that understanding throughout the learning process (formative assessment) as well

Figure 3. Backward design model (Source: Wiggins & McTighe 2000)



as at its conclusion (summative assessment).

The final stage of the backward design model develops the learning experiences, sequence of the instruction, and the actual subject area content to be taught.

Historically, ISD led the charge from advocates seeking an explanatory model for developing instruction. For its time (the 1940s and 1950s), education was well served. However, by the 1960s and into the 1970s, the shortcomings of ISD produced the next necessary schemata with its focus on lesson design. Finally, recognition of its shortfalls was hastened with the advent of the universal curriculum. Each model, in turn, served to address a recognized need in the design and delivery of instruction.

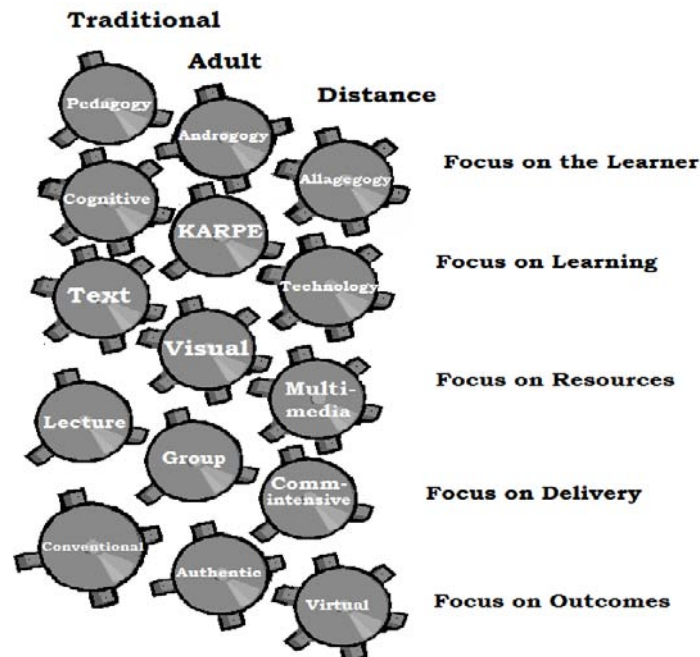
For the 21st century educator, evolution was replaced with revolution as technology sought to impact the classroom. And, as in the past, this change, too, was to precipitate yet another new model for instructional design.

THE ENGINE FOR DESIGNING ONLINE EDUCATION IN SUPPORT OF LIFELONG LEARNING

Each of the three previous approaches to lesson design offered a unique perspective for developing successful lessons. However, by fate or circumstance, each model would focus on the same set of five key elements: the learner, principles of learning, instructional resources, delivery methods, and learning outcomes.

In graphical depiction, Figure 4 illustrates the new model for designing online instruction in support of lifelong learning. Like its ancestors, the five foci remain unchallenged. The remainder of this chapter considers each component independently and presents arguments for moving from the more traditional perspective of the child-learner to one that considers the idiosyncrasies of the adult, and finally, to a perspective unique to the demands of distance education. The new engine for designing online education changes the way we design,

Figure 4. The engine for designing online education



develop, implement, and assess learning in this emerging virtual world of lifelong learning. We begin with learning theories and the many contributions of educational psychology to the design of traditional, adult, and distance-based lessons.

Focus on the Learner: Learning Theories

The primary responsibility of an educator is to promote student learning. Teachers select instructional strategies based in large measure on their own particular comfort and familiarity with learning theory. A popular model of teaching and learning depicts how the principles of learning contribute to the fabric of a successful lesson. One of the most important objectives of lesson design is to factor into course development the appropriate learning theories of the target learners be they traditional, adult, or distance learners (Dembo, 1991).

K-12 teachers, in particular, learn how to design lessons from the outset of their preservice undergraduate programs using boiler plate lesson planning tools. They mirror courses that they, themselves, take which celebrate the diversity of pedagogical learning styles associated with traditional preschool through high school students. Teachers of adult learners, on the other hand, are often not as well prepared to teach their particular strata of client. Andragogy, which attempts to describe how adults learn, is not often a prerequisite for undergraduate or postgraduate faculty education, or corporate trainers for that matter. Teaching at a distance adds yet another layer of learning, termed *allagegogy* (“teaching to transform”) by Priest (2002), to describe a still newer approach to education that focuses on learner independence and the inherent changes that define lifelong learning.

Learning Theory for the Traditional Learner (Tomei, 2004)

Historically, learning theory for traditional learners has advanced through three evolutionary phases of what is typically referred to as pedagogy. The three schools of educational psychology (behaviorism, cognitivism, and humanism) were introduced briefly in the previous section and are now discussed in detail as they pertain to the traditional learner.

Years ago, teachers believed that the best way to learn was through repetition, a principle from behavioral learning theory that dominated educational thinking since the time of Ivan Pavlov and his experiment with animals. Contemporary behaviorists view the environment in terms of stimuli and its resultant behavior or response. Simply put, learning is a response to the environment. Teachers who accept the behavioral perspective assume that the behavior of their students is a response to their past and present experiences and that all behavior is learned.

Cognitive teachers, on the other hand, focus more on the learner as an active participant in the teaching-learning process. Those who adhere to this psychology of learning believe that teachers can be more effective if they know what prior knowledge the student already possesses and how information is processed and structured in an individual’s memory. Cognitive-based teachers instruct students by using teaching strategies to help the learner acquire knowledge more effectively.

Humanists believe that how a person feels about learning is as important as how he or she thinks or even behaves. They describe behavior not from the viewpoint of the teacher as do behaviorists but rather from the vantage point of the student who is performing the activity. Teachers create an educational environment that fosters self-development, cooperation, positive communications, and personalization of information.

Learning Theory for the Adult Learner

Knowles' (1984) theory of andragogy redefined the previously child-only perception of learning. Adult learning is typically characterized as experiential, problem-based, immediate, and self-directed.

Unlike children, adults learn experientially using their considerable practice, knowledge base, and problem-solving skills. They must know why they need to learn something and they learn best when that topic is of immediate value. Adults approach learning, for the most part, as self-directed and expect to take at least some responsibility for their own learning. Adults expect that the learning environments fashioned for them accommodate these fundamental aspects of adult learning.

In practical terms, andragogy focuses more on process (how we learn) and less on content (what we learn). Strategies include case studies, role playing, simulations, and self-evaluation and are often enhanced with the infusion of the right blend of technologies. Instructors adopt the role of facilitator rather than lecturer.

Learning Theory for the Distance Learner

Although Lev Vygotsky died decades before the information revolution of the late 20th century, his work and that of other developmental psychologists was to become the foundation of distance learning theory. His theories stress the fundamental role of social interaction in the learning process and the importance that community serves in the process of "making meaning" (Vygotsky, 1978). Such concepts have come to form the basis of adult education, lifelong learning, and distance education. For example, teaching at a distance has come to be accepted as a natural outgrowth of Vygotsky's work on the more knowledgeable other (MKO) that refers to someone who has a better understanding or a higher ability level than the learner, with respect to a particular task, process,

or concept. Electronic tutors as well as today's online learning management systems have been used in distance settings to facilitate and guide students through the learning process.

From these early beginnings came a growing research base that continues to identify qualities inherent to successful distance learners. Moore (1990) and Campbell Gibson (1990) examined the success rates of distance students and discovered that certain common characteristics seem to lend themselves to success at a distance. Others, typified by Holmberg (1995), discovered a nonhomogeneous population with respect to demographics of distance students. Regardless, research does contribute some broad demographic and situational parallels that help educators profile the "typically successful" distance learner. Characteristics vary but in general reflect a combination of demographic variables such as age, gender, and ethnic background as well as situational variables including disability, location, and life roles.

In addition, characteristics inherent to allagegogy include the ability to work independently or in a group, complete assignments and readings with minimal supervision, write in a clear and articulate manner, manage time, learn using different delivery formats, and work with technology tools (Lehigh Carbon Community College, 2006).

As the first component of the engine, learning theories encourage designers to consider developing lessons that combine principles from pedagogical, andragogical, and allagegogical learning theory to produce a lesson that truly targets the widest possible audience of distance learners. Lessons designed for the online environment should take into account that some of their target learners anticipate content that must be mastered (behavioral) as well as those who expect exposure to problem-based, real-world experiences. The first component of our engine produces lessons that consider these initial competencies while moving towards true online education designed with a set of prejudged skills, namely, the ability

to learn either independently or in a cohort, writing and time management skills, and technology literate. Focus on the learner is the first stage of our engine for designing online education.

Focus on Learning: Taxonomies

A taxonomy is a classification system that presupposes an innate relationship or order among elements. A vocabulary is considered the simplest form of a taxonomy with only one level, that being its acknowledged register of terms, common expressions, and established lexis. More complex taxonomies form a hierarchical structure. At the highest level, terms and descriptive phrases are general in nature, followed by an increasingly more refined set of terminology at progressively more specific levels of articulation.

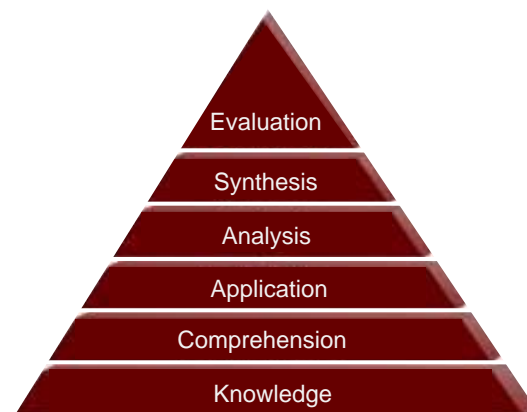
Taxonomies are typically categorized by domain. Historically, the more popular taxonomies have addressed a broad representation of educational objectives (cognitive, affective, and psychomotor): service-learning outcomes (academic, career, civic, ethical, personal, and social); developmental skills (cognitive, social/emotional, language/linguistic, and fine/gross motor abilities); lifelong learning skills (knowledge,

application, and research/practice, and evaluation); or, more recently, instructional technology (literacy, communications, decision making, learning, teaching, and technology) (Furco & Billig, 2002; Krathwohl, Bloom, & Masia, 1964; National Center For Infants, Toddlers and Families, 2002; Tomei, 2005). A brief review of the more important taxonomies as they pertain to lifelong learning follows.

Taxonomy for the Traditional Learner

Benjamin Bloom created what is arguably the most famous classification for educators in his *Taxonomy of Educational Objectives* (Bloom & Krathwohl, 1956). In his landmark exposition, Bloom developed a theory of six progressively complex steps of cognitive development (Figure 5) to include knowledge, comprehension, application, analysis, synthesis, and evaluation. He offered educators a rubric for designing and implementing instructional objectives at increasingly advanced levels of higher order thinking. Following in his footsteps, Krathwohl and Kibler completed a trilogy of domains with similar classifications for the affective and psychomotor learner, respectively (Krathwohl et al., 1964). Supplement-

Figure 5. Bloom's taxonomy of educational objectives



ing Bloom's effort came a host of extraordinary contributions supporting the advancement of higher order cognitive thinking skills from the likes of Howard Garner, Jean Piaget, and Jerome Bruner, to name a few.

Taxonomy for the Adult Learner

Later, the *KAR-P-E taxonomy* (Figure 6) offered a schema for technology education encompassing adult education, corporate training, and professional development. Designing instructional learning objectives at the knowledge, application, research, practice, and evaluation (KAR-P-E) levels (1) applies to all learners in all disciplines; (2) develops the learner in progressive sequential steps; and (3) assumes mastery and competency at previous levels before advancing up the hierarchy (Tomei, 2005). Using the KAR-P-E model answers the perennial question from advanced learners who seek a distinction among undergraduate, graduate, and postgraduate courses that often sport the same course titles if not many of the same learning objectives, the model (and the research that supports it) proposes that typical undergraduate courses should construct learning focused predominantly on the knowledge plane. Graduate courses present learning on a more application level, while postgraduate programs (e.g.,

doctoral studies) should concentrate on research, practice, and evaluation. Of course, some overlap among all three program levels is not only expected but encouraged.

Taxonomy for the Distance Learner

The latest addendum to the classification of educational learning objectives came onto the scene with the introduction of *The Taxonomy for the Technology Domain*. Like its predecessors, technology classifications include a similarly progressive level of higher order thinking skills complete with action verbs that represented appropriate intellectual activity on each of the hierarchical levels (Figure 7). The six interconnected levels of literacy, communication, decision making, infusion, integration, and technology matured into a paradigm for constructing technology-related lesson objectives and technology-based student learning outcomes (Tomei, 2005). It offers the most comprehensive classification system for designing distance online education. Online courses begin with the mastery of targeted technologies (literacy) and move quickly to communications (e-mail, word processing) and decision-making skills. True distance learning design begins with the infusion of existing and available technology-based resources (e.g., files, audio and video, Web-based learning environments, etc.) and advances to the integration of new technologies and new technology-based learning materials created by a highly motivated and technologically-prepared instructor who tops the lesson by placing technology in its rightful place and priority in the learning equation (tech-ology).

Use of an educational taxonomy is considered appropriate either to establish a set of terms defined by a common rubric and accepted by a common body of knowledge or to confirm a progressively complex yet controlled set of possibilities. Especially useful for our purposes in conceiving the engine for designing online education is to emphasize the importance of selecting appropriate

Figure 6. K-A-RPE taxonomy

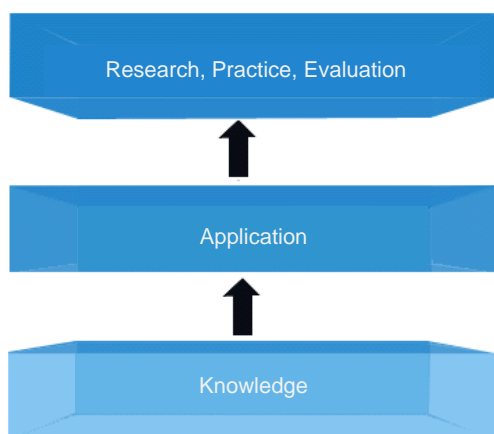
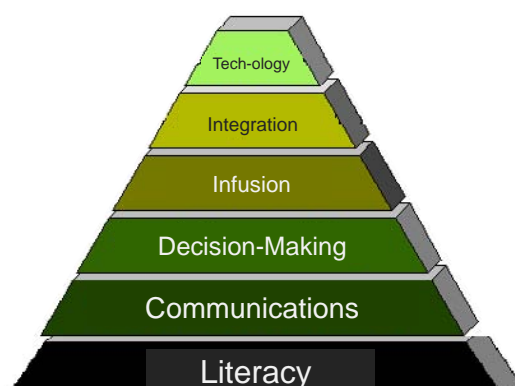


Figure 7. The taxonomy for the technology domain (Source: Tomei, 2005)



methods, media, and materials. In this step, the design of the lesson is a focus on learning that bridges the audience and the lesson objectives.

Focus on Resources: Selecting Learning Materials

Selecting Learning Materials for the Traditional Learner

Prototypically, traditional learners are provided with static-based materials that offer significant learning opportunities coupled with the advantages of extreme portability. The ability to use these materials in any instructional environment, plus their high recognition level, ensures most students have an acceptable comfort level using these materials. Add to these advantages, the cost-effectiveness and availability of materials readily created and duplicated with little expense, and it becomes immediately evident why text-based resources such as textbooks, handouts, worksheets and workbooks, manipulatives, encyclopedias, and lesson kits remain the instructional materials of choice for the traditional learner. Other learning materials, technology-rich but traditionally delivered, include CD-ROMs, VHS videotapes, and 35 mm slides.

Selecting Learning Materials for the Adult Learner

Adult learners are afforded a broad range of learning material alternatives categorized for purposes of this text as dynamic materials. They include, but are not limited to, visual-based graphic presentations, video and audio reproductions.

Experiential learning is adult learner-centered and operates on the premise that adults learn best when instruction combines experience with the theoretical; in other words, “learning by doing.” Experiential materials engage the learner directly with the content being studied via case studies, clinical experiences, team-building, and decision-making exercises.

Self-directed materials encourage the learner to take responsibility for personal growth by diagnosing their own learning needs, setting individual goals, identifying appropriate resources, implementing successful strategies, and assessing the personal worth of learning outcomes. In 1999, more than 95% of adults participated in self-directed learning and spent an average of 15 hours per week on self-directed learning initiatives (Rager, 2003), enhanced by instructor facilitation. Adult learning occurs just as often in the isolation of a university library as it does in more interpersonal communication with experts

and peers. Typical resources brought to bear to promote self-directed adult learning include printed and audiovisual materials; first- or second-hand experts; education-focused institutions such as museums; and involvement with professional associations.

Selecting Learning Materials for the Distance Learner

Distance learners command the widest assortment of learning materials in terms of quantity, format, and form. Multimedia-based materials are the particular forte of the distance learner, roughly divided across print, audio (voice) and video, and computer (data) objects. Several subdivisions and widely diverse applications of the same, many of the technologies extend this grouping into multiple categories.

Print technologies heralded the advent of the original form of distance learning—correspondence courses once integrated self-paced print materials mailed to students and returned upon completion for instructor assessment. Even though most, if not all, printed text for today's distance courses takes on an electronic façade, reading assignments remain a significant component of most courses. Lumped into print technologies comes electronic mail and many other forms of digital material (e.g., hyperbooks, e-journals, and e-books).

Audio or voice technologies offer less costly and yet very effective ways to enhance distance learning. The audio component of a distance learning course can be as conventional as voice mail or as complex as audio conferencing or live broadcasts integrated audio, chat rooms, presentation hardware, electronic polls and surveys, and computer sharing represent some current advancements in audio technologies.

The ability to see and hear an instructor offers opportunities for behavior modeling, demonstrations, and instruction of abstract concepts. Video

technologies for distance learning are often characterized by the media on which they are hosted: videotape, satellite, cable vs. broadcast television, and desktop or Internet conferencing. Each of these media is further categorized depending on the path of the video signal (i.e., one-way audio/video, one-way video/two way audio, or two-way audio/video).

Computer (data) technologies comprise the broadest and fastest growing dimension of distance learning materials. The primary computer technologies used for distance education include both online environments and electronic tools that host a wealth of materials for the distance learner. Most state-of-the-art online environments host digital content, audiovisual presentations, and links to related Web content. If it is digital, it can be uploaded to distance courses hosted by Blackboard, WebCT, e-College, and other online forums.

In addition, a suite of ever-increasing technology tools can be dropped into online courses with a click of a mouse. Chat rooms with online logs, threaded discussion groups with multiple levels, online quiz editing and grading, whiteboards, gradebooks, calendars, drop boxes, and Webliographies are just a few of the tools available to the distance learner.

Future online instructors can anticipate even more advancements as two-way Web video, desktop video, and evolutions in assessment options are integrated into the list of multimedia-based learning (and teaching) materials.

The final cache of multimedia-based learning materials, often overlooked as a category in its own right, is multimedia software. Streamed audio and video software is as important as the hardware that drives it. CD-ROM and Web development software, along with advanced graphics and presentation applications, have incontrovertible influence on the discipline of media and fine arts. The abundance of distance learning applications validates the claim that multimedia software is one

of the fastest growing branches of the computer industry (University Affairs, 1996).

The focus on resources accounts for the third rung in the engine for designing online education. With this step comes a shift from the predominantly theoretical considerations of the previous two steps to a more practical focus on the methodologies of teaching online. Our fourth level of the engine next examines presentation modes in general and, specifically, the most effective modes for teaching at a distance.

Focus on Delivery: Selecting Presentation Modes

Selecting Presentation Modes for the Traditional Learner

Historically, instructors of traditional learners have opted for classroom-centered presentations. In many respects, classroom lectures represent the “but we’ve always done it this way” approach to teaching. Such emphasis on the lecture-rich “sage on the stage” has rapidly diminished as research and technology combined to offer new and exciting venues for delivering instruction to contemporary students. Lectures are arguably the easiest mode for both the sender (teacher) and receiver (learner) requiring less student preparation and groundwork than more complicated modes of presentations. As educational psychology matured over the years since the 1940s, emphasis on behavior, research, and the literature have combined to uncover many of the major shortcomings of the lecture-based lesson. More importantly, the growing sophistication of learners (even at the K-12 level) and the infusion of technologies appropriate for traditional as well as mature learners have heralded the re-tooling of presentations away from the one-way, send-receive mode to a host of new and innovative modalities for learning.

Selecting Presentation Modes for the Adult Learner

Teaching adults demands the incorporation of a variety of instructional strategies, expanding an already complex inventory of diverse teaching tools. Andragogy places instructional emphasis on groupwork suggesting several new modes of participative, self-directed instruction, the most widely known being cooperative and discovery learning. Cooperative learning, as an adult mode of presentation, encourages a manner of interaction similar to how successful adults master many real-world experiences. A solid cooperative learning experience incorporates realistic tasks, shared leadership, predefined responsibilities, and often ill-defined outcomes to trigger the desired learning outcomes.

Discovery learning places the teacher in the role of facilitator, serving up a menu of resources from which the adult learner may pick and choose to enrich their personal learning experience.

Together, presentation modes for the adult learner are characterized by collaborative projects and shared endeavors, and other group-focused evaluation and assessment.

Selecting Presentation Modes for the Distance Learner

Distance learning adds still other strategies that provide a wealth of communications-intensive presentation modes including: asynchronous and synchronous communication, immersion/hybrid/repository online courses, and online learning management systems.

Asynchronous communication does not happen in collaboration; it is most beneficial when common meeting times are difficult to arrange (e.g., incompatible time zones or work schedules) or when the learner is required or would prefer to take time considering a response or forming opinions. E-mail, newsgroups, and bulletin

boards are common examples of asynchronous learning tools.

Synchronous communications occurs in real time, back and forth between two locations, fostering socialization and discussion. Audio and video conferencing, chat rooms, and electronic whiteboards offer the best examples of this form of learning.

Most distance courses are constructed as immersion (totally online), hybrid (partially online), or repository (materials only online) presentations. Immersion courses are often referred to in their more generic term: e-learning. Defined by Wikipedia (2006), immersion or e-learning is computer-based training that incorporates technologies that support interactivity enhanced by technology. Hybrid, or partially online courses divide course content, collaboration, and assessment, offering combinations of these elements either online or traditional. Repository courses provide an online component for instruction but use technology narrowly to capture and store digital information. For example, an instructor might make available a list of favorite Web sites online or a digital journal article might be captured for download (assuming appropriate copyright permissions, of course). Finally, the newest category of comprehensive multimedia-rich distance courses is learning management systems (LMS) that manage essential learning activity such as registration, scheduling, reporting, and so forth. Instructionally, a typical LMS might provide course delivery and content authoring, student exercise and quiz item authoring, student grade book and progress tracking, and statistical analysis.

This focus on delivery comprises a review of appropriate presentation modes for the traditional, adult, and distance learner and covers an impressive range of instructional tools from the straightforward lecture to the virtual. Next, a discussion of assessment methodologies and their importance in measuring learning outcomes completes the introduction of a new model for designing online education.

Focus on Outcomes: Selecting Assessment Methodologies

Selecting Assessment Methodology for the Traditional Learner

Assessment takes many forms, typically extends over an extended period of time (class periods, semesters, entire programs of study), and serves multiple purposes. Principally, assessment measures the quality of a student work and attainment of mastery. In its more robust roles, it is the stimulus for continuous course improvements, faculty development, and lifelong learning. For the traditional learner, conventional assessment often takes the form of a single-incident, unidimensional, timed exercise characteristically objective in its measurement, summative in its scope, and often limited to rote memorization, rehash of definitions, and reiteration of terms. Traditional assessments are commonly multiple-choice, true-false, or short-answer instruments and have garnered considerable criticism over the years from teachers, students, and administrators alike.

However even its staunchest critics will concede that conventional assessments do have their advantages. They are less time consuming to construct, easier to grade, and much more straightforward to administer. They are also less problematic to validate for internal consistency and reliability. Past studies by Gaynor and Millham (1976) found that students who received weekly quizzes earned higher scores on final examinations when instruction was modified based on class results, a powerful testimony to more frequent student-centered feedback.

Selecting Assessment Methodology for the Adult Learner

Adult learners expect real-world challenges that require them to apply their personal skill and

knowledge base. Proponents of andragogy have come to find that experience, communications, and interpersonal skills define the unique characteristics that blend to form the successful adult learner. For the adult learner, such expectations have come to mean authentic assessment.

Authentic assessment requires learners to build responses rather than choose from preselected options, thereby eliciting higher order thinking and a return to the educational learning objectives of Bloom. Authentic assessment focuses on students' analytical skills; abilities to integrate what they learn; creativity; capacities to work collaboratively; and written and oral expression skills. Assessing authentically values the learning process as well as the finished product and includes an inventory of tools such as portfolios, performance tasks, demonstration presentations, observations (formal and informal), discussions, and learner self-reflection and self-assessment.

Selecting Assessment Methodology for the Distance Learner

As a group, distance learners are probably more anxious about how they are doing than their traditional counterparts. Distance instructors use virtual assessment to provide the frequent feedback needed to track their learners' individual and collective efforts to complete assignments, master objectives, and gauge progress. Because distance learners are forced to read directions online, detailed information on how assessment will be conducted is highly recommended. Basic information such as the specific forms that assessment will take is paramount. For example, synchronous participation using chat rooms, videoconferencing, and Web conferencing is an excellent option when teaching at a distance. Distance learners should be prewarned that, even though a course may be labeled as online or at a distance, participation during scheduled syn-

chronous discussions may comprise a significant percentage of the final course grade. Likewise, timely submission of asynchronous contributions is important to keep most online courses within semester timelines. Strict adherence to issues of American Psychological Association (APA) style, copyright infringements, and academic integrity often contribute to final grades while e-mail, bulletin board posts, discussion forums, and listservs are integrated into formative and summative course assessment. Finally, the online versions of the more traditional evaluator instruments remain viable assessment tools and include digital documents (e.g., essays), other electronic files (e.g., spreadsheets), as well as online exams in the form of multiple choice, true/false, or short answer completion graded electronically online as soon as responses are submitted.

In addition (and somewhat beyond the scope of this chapter) are numerous other electronic tools that enhance the statistical dimensions of distance learning environments. Many online learning management systems provide instructors with standardized analytical data including rate of student progress, completion rates, access to course materials, quantity of instructor/student interaction, assignment completion tracking, examination item analysis, and more.

Our focus on outcomes is fraught with challenges as well as opportunities. For many learners, technology already places them in isolation from both their instructor and their peers. Even though technology has invaded every aspect of 21st century living, there remains uneven access to some resources necessary to learn at a distance. Finally, technical problems are common, variations in learner (and instructor) skills are endemic, and learner anxiety must all be factored into every consideration when selecting appropriate assessment methods for distance learning.

RECOMMENDATIONS

Applying the Engine for Designing Online Education

Using the new engine, designing online education embraces the structured approach of a sequential, step-by-step process that begins with the learner and flows through a considered examination of learning objectives, learning materials and presentation modes, and ends with appropriate assessment.

Focus on the Learner: Pedagogy, Andragogy, and Allagegogy

Define target learners by moving quickly through pedagogy and andragogy and focusing on the new concept of allagegogy. For best results, design a lifelong lesson based on adult learning strategies taken to its ultimate goal of “teaching to transform.” Consider infusing traditional principles of pedagogy and themes of behaviorism, cognitivism, and humanism to appeal to the widest audience whenever possible while simultaneously developing online lessons that encourage independent learning and incorporate appropriate technologies.

Focus on Learning: Cognitive, K-A-RPE, and Technology

Bloom’s taxonomy for the traditional learner as well as Tomei’s KAR-P-E classification for adults have much to contribute to the formation of successful lesson objectives and should not be summarily dismissed. The engine’s second gear emanates from the traditional and adult learner for a reason. However, designing lifelong learning at a distance demands conscious reflection on the technological elements of a lesson. Use the taxonomy for the technology domain to formulate successful learning objectives for online education.

Focus on Resources: Static, Dynamic, and Multimedia Materials

The third set of cogs petitions the designer to consider the various resources for learning. Again, designing for the distance learner moves us quickly past traditional materials and resources towards the infusion of digital content. Integrate as diverse a menu of multimedia resources as time, money, and best practice permit to produce a winning online lesson.

Focus on Delivery: Lectures, Groupware, and Communications-Intensive Media

The fourth set of gears for the new engine encompasses the medium of delivery. Lectures, whether they occur in the classroom or digitally via audio or video, remain a viable platform for any lesson. Groupwork, likewise, is now more accessible to a broader population and retains its attraction for the socially-receptive adult learner. But certainly, an ever-expanding inventory of innovative tools suggests that the designer of distance lessons should proceed with all due haste to the suite of communications-intensive delivery modes that will surely come to define the future of lifelong learning.

Focus on Outcomes: Conventional, Authentic, and Virtual

The final bank of gears to turn in crunching out a new lesson emphasizes learning outcomes. As before, consider the more conventional as well as electronic adaptations of authentic assessment tools. The digital portfolio, perhaps the most authentic of the various evaluation instruments, bridges the adult and virtual learner. While more is not always better (especially regarding educational technology), when it comes to focus on outcomes, the more opportunities for assessing

learner achievement in a virtual environment, the greater the chances of realizing successful learning outcomes.

CONCLUSION

The search for a research-based methodology for designing effective online education boils down to a simple five-step process. A new model has been offered to assist the educator in developing technology-based online instruction in support of the lifelong learner.

An anonymous educator expressed it best, "Learning is difficult. To better learn a subject, try teaching it. To truly master content, try teaching it using technology." The application of technology has moved lifelong learning past the traditional models of instructional design to a new paradigm for lesson development. The consequences of teaching with technology force teachers to simultaneously consider multiple instructional foci while demanding that learners recognize their own learning style and how technologies help or hinder their own ambitions.

To that end, we add one more level of definition to the aforementioned author's quip: "To truly understand subject content, try teaching it at a distance." The engine for designing online education in support of "lifelong learning" is learner-focused, theory-based, and resource-rich. It supports communications-intensive delivery and virtual assessment. And it incorporates a truly unique blend of traditional and contemporary tools for designing online instruction.

Turn all the gears. Follow the concepts and tools presented in this chapter. Infuse the wealth of information provided elsewhere in this text. And, develop successful online education lessons in support of lifelong learning.

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Chapter 4

A Brief History of eLearning

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ABSTRACT

The purpose of this chapter is to explore prior research associated with the history of eLearning. While issues related to the eLearning, technology and innovation adoption, the online environment, the role of faculty in online environments, and preparing faculty for online instruction are important, it is prudent to examine the history of this innovation in order to chart the future of such practices.

INTRODUCTION

Investigation into faculty adoption of eLearning for the purpose of quality teaching and its implications for training and faculty development, policy, and leadership, not only draws upon academic foundations, but also advances practice aimed to explore the technical, cognitive, and aesthetic basis of signifying human interaction as mediated by technology. This chapter will center upon several interrelated topics to explore the historical developments of eLearning.

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MAIN THRUST

Historical Perspectives of eLearning

The origins of *eLearning* as currently practiced in higher education stem from the insightful work of Suppes (1964) and Bitzer (1962). While others such as Porter (1959) and Uttal (1962) were also active early in this field (Fletcher, 2002), only Suppes and Bitzer clearly situated the use of technology within a broader educational agenda (Suppes, 1964, 1966, 1986). It is important to note that there is no single evolutionary point of which the eLearning originated nor is there a single agreed definition of eLearning. Since the 1960s, eLearning has evolved

Historical Perspectives of eLearning

in different ways affecting Business, Education, the Training sector, and the Military (Fletcher & Rockway, 1986) in different ways. eLearning means different things in different sectors. In the higher education sector, “e-Learning” refers to the use of both software-based and online learning, whereas in Business, Higher-Education, the Military and Training sectors, it refers solely to a range of on-line practices (Campbell, 2004). Our focus for this paper is e-learning in higher education.

In the 1960s, there were few educational applications of computers in universities. It was thought that the high cost of technology would prevent its ubiquitous uptake as an educational tool. Suppes (1964; 1966) argued that:

“in the future it would be possible for all students to have access to the service of a personal tutor in the same way that ancient royals were once served by individual tutors, but that this time the tutors would be in the form of a computer.” (Suppes, 1964; 1966).

Further, he argued that the single most powerful argument for the use of computers in education is individualized instruction and the dialogue that it supports. This was not an idle conjecture, but was based on Bloom’s (1984) research that demonstrated that one-on-one tutoring improved student achievement by two standard deviations over group instruction. Individual tutorials, Suppes (1964; 1966) argued, were also a core aspect of the university and computers would embrace and extend this through the use of virtual learning environments.

Suppes work (1964; 1966; 1986) and teaching was confined to structured fields and views of knowledge, with “drill and practice” approaches. Further, Suppes was concerned with both producing better learning, and learning how to be a better teacher with computers. Contemporary critiques of his approach often overlook the lack of viable alternative paradigms at that time, something

that Suppes was aware of. His research found that computer mediated instruction produced profound effects on learning, and identified changes in students’ understandings ranging from simple to complex. While his use of computers was essentially as a tool, he foresaw the potential for wider applications of computers in education. His research led to the foundation ground work for computer assisted learning.

With Suppes foundation work on computer assisted learning (1964; 1966; 1986), it was not until Blitzer (1962) who created PLATO, a time-shared computer system, can to address concerns about student literacy. According to Blitzer (1962) PLATO could be used to develop and deliver computer-based education, including literacy programs. It allowed educators and students to use high resolution graphics terminals and an educational programming language, TUTOR, to create and interact with educational courseware and to communicate with other users by means of electronic notes – the forerunner of today’s conferencing systems (Blitzer, Lichtenberger & Braunfeld, 1962). Woolley (1994) argues that as well as PLATO’s advances in Computer Assisted Instruction, its communication features were equally innovative and were the foundations of today’s conference and messaging systems:

“Two decades before the World Wide Web came on the scene, the PLATO system pioneered online forums and message boards, email, chat rooms, instant messaging, remote screen sharing, and multiplayer games, leading to the emergence of what was perhaps the world’s first online community.” (Woolley, 1994)

Comparing e-learning practice over time is problematic and fraught with a host of methodological concerns (Charp, 1997; Herrington, Reeves & Oliver, 2005; Mortera-Gutiérrez, 2006; Nicholson & McDougall, 2005; Pilla, Nakayama, Nicholson, P., 2006; Thomson, 2005). Table 1 provides an historical perspective based on macro-

Table 1. Historical context of e-learning development

Era	Focus	Educational Characteristics
1975-1985	Programming; Drill and practice; Computer-assisted learning –CAL	Behaviorist approaches to learning and instruction; programming to build tools and solve problems; Local user-computer interaction.
1983-1990	Computer-Based Training Multimedia	Use of older CAL models with interactive multimedia courseware; Passive learner models dominant; Constructivist influences begin to appear in educational software design and use.
1990-1995	Web Based Training	Internet-based content delivery; Active learner models developed; Constructivist perspectives common; Limited end-user interactions.
1995-2005	e-learning	Internet-based flexible courseware deliver; increased interactivity; online multimedia courseware; Distributed constructivist and cognitivist models common; Social networking; Remote user-user interactions.

level features, it says little about the processes and agency occurring under the various categories.

The history of e-learning is best summed up as: “*Opportunities multiply as they are seized.*” (Sun Tzu, 410bc) as for the past 40 years, educators and trainers at all levels of higher education, business, training and the military made use of computers in different ways to support and enhance teaching and learning (Charp, 1997; Molnar, 1997). Consequently, the contemporary use of the term “*e-learning*” has different meanings in different contexts (Campbell, 2004).

Zahm (2000) described computer-based training (CBT) as delivered via CD-ROM or as a Web download and that it is usually multimedia-based. Karon (2000) discussed the convenience factor of well-designed computer-based learning by saying that any well-designed computer-based learning whether by a networked based or delivered via the Internet is more convenient than traditional instructor-led format. Hall (1997) incorporated both Zahm (2000) and Karon (2000) definitions by underlining computer-based learning as an all-encompassing term used to describe any computer-delivered learning including CD-ROM and World Wide Web. Hall further explained that

some people use the term CBT to refer only to old-time, text-only training.

Like CBT, online training was classified as an all encompassing term that refers to all training done with a computer over a network, including an organizations intranet, the organizations local area network, and the internet (Gotschall, 2000). Gotschall (2000) states that online learning is also known as net-based learning. Urdan & Weggen (2000), related that online learning constitutes just one part of e-learning and describes learning via internet, intranet and extranet. Urdan & Weggen (2000) added that levels of sophistication of online learning vary. It can extend from a basic online learning program that includes text and graphics of the course, exercises, testing, and record keeping, such as test scores and bookmarks to a sophisticated online learning program. This sophistication would include animations, simulations, audio and video sequences peer and expert discussion groups, online mentoring, links to materials on a intranet or the web, and communications with corporate education records. Schreiber & Berge (1998) agreed with Gotschall (2000) and purported that online learning is any technology-based learning, that is, information

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currently available for direct access.

Hall (2000) contends that e-learning takes the form of complete courses with access to content for “just-in-time” learning, access. Learning is and will continue to be a lifelong process, that could be accessed anywhere at anytime to meet a specific need or want. Hall added that more links to real-time data and research would become readily available. Given the progression of the definitions, then, web-based training, online learning, e-learning, distributed learning, internet-based learning and net-based learning all speak of each other (Hall & Snider, 2000; Urda & Weggen, 2000).

Similar to e-learning and its related terms is technology-based learning (Urda & Weggen 2000). Urda & Weggen shared that e-learning covers a wide set of applications and processes, including computer-based learning, web-based learning, virtual classrooms, and digital collaborations. For the purpose of their report, they further customized their definition to the delivery of content via all electronic media, including the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, and CD-ROMs. They warned, however, that e-learning is defined more narrowly than distance learning, which would include text-based learning and courses conducted via written correspondence. Like Hall & Snider (2000), Urda & Weggen (2000) have set apart distance learning and e-learning in their glossaries, making, however, e-learning inclusive and synonymous to all computer-related applications, tools and processes that have been strategically aligned to value-added learning and teaching processes.

Interestingly, Urda & Weggen (2000) saw e-learning as a subset of distance learning, online learning a subset of e-learning and computer-based learning as a subset of online learning. Further, another rationale for the choice of e-learning is that “just-in-time” learning is a major advantage of e-learning but not of distance learning. Distance learning purports planned courses, or planned ex-

periences, e-learning does not only value planned learning, however, it also recognizes the value of the unplanned and the self directedness of the learner to maximize incidental learning to improve performance (Wentling, Waight, Gallagher, Fleur, Wang & Kanfer, 2000).

In the higher education, business, and training sectors e-learning relates particularly to Internet-based flexible delivery of content and programs that focus on sustaining particular communities of practice. e-learning in business and training can be characterized as being driven by notions of improved productivity and cost reduction, especially in an increasingly globalize business environment, with a focus on content delivery and online course management. However for the contexts of this paper, we will focus on e-learning in the higher education sector. These sectors initially employed the limited learning models extant at the time, but have since moved to incorporate a diverse range of learning models and foci (Nicholson, 2004).

Campbell (2004, p1) argues that:

“Broadly, in industry settings, e-learning reflects an emphasis on informal and non-formal, just-in-time learning where the emphasis is on collaborative productivity. Whilst, in higher education settings, best practice online learning emphasizes the development of metacognitive skills, where the emphasis is on reflective and collaborative learning.” (Campbell (2004, p1)

In the context of the wider education community, the use of the term e-learning has historically had wider connotations that embrace a diverse range of practices, technologies, and theoretical positions. It is not only focused on online contexts, and includes the full range of computer-based learning platforms and delivery methods, genres, formats and media such as multimedia, educational programming, simulations, games and the use of new media on fixed and mobile platforms across all discipline areas. Further, e-learning is

often characterized by active learning student centered pedagogical techniques (McDougall & Betts, 1997).

The growth of E-learning in business and higher education, and its marketing as a “killer-app” (Friedman, 1999), has led to concerns about the influence of quality assurance driven models on the structure and quality of these programs (King, 2002; McGorry, 2003). Related concerns about its ability to deliver meaningful pedagogically structured learning experiences or to have a clearly identifiable learning paradigm have also been raised (Gillham, 2002; Stone Wiske, Sick, & Wirsig, 2001; Suthers, Hundhausen Girardeau., 2003). Recently, driven by such concerns, its focus has expanded to accommodate the incorporation of learner engagement and social-learning models (Mortera-Gutiérrez, 2006; Schroeder & Spanngel, 2006). Since its inception, technological advances in computers and networks facilitated advances in e-learning as educators seized on new features in an attempt to adapt them to their needs, to accommodate new educational theories, or looked for the promise of enhanced functionality.

Since its inception, e-learning has assimilated a diverse range of pedagogical practices, however the defining aspect of e-learning—the trend towards collaborative online learning environments—is not only a result of the increasing adoption of constructivist paradigms, but is also a consequence of the affordances of ubiquitous global networks that have facilitated the realization of individualized learning and interpersonal interactivity on a large scale, perhaps far exceeding the expectations of Suppes (1964; 1966; 1986) and Bitzer (1962) in its scale and scope.

The contemporary claims for E-learning being ‘new or different’ arise in the different and independent development of the application of computers to educational needs in the business and education sectors, as well as from the ‘lost history’ of educational computing. It is clear that the early pioneers, confined by the dominant

paradigms and technologies of their time, were striving to move beyond their contemporary practices to better engage learners and to enhance teaching and learning: at the inception of the field, PLATO contained features that pre-empted, and now characterize, cutting-edge third generation E-learning systems.

It is accepted that according to Wentling, Waight, Gallagher, Fleur, Wang & Kanfer (2000), e-learning can be seen as the acquisition and use of knowledge distributed and facilitated primarily by electronic means. This form of learning currently depends on a variety of means such as networks, computers, a variety of channels (e.g., wireless, satellite), and technologies (e.g., cellular phones, PDA’s) as they are developed and adopted. Further, e-learning can take the form of courses as well as modules and smaller learning objects that may incorporate synchronous or asynchronous access that can be distributed geographically with varied limits of time.

FUTURE DIRECTION AND CONCLUSION

E-learning offers a worldwide forum in which to teach courses. One can assume, for example, that each student at any time has an excellent encyclopedia at his or her disposal. Course material can be dynamically updated and linked across several related sources. Course text, examples and exercises can be interactive in the sense of immediately illustrating equations with graphs, changing parameters and seeing the results, linking to other web-sites according to the interests of the student. E-learning is free from limitations of space and time, while reaching adult learners in a global context. In addition, the e-learning offers students a wealth of information and opportunities for social networking that was never possible from the traditional classical setting. The possibility of linking to information worldwide in a multitude of formats creates a remarkably rich

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medium for learning. E-learning is not merely an electronic duplicate of the original course material. It represents a new type of educational materials which takes full advantage of the emerging Web and multimedia technologies in order to achieve an effective yet enjoyable learning process (Michael & Tait, 2002). Thus, complex concepts are introduced in innovative ways – ways that involve the adult learner and integrate them into the learning process. Full linking to vast resources available worldwide, introduces new levels of value to online courses in distance education. A e-learning is envisioned as a dynamically-evolving resource that will prove beneficial to both the adult learner and non tradition students and instructors alike.

In light of its historical development, it is evident that the design of e-learning is a multi-faceted process that resembles movie making in cinema productions. Thus, e-learning is developed through the efforts of a team of professionals with a complementary range of skills, as opposed to classical course design, which is typically developed by faculty alone. Designer and instructors alike will have to take head to principles in design, usability, interaction, etc in order to make online distance learning courses the top quality product for the next generation.

The richness of modern Web and multimedia technologies allow for unlimited creativity when it comes to electronic courseware development. Such richness offers educators new opportunities to develop very interesting course material while it also poses a substantial challenge in that it requires faculty to rethink their own course offerings in the light of the new technologies. In order to best serve the adult learner population instructional designers, instructors, and course administration will have to take an active look at effective course design and communication strategies within online and web based courses. It is not enough for university, colleges, and other educational institutions to just give financial re-

sources, hardware and software, but should fundamentally equip instructor to effectively teach, engage, extend, and enhance the adult learner's learning experience, while in an online course offered via a distance.

The future entails faculty training and development in designing effective and efficient online courses for the adult learning population. This trend can be seen at many major research institutions that offer online courses and e-learning training courses specifically for the adult learner. By equipping the instructor to effectively design e-learning courses in terms of online course interaction with both students and with the online content and materials, visual aesthetic in design and web architecture, convenience and open access to materials, positive and useful user feedback, communication, and usability of both the course content materials and course website, students will develop a consensus toward a positive view on the instructional quality of the online course.

It is important to understand that in order to foster an environment conducive to effective learning in the online atmosphere, we must pay close attention to the historical developments of e-learning. For such developments, the future seems very bright and encouraging. There is a great of discussion on the effective and systematic design of instruction, effective design of visual aesthetics, design of communication structure, and the available of open access to course content and materials in online courses, specifically for adult learners. This theme will be repeated as other aspects of e-learning come under scrutiny. We know enough at this point to optimize quality in design and delivery, however as history has shown us, e-learning has become a genre difficult to define and measure; that is why the more we discuss the topic of e-learning, the more strategies, processes, and procedures will be developed to effectively engage adult learner.

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Chapter 5

Online Learning: A Transforming Environment for Adults in Higher Education

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ABSTRACT

The authors describe the distributed learning program (Online@UCF) at the University of Central Florida (UCF) that serves a number of adult learners. They present outcomes from several years of research collected by the Research Initiative for Teaching Effectiveness on adults enrolled in online courses. Paradoxically, most educators in online learning focus on millennial generation students, their learning styles, and preference for Web 2.0 technologies. However, research at UCF confirms that online education resonates with adult students because it responds to their lifestyle needs, provides more active learning environments, and empowers their learning beyond classroom boundaries. This chapter examines the strategic elements required for successful adult online programs and explores components of online student satisfaction. The authors conclude by considering the opportunities and challenges for adults in online distance education.

INTRODUCTION

The growth of fully online and blended courses is contributing to an expanding body of research that examines how students and faculty members respond to these technology-rich learning environments. However, the majority of these studies focuses on younger learners and their experience

and propensity toward choosing digital, mobile and personal technologies (Dziuban, Moskal, Brophy-Ellison, and Shea, 2007; Oblinger and Oblinger, 2005; Prensky, 2001). This paper considers an alternative population encountered in Web courses—the adult learner. We investigate a large metropolitan university's distributed learning initiative and how adults are finding expanded educational opportunities enabled by online and blended learning.

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More than 73% of Americans report using the Internet regularly (Pew, 2006) and more than 55% of Americans have broadband access, up from 47% in 2007 (Horrigan, 2008). Of those who use the Internet at home, 79% have a high-speed connection. These data suggest that Americans are becoming technologically engaged, if not savvy. Eighty-eight percent of students indicate they access the Internet on a daily basis at a minimum (Student Monitor, 2008).

As a result of this technological proliferation, higher education is turning to the World Wide Web to expand or enhance course and program offerings. In fall 2006, nearly 20 percent of the nation's postsecondary students were enrolled in at least one online course, and the online enrollment growth rate was 9.7 percent, nearly 7½ times the rate of overall enrollment growth in higher education (Allen & Seaman, 2007).

ADULT LEARNERS

Adult learners do not fit the customary description of the “traditional” college student who is a recent high school graduate, 18-22 years of age, not yet employed nor having family obligations. Adults, on the other hand, are described as “engaged in some form of instruction or educational activity to acquire the knowledge, information, and skills necessary to succeed in the workforce, learn basic skills, earn credentials, or otherwise enrich their lives” (NCES, 2000). Pioneer andragogy researcher Malcolm Knowles (1973) describes unique adult learner characteristics this way: read to learn, relevancy-oriented, responsible, self-directed, goal oriented, practical, and pragmatic, with life experiences that they bring with them to the classroom. As students, adults are more financially independent, working part time or full time while enrolling in courses. They may have dependents, a spouse, and/or children (NCES, 2002).

However, the characteristics that make adult learners “nontraditional” also create challenges

for them in successfully attaining a degree. Often, adult students approach college with an already full plate. Employment and family obligations present time and financial considerations that may compete with the traditional educational experience. Because adults require more flexibility in scheduling, online asynchronous opportunities increase the likelihood that they will be able to successfully complete a degree program.

Silva, Calahan, and Lacireno-Paquet (1998) found four barriers for adults completing a degree: lack of time, family responsibilities, scheduling and location of courses, and cost. Customarily, adults see their work as a primary responsibility, compared to traditional college students who envision college as their primary “job.” These at-risk adults were successful at college completion less than 15% of the time, compared to 57% of those students who were classified as traditional (Choy, 2002). Berker, Horn, and Carroll (2003) found that 62% of these working adults were unable to complete their studies in 6 years, compared to only 39% of full time students. Similarly, an NCES (2002) study of nontraditional students found nearly half of them dropped out of community college, compared to only one fifth of the more traditional students. Clearly, life responsibilities make higher education challenging for this population of students.

WEB COURSES FOR THE ADULT LEARNER

Flexibility in course location and scheduling is critical to the adult learner. Online or blended courses can provide asynchronous opportunities that allow these nontraditional students to be able to effectively juggle work, family, and education (Chao, DeRocco, Flynn, 2007). The many positive characteristics of adult learners—motivated, able to manage their time, have much to contribute, prefer consistency from course to course, and require a high degree of organization and flexibility (O’Lawrence, 2007)—make Web courses a viable

Table 1. Online and blended enrollment growth

Academic Year	Modality	
	Fully Online	Blended
2000-2001	8,710	4,729
2001-2002	12,778	7,771
2002-2003	15,828	10,505
2003-2004	21,950	13,640
2004-2005	29,187	16,690
2005-2006	38,148	16,765
2006-2007	42,398	19,537
2007-2008	46,326	25,064

and attractive option for this population.

The successful Web student also needs to be self motivated, organized, and responsible – characteristics that mirror adult learners. In 1996, the University of Central Florida began offering fully online courses in part to provide access to community college transfer students who had been enrolled in online 2-year programs. In 1997, UCF's Web course offerings expanded to include blended courses—courses with reduced face-to-face seat time. Since that time, the university has seen phenomenal growth in these modalities (Table 1).

The instructional model selected by UCF for use in online courses is based on the following elements and principles:

Social constructivist learning theory-based: It is assumed in UCF online courses that students construct their own knowledge and are responsible for their own learning. Students in online courses are expected to be autonomous and self-motivated.

Communication-centric vs. content-centric course design: Online courses emphasize communication and team-based learning through the use of learning communities. Student communication is a required element of online courses, and is typically graded. The decision to employ a CMC model, rather than a content-centric model was based on the need to support learning com-

munities, as well as a desire to avoid the need to produce extensive content, making it possible to support increasing numbers of courses.

High level of interactivity: Active student learning is emphasized. Modes of interaction include student-instructor, student-student, student-content, and student-external resource. UCF research has observed that the level of student-student interaction in online courses exceeds that in many face-to-face courses, especially large enrollment sections. Faculty members also report that the quality of interaction in online courses exceeds that in their face-to-face courses.

Asynchronous vs. synchronous: Online courses will primarily employ asynchronous communication, although synchronous communication is possible and occasionally used. The emphasis on asynchronous communication was made in recognition of the needs of UCF students for time flexibility.

Instructor led: All online courses are designed and delivered by a faculty member, who is responsible for all aspects of course design and delivery. The role of the instructor shifts from content transmission to guide of student learning. Accommodating the needs and preferences of individual faculty requires that some courses deviate slightly from this model.

These components resonate with the Sloan-C technology-based template for quality higher

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education online programs. The model organizes itself around a set of five metaphorical pillars that comprise an effective framework for delivering online learning to adults. *Access* assures that students who are on campus, near campus or far from campus have the opportunity to achieve their educational goals; this defines the Sloan-C concept of localness. *Learning effectiveness* addresses a fundamental concern that courses in any nontraditional modalities must provide high quality student learning outcomes. *Student satisfaction* responds to the assumption that a satisfied and engaged client base is a primary contributor to an effective learning environment. *Faculty satisfaction* requires that instructors in the online environment have positive experiences with new teaching modalities and experience a sense of professional development that enhances their teaching skills. *Cost effectiveness* requires distance and online learning to be responsive to institutional strategic initiatives, generating revenue while increasing student participation and completion. The Sloan-C pillars serve as the basis for continuous quality improvement of Online@UCF, the University of Central Florida's online learning initiative and provide the framework for the findings in this chapter.

IMPROVING ACCESS THROUGH WEB COURSES

The population of Florida increases by 1,000 persons per day, and along with Texas and California, Florida will account for nearly half (46%) of all U.S. population growth by 2030. The central Florida region served by UCF is one of the fastest-growing areas in the nation. UCF's enrollment surpassed 50,000 students at the beginning of the 2008-2009 academic year, making UCF the second largest university in Florida and the fifth largest in the country.

The university cannot fully meet the educational needs of its 11-county central Florida region

through exclusive reliance upon its main Orlando campus, which is rapidly approaching its projected maximum capacity. Therefore, the university has turned to development of 11 regional campuses and a large scale online learning initiative, Online@UCF, to ensure its ability to meet the expanding demand for access to higher education throughout the region, while at the same time making access more flexible and convenient for the area's many place-bound students, many of whom fit the adult model. Through aggressive development of online degree and certificate programs, as well as hundreds of blended learning courses, UCF has strategically shifted from a capacity-driven access model to a demand-driven model.

Online@UCF currently provides access to 20 fully online undergraduate and graduate programs and tracks, and 12 fully online graduate certificate programs, with additional online degree and certificate programs under development. Student credit hours produced by UCF's fully online and blended learning courses increased 190 percent over just the past five years. During academic year 2007-2008, 63 percent of all UCF students enrolled in one or more online or blended learning courses, and in that year UCF generated 17 percent of its total student credit hours from online enrollments. These growth rates are a strong indication that UCF's strategy of increasing access through online learning is succeeding.

SOME DEMOGRAPHICS FOR THE ADULT ONLINE STUDENT POPULATION AT UCF

As so many authors have pointed out, determining who belongs to the adult category and who does not is difficult and oftentimes arbitrary. The context of a particular institution has a great deal to do with making this decision. UCF is a metropolitan research university dedicated to serving central Florida while building selected internationally outstanding programs. This rapidly growing in-

Table 2. Characteristics of UCF’s web students

	Adults (n=226)	Non-Adults (n=1,095)
Have children	45%	4%
Employed 36-40 hrs/week	53%	13%
Married	47%	17%

stitution is one where many adults are attempting to complete their first degree rather than enroll for job advancement through continuing education. Therefore, the definitions of adult learners as being in the 35-37 year age range (Eduventures, 2008) misrepresent our adult student population. However, some classification metric was necessary in order to portray the data accurately. The method used was the procedure developed by Harris for a fixed length mastery test (Kuyper & Dziuban, 1982). Essentially, we identified the age point in our student population that maximized the F ratio for the groups above and below the cut point. This was an objective procedure that identified the age of 24 as the demarcation point for adults and non adults in our student population.

Therefore, from a random sample of 1,321 students approximately 17% (n=226) are classified as adults by the UCF criterion with the remaining 83% (n=1,095) falling in the non-adult category. Table 2 presents the characteristics of students who are enrolled in Web courses at UCF. These data suggest the adult online learner at the University of Central Florida fits the characteristics defined in the andragogy literature. In addition, 56% of the adults indicated they had taken 5 or more fully online courses, while only 29% of non-adult students had done so. Clearly, adults are drawn to this modality at UCF.

ADULT STUDENT SATISFACTION WITH DISTANCE EDUCATION

The authors indexed online student satisfaction with various elements of online learning using five-point Likert scales ranging from strongly agree to strongly disagree. A common strategy with these responses is to combine like responses (e.g., strongly agree and agree) into one generally “agree” category. The problem with this procedure is that it obscures many important interactions of satisfaction responses, demographics and other item responses. In addition, the middle responses for Likert scales (agree, neutral and disagree) carry some ambivalence. In theory, the extreme responses (strongly agree and strongly disagree) are close to ambivalence-free. For example, consider these comments from students with the most positive responses toward distance education (strongly agree):

“Because there is something due every week you tend to be more involved with the class. You are constantly with the book and reading because it is set up so that you have to be engaged weekly”

“I am able to attend classes with online classes. This allows me to still work. If I couldn’t work, I wouldn’t be able to go back to school”

“As a ‘late in life’ student, I have come to believe I take my online educational experience twice as seriously”

These statements portray non-ambivalent satisfaction with online learning and are typical of the narrative from adult students that assign the highest ratings to their online courses. Now consider these negative comments:

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“I prefer the requirement of sitting in a seat and being lectured to, because it makes sure that I learn the material”

“I am more likely to procrastinate and only work on the material for an online class when it is due”

“I disagree (that I learn more in online classes than smaller face-to-face classes) because I’m not completely a self-learner. I’m more visual, where sometimes a person has to show me something for me to understand it”

These students do not equivocate while expressing their dissatisfaction with distance education. Generally, however, the number of students who are dissatisfied is quite small (Dziuban, Moskal, & Futch, 2007). Often, those who are genuinely dissatisfied with online learning do not re-engage after their first experience.

Finally, these comments represent students who selected the neutral category (most ambivalent):

“I believe attendance and commitment are part and parcel with higher education goals”

“Sometimes this happens in online courses and sometimes it doesn’t”

“I agree only moderately that online classes reduce stress, they are more convenient but they have their own built in type of stresses”

“It (how much you learn) depends on how the online course is set up and what kind of assignments and activities are assigned. I can learn a lot from some online classes, while others can be passed easily without learning that much material”

These responses from the neutral category are prototypical in their simultaneous positive and negative responses. Students are positive about the convenience and flexibility of online learning but miss the face-to-face interaction with instructors. They respond well to the power of technology but become upset when it fails to function properly.

Because of these idiosyncrasies of rating scales, the authors chose to evaluate non-ambivalent satisfaction with distance education in the adult and non-adult student populations (Table 3). Several findings are noteworthy. Approximately 2/3 of the adult population expressed satisfaction with online courses while less than half of the non-adults students indicated that level of satisfaction. Scheduling facilitation is a positive for adult students (84%) compared to 60% for non-adults, as is life management 50% (adults) vs. 28% (non-adults). Adult students (38%) are more likely to remain engaged in education because online course allow them to work when they can (78%). Another important finding in Table 3 shows the adult students (54%) indicate that online courses increase the likelihood of their completing their degrees. Interestingly, only 15% of the non-adult students indicate that online courses facilitate their ability to complete their education. In alignment with much of the research literature on satisfaction, adult students agree that online courses increase their learning flexibility (72%) and convenience (67%). Those percentages were much lower in the non-adult population (47% and 46%, respectively). When compared to non-adult students, 74% of adult learners indicate that they had major life responsibilities outside of obtaining an education. Only 35% of non-adults indicated that such was the case in their lives. Finally, almost half (49%) of adult learners indicated that their information fluency skills were enhanced by online learning compared to 25% for non-adult online students.

Table 3. Non ambivalent (very high) satisfaction for online courses

	Non adult <=24 yrs	n	Adult > 24 yrs	n
Online class easier to schedule	60%	650	84%	189
Online course helps me control my life	28%	306	50%	112
Overall, satisfied with online courses	40%	428	67%	150
More likely to stay engaged in online course	18%	198	38%	85
They allow me to work when I want	59%	641	78%	176
More likely to get degree because online class	15%	161	54%	121
Online class makes my life more flexible	47%	503	72%	162
Online classes make life more convenient	46%	496	67%	151
I have major responsibilities other than degree	35%	367	74%	165
Online experience increased ability to access information	25%	262	49%	109

THE ANNA KARENINA PRINCIPLE AS A MODEL FOR ADULT SATISFACTION WITH DISTANCE LEARNING

What is it about distance education that satisfies adult learners? This important question addresses the value-added assumptions about why nontraditional students choose online learning in higher education. Because the adult population has many options for continuing education, colleges and universities are becoming much more responsive to this client base, placing a premium on student engagement. Satisfied adult learners are motivated, responsive, contribute to a positive learning environment and tend to achieve at higher levels. Dissatisfied or ambivalent students contribute to less positive learning climates, where instructors encounter more difficulties creating opportunities for effective learning. Faculty members in such circumstances, especially online, have trouble relating to their adult students. They encounter resistance and some cases experience outright hostility from those individuals whose skills they are trying to enhance.

Interestingly, a template for gauging adult satisfaction with learning at a distance can be found in classic literature and cultural anthropol-

ogy. “Happy families are all alike; every unhappy family is unhappy in its own way.” This opening line of Leo Tolstoy’s *Anna Karenina* (2000) tells us that resolution of many elements is necessary for a successful marriage. Couples must come to terms with issues such as attraction, sex, money, in-laws, children, work, religion, communication and leisure time among many others. Implicitly, Tolstoy warns us that marriages can turn unhappy if one or any combination of these elements fails to reach resolution for both partners. Thus unhappy marriages have an almost unlimited number of footprints for failure, most of which are unique to that particular partnership.

Similarly Jared Diamond in his book, *Guns, Germs and Steel: The Fates of Human Society* (1999), uses the Anna Karenina principle to explain the difficulties encountered by civilizations in domesticating large mammals, a singularly important key to societal advancement. Generally, good candidates for domestication must be herbivores because the dietary requirements of carnivores are overly restrictive and costly. To be domesticated, herbivores must not have a nasty disposition, not panic in captivity, not be overly territorial, grow quickly, breed in captivity, be able to live in herds, have a dominance hierarchy, and be able to imprint on man. Like good

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marriages, each of these issues must be resolved in order to domesticate a large mammal. Failing any one of these criteria renders the animal unfit for domestication. Zebras, for instance, would make excellent domesticates except for the fact they will not imprint on man.

Recent educational studies have shown that the Anna Karenina principle applies to adults' satisfaction with their online experiences. Using data mining techniques to predict overall student rating of courses, Wang, Dziuban, Cook, & Moskal (in press) identify stable elements that predict students' satisfaction. The investigators developed a model for excellent ratings in distance education using course level (a variable highly correlated with age), college membership and ratings of other aspects of classes—for example pace of the course or communication of expectations. Stable decision rules evolved for adult learners. The authors found that adult satisfaction with courses is best predicted by two perceived characteristics of the instructor, his or her ability to facilitate student learning and his or her ability communicate ideas and information effectively. When students see excellence in those two categories the probability is .96 that they will assign a rating of excellent to any course. This rule proved valid across disciplines, a wide range of course levels and instructional modes such as interactive television, technology-enhanced, blended, and fully online. Adult learners respond to facilitative instructors.

An examination of the literature in adult satisfaction with online learning will reveal two recurring themes: convenience and flexibility. These obvious and ambiguous elements constitute what the sociologist Susan Leigh Star (1989) terms boundary objects, concepts that tend to bring various constituencies together but have different meaning for each cohort. A recent study commissioned by the A.P. Sloan Foundation (Dziuban, Moskal, Brophy-Ellison, & Shea, 2007)¹ sought to identify underlying elements for flexibility. Through focus groups and factor analytic work with a wide range of students (including adults),

the following satisfaction components emerge for online courses:

Reduced Ambiguity

- Reduced uncertainty about how to succeed in course
- Reduced work and family disruption and constraints
- Improved sense of control

Enhanced Student Sense of Value in Courses

- Faster assessment of assignments
- Higher levels of recognition
- Better able to audit course progress

Reduced Ambivalence

- Reduced stress over class completion
- Increased degree access
- Increased connectedness

Clarified Rules of Engagement

- Course expectations clear from the onset
- Fairer performance assessment
- Clearer definition of involvement
- More opportunity to collaborate

More Individually Responsive Learning Environments

- Continually connected as an individual
- Encourages active engagement
- Facilitates access to outside sources
- Able to audit course progress

Improved Interaction

- Anywhere, anytime communication with peers
- Anywhere, anytime queries to instructors
- Sustained conversations
- Rapid access to independent experts
- Better able to find, evaluate, and use information (information fluency)

Augmented Learning

- More room for individual creativity
- More individually empowered to learn
- Expanded course boundaries

Increased Freedom (Latitude)

- To manage the learning environment
- To expand beyond a course
- From large lecture classes
- From prohibitive logistics

The Anna Karenina principle teaches us that all good courses feature a good deal of instructor facilitation and effective communication. In addition, each one of the above eight elements must be present if adult learners are to express satisfaction with their online experience. Failing to meet any one of those elements will cause a decrease in the valuation of a course. Adult learners express satisfaction with online learning because they believe that colleges and universities are responding to the complex demands of their lifestyles. Their satisfaction emanates from a sense of cooperative learning and personal empowerment. The bottom line for nontraditional students is that learning at a distance reduces their opportunity costs for obtaining an education.

Faculty satisfaction is highly related to student satisfaction. We have made the point (Hartman, Dziuban, & Moskal, 2000) that satisfaction of both students and faculty members must operate in resonance. Instructors are unlikely to have a positive experience online without positive and engaged clientele. Nothing is quite as unappealing as a class of disgruntled students. This contributes to a negative learning environment with very little synergy or positive interaction. Earlier in this section we pointed out that when students believe that an instructor is facilitative and communicates well, he or she will most likely an overall student rating of excellent. The opposite is also true. When students perceive instructors as poor on those two elements, they will most likely present that faculty member with a poor overall rating. This does not lead to faculty satisfaction.

ADULT ONLINE LEARNER SUCCESS

The research literature makes a strong case that in spite of that fact that online learning substantially reduces the opportunity costs and increases the probability of success for adults, they still encounter considerable obstacles. Their success rates are lower and withdrawal rates higher than their non-adult peers (Chao, et al, 2007). Recognizing this likelihood, and in an attempt to mitigate its effects, Online@UCF provides a wide array of support services for online students and faculty. Some of these supportive elements include critical success factors, linkage to core institution mission, high quality professional development, online learner support, proactive mechanisms for policy formation, executive sponsors and champions, online support services, and continuous quality improvement through evaluation (Hartman, et al., 2007). Table 4 contains the outcome data for that initiative—showing success and withdrawal rates for adult and non-adult online learners at the lower undergraduate, upper undergraduate and graduate levels. Success at UCF is determined through a declassified grading system (A, B or C=Success). Table 4 depicts that fact the success rates for adult online learners are only trivially lower than they are for non-adult students. Continuing the trend, adult withdrawal rates for online courses are only marginally higher than those for younger students. These data suggest that online learning can greatly reduce the historically high probabilities that adult learners will not achieve their educational objectives.

CONCLUSION

The Good News

Online distance education presents many opportunities as well as some challenges for adult learners. They have access to professional development, certification, and degree seeking programs that,

Table 4. Success and withdrawal for adult and non-adult online students

Success Rates for Adults/Non-Adults						
	Lower Undergrad		Upper Undergrad		Graduate	
Generation	N	%	N	%	N	%
Adults	4,701	73%	52,811	87%	28,415	93%
Non Adults	30,351	75%	75,471	87%	4002	94%

in the traditional academy, were logistically challenging, if not impossible for them. They have a world wide network of learning resources available to them just a click away, transforming education into a classroom without walls, clocks, or physical space. Millennial age adults have increased access to their instructors, interaction with their classmates and a portal to expertise throughout the world. They can go to an expert’s Web site or blog, in some cases being able to interact directly with them. Adult learners can build a peer support network around them in learning circles that make education a cooperative rather than a broadcast experience. These support groups often continue long after the actual time frame of the class. Online students have the ability to share their work with their peers and colleagues receiving facilitative feedback that enhances their critical thinking skills. They move past traditional the “write a paper, submit it, and get a grade” model. Adult learners bring considerable expertise to class, and when online have the opportunity to be co-creators of the curriculum where they contribute to the class in a manner than transforms the instructor’s role to one of a facilitator

The online environment forces adult learners to develop personal learning geographies for time, resources and people. This is the process Stephen Hall (2004) calls “orienting”--one that is one of the most valuable side effects of online learning. The student must build an individual learning map for how they will negotiate the demands of their lives, their personal goals, the demands of the courses, and many other complicating factors such as their energy level on any given day.

Although there are specific requirements in all classes online learning eliminates the rigid lock step trajectory of traditional courses for adults where if they miss one class they have lost 8-10% of the course. By creating their personal learning maps (where, what, when, how, and with whom) adult learners experience an unanticipated value-add from distance education thereby learning how to learn. Online learning eliminates courses in silos, an enduring criticism of higher education classes on *Ratemyprofessor.com*.

The good news is the adult learner, compared to younger students, is more positive and engaged in online learning. They know what is expected of them and experience faster feedback about their work so that they know where they stand. Garrison and Vaughan (2008), in their community of inquiry framework, summarize the advantages of online learning for the adult learning population. There is an enhanced sense of social presence featured by open communication enabling risk-free communication. Online learning fosters optimal cognitive presence that enables exploration and integration by exchanging information and applying new ideas. Finally, this modality extends the concept of teaching presence where students are able to participate by contributing to the curriculum design and focused discussions. All of these elements point to the fact that online distance education can be a transformative event for adult learners, making education accessible and success much more likely. In this new environment one is never far away from educational opportunities.

Challenges

Along with the many opportunities afforded adult learners by online learning there are some substantial challenges. First, they must assume a much more active role in their own educational activities by managing their learning space. When we survey our students about the advice they would offer their peers, the number one response is *stay connected*. Success in online learning depends on continuous and incremental engagement in the course assignments, discussion boards, and interactions with classmates and the instructor. This can be a challenge for students used to attending weekly classes.

Secondly, adult online learners will have to accustom themselves to a completely different kind of class climate. It is entirely possible that they will interact with peers that they never meet face-to-face. The traditional cues such as body language and instructor's immediate oral response will not be available to them. Depending on their preference for learning this can be a difficult circumstance. If they seek approval from the teachers and classmates it comes in much altered formats, usually textual. This issue points to another potential problem for adult learners. A comment in class can be immediately modified or corrected. Online written comments can be interpreted much differently than intended, resulting in a time consuming flurry of back and forth posts that can derail the objectives of the course. Most all of us have experienced the "that's not what I meant" phenomenon with our e-mail.

Adult learners in online courses are likely to experience an expanded metric for evaluation of their work. Evidence of successful student learning outcomes in distance education is moving from that traditional teach-then-test paradigm to assessment approaches that require students to be technology literate, information literate, and have the ability to demonstrate critical thinking. In fact, online learners are expected to be much more information fluent in this world; Peter Morville

(2005) claims this is ambient findability, where anyone can find anything at anytime. More pointedly, Taleb (2007) suggests that we now live in a world of information toxicity. Therefore, there is a greater expectation placed on adult learners to find, evaluate, and use information in an ethical manner. The challenge adult learners face in new learning models is that objective, non-authentic, and non-contextual methods for assessing their work have given way to procedures that are reflective, authentic, and contextual. Rather than take a test, most likely they will have to design or create something, have it reviewed by their peers and classmates, then produce an appropriate response. This is a big change from just the midterm and final exam format to which "traditional" students are accustomed. The new approach is more time consuming and much more thought intensive, requiring analysis, synthesis, and creativity. Often this is accomplished in groups and collaborative work--a drastic change for those accustomed to working alone.

ADULT LEARNERS AND WEB 2.0: OPPORTUNITY AND CHALLENGE

Adults who engage online learning for recertification, continuing education, or career advancement may be involved with educational institutions in programs tailored toward the adult learner's learning preferences and life circumstances. However, many higher education classes are not specifically designed with the adult student in mind. Students may interact with the instructor, peers, and course materials through learning management systems as such a Blackboard, Angel, or Desire2Learn. Younger students in these classes are also familiar with many Web 2.0 technologies that provide rich user experiences with dynamic content and an open environment, often drawing synergy from the participation of users and their collective intelligence. A prime example of a Web 2.0 technology is Wikipedia: the free online encyclopedia that

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can be edited by any user at anytime.

According to O’Rielly (2005) Web 2.0 follows certain principles:

1. The World Wide Web is its platform
2. It harnesses collective knowledge
3. Data become the primary resource
4. It will be in a constant state of development
5. Programming is not requisite
6. It is not dependent on a single device
7. It provides rich user experience.

Remembering that Web 2.0 is in a state of constant evolution, a review of some of the learning concepts that adult students might encounter include:

1. Social bookmarking software that facilitates personal collection of Web sites and URLs that give us the ability to locate information while at the same time building a personal organization system that can be shared with other users (<http://delicious.com>)
2. Blog is a shorthand for Weblog which is a public diary with dated entries, often accompanied by links to others users’ blogs (<http://blogger.com>)
3. Wikis form a collection of Web pages that may be edited by anyone, at any time, from any location. This is the frequently used in classes for collective writing (<http://www.wikispaces.com>)
4. Social networking focuses on building social communities and interaction online with people who share common interests (<http://www.facebook.com>)
5. Social media sharing Web sites facilitate the process of posting and sharing media content such as pictures or video on the Web (<http://flickr.com>)
6. Mashups permit users to combine images and data into configurations that create new meaning (<http://mashmaker.intel.com>)

7. Voice over Internet protocol (VoIP) facilitates synchronous communication with audio, video, and text messaging (<http://skype.com>)
8. Virtual worlds allow synchronous interaction in a 3-dimensional immersive world (<http://secondlife.com/>)

Adult learners in online classes can have many rich Web 2.0 learning resources available to them. The convenience and flexibility that motivates them meshes perfectly with their ability to collect resources in a retrievable system, write cooperatively, form and participate in social communities, share their material and resources worldwide, remix resources into new content, instantly communicate around the world and enter alternative realities. Web 2.0 technologies and processes provide almost limitless opportunities for adult learners because they expand learning far beyond the confines of the traditional classroom.

The challenge with Web 2.0 is that it requires a whole new way of thinking. There is a learning curve with each of the technologies and their use can be time consuming, sometimes to the detriment of achieving course objectives. As Friedman (2005) reminds us, this is a Web-enabled playing field with players from all over the world with completely horizontal collaboration. Group writing on wikis takes some getting used to when anyone can edit what you have written at anytime. In addition, evolving technologies continually modify our familiar relationships. Effective searching on the World Wide Web is vastly different the traditional library research mode. In fact Marsha Bates (1989) suggests that our current search methods resemble grazing or berry picking rather than framing a question then finding the answer. Almost every Web 2.0 technology has an associated community of practice that characterizes itself with organizational needs, openness, and in most cases sharing and acting globally. Web 2.0 requires engagement, whether it is blogging, joining a group on Facebook,

posting your photographs on Flickr or uploading a video to YouTube. Whenever one uses a Web 2.0 technology their work is available worldwide. Repeating the opening of this paragraph, this is a whole new learning world--especially for those of us who were used to just going to class and taking notes.

THE FUTURE FOR ADULT LEARNERS AND DISTANCE EDUCATION

The changes and opportunities for adult learners in the past decade have been nothing short of astounding. The question remains, however, what lies ahead? Although Taleb (2007) would argue that the major transformation in adult learning is impossible to predict we would like to close by raising a few possibilities. Most of the ideas here were provided to us in conversations with colleagues throughout the country: There were far too many to name but we summarize their ideas here. We believe that future adult populations will become much more mobile creating the need for more modular courses. There is a good chance that the expectations of adults will rise, forcing a much more inter-institutional collaboration that is now easily attainable through the Internet. In fact, there may be more adult education outsourcing and the expansion of informal and on-demand learning opportunities. In addition, there is a good possibility that teaching platforms will gravitate to student preferred technologies. In the future it may be possible for adult learners to arrange their own cognitive apprenticeships or use the syndication capabilities of Web 2.0 for personally aggregated feeds of open content. Learning will be driven more through multimedia content with visualization becoming important. All of these ideas have common unifying concepts. The increasing possibilities adults have for learning at a distance will cause traditional educational boundaries to disappear

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Chapter 6

The Role of Individual Learner Differences and Success in Online Learning Environments

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ABSTRACT

“Education over the Internet will be the next big killer application,” says John Chambers, President and CEO of Cisco Systems. He also states that online learning will be much bigger than the last killer application of the Internet — e-mail (Friedman, 1999). The recent surge in online learning has opened up the eyes of many educators to the growing possibilities of online learning and teaching. As these on-line offerings continue to grow, the educational impact will have far reaching implications for schools, teachers and students. In order to better understand the effectiveness of the online environment as an instructional delivery medium, research needs to be conducted focusing on factors that contribute to the effectiveness of the learning environment. In particular, individual learner differences are an important variable when evaluating online learning success. This chapter will discuss various individual learner differences and how they relate to student success in the online learning environment.

INTRODUCTION

The popularity of the online learning format is prompting many educational institutions to make decisions about the future of online learning at their institution including, increasing the number of classes offered online, replacing classes offered in traditional formats with online classes, and allocating resources for supporting the course

delivery medium. These institutions are not limited to higher education institutions. According to Gallagher (2004), nearly 300,000 high school students attended online classes during the 2002-2003 academic year.

The list of online learning possibilities continues to grow from virtual high school classes and fully accredited graduate degrees to certification programs and faculty development in-services. As these online offerings continue to grow, the educational impact will have far reaching implications

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for schools, teachers and students. Students will have access to schools anywhere in the world. Just having a program that allows students the opportunity to learn anytime, anywhere, will not be enough. Schools that allow students the opportunity to learn in ways they prefer will have a remarkable advantage. Catering to individual differences, these schools will allow students to learn via methods and formats that fit their learning styles. In turn, these students will have more positive learning experiences that will facilitate the life long learning desires that they will need in order to succeed in the third millennium.

According to Wood (2005), students who succeed in traditional settings may not do well in online courses. Carr (2000) states that distance education courses tend to have higher dropout rates than traditional courses. In a study at a small liberal arts college, Lynch (2001) reported dropout rates from Internet courses to be 35-50% while traditional courses were at 14%. This could be attributed to student motivation, learning style, or any number of individual learner characteristics and differences. Evaluating learner differences of online students and how these differences affect one's academic performance is one way to understand the student's role in evaluating the effectiveness of the online learning environment.

This chapter will discuss various individual learner differences and how they relate to student success in the online learning environment. Included in this chapter will be a review of learning styles and self-regulated learning characteristics. A discussion will describe the development of an online course to address learning styles. A study will also describe how self-regulated learning characteristics compare to academic performance of graduate students in an online course.

BACKGROUND

Successful Learning Styles in Distance Education

Diaz and Cartnal (1999) recommend that faculty utilize relevant social and cognitive preference data from the learning style inventories of their students for assistance in developing and delivering online courses. Learning style assessments taken at the beginning of a course, or ideally as students enter certification or degree programs, can give faculty and designers the information needed to help identify students that may need more attention and develop resources to help them.

Diaz and Cartnal (1999) cite a number of distance learning studies done over the past decade that indicate that students with independent learning styles score higher and succeed more often in distance courses than those with more social learning styles. Diaz and Cartnal (1999) labeled the "absence of face-to-face social interaction between students and teacher" as a "distinguishing feature of most distance education classes." Additionally, they found that those who prefer abstract concepts to concrete experiences fair better in distance courses. These factors should come as no surprise as today's online learning materials are not exceptionally social and are more abstract than concrete.

It is important to note here that independent and abstract learners are also better academic performers than their more social and concrete classmates in the traditional classroom (Myers & McCaulley, 1985). Although the traditional on-site classroom, as opposed to the online classroom, would seem to offer more resources for the more social and concrete learner, they may still be geared toward independent and abstract learners. If social and concrete students cannot benefit as much from the regular classroom, today's online classrooms might only leave them farther behind.

In the future, when collaborative software has improved, and bandwidth constraints are overcome, social students will work on software applications with a group of people they can hear and see in real-time audio and video. Those with more social learning preferences may at that point perform comparatively as well as their independent counterparts. By then, the predominance of abstract materials and presentations may become more concrete. Perhaps virtual reality will give us the ability to reach into our 2-D monitors and begin maneuvering objects. Then, those with concrete preferences may begin to fair as well online as those who conceptualize abstractly.

Self-Regulated Learning Characteristics

Additional factors affecting student success in distance education courses include an individual student's personality characteristics such as motivation and other learning styles. One way of looking at individual student characteristics is to look at his or her use of self-regulated learning strategies. Self-regulated learning theory and research was developed in the mid-1980s to address how students become masters of their own learning processes (Zimmerman, 2001). According to Zimmerman (2001), self-regulation is not a mental ability or an academic performance skill, but rather, a self-directive process through which learners transform mental abilities into task-related academic skills.

Self-regulated theory and research include social forms of learning such as modeling and feedback from peers, coaches, and teachers (Zimmerman, 2001). It is not limited to asocial forms of education such as self-education through reading, programmed instruction, or discovery learning. According to Zimmerman (2001), the key issue in defining learning as self-regulated, is not whether it is socially isolated, but whether the learner demonstrates personal initiative, perseverance, and adaptive skill in pursuing learning.

Self-regulation is defined as the "process whereby students personally activate and sustain behaviors, cognitions, and affects that are systematically oriented to the attainment of goals" (Zimmerman, 1989). In other words, it is the degree that students are metacognitively, motivationally, and behaviorally active participants in their learning process (Zimmerman, 1986). Students, who are motivated to achieve a goal, will engage in self-regulatory behaviors they believe will assist them in the completion of a task (Pintrich & Schunk, 2002).

According to Pintrich (1995) self-regulated learning must include three components of student behavior in conjunction to their behavior and use of cognitive strategies. First, students must actively control their behavior by monitoring progress and adjusting the use of a strategy to assist with the task. The goal, or the degree to which this task is completed, is the second component of self-regulated learning. The student must adjust the use of a cognitive strategy in order to achieve his or her objective. The third component of self-regulated learning is that the individual student must control his or her actions. A student may change a behavior in reaction to an instructor requirement; however, after the requirement is removed, the student may no longer engage in the behavior. These three self-regulated learning components are necessary to regulate student behavior and use of cognitive strategies.

INDIVIDUAL LEARNER DIFFERENCES

1. Sensory Learning Styles

One way to begin integrating learning styles into online curriculum is to utilize the sensory styles. Of the five senses, three are traditionally associated with academic learning: visual, auditory, and haptic (or kinesthetic). Although the olfactory and gustatory senses might be prominently used in

cooking or wine tasting classes, they are not the senses attributed to most learning experiences. An excellent way to address the individual differences of sensory learning styles would be to develop courses using the 'Universal Design for Learning' framework. In this framework, curricular materials are developed in "many media so that learners can select one or more ways to approach the subject matter. Text, images with no text, images with text, voice, animation, video, or a sequence of sounds can effectively convey a series of events" (Meyer & Rose, 2000). A virtual sensory smorgasbord is available to the learner. Students are able to select media presentations in the format in which they learn best. Idealistically, it would be great if we could develop all of our courses with a rich sensory framework. However, budget and time constraints mitigate limits. A realistic way to begin this process is by creating multiple sensory options for only the most difficult concepts that will be covered. Additionally, one might choose three other lessons and develop each one around a separate sense. This would force students to work with each of their senses. When students learn material via media not compatible with their sensory preferences, they "have to work on the underdeveloped aspects of their learning styles. ...visual learners might need to explore their kinesthetic style by learning how to draw images and charts on a computer" (Grasha & Yangarber-Hicks, 2000). The authors continue by saying that if such assignments are properly developed and presented, the "teaching-learning process would be enriched."

Visual Learners

The old saying that a picture is worth a thousand words may be apt here. Seeing an example of what is being learned is vital for these learners. Ross and Shultz (1999) state "online course animations, hypertext, or clickable diagrams and video clips can clarify concepts that a static textbook image simply cannot." They further recommend that

courses contain online archives of slide presentations to assist these visual learners. Although most chat today is still text based and could therefore favor the visual or kinesthetic learner, charts and graphs are generally preferable for those with this learning style.

Auditory Learners

Traditional lectures tend to benefit auditory learners. However, most online learning does not revolve around an instructor speaking for the majority of the class. Establishing audio resources for these students is recommended. Ross and Shultz (1999) recommend courses archive digital audio files of short fifteen-minute class summaries on the web. These can be set up to stream as just audio, or with added graphical enhancements, in the Quicktime, Realplayer or Windows Media Formats. Shorter sound clips can also be added to clarify course segments. Auditory learners could also be made aware of software programs that could benefit them. For example, voice dictation software can convert voice to text, as well as read text materials out loud.

Haptic or Kinesthetic Learners

These learners prefer to do something more active to learn course material. "Practicing problems, doing lab experiments, creating solutions, doing physical activities, engaging in manipulative exercises, and brainstorming ideas are all ways to involve this learner in the classroom." Ross and Shultz (1999) continue by saying that "java-programmed jigsaw puzzles can provide a powerful learning and review tool for students."

2. Cognitive Learning Styles

McCarthy's 4MAT model parallels David Kolb's Experiential Learning Model with additional research on brain dominance. These models state that we perceive information by either sensing

and feeling or thinking and reasoning. After we perceive information, we process it. Some watch and reflect while others jump right in and try. Both Kolb and McCarthy juxtaposed these two dimensions of perceiving and processing to form a four-quadrant system, articulating four types of learners. McCarthy added a brain hemisphericity test that helps to further refine left and right brain differences between each of the four types. This evolved into “an eight-step instructional cycle that capitalizes on individual learning styles and brain dominance processing preferences” (McCarthy, 1990). Teachers and trainers design lesson plans around this cycle that allows each learner to focus on the abstract qualities (left brain) and concrete applications (right brain) of each of the four learning styles.

Developing an Online Course to Address the 4MAT Learning Styles

When developing an online course for its flagship Fundamentals of 4MAT Training Level One certification program, About Learning, Inc. collaborated with another media corporation and online course developers from Emporia State University. The course was built using the “eight-step” 4MAT model as an instructional design template. Initially, developers identified online technologies that would match well with the different learning styles. For instance, Type One learners perceive by sensing and feeling before they process by watching. These types of learners have been called ‘imaginative’ and ‘communicators.’ They seem to prefer learning situations that utilize live chat, forums, video conferencing and email. Type Two learners, sometimes called ‘analytic,’ prefer to perceive information by thinking before they process it by watching. Analyzers prefer technologies such as streamed lectures, structured learning experiences that deliver facts and information. Type Three ‘practitioners’ perceive by thinking before they process by doing. These learners are also hands-on builders that enjoy

step-by-step tutorials, as well as the ability to use relevant tools that allow practical application of the material being covered. Finally, Type Four ‘dynamic’ learners perceive by sensing and feeling before they process by doing. Dynamic learners are dreamers that like open forum discussions, unstructured chat, and web page and graphical creation opportunities.

The online learning designers worked hard to even the playing field for the more social, type one ‘communicators.’ As was previously discussed, those with more social learning preferences do not succeed as well as independent learners in online courses. The design team also identified several ways to improve their learning opportunities. Some possibilities included facilitating more informal and topical discussions, inviting special speakers for live chats, opening private chat rooms for lesson discussions with partners, establishing virtual office hours and a variety of times for live chats in order to develop a more personal atmosphere.

ACD-ROM was designed to integrate various learning experiences utilizing graphics and animation to enhance the course materials. The CD helped to alleviate bandwidth and download problems, particularly problematic for international and rural students. This also helped minimize the need for large Internet files, allowing for the creation of a more streamlined web site. The CD-ROM was comprised of self-paced animation and audio descriptions containing video and audio presentations, assessment tools, and interactive left/right brain puzzles to emphasize major concepts and course applications.

The Internet website (<http://www.aboutlearning.com/onlinetraining/index.html>) was developed to contain any dynamic information that changes with every new course. Students could find information at this site on course requirements and the schedule of assignments for each of the twelve modules. Introductory activities utilized technical tools for designing a personal biographical page and icebreaker activities to ac-

quaint students with each other. Selected readings, CD-ROM information and assessments, topical forum discussions, and submission forms to input learning style preferences were generated from the assessments on the CD-ROM. The assessments in turn generated graphical representations for all to see. Using interactive technological tools, students developed a culminating lesson plan of their own through cooperative learning experiences that involved partner collaboration and critique. The brain-based lesson plan was built upon the 4MAT instructional design template that revolved around the learning styles of students.

3. Self-Regulated Learning Characteristics

Pintrich, et al. (1991) in the development of the Motivated Strategies for Learning Questionnaire (MSLQ) measured the use of learning strategies by addressing nine areas that contributed to a student's level of self-regulation, including rehearsal, elaboration, organization, critical thinking, metacognitive self-regulated learning, time and study environment, effort regulation, peer learning, and help seeking. Rehearsal strategies, such as reciting or naming items from a list to be learned, are used for activation of information in working memory rather than the acquisition of new information in long-term memory (Pintrich, et al., 1991). The rehearsal scale of the MSLQ measures basic strategies for recalling information such as repetition or copying notes (Pintrich & Johnson, 1990). Elaboration strategies allow the building of internal connections between items to be learned. Elaboration strategies include paraphrasing, summarizing, and creating analogies. Organization strategies help learners select and construct connections between information items to be learned. Organization involves active processing and should result in increased performance (Pintrich, et al., 1991). Critical thinking refers to the level to which students report they apply previous knowledge to new situations in order to

solve problems and reach decisions. Metacognitive self-regulation refers to the awareness, knowledge and control of cognition. This includes planning, monitoring, and regulating activities (Pintrich, et al., 1991). For example, students who set goals for study time demonstrate planning behavior, while checking for self-comprehension of readings and lectures demonstrate monitoring behavior (Pintrich & Johnson, 1990). The time and study environment variable refers to the degree to which students manage their time and setting up a study environment conducive to learning. Effort regulation refers to a student's ability to control their effort and attention when faced with distractions and uninteresting tasks. Peer learning refers to the degree to which a student will collaborate with peers. Help Seeking refers to a student's tendency to seek assistance from peers, instructors, or colleagues (Pintrich, et al., 1991).

Past research (Zimmerman & Martinez-Pons, 1986, 1990; Pintrich & Degroot, 1990; Pokay & Blumenfeld, 1990; Paterson, 1986; Cheung & Kwok, 1998; Spitzer, 2000; Hwang & Vrongistinos, 2002; Naumann, Bandalos, & Gutkin, 2003) indicates that self-regulatory skills are highly predictive of academic success. In a study involving 173 seventh grade students, Pintrich and Degroot (1990) reported higher levels of cognitive strategy use and self-regulation were positively related to academic achievement on all assignments. Although motivational beliefs were also taken into account in this study, they were not sufficient for successful academic performance. Self-regulated learning components were more directly related to academic performance (Pintrich & Degroot, 1990).

Self-Regulated Learning Characteristics and Academic Performance

Hwang and Vrongistinos (2002) examined 41 in-service elementary teacher students to compare academic performance levels to the use of self-regulated learning strategies. The analysis

indicated that high performing students used self-regulated learning strategies significantly more than low performing students, thus demonstrating a strong relationship between frequent use of self-regulated learning strategies and high academic performance in elementary in-service teacher students (Hwang & Vrongistinos, 2002).

After designing and developing a structured interview to measure student use of self-regulated learning strategies, Zimmerman and Martinez-Pons (1986) selected 40 sophomores from the advanced achievement tract and 40 sophomores from lower achievement tracts. Students were interviewed about their use of self-regulated learning strategies using the developed structured interview. Results indicated the structured interview designed to measure self-regulated learning strategies substantially correlated with academic achievement. The high achievement group reported significantly greater use of self-regulated learning strategies than the low achievement group. The results showed that 93% of the students were correctly classified to the appropriate achievement track based on the knowledge of their use of self-regulated learning strategies (Zimmerman & Martinez-Pons, 1986). Pokay and Blumenfeld (1990) conducted a study assessing student's use of metacognitive strategies and effort management. 283 high school math students completed measures three times at specific points of a geometry class through a fall semester. Metacognitive strategy use and effort management were significant predictors of grades (Pokay, P. & Blumenfeld, P., 1990).

In a study identifying variables that predict college success of first-generation college students, Naumann, Bandalos, and Gutkin (2003) found that self-regulated learning variables and ACT scores were able to predict GPA for the first-generation students better than for the second-generation students. The researchers concluded that the ACT continue to be used in the college admission process, but to also use self-regulated learning variables to confirm admission decisions. Another

study examining predictors of college success compared traditional student characteristics to non-traditional student characteristics (Spitzer, 2000). This study determined that self-regulation and social support made positive contributions to GPA. Spitzer further concluded that an intervention combining academic self-efficacy, motivation, and self-regulation can predict academic performance and any support programs using this intervention can be used for both traditional and non-traditional students

Pape, Zimmerman, and Pajares (2002) considered students' level of self-regulation highly predictive of academic performance in typical learning circumstances as well as those learning circumstances that are more difficult, such as having a learning disability or learning in an unsupported academic environment. A study involving 53 students with learning disabilities and 417 students without learning disabilities examined students' motivation, use of self-regulated learning strategies, and academic achievement (Ruban, McCoach, McGuire, & Reis, 2003). The results of this study indicated that the use of self-regulated learning strategies made a larger positive difference in academic achievement of students with learning disabilities versus student without learning disabilities.

In addition, research studies suggest self-regulated learning are teachable and can possibly lead to increased student motivation and achievement (Schunk & Zimmerman, 1998). According to Zimmerman (2002), students are seldom asked to establish specific goals for academic work. They are rarely asked to self-evaluate their work. In addition, instructors rarely teach students how to use strategies to help in the learning process.

In a study relating grade level, sex, and giftedness to self-efficacy and strategy use, Zimmerman and Martinez-Pons (1990) found that gifted students made greater use of certain self-regulated learning characteristics than regular students, including organizing, seeking peer assistance, and reviewing notes. A student's giftedness was

associated with high levels of academic efficacy. This study concluded that the achievement of the gifted students indicates that a model of self-regulation may have merit for teaching students to become more effective learners (Zimmerman & Martinez-Pons, 1990).

McKeachie, Pintrich, and Lin (1985) evaluated an introductory cognitive psychology course on Learning to Learn in which both the concepts of cognitive psychology and the application to learning strategies were taught. The course included the practicing of learning strategies, discussions of lectures and textbook content, as well as research projects involving the development and evaluation of a learning strategy. Results showed students in the Learning to Learn course had higher learning strategy use scores than students enrolled in an introductory psychology course. In addition, the transfer of the use of learning strategies and its impact on students' grades to courses beyond the Learning to Learn course was observed (McKeachie, Pintrich & Lin, 1985).

Self-Regulated Learning Characteristics and Online Academic Performance

A study was conducted to determine if a student's level of self-regulated learning characteristics predict academic performance. Data was collected using the Motivated Strategies for Learning Questionnaire (MSLQ), which measured students' use of learning strategies including rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time and study environment, effort regulation, peer learning, and help seeking. This data was collected from 170 graduate students enrolled in online courses during the Spring 2005 and Summer 2005 semesters at Emporia State University. A multiple regression analysis was conducted to evaluate how well the combination of these nine self-regulated learning characteristics predicted academic performance for graduate students in online courses.

The multiple regression analysis clearly shows no relationship between rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time and study environment, effort regulation, peer learning strategy use, help seeking strategy use and academic performance. Although past research indicates these factors predict academic performance in traditional face-to-face undergraduate courses, the results of this analysis indicate this generalization does not necessarily apply to graduate students enrolled in online courses. Further research should be conducted with K-12 and undergraduate students enrolled in online courses.

CONCLUSION

Technology seems poised to deliver course content based on individual learning differences instead of the centuries old model of one size fits all. Perhaps someday soon, learning differences indicators will seamlessly filter information to students based on how they learn best. Part of this process may be developed using XML (extensible markup language), the next generation of HTML. XML "can make dynamic judgments about content, enabling designers to build Web content that is more customized to specific user needs and learning styles." (Zielinski, 2000).

Leaders in the new millennium of web development will certainly be looking for ways to address individual differences and learning preferences of individuals. Past research studies conclude it is possible to predict student achievement based on the use of self-regulated learning strategies. Confirming whether these characteristics also predict achievement in online courses could allow educational organizations to advocate instructional design and support services that assist instructors to embed self-regulated learning strategies within online courses. Developing sensory experiences for visual, auditory, and kinesthetic learners, and designing materials that address the cognitive

learning styles, as well as producing additional resources for the more social and concrete learners, will help make the world wide web a place where everyone has an equal opportunity for life long learning experiences.

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KEY TERMS AND DEFINITIONS

Self-Regulated Learning Characteristics: include (a) students' use of metacognitive strategies (Zimmerman & Pons, 1986, 1990), (b) students' management and control of their effort on classroom academic tasks, and (c) the specific cognitive strategies students use to learn, remember, and understand content.

Motivated Strategies for Learning Questionnaire (MSLQ): measures self-regulated learning characteristics in two categories: learning strategies and self-regulated learning.

Rehearsal Strategies: include reciting or naming items from a list to be learned, are used for activation of information in working memory rather than the acquisition of new information in long-term memory (Pintrich, et.al, 1991)

Elaboration Strategies: the building of internal connections between items to be learned. Elaboration strategies include paraphrasing, summarizing, and creating analogies. (Pintrich, et.al, 1991)

The Role of Individual Learner Differences and Success

Organization Strategies: learners select and construct connections between information items to be learned. Organization involves active processing and should result in increased performance. (Pintrich, et.al, 1991)

Critical thinking: the level to which students report they apply previous knowledge to new situations in order to solve problems and reach decisions. (Pintrich, et.al, 1991)

Metacognitive Self-Regulation: the awareness, knowledge and control of cognition. This includes planning, monitoring, and regulating activities. (Pintrich, et.al, 1991)

Time and Study Environment: the degree to which students manage their time and set up a study environment conducive to learning. (Pintrich, et.al, 1991)

Effort Regulation: students' ability to control their effort and attention when faced with distractions and uninteresting tasks. (Pintrich, et.al, 1991)

Peer Learning: the degree to which a student will collaborate with peers. (Pintrich, et.al, 1991)

Help Seeking: a student's tendency to seek assistance from peers, instructors, or colleagues. (Pintrich, et.al, 1991)

Section 2

New Frontiers for Online Teaching and Adult Learning Practices

Chapter 7

Fear Factors: Hidden Challenges to Online Learning for Adults

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ABSTRACT

The purpose of this chapter is: (1) to examine the interrelationship between andragogy and online learning; (2) to uncover the hidden challenges to successful online learning for non-traditional students; and (3) to uncover hidden challenges in faculty adoption of online instruction. The authors believe that fear is often the biggest factor which can present itself in a variety of ways. A study was conducted to identify those hidden challenges facing students and faculty who choose not to take or teach online courses. This study identifies how institutions can support students and faculty who desire to take or teach online courses. This study also discusses how online learning is aligned with andragogy¹, which traditionally leverages learners' experience, independence, and interaction (Gibbons & Wentworth, 2001).

INTRODUCTION

Many colleges and universities understand that in order to stay relevant in this time of declining enrollments, and with an increase in non-traditional student populations, curricula must be developed in ways to accommodate them. According to Jacobson

and Harris (2008), non-traditional students make up between half and 75% of the students enrolled as undergraduates. Many institutions may launch online learning environments attempting to cater to the non-traditional learner. Given the flexibility that online learning offers, one might expect that most non-traditional students will gravitate toward this option. However, organizations are identifying

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a number of factors that must be addressed in order to successfully launch and maintain a robust online learning environment.

Experts in the field suggest that the current generation of teenagers—sometimes referred to as the E-Generation—possesses digital competencies to effectively navigate the multidimensional and fast-paced digital environment. For generations of adults who grew up in a world of books, traveling through cyberspace seems as treacherous and intimidating as speaking a new language. In fact, Prensky recognized such non-IT literate individuals as burdened with an accent—non-native speakers of a language, struggling to survive in a strange new world. (Jones-Kavalier & Flannigan, 2008)

BACKGROUND

Maor and Volet (2007) have identified three barriers to online learning: (1) institutional inexperience in developing online courses; (2) perceived insufficient instructional support and communication, and (3) insufficient participant computer literacy. Various research studies, including those done at Arizona State University, Texas Women's University, and Ball State University, have focused on the Early Majority population and their expectations with regard to the technology environment (Brush, et al., 2003; Butler & Sellbom, 2002; Nelson, Snider, & Gershner, 2002). The research identifies similar foundational requirements, which includes training, support, reliable infrastructure, and consulting to match the right technology with the right learning objective.

To overcome a resistance to change and/or fear of something new, faculty members at the University of Maryland were offered stipends and recognition for successfully integrating technology, utilizing the University's current resources (Fritz, 2004). Wingard (2004) reported on the results of a coordinated study done across seven

institutions. In this study, faculty members were exposed to strong instructional technology support, training, and consulting, in their use of Web technologies in the classroom.

Ashley-Fridie (2008) argues that there needs to be a “focus on faculty attitudes, motivations, and specific factors” in order to take the fear out of online course design. She argues that administration must provide pedagogical support, instructional technical support, intrinsic support (challenge, keeping up with technology, acceptance, etc.), extrinsic support (time, money, scheduling, flexibility, etc.), and instructional design support.

Andragogy

Adult learners often express great trepidation at the thought of signing up for online courses. Likewise, many faculty members are reluctant to offer their courses in an online or hybrid format². At first glance, and based on our observations during advising sessions or faculty planning periods, it appears that the primary reason for this reluctance to teach and learn in an online environment is that students and faculty alike prefer the face-to-face interaction they find in traditional classrooms over the perceived anonymity of online courses. However, as we dig deeper into the possible reasons for the unwillingness of these individuals to become involved with online learning, we suspect that the underlying issue is related to fear. There are many kinds of fear, of course; therefore, for the purposes of this study, we have identified the *fear of loss of control*, *the fear of technology* and *the fear of the unknown*, as having the greatest impact on adult learners and faculty members as they contemplate online learning.

With questions as basic as “how do I turn on this computer?” to more complex concerns such as “how can I keep students from cheating in my online courses?” students and faculty may need basic coaching on how the online learning environment works (*fear of loss of control*), in computer technology including Blackboard or

Fear Factors

Table 1. *Andragogical assumptions*

ASSUMPTIONS		
About	Pedagogical	Andragogical
Concept of the learner	Dependent personality	Increasingly self-directed
Role of learner's experience	To be built on more than used as a resource	A rich resource for learning by self and others
Readiness to learn	Uniform by age-level & curriculum	Develops from life tasks & problems
Orientation to learning	Subject-centered	Task- or problem-centered
Motivation	By external rewards and punishment	By internal incentives curiosity

Source: Knowles (1992)

other learning platforms (*fear of technology*), or on the history of online learning and the impact it has had on higher education today (*fear of the unknown*).

Interestingly, once students and faculty become educated about online learning, they often become much more comfortable with the concept, and as we review some of the earliest research on andragogy, or adult learning, we can begin to see the reason for this. The fact is that the online learning model lends itself particularly well to andragogy, and in many cases, adults are far more comfortable with this model than traditional models once they understand its many benefits.

Knowles (1984) compares the traditional pedagogical model of learning with a new andragogical approach which better suits the aging student population. Assumptions inherent to both of these models focus upon the concept of the learner, the role of the learner's experience, readiness to learn, orientation to learning, and motivation to learn (pp. 8-12).

The pedagogical model is based on the assumption that the learner is a dependent personality, one who simply carries out the teacher's directions, where learners enter the educational situation with little or no experience. Readiness to learn is a function of the age of the learner; learning is a process of acquiring subject matter content. Finally, in this model motivation to learn comes from external pressures exerted by parents or teachers (Knowles, 1984, p. 8).

In the andragogical model of learning, the learner is assumed to be self directing, and is seen as entering the educational situation with much experience. Readiness to learn is associated with a "need to know," and the orientation of learning is life-centered or problem-centered. Motivation to learn in the andragogical model is internal, and is often related to the need for enhanced self-esteem, self-confidence and quality of life (Knowles, 1984, pp. 9-12).

Table 1 illustrates the differences between andragogy and pedagogy in terms of the assumptions made about the learner. Again, the andragogical model is better suited to online learning, and we see this most clearly in the concept of the self-directed learner. The fact that online courses encourage personal interactions among students and faculty through live chats and online discussions, capitalizes on the wealth of personal experiences that students bring into the learning environment, as opposed to the traditional pedagogy of teacher as primary source of knowledge. Also, adults bring to their learning experience a great deal of practice as problem-solvers in their family lives or in their work environments. The pedagogical model, which focuses primarily on subject content area, is certainly less effective with adults who are more oriented to tasks and problem solving.

Three basic physiological functions which affect the learning process are reaction time, vision and hearing. Cross (1981) examines the widely-held myth that as these three functions

deteriorate with age, so too does the capacity for learning. In refuting this myth, Cross points out that the speed of learning has been overemphasized “to the detriment of learners of all ages.”(p. 155). With regard to vision, increased illumination in the learning environment, along with corrective eye care can remedy normal visual impairment associated with aging. Hearing loss, which may be considered the most serious affliction because of its ties to self-confidence in new situations, may also be accommodated in the learning environment by increased volume and by corrective medical care.

Cross (1981) also examines the phenomenon of short-term memory impairment. She presents guidelines which may reduce the effects of short-term memory loss, and emphasizes the fact that students of all ages will benefit from them. The guidelines are: 1) New information should be presented at a pace which permits mastery; 2) In order to eliminate competing intellectual demands, only one idea at a time should be presented; 3) Frequent summarizations of information should be offered (p.164).

There are three classifications of barriers to adult learning (Cross, 1981a): 1) Situational barriers are related to current life circumstances of the learners; 2) Institutional barriers include procedures and practices which discourage or exclude adult learners; and, 3) Dispositional barriers are related to attitudes and self-perceptions.

For the purposes of this chapter, we have focused on the dispositional barriers for adult learners. Cross based much of her work on findings from a study conducted by Carp, Peterson and Roelfs (1974), who were commissioned to conduct a national survey in which they first identified the three types of perceived barriers to adult learning. In that study, they found that the top barriers to learning for adults included:

- Afraid that I’m too old to begin
- Low grades in past, not confident of my ability

- Not enough energy and stamina
- Don’t enjoy studying
- Tired of school, tired of classrooms
- Don’t know what to learn or what it would lead to
- Hesitate to seem too ambitious

As we consider these basic findings from thirty years ago, we cannot help but note that the emergence of online learning has had major implications on adult learning in general. Clearly, the barriers identified above are basically the same today, and most of them can be addressed effectively with the online learning model. For example, the anonymity of online learning may eradicate the issues of appearing too ambitious, being fearful of being too old, etc. More obviously, issues of not having energy or stamina, and being tired of classrooms are alleviated by the ability of online learners to study and participate in class in the privacy of their own homes, at the time and for the amount of time of their own choosing. Online learning offers a mode of delivery which addresses the most common concerns of adult teachers and learners, but until they are aware of this fact, they will continue to fear the unknown elements of online learning, and or the loss of control over their learning environment.

METHODOLOGY

This focus of this case was on a 4-year comprehensive Catholic Augustinian college, located in the Boston area. For the purposes of this study, we will refer to it as College A. College A has approximately 2000 students, with 150 part time Division of Continuing Education students during the academic year. In the summer of 2008, 639 part time students took courses. There has been concern among faculty and students regarding online course delivery options in both the traditional and non-traditional segments of the college population.

Fear Factors

Figure 1. Demographic and online experience characteristics of survey respondents³

	<u>Instructors</u>	<u>Students</u>	
Full-time	14 (58.3%)	17 (39.5%)	
Part-time	10 (41.7%)	26 (60.5%)	
<u>Experience</u>			
Instructors:			Students:
1-5 years	3 (12.5%)	4 (9.3%)	Freshman
6-10 years	5 (20.8%)	8 (18.6%)	Sophomore
11-15 years	5 (20.8%)	13 (30.2%)	Junior
16-20 years	3 (12.5%)	17 (39.5%)	Senior
21+ years	8 (33.3%)		
<u>Online courses taken</u>			
none	16 (66.7%)	11 (25.6%)	
1-5	5 (20.8%)	31 (72.1%)	
6 or more	3 (12.5%)	1 (2.3%)	
<u>Online courses taught</u>			
none	13 (54.2%)	--	
1-5	8 (33.3%)	--	
6 or more	3 (12.5%)	--	
<u>Would a Workshop on Teaching/Taking an online course be helpful?</u>			
No	0	4 (9.3%)	
Yes	10 (41.7%)	9 (20.9%)	
Taken	4 (16.7%)	1 (2.3%)	
<i>not relevant</i>	8 (33.3%)	25 (58.1%)	

This case study began with a focus group, comprised of administrators, faculty and students to ascertain their attitudes and perceptions of “fear factors” associated with online learning, such as loss of control, working outside of their preferred communication style, lack of technical support, and change. Two survey instruments were administered; one for students and one for faculty, using a 5-point Likert scale and lists of check-off items, to examine perceptions and attitudes of online education. These results were compared against research initiatives at other institutions, such as incentive-based and increased instructional technology support programs.

In the summer of 2008, surveys were sent to students and faculty who were engaged in summer courses. A total of 298 emails were sent, 64 to faculty and 234 to students, inviting them to participate in the survey.

Survey Results

A total of 24 instructors (37.5% response rate) and 43 students (18.4%) completed the survey. Figure 1 shows the characteristics of respondents on a number of demographic variables (see below for explanation of the measures). The instructors ranged in age from 33 to 66 (*Mean* = 50.9 years, *SD* = 10.1, *n* = 23); the students ranged in age from 18 to 59 (*Mean* = 32.4 years, *SD* = 12.1, *n* = 40).

The majority of students (74.4%) had taken at least one online course before; the majority (83.7%) said they had a friend who had taken an online course as well. However, the majority of faculty (66.7%) had *not* taken any online courses. The difference in experience between students and faculty was statistically significant. Of those who had not taken an online course before, 2 of the

Figure 2. Mean level of comfort with categories of online tools^{4,5}

Category:	<u>Instructors</u>	<u>Students</u>
Social sites	2.36 (1.14)	1.95 (1.26)
Informational tools	1.09 (0.29)	1.02 (0.15)
Transactional tools	1.04 (0.21)	1.43 (0.63)
Course management	1.35 (0.71)	1.48 (0.74)
Online courses	1.83 (0.94)	2.02 (0.99)

instructors (12.5%) and 6 of the students (54.5%) also said they would not do so in the future. Nearly half of the instructors (41.7%) had a departmental colleague who had taught online; all of the instructors who had not taught online before said they would be willing to do so in the future.

Measures and Simple Results

In addition to the background information described above and presented in Figure 1, participants were asked about their comfort with a selection of online tools or activities. The remainder (and majority) of the survey consisted of check-off lists in two sets. First, a set of statements about online courses was given as possible responses to the question “What is your perception of online course offerings in degree programs?” Participants were asked to check off all that applied. These items are referred to as Perception items. Second, a set of adjectives was listed as possible responses to the statement “When I think about taking [or teaching] an online course, I feel:”. Again, participants were asked to check off all that applied; these are referred to as Feelings items. The following describes each of the above in turn.

Comfort with Online Tools

Comfort with online tools was assessed in five categories: Comfort with social websites (e.g., Facebook, MySpace, LinkedIn); comfort with informational tools (e.g., Google); transactional

tools (e.g., ordering a book from Amazon); common web-based educational applications (e.g., Blackboard); and more extensive educational applications (e.g., taking an online class). Participants responded to a 5-point Likert scale for each item, with 1 being labeled as “Very comfortable” and 5 being labeled as “Fearful.”

Figure 2 shows the mean response to each comfort item for instructors and students. What is clear from the figure is that mean level of comfort depended on the type of tool or application. Transactional and informational tools were associated with the greatest level of comfort, and taking online courses or interacting with social sites were associated with less comfort. Interestingly, there was a statistically significant difference in comfort between instructors and students only in response to the item about transactional tools, $t(63) = 2.84, p < .005$. Age was a more important determinant of comfort; among instructors, age was significantly correlated with comfort with social sites, $r(19) = .52, p < .05$; among students the correlation was also significant, $r(36) = .68, p < .01$. That is, older participants were less comfortable with such sites, reflecting well-known generational differences.

In both groups, the two items referring to educational applications were significantly correlated (instructors: $r(21) = .50, p < .05$; students: $r(39) = .56, p < .01$). There were other intercorrelations among these items as well. For students, the education-relevant items were both correlated with the level of comfort with online transactions

Fear Factors

Figure 3. Proportion of respondents selecting each Perception item⁶

	<u>Instructors</u>	<u>Students</u>
Easier than teaching/taking a traditional face-to-face course	.09	.14
Harder than teaching/taking a traditional face-to-face course	.57	.55
It is easier to express myself online than in a face-to-face class	.09	.26
It is harder to express myself online than in a face-to-face class	.48	.43
It's not credible (it's a joke)	.04	.05
It is credible	.39	.38
It's frustrating	.22	.29
It's rewarding	.26	.21
I'm afraid to teach/take an online class	.04	.10
I'm confident about teaching/taking an online class	.35	.29
It's flexible	.74	.79
It's not flexible	.00	.00
It's more engaging than face to face instruction/learning	.04	.07
Face to face teaching/learning is more engaging than online teaching/learning	.61	.60
It fits better with my teaching/learning style	.17	.17
It does not fit with my teaching/learning style	.26	.31

(course management applications and transactions $r(40) = .39, p < .05$; online courses and transactions $r(39) = .38, p < .05$). For instructors, comfort with online transactions was correlated with comfort with informational tools, $r(21) = .69, p < .01$.

Perception of Online Course Offerings

Participants had 16 items to select in response to the question about their perception of online course offerings in degree programs. Half of the items differed in their wording for instructors and students. The 8 items that differed referred either to teaching or learning. For example, the item listed in Figure 3 as "I'm afraid to teach/take an online class" was actually "I'm afraid to teach an online class" for instructors; for students it read "I'm afraid to take an online class."

Figure 3 shows the items in this category and the proportion of instructors and students checking off each item. Perceptions were strikingly similar for instructors and students, who did not differ significantly on any item. However, when all participants are categorized as having taught (or taken) a course versus not having done so, there

were two items that differed. Those who had not taught (or taken) an online course ($n = 25$) were more likely than those who had ($n = 40$) to identify such courses as harder to teach (or take) than a traditional face-to-face course, $t(63) = 2.18, p < .05$. They were also less likely to feel confident about teaching or taking online courses, $t(63) = 2.08, p < .05$. In sum, those without direct experience of online courses perceived them as more difficult, and they lacked confidence about participation, consistent with expectations.

With 16 variables, there are 120 possible simple correlations. Of those, among the student participants, 37 achieved the .05 level of significance. Among the instructors, only 9 did. The difference in number of significant correlations is most likely the consequence of the smaller number of instructor participants. The highly intercorrelated nature of the data suggests that a data reduction technique such as factor analysis would be helpful in seeking clarity. That analysis is reported below.

Figure 4. Proportion of respondents selecting each Feeling item⁷

	<u>Instructors</u>	<u>Students</u>
Frustrated/annoyed	.14	.29
Satisfied	.24	.29
Panicked	.05	.10
In control	.24	.22
Confident	.43	.27
Apprehensive	.38	.24
Distracted	0	.24 *
Engaged	.38	.27
Unmotivated	.10	.29
Motivated	.43	.17 *
Bored	0	.10
Interested	.62	.32 *
Overwhelmed	.14	.24
Frightened	.10	.05
Fearless	.05	0
Fulfilled	.10	.02
Unfulfilled	0	.17 *
Challenged	.67	.51
Unchallenged	0	.02
Confident	.14	.15
Insecure	.10	.10
Isolated	0	.10
Connected	.33	.15
Anonymous	0	.20 *
Exposed	0	0
Flustered	.10	.07
At ease	.24	.17

Feelings about Teaching or Learning Online

Figure 4 shows the proportion of instructors and students who checked off each of the 27 possible responses to the question about how they felt when they thought about teaching or learning online. Many of the terms used in the survey were derived from Plutchik's (2001) three-dimensional circumplex model of "primary emotions." Plutchik posits that there are "primary emotions" from which all other emotions can be derived. The items were all the same for both types of respondents, but the question differed slightly. Instructors were asked to check off items "when I think about teaching an online course, I feel...". Students were asked

to check off items "when I think about taking an online course, I feel...".

For five of the items, students and instructors differed significantly in the likelihood they would feel a particular way: Students were more likely than instructors to feel distracted, unfulfilled, and anonymous. Instructors were more likely than students to feel motivated and interested. Those differences are particularly striking when considering that the students had much more experience with online courses on average than the instructors did.

The impact of online experience appeared in responses to these 27 items. A total of 39 respondents had taken or taught at least one online course, and 23 had no online course experience. By statistical

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analysis, those with no online experience were *less* likely to feel satisfied, in control, and confident than those with some experience. They were also *more* likely to report feeling apprehensive, frightened, and insecure when thinking about teaching or taking an online course.

The items were also highly intercorrelated. With 27 variables, there are 351 possible correlations. For the instructors, 38 met the .05 level of statistical significance. For the students, 47 did. As with the perception items, these intercorrelations suggest the value of factor analysis to identify the underlying issues driving the responses of participants.

Analysis of Underlying Factors

The purpose of Factor Analysis in the present study is to reduce the number of variables that are used to understand the characteristics of those who choose to teach or take online courses, and those who do not. Factor analyses were conducted separately on the Perception items and on the Feelings items. In each case, a variable was excluded if either group never checked it off as applicable. For the Perception data, no participants in either group perceived online course offerings as inflexible, so responses to “It’s not flexible” were excluded leaving 15 variables. In the Feelings data, the following items were excluded: *distracted, bored, fearless, unfulfilled, unchallenged, isolated, anonymous, and exposed* leaving 19 variables.

Figure 5 shows the factors that emerged from the analysis, and the items (variables) that loaded on each factor. The best solution that emerged for Perception variables had two factors accounting for 36% of the variance: Suitability and Unsuitability. In essence, this means that the items people checked off as applicable fell into those two categories. In the figure, “positive loading” meant that the variable was positively correlated with the factor; “negative loading” meant that the variable was negatively correlated with it. In other words, people who checked off the positively

loaded items in that factor were less likely to check off the negatively loaded ones. Thus, perceptions of online courses seem to be driven by judgments about how well such courses suited their desired teaching or learning goals and styles.

Regarding feelings about online courses, the figure shows 6 factors. The best solution involves only the first 3 in terms of explaining variance in what people checked off (accounting for 40% of the variance). However, the sixth factor turned out to be important in explaining involvement in online courses, so all are included for completeness. The first three factors seem to match up with the first factor in the Perception data, and the last three seem to match up well with the second factor in those data.

Predicting Online Course Participation

A final set of analyses used the factor scores from the factor analyses to predict, in regression analysis, who would take or teach online courses. In essence, factor scores are derived for each participant based on the items they checked off in combination with how strongly correlated each item was with each factor. For example, a person who checked off all the positively loaded items on the Suitability factor and none of the negatively loaded ones would have a high factor score for Suitability. The regression analysis would then indicate whether Suitability mattered to people who had taken any online courses, for example.

For Perception items, neither factor was related to taking an online course. However, Suitability was significantly related to online teaching. That is, when online courses were perceived as suitable, an instructor was more likely to have taught online. For Feelings items, the second (Security) and sixth (Fear) factors predicted who was likely to have taken any online courses. Briefly, people who selected items related to Security were more likely to have taken an online course; people who selected items related to Fear were less likely to have done so. For teaching courses, the first fac-

Figure 5. Factor Analysis loadings above .35

<u>Perception Variables</u>	
Factor 1:	
<i>Suitability</i>	positive load: credible, rewarding, confident, flexible, easy to express, fits negative load: does not fit, less engaging
Factor 2:	
<i>Unsuitability</i>	positive load: hard to express, hard to teach/take, afraid, does not fit negative load: easy to teach/take, easy to express
<u>Feelings Variables</u>	
Factor 1:	
<i>Fit</i>	positive load: connected, interested, satisfied, motivated, confident, at ease, engaged negative load: (none)
Factor 2:	
<i>Security</i>	positive load: in control, confident, at ease, engaged negative load: apprehensive
Factor 3:	
<i>Effort</i>	positive load: challenged, overwhelmed, engaged negative load: unmotivated
Factor 4:	
<i>Anxiety</i>	positive load: frustrated, flustered, panicked, overwhelmed negative load: (none)
Factor 5:	
<i>Fulfillment</i>	positive load: fulfilled, confident, motivated negative load: (none)
Factor 6:	
<i>Fear</i>	positive load: insecure, frightened negative load: (none)

tor (Fit) was the only significant predictor. That is, faculty who selected the items related to Fit were more likely to have taught online. In other words, teaching online was related to the degree to which they felt connected, interested, satisfied, etc. when doing so⁸.

Limitations

Although the completion rates for the survey are good in the present context, the sample sizes are small, particularly for reaching strongly generalizable conclusions about group differences, and most especially for factor analysis and regression. For that reason, separate analyses of students and faculty were not conducted. However, the similarity of results for the factor analysis of Perception

and Feelings data lend converging evidence for the outcome. A more subtle caution for interpreting the factor analysis results comes from evidence that factor analysis on dichotomous variables (checking an item or not) can generate spurious factors (e.g., Shapiro, Lasarev, & McCauley, 2002). Again, the pattern of results and the consistency with theory may counteract that concern.

Finally, it is striking that the faculty who had not taught online before unanimously expressed a willingness to do so in the future. That makes them an unusual sample, and conclusions about their responses to the survey should be made with that in mind⁹.

SOLUTIONS AND RECOMMENDATIONS

Much of the feedback received via the survey, anecdotal remarks, as well as in the literature review, pointed to an over-arching fear, *a loss of control*. This extended to the concerns over the presentation, environment, as well as communication associated with online learning and teaching.

To gain further insight as to the practical challenge of deploying solutions to address these anxieties, interviews were conducted with Fr. Gary McCloskey, OSA, Ph.D., Dean of the College at College A, who has done extensive research in the field of phobias and educational technology, and John Bourne, Ph.D., Executive Director of the Sloan Consortium (Sloan-C). Bourne is also a founding professor at College B, which focuses on engineering education, and holds a joint faculty appointment at College C, a primarily business focused college, both in the Boston area. Sloan-C's mission (Sloan, 2008) is:

... to help learning organizations continually improve quality, scale, and breadth of their on-line programs according to their own distinctive missions, so that education will become a part of everyday life, accessible and affordable for anyone, anywhere, at any time, in a wide variety of disciplines.

Both McCloskey and Bourne agreed that the fulfillment of a need was one major component to initially incent students and faculty to overcome their fears of the online environment. The need has to have practical and tangible benefit to the individual. A student or faculty may be unlikely to connect with an institution's overall strategy to, for example, alleviate overcrowded classrooms. Practical needs may include flexibility for the working adult, who needs to be able to travel for business and still keep up with coursework, or for an adjunct professor who works full time elsewhere.

During the summer of 2008, U.S. gas prices began to impact institutions who were considering whether to offer courses purely online, hybrid, or on the ground modalities, as students and faculty experienced a need to conserve transportation expenses (Young, 2008). Conserving expenses might incent faculty or students to move beyond seeing online learning as a risk and to perhaps consider it as a calculated risk (G. N. McCloskey, personal communication, July 8, 2008).

"Schools need to come up with some sort of taxonomy, which classifies students as being on campus, near to campus, or far to campus," maintains Bourne. For an on-campus, residential student, there really is no need to participate in online learning, and this carries over to the faculty's perception of the same. Bourne makes reference to College B, the engineering-focused institution. It is an undergraduate, residential college, and thus, the school does not have an exhaustive need for online education yet. The community covets hands-on, face-to-face learning. The curriculum has been carefully built to be delivered in that environment, and the college and its graduates have proven to be very successful with that modality. There is a sharp contrast between Colleges B and C. College C has a population of working adults, pursuing graduate degrees, who have a need to access course materials from a distance (J. Bourne, personal communication, July 28, 2008).

At College C, much of the faculty's ability to overcome concerns about putting their MBA courses online was due to intensive support initially given to faculty members in the form of monthly seminars, training, online resources, flexible online tools, and lunches where peers shared knowledge with each other. College C has created a community of practice and inquiry where faculty can learn from each other.

McCloskey (2008) emphasizes that faculty often wish to have a location away from students to receive instructional, computer literacy, and/or pedagogical/andragogical training. Some institutions have pursued the creation of a Teaching

and Learning Training Center, where faculty can freely acquire new skill sets off-campus. This answers another anxiety provoking situation, where the faculty member may feel that s/he may not appear to be the expert, if students should witness him/her taking part in these skill building activities.

Faculty, as well as administrators supporting e-learning environments, can find additional in consortia opportunities, which allow interaction and networking with other institutions. The Educause Learning Initiative and Sloan-C provide such opportunities on a national level. However, there are regional opportunities, which institutions may take advantage of as well.

Beyond these overarching solutions, there were more specific recommendations regarding particular anxieties around presentation, environment, and communication.

Presentation of Course Materials

Faculty members often feel challenged when it comes to preparing and delivering materials online that were originally designed for the traditional classroom. The Educause Center for Applied Research (ECAR) conducted a research study on the support of e-learning. With regard to presentation, Piriani (2004) identifies the following challenges for faculty:

Instructors face new quandaries when implementing e-learning, mostly the time required to write rather than speak thoughts and to build interactivity into a course, and ongoing course maintenance...

In addition to the above challenge, all resources referenced by the instructor, as part of the course, need to be made accessible online. This may include videos, audio, and perhaps the ability to deliver some of this content synchronously via tools like Adobe Connect, Dyknow, or WebEx.

The time and skill sets involved with repurposing curriculum for the online environment can make this prospect seem overwhelming. "Some institutions partner instructors and instructional technologists in formal e-learning course development programs that can last 6 to 18 months" (Pirani, 2004). Successful institutions in the e-learning space tend to use instructional designers to help bridge the gap between adapting materials that were previously delivered synchronously in a classroom to online (Bourne, 2008).

In a coordinated study done across seven institutions, faculty members were exposed to strong instructional technology support, training, and consulting, while using Web technologies in the classroom (Wingard, 2003). While the study focused on how face to face (f2f) instruction might change when Web enhancements were added, thereby creating a blended learning environment, the results were also pertinent to assessing the value of a well architected technical enhancement to curriculum. This came with the additional help of instructional technologists.

Faculty who had the opportunity to work with instructional designers to coordinate the additions of Web enhancements to their courses often reported that they increased their familiarity with learning theory and enhanced their teaching and course development skills in general.

Due to the extra support received, 57% of the participating faculty members in the Wingard (2003) study would expand their use of Web technologies in their course. Thirty-six percent reported that they planned to continue its use at the present level. In addition, 46% stated that they would incorporate the Web technology into their other courses. Only 7% said that they would discontinue their use of Web technologies. In addition, the amount of interaction between students, students and instructor, and overall class discussion were increased inside and outside of class. Student to student interaction inside class rose 48%, and outside class 35%. Student to instructor interaction rose 28% inside class, and rose 30%

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outside of class. Discussion increased 15% inside class and 7% outside of class (Wingard, 2003).

Research initiatives that explored incentive-based programs also yield encouraging results. To overcome a resistance to change and/or fear of something new, faculty members at The University of Maryland were offered stipends and recognition for successfully integrating technology, utilizing the University's current resources (Fritz, 2004). In the first year, six proposals were submitted and six were funded. A technology showcase was well attended that year by forty faculty members. The second year, 12 proposals were received and 6 were funded, with 70 faculty members attending the technology panel that year.

Environmental Influences

In order to properly address the needs of faculty with regard to technology adoption, one must first understand the population. Donovan (1999) analyzed why advancements do not move beyond an initial set of early supporters. This research divides faculty members into two categories, Early Adopters and Early Majority.

Early Adopters tend to be motivated to teach themselves how to integrate new technologies into their curriculum and use it consistently. However, they do not necessarily make good evangelists with other faculty members. According to Donovan (1999):

Early adopters often are lauded as ready-made advocates for technology, but this rampant enthusiasm is a double-edged sword: sometimes it is contagious, but more often, it is perceived as techno-zealotry. This is off-putting to the majority of faculty, who may resist the adoption of technology by saying, 'I can't do that because I'm not like him/her' [an early adopter].

The Early Majority is motivated differently. They need to understand how technology will fit with their teaching objectives, before they commit a significant amount of time to it (Garofoli & Woodall, 2003). Unfortunately, because this group tends to be less verbal about technology than their Early Adopter counterparts, they tend to go unrecognized in technology support plans, although they make up the largest part of the faculty population (Geoghegan, 1994).

Program efforts need to focus on the Early Majority population in order to be successful. Understanding the differences between the two supports the need for a more concentrated supportive technology environment, which encourages the Early Majority to adopt technology into the curriculum.

Based on Rogers (1962) early work, Garofoli and Woodall (2003) posit that Early Adopters and Early Majority faculty members can be compared and contrasted as depicted in Table 2.

Table 2. Early adopter vs. early majority faculty differences

Early Adopter	Early Majority
Favor revolutionary change	Favor evolutionary change
Visionary	Pragmatic
Project oriented	Process oriented
Risk takers	Risk averse
Willing to experiment	Want proven applications
Generally self sufficient	May need significant support
Horizontally connected	Vertically connected

Source: Garofoli and Woodall (2003)

Various research studies, including those done at Arizona State University, Texas Women's University, and Ball State University have focused on the Early Majority population and their expectations with regard to the technology environment (Brush, et.al, 2003; Butler & Sellborn, 2002; Nelson, Snider & Gershner, 2002). The research identifies similar foundational requirements, which includes training, support, reliable infrastructure, and consulting to match the right technology with the right learning objective.

While each study focused on a different population, Arizona State University on pre-service teachers, Texas Women's University on Education faculty, and Ball State's on a random sample of faculty, the concerns were the same. Faculty members wanted to know how technology would enhance their classes, and if it would be properly supported, so that they would be successful in the presentation of their curriculum. With regard to students, the ECAR e-learning study reports:

Many e-learning students lack confidence and experience with computers, and they may lack skills in commonly used applications like Microsoft Word, Excel, or PowerPoint. The access level differs for students who must use the computer lab versus those who own a laptop or desktop PC and can work at any hour in their rooms, creating something of a digital divide among them. (Piriani, 2004)

More specifically, the ECAR research study recommends providing a variety of training resources for both faculty and students. Success can be had by utilizing one-on-one consultation, and classroom training sessions (Piriani, 2004). Just-in-time online tools like Element K and lynda.com can also provide an additional layer of support for students and faculty for using applications like Word, Excel, and PowerPoint, or even multimedia tools.

The 24/7 nature of distance learning also necessitates the availability of a Help Desk, where

faculty members and learners can call into during the hours that they are most inclined to be working. While some institutions have opted for a full 24/7 implementation, to keep costs down, agreements can also be reached with third party providers which typically provide 24/7 coverage for high traffic hours only (service discontinues between 2:00 a.m. and 7:00 a.m.). Each institution should review its call reports, the various time zones where learners reside, to determine whether there could be cost benefit.

Communication Factors

In the results of the survey that was conducted for this study, students and faculty indicated concerns over communicating online. Survey results indicated that a majority felt it more difficult to express instruction or ideas in an online environment. In addition, a majority of respondents said that online courses were more difficult to take/teach, and that face-to-face classes were more engaging than online offerings. These concerns certainly echo challenges voiced at other institutions.

If a learner has difficulty expressing him/herself effectively in email, online learning spaces will be a challenge for that individual. In addition, if this individual has not had a great deal of experience interacting in teams, the peer to peer (P2P) constructivist learning environment typically employed online may also prove difficult. To build these skill sets, online social and virtual team participation skill set building should be part of the design for every online course (McCloskey, 2008). Students may also feel more control over their team and social dynamics through peer and team grading activities.

Experienced online instructional designers can also assist faculty members new to online instruction with building effective learning spaces that communicate effectively and also incorporate online social and team building activities (Bourne, 2008). A well designed online course will anticipate and fill in the gaps, where learners

Fear Factors

may tend to go astray. This saves time for both the student and the faculty member, addressing another concern raised about the online learning environment. Additional support for faculty to understand the nuances of online facilitation should be provided as well.

FUTURE TRENDS

Web 2.0 is now leading e-Learning 2.0, and the concept of Digital Immigrant vs. the Digital Natives has been widely discussed. For the next ten years, most faculty members will be Digital Immigrants, working with an adult population mixed with Digital Immigrants and Digital Natives. As the paradigm shifts toward a majority of Digital Native learners, Downes (2005) describes the following:

Learning is characterized not only by greater autonomy for the learner, but also a greater emphasis on active learning, with creation, communication and participation playing key roles, and on changing roles for the teacher; indeed, even a collapse of the distinction between teacher and student altogether.

The survey showed that most of the younger students were comfortable with Web 2.0 social networking tools, whereas the older populations were comfortable with information and transactional use of the Web, but not comfortable with the social networking aspect. The trends online, however, are beginning to affect e-learning. Those faculty and students who are uncomfortable with social networking will need support to better understand how to incorporate these concepts into courses. According to Downes (2006):

In learning, these trends are manifest in what is sometimes called “learner-centered” or “student-centered” design. This is more than just adapting for different learning styles or allowing the user

to change the font size and background color; it is the placing of the control of learning itself into the hands of the learner (Marzano, 1992 as cited in Downes, 2006).

While the inclination might be to assume that as the faculty and student population ages and turns over to the next generation, e-Learning 2.0 will be more natural. However, as platforms develop, the same conversations with different nuances may be held about e-Learning 5.0; perhaps by then it may be called something different, such as VR (for Virtual Reality) Learning 3.0.

Virtual Reality platforms, such as Second Life, are now gaining attention, and the next generation of those tools will be further refined. Bourne (2008) reports that team work within his courses seems to go more smoothly in Second Life. Students choose and build an avatar; the avatar attends meetings within conference spaces “in World”, as Second Lifers refer to their virtual environment. While the avatar does not have the student’s natural face, it is a face that the student chose to represent him/her. It appears that there is more trust among the team members than when there is no face at all.

Like wikis and blogs, spaces in Second Life can be private or public, and professors can choose to have students interact in either, perhaps encountering others who are not necessarily members of the class. This adds another dimension to the class. Downes (2006) predicts:

In the future it will be more widely recognized that the learning comes not from the design of learning content but in how it is used. Most e-learning theorists are already there, and are exploring how learning content—whether professionally authored or created by students—can be used as the basis for learning activities rather than the conduit for learning content.

However, this will again stir a sense of loss of control. The process by which the faculty member

moves from the “sage on the stage” to the “guide to the side” will be truly complete. In addition, questions of protecting privacy and intellectual property will need to be discussed. These platforms lead to an enormous connectivity between individuals, as well as access to content. The sense that all information is considered “open-source” may pervade. U.S. college and university IT departments see this now with the number of RIAA and MPAA notices received, with regard to illegally downloading music or movies. Many students feel that if information is out there and available, it is theirs to possess. However, they would not go into a store and steal a CD or DVD. A sense that if it is available on the Web it must be free, reigns.

This open source attitude leads to a social constructivism, often found in social networks, where information is gathered and shared less formally amongst a group of people with like-minded interests. It is not a formal setting, and individuals come and go as they wish. However, the group may create a community of practice.

Where does higher education fit into all of this? Is this the end of the university as we know it? If anxieties exist around e-Learning 1.0, concerns around privacy and intellectual property may haunt e-Learning 2.0 and 3.0. However, our opinion is at the end of the day, the university retains its relevance. Faculty members and students will need to come together to discern and wade through a myriad of choices and information, as they always have. The learning process will just occur through a wider number of venues and delivery mechanisms.

CONCLUSION

Non-traditional students, or adult learners, make up between half and 75% of the students enrolled as undergraduates today. In order to accommodate this growing student population, institutions of higher learning must adjust how they deliver con-

tent. Many of these students have families and/or full time jobs; online learning provides flexibility and is a way for adult learners to continue their education with limited interruption to career or family obligations.

Online learning is aligned with andragogy, which traditionally leverages learners’ experience, independence, and interaction. The andragogical model is associated with a “need to know,” and the orientation of learning is life-centered or problem-centered. Adult learners are more suited for the andragogical model of learning, where the learner is assumed to be self-directing and intrinsically motivated.

Many adults, however, choose not to take online courses due to a variety of fear factors: the fear of loss of control, the fear of technology and the fear of the unknown. In addition to these fear factors, another obstacle includes feelings of insecurity. Barriers for faculty who are reluctant to teach online include the same student-related fear factors (control, technology, unknown) with the addition of concerns over suitability and security. Conversely, faculty who perceived that there was a “fit”, that is, feelings of being connected, interested, satisfied, etc., were more likely to have taught online. Other wide-ranging barriers to online teaching and learning include (1) institutional inexperience in developing online courses; (2) perceived insufficient instructional support and communication, and (3) insufficient participant computer literacy. In order to break down these barriers, education and support must be provided to both students and faculty.

The fulfillment of a need was one major component to initially incent students and faculty to overcome their fears of the online environment. Practical needs may include flexibility for the working adult, or conserving fuel expenses in lieu of travelling to campus for faculty and students. Some initiatives to encourage faculty to develop online courses have been incentive-based.

Training for both student and faculty is imperative. These types of initiatives will take the fear out

of the unknown and the fear out of one's insecurity with using various types of technology. Faculty often wish to have a location away from students to receive instructional, computer literacy, and/or pedagogical/andragogical training. Some institutions have pursued the creation of a Teaching and Learning Training Center, where faculty can freely acquire new skill sets off-campus. Faculty and administrators can find additional support through consortia opportunities, which allow interaction and networking with other institutions. There are various mechanisms by which to provide training for faculty and students; they could include videos, audio, synchronous tools, just-in-time online tools, and support for applications like Word, Excel, and PowerPoint, and multimedia tools. The 24/7 nature of distance learning also necessitates the availability of a Help Desk.

Many institutions of higher learning have found success in partnering with or employing instructional technologists and/or designers to work with faculty and students. Instructional designers help bridge the gap between adapting materials to an online paradigm that were previously delivered synchronously in a classroom. Other foundational requirements have been identified, which include training, support, reliable infrastructure, and consulting to match the right technology with the right learning objective.

Program efforts need to focus on the Early Majority population within the faculty in order to encourage that group to adopt technology into the curriculum. Finally, online social and virtual team participation skill set building should be part of the design for every online course.

Knowledge is power. In order to take the fear out of learning or teaching online, colleges and universities must invest time and money into programs that will educate the adult learner and faculty member, taking the fear out of online learning and course facilitation.

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KEY TERMS AND DEFINITIONS

Andragogy: The approach based on self-directed learning theory (Gibbons & Wentworth, 2001)

Andragogical Model: The learner is assumed to be self directing and is seen as entering the educational situation with much experience (Knowles, 1984)

Constructivism: Based on the premise that knowledge cannot be transmitted but has to be constructed by the individual; learning takes place in context and in collaboration (Ullrich, Borau, Luo, Tan, Shen, & Shen, 2008)

Digital Immigrant: Those of us who were not born into the digital world but have, at some later point in our lives, become fascinated by and adopted many or most aspects of the new technology (Prensky, 2001)

Digital Native: “native speakers” of the digital language of computers, video games and the Internet (Prensky, 2001)

Early Adopters: Those who tend to be motivated to teach themselves how to integrate new technologies into their curriculum and use it consistently (Donovan, 1999)

Early Majority: Those who need to understand how technology will fit with their teaching objectives, before they commit a significant amount of time to it (Garofoli & Woodall, 2003)

e-Learning 2.0: Electronic learning; learning from courses conducted online

Hybrid: When a course is conducted online 30-80% of the time, with the remainder held face-to-face (McCloskey, 2008)

Pedagogical Model: Based on the assumption that the learner is a dependent personality, one who simply carries out the teacher’s directions, where learners enter the educational situation with little or no experience (Knowles, 1984)

Social Constructivism: Proposes that we learn best in collaborative environments, in which students’ ideas encounter and are enriched by those of other students (Essex, 2007)

Web 2.0: Collaborative Internet applications that allow for facilitation of communications between individuals and organizations. Examples of Web 2.0 tools include blogs, wikis, Second Life, and social networking.

ENDNOTES

- ¹ Andragogy describes the approach based on self-directed learning theory (Gibbons & Wentworth, 2001)
- ² Hybrid is defined as coursework which is conducted online 30-80% of the time, with the remainder held face-to-face
- ³ Percentages may not sum to 100 because of missing responses or rounding

- ⁴ Standard deviations are in parentheses
- ⁵ Comfort was measured on a Likert scale running from 1 = “very comfortable” to 5 = “fearful.”
- ⁶ For these items, there were 23 instructor respondents and 42 student respondents
- ⁷ For these items, there were 21 instructor respondents and 41 student respondents. Items for which instructors and students differed significantly (by t-test, 60 df, $p < .05$) are starred
- ⁸ A special thanks to Diane Shaw for her assistance on Factor Analysis categories
- ⁹ For more information on the statistical analysis of this study, please contact the authors

Chapter 8

Factors Leading to a Quality E-Learning Experience

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ABSTRACT

The Internet became available to the general public in the mid 1990's. At that time, a few institutions starting using the net as a vehicle for providing course credit. Since this early time, the number of institutions offering classes and full degrees online has grown exponentially. At one northeastern institution, the growth has been from 4 courses in 1996 to over 500 courses today. At the same time, most institutions now have updated their classrooms with ever more sophisticated technical capabilities, such as access to the Web for presentations, synchronous videos, and clickers for taking class polls. Others use technology as an add-on to the class room creating hybrid, blended, or e-learning experiences. In the late 90's classes were primarily text based, using either in house developed web pages, and later using self contained course management shells such as WebCT and Blackboard, which required the users to create content, but the linkages and communication tools were self contained. Some authors have developed taxonomies to look at quality [media richness, student interaction, etc.], but not enough has been done to compare online learning and e-learning to traditional classroom based learning. The contribution of this paper will be to report on the findings of previous studies relating to the assessment of online course delivery and the online component of blended learning classes. The results of the research findings should provide significant contributions to the performance improvement of e-learning.

INTRODUCTION

The Internet and World Wide Web have provided many institutions with advantages as alternate instructional tools. The lines between electronic

learning and classroom learning are blurring because more and more instruction has been delivered using computer-based information technology. The consideration of online and offline teaching as two separate entities is an outdated framework. Today's instructors are asking themselves how to

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use information technology to enhance classroom teaching and learning and how to combine activities based in technology to better student learning is an emerging paradigm. Teachers are demanding a more blended and flexible approach to create an effective teaching environment to improve the instructional quality. Coalescing the Internet and WWW with a variety of pedagogical strategies provides a promising vehicle for teachers to deliver their instruction with high quality.

In recent years, the academic community has seen an enthusiastic rush of faculty to the Web as the newest mode of interface with students. Syllabi, lecture notes, assignments, tutorials, and even full courses are being placed on the Web. It is a new mode of electronic learning. It also supplements traditional mode of face-to-face classroom teaching.

To accommodate this potential paradigm shift in education, we need to create a conceptually innovative technological and pedagogical basis for enhancing teaching and learning between teacher and students. This paper describes our effort of applying knowledge management approach to develop an integrated teaching strategy to enhance instructional quality. This teaching strategy is based on a set of essential learning theories. The knowledge management approach combines the most important knowledge management principles and course management applications into our regular curriculum.

This paper is organized by the introduction of learning theories, following by the discussion of types of e-learning. The next section presents the benefits of using knowledge management in education and how to apply knowledge management to increase the instructional quality. In the end, we will conclude our research with implications and future suggestions.

LEARNING THEORY

Curriculum design, combined with learning theory, defines how individuals learn and how instruction should be conducted to optimize the knowledge acquisition. There are two major learning theories that have influenced most modern teaching practices: behavioral learning theory and cognitive learning theory. With the development of learning environment and the focus of learning, several new theories have been established. Some are critical to the e-learning instruction and curriculum design.

Behavioral Learning Theory

Behavioral learning theory developed largely from Skinner's model (1968) that learning is measured as change in an individual's behavior. Behavioral learning theory focuses on modifying the learner's behavior and provides instruction that involves a presentation of information, a question to seek a response from the learner, feedback to the learner's response, and either positive reinforcement for a correct answer or a repeat of the cycle to learn correctly. A sequence of instructions is designed to assist learner to acquire more complex skill through broken down component skills. Mastery of the smaller units is a prerequisite for the larger units, and these gradual steps foster student success (Gagne & Briggs, 1979).

The behavioral learning model is best seen in objectivist methodology such as in direct lecture, where the objective is to have the student acquire and repeat factual information. According to the objectivist view, objects have intrinsic meaning, and knowledge is mirroring the reality. Jonassen (1991) defines objectivism, as that knowledge is stable because the essential attributes of objects are knowable and relatively unchanging. The fundamental metaphysical assumption of objectivism is that the world is real, it is structured, and structure

can be modeled for the learner. It assumes that individual can acquire the understanding of the objects, and this understanding can be accomplished when rational structures or systematic rules are used to draw conclusions (Winograd & Flores, 1986). Since lecture is the main objectivist methodology, teacher acts as a “Sage on the Stage” rather than a mentor or a coach, teacher passes on knowledge to students in class and interacts with students to clarify misunderstanding so that true knowledge transfer can be completed (Jonassen, Davidson, Collins, Campbell, & Haag, 1995; Leidner & Jarvenpaa, 1995).

Cognitive Learning Theory

Cognitive learning theory focuses on the learner’s mental state rather on the behavior. Piaget (1970) proposed that individuals have internal cognitive structures, or ways in which they understand the world. Learning takes place by assimilating new information into their existing cognitive structures or accommodating their cognitive structures to new information. Teaching strategies should therefore provide activities that challenge and engage students in order to cause assimilation and accommodation to take place (Furth, 1970). Meaningful learning occurs when learners actively relate new materials to their cognitive structure and reorganize their understanding of concepts. Such active engagement with the learning materials will lead to transfer of the concepts to new situations (Ausubel, 1968).

Cognitive learning theory is the foundation of constructivism. The basic idea of constructivism is that individual must construct knowledge; the teacher cannot supply it (Bringuier, 1980). The constructivist approach is an epistemology that the learner acquires knowledge by playing an active role in building understanding and making sense of information. Constructivism espouses the notion that individual creates meaning through the interaction between the learner and the environment. Existing experience allows the learners to

acquire new knowledge in unique ways that reflect their needs, dispositions, attitudes, beliefs, and feelings. The goal of instructional design under constructivism is to create a learner-centered environment that enables learners to construct knowledge through interactions with the learning environment (Jonassen et al, 1995; Leidner & Jarvenpaa, 1995).

Motivation Theory

Motivation is also a vital factor in learning theory. The behavioral view stresses extrinsic motivation and the cognitive view emphasizes intrinsic motivation. Extrinsic motivation is motivation based outside the learner in the form of positive or negative reinforcement such as rewards or punishments to influence the learner’s response to the instruction. The reinforcement should be given after the behavior as soon as possible to be effective. To avoid negative reinforcement in learning, assignments should be given to students that have gradually increasing difficulty in sequence that each step is correct and receives positive reinforcement (Skinner, 1968). Intrinsic motivation relies on the learner’s intrinsic interest in a subject. Piaget believed that educator should foster students’ natural inclination to learn by developing activities that will arouse and engage them in the pursuit of learning. Hence, teacher should design activities that are challenging to students and stir up their curiosity (Malone, 1981).

Social Learning Theory

Social learning theory (Bandura, 1971) explains human behavior in terms of continuous reciprocal interaction between behavioral, cognitive, and environmental influences. The component processes underlying observational learning are:

1. Attention, including modeled events (distinctiveness, affective valence, complexity, prevalence, functional value) and observer

- characteristics (sensory capacities, arousal level, perceptual set, past reinforcement),
2. Retention, including symbolic coding, cognitive organization, symbolic rehearsal, motor rehearsal),
 3. Motor Reproduction, including physical capabilities, self-observation of reproduction, accuracy of feedback, and
 4. Motivation, including external, vicarious and self reinforcement.

These four conditions are necessary for an effective learning to occur. So when designing a pedagogy, instructor should consider the social context of the learners.

Because it encompasses attention, memory and motivation, social learning theory spans both cognitive and behavioral frameworks. Bandura's theory improves upon the strictly behavioral interpretation of modeling provided by Miller & Dollard (1941). Social learning theory has been applied as the theoretical foundation for the technique of behavior modeling which is widely used in training programs.

Self-Regulated Learning Theory

International recognition of the educational importance of self-regulation has increased dramatically (Schunk & Zimmerman, 1994; Butler & Winne, 1995; Wolters, Yu, & Pintrich, 1996). Theoretical accounts of learning, motivation, and performance have placed greater emphasis on the active role of students as seekers, generators, and processors of information, and less emphasis on the notion that students are passive recipients of information from the environment. It has drawn elements from cognitive psychology. Self-regulated learning refers to learning that occurs largely from the influence of students' self-generated thoughts, strategies, and behaviors, which are oriented toward the attainment of goals.

Self-regulated individuals have a lasting and persistent impact on the decisions: if, what,

when, where, how they learn and which goals and objectives they pursue. Electronic learning environments have the potential to support various aspects of self-regulated learning. They are flexible instruments to deliver learning resources and they can complement individual learning by creating a learner-centered environment. Self-regulated learning is especially suited to adults (Knowles, 1980), as it assumes:

1. the learner prefers to be self-directed, so the learner and teacher should plan together what will be learned;
2. learning has more meaning if it comes from experience;
3. learners are most ready to learn when they have real-life need to know something; and
4. learners want to be able to make a practical application of what they learn to their lives.

TECHNOLOGY IN EDUCATION

Forman (1987) points out that technology supplements students with the ability to choose when, where, and how they participate in the learning experience and to bring together an immense amount of previously unavailable learning resources. Online education provides the efficiency and flexibility of computer-assisted instruction as well as the individual attention of instructor-guided instruction (Huang, 1997). The online instruction possesses the advantages of meaningfulness, open communication, clustered essential ideas, learning aids, modeling, active appropriate practice, pleasant conditions, and consistency (Berge, 1997). Technology can help some people obtain education in an easy way, learn more effectively, and enjoy learning more. Technology continues to be important in education because it allows learners to access information resources either at home or at work and at times when they want to learn (Palmieri, 1997). Research results also indicate

that Internet/WWW use can increase learning performance (Follansbee, 1997; Hargis, 2001).

Electronic learning (or e-Learning), according to Wikipedia, is defined as “is a term where the student and the teacher use online technology to interact and participate.” E-learning is delivered through information and communication technologies. What learners learn is derived from the content within the e-learning system. Based on interviews with senior executives, Ettinger, Holton and Blass (2006) report that the acceptance and practice of e-learning is rising, typically by forty percent. There are as many as seventy eight percent of the executives expect their companies to start using e-learning in the near future.

There are many motives that drive companies to start using e-learning for their training such as, cost-effectiveness and flexible learning. E-learning can be adopted across multiple sites taking the learning to the learner. It has the ability to be tailored to the organization’s needs and e-learning complements knowledge management in the organization. The key reasons that are typical for most companies to use e-learning are outlined below (Ettinger, Holton and Blass, 2006):

- Creating competitive advantage, by aligning workforce with company strategy
- Globalization, ability to reach potential learners anywhere in the world
- Information age, using highly developed tools to communicate
- Demand for post-secondary and life-long learning
- Budget constraints for both internal and external education

Although many companies have similar reasons to use e-learning, some have their own agenda for wanting to use e-learning. The ability to align e-learning with high-level business strategies along with the capacity to train entire workforces to support these strategies is one of the key reasons that attracts companies to e-learning (Clarke and

Hermens, 2001). Using technology to deliver learning, such as CD-ROM, DVD, Internet and intranets, allows the company to completely train their workforce while keeping costs down. One way that companies ensure that their employees have the right tools to execute strategy is by using the Internet as a vehicle for imparting knowledge. These ideas have been around for a while but with recent advances in technology they are now possible (Henry, 2002; Allen, 2008).

From the technology development in education, we can see a clear time line that follows the evolution of learning theory. Pedagogical design based on early behaviorism, which emphasizes on drill and practice, has progressed toward cognitivism, which promotes structured instructional modules. Each learning unit can be programmed in a sequential flow. A learner can learn each unit based on his or her learning style and at a self-paced process. The most recent learning design is based on the constructivism, which provides a rich socioeconomic learning environment that motivates learner to conduct a self-regulated learning. With easy access to the Internet and WWW, the learner can engage a multi-way interactive learning by joining a blog, chat, discussion board, or a team project with intense collaboration.

TYPES OF E-LEARNING

There are several types of e-learning and combinations thereof currently being deployed:

- all online
- blended or hybrid
- asynchronous
- synchronous

Both the online and asynchronous approaches are self-directed and self-paced methods of learning that enable learners to increase knowledge and skills when the learner is ready and willing to learn. The difference between the two is that

online has no interaction between learners and instructors where as asynchronous learning will have some interaction. For instance there could be a discussion board where learners post comments during a time that is convenient to them and then the instructors will post back at a later time.

Blended or hybrid learning is a type of learning that is a mixture of face-to-face and online learning. The online portion of this learning can be delivered in various ways, such as online tutorials, documents, interactive tests, presentations, video, audio, animations and many other types of interactive media. Typically, this approach involves approximately thirty percent of face-to-face classroom time combined with the remaining time spent online (Mitchell and Honore, 2007). They list the advantages of this type of learning are:

- convenience
- increased interaction
- flexibility
- increased learning
- higher retention
- reduced seat time
- decreased costs

The hybrid approach is most valuable when an institution wants to leverage all of the e-learning advantages while still maintaining the nuances that oftentimes face-to-face training provides to the learner.

Synchronous learning occurs when there are interactions in real time. For instance, learning is conducted in a chat room or engaged other types of collaboration tools. In synchronous learning, both the learner and the instructor are present in the technology based learning environment. They can interact with each other instantaneously. According to Pulichino (2004), seventy four percent of organizations surveyed used synchronous learning. The reason for its high usage is that the technology has advanced dramatically in recent years. Synchronous learning coupled with technology allows for greater interaction between

instructors and learners. This approach provides a rich opportunity to generate ideas, solve complex problems, and develop critical thinking skills together (Taran, 2006).

QUALITY AND EFFECTIVENESS IN E-LEARNING

Now that we have defined e-learning, it is important to verify the effectiveness of this new learning model. There is a significant body of knowledge which has been reported since the turn of the century, which is summarized in the next few paragraphs. Quality and effectiveness are used interchangeably in this regard.

The first set of authors contrast traditional course delivery with online course delivery. Topper (2007) found no difference in the quality of instruction between traditional classroom and an online classroom. McFall and Freddolino (2000) compare the effectiveness of traditional and distance education programs, and found little difference. Meyer (2002) did a review of the literature and found that online students do as well as their face-to-face counterparts. He also hypothesizes that different learning styles will make it difficult to promote one approach as being right for everyone. Sullivan (1998) [not in References] included learning style (field dependence/independence) in evaluating e-learning classes and techniques. Others embrace the attitude that distance education must be evaluated differently, and highlight the differences between face-to-face and online education (For example, Stella, 2006). Finally, other research focused on a subset of the population. Richardson (2006), for example, created a tool for monitoring effectiveness of online classes geared toward technical students. It is obvious that e-learning presents challenges to evaluation and delivery to diverse populations with diverse learning styles.

Some authors have developed models or frameworks to help higher education in the assess-

ment of e-learning programs. Zhao (2003) built a framework as a guide the introduction of distance education classes. Chaney (2007) developed a culturally sensitive model of look at students' attitudes and perceptions of distance education classes. Bennett and Bennett (2002) surveyed faculty to see the effectiveness of the benchmarks developed by the Institute for Higher Education. They found the benchmarks with the exception of faculty support were being incorporated into distance learning classes.

Variejs (2003) developed a set of quality guidelines for online continuing education classes. Richardson (2006) used two established instruments, The Course Experience Questionnaire (Wilson et al., 1997), and the Revised Approaches to Studying Inventory (Entwistle et al., 2000), and found the perceptions of distance education classes with the approaches used to conduct the courses.

Twenty-four benchmarks were developed from a group of leaders at six institutions to ensure excellence in online education. The major categories were institutional support, course development, teaching/learning, course structure, student support, faculty support, and evaluation and assessment (Phipps and Maerisotis, 2000). The importance of issues beyond the individual infrastructure and individual course are striking, indicating a need for accountability and support from the institutional as a whole, down to the individual instructor. The importance of adequate preparation of instructors is highlighted by Yang and Cornelious (2005). Chau and Lam (2007) found five major areas must be evaluated for quality assurance in distance education: content authoring, courseware development, adjunct faculty recruitment, pedagogy, and delivery.

E-learning programs have taken off. Accreditation agencies are now paying close attention to new learning environments (Simonson, 2007; Cook, 2001, Lezberg, 1999). Old time faculty and others including Congress (Foster, 2006), are questioning the rigor of the new e-learning environment, while others dismiss the need for legislative intervention

(Carnevale, 2000). Others offer the comparison to the promise of correspondence courses which lacked quality in many cases (Heerema and Rogers, 2001). Full time faculty expertise was found to be the key to successful e-learning initiatives (Smith and Mitry, 2008), while Buck (2001) prescribes heavy involvement from organizations such as the American Association of University Professors to guarantee not only quality but academic freedom. Approaches to quality insurance vary from faculty peer review at Ivy State College (Ross, et al, 2002) to administrative oversight. Van Dusen (2000) describes two opposing views of the impact to e-learning, paralleling the differences between total quality management (TQM) and reengineering. That is, should higher education radically change delivery structures or incrementally change, slowly integrating technology into the classroom. Montague and Pluzhenskaia (2007) found students generally satisfied with online education, but expressed concern with the lack of course organization and interaction.

Leh and Jobin (2002) are representative of an earlier set of articles which discuss the pros and cons of distance education. Topics included quality of delivery, of learning, faculty support systems, and program design. Gibson (1998) gives a good review of the practices in distance education in higher education ten years ago. Cavanaugh (2002) evaluated the effectiveness of the resources—practices—results lifecycle (RPR cycle) in evaluating distance education standards from the US and Great Britain, and found it not to be a great predictor of effectiveness.

One study found student satisfaction increased if expectations were reviewed at the beginning of the class (Stevenson, et al, 2006). Communication with students was found to be the most important predictor of satisfaction in a number of studies (Ortiz-Rodriguez, et al, 2005). Rangelcroft (2002) looked at the effectiveness of the template satisfaction survey in improving student evaluation of distance education classes. It also showed the need for better communication to manage

student expectations. Trentin (2000) discusses the importance of technology to enhance the communication process.

The University of Texas obtained good experience on communication and collaboration issues because they twelve distinct programs which administratively had to be coordinated (Robinson, 2001). An importance aspect of quality is to make sure the technology is used in ways besides the simple transfer of content from in person to on-line. Mugridge (1999) and Mann (1998) present an overview of a distance learning program in England and the factors associated with quality assurance in their programs. Factors were broken into three major areas: learner-content, learner-instructor, and learner-learner. Lorenzetti (2004) reviews the Babson College experience in blended education. Keys to success include establishing clear objectives, use a common language, work in new units of instruction, and development of content units which can stand alone.

A number of studies have looked at the effectiveness of distance and e-learning in developing countries including Bhutan (Jamtsho and Bullen, 2007), South Africa (Badat, 2005), the Middle East (Mohammed, 2005,) Botswana (Lee, et al, 2005), India (Rathore, 1997), and the developed world including Australia (Vidovich, 2002), Hong Kong (Yeung, 2001), and England (Lezberg, 1998). Common trends are access issues, cost and quality of media enriched and distance education programs (Van Dusen, 2000). Thus, we can conclude that with increased accessibility to technology, quality issues in e-learning will gain increased importance.

E-LEARNING ATTRIBUTES AND SELF-REGULATED LEARNING

E-learning is a medium which fits well with all learners, including adult learners who fit the self-regulated learning model. The e-learning attributes have been chosen because they have

been identified in the literature as providing a quality or effective learning experience. In Table 1 we discuss characteristics of e-learning and how they can be adapted to the self-regulated learning model.

Knowledge Management for Education

Knowledge is seen as neither absolute nor universal. It is local, shifting and has to be reconstructed time after time on the basis of individual and social experience (Psarras, 2006). Knowledge is definitely changing constantly in both business and academia. Instructional design involves a considerable amount of information and methodology to transfer the knowledge. The knowledge sharing process using the Internet and Web tools has changed the way teaching occurs, and more importantly, the way that students are learning in academics.

We are currently in a knowledge based society. Psarras (2006) believes the shift of learning is moving in direction that shows students acquiring an approach that focuses more on research and being able to learn without traditional instruction. Universities have typically been responsible for disseminating knowledge. The changing knowledge society is forcing them to rethink the way that the knowledge is transferred. How to engage student to learning; what are the impacts of innovative and on-line learning techniques like e-classrooms, online library research, and remote education on the overall learning outcomes; and how the knowledge transfer process helps students in real life scenarios are some important issues when integrating above-mentioned e-learning attributes into a self-regulating learning platform.

Schools as learning organizations need to capitalize on all the factors that play into the educational process to leverage knowledge that is typically dispersed all over the school (Alqudsighabra, 2007). Schools need to take advantage in utilizing knowledge management approach to

Factors Leading to a Quality E-Learning Experience

Table 1.

E-learning attribute	How to effectively use for self-regulated learning
Communication	Communication is more than 3 times a week during regular class time. Instructor must respond to emails at least once per day, and check discussion forums at least once a day, and allow for instant messaging as well. Response rules must be well documented.
Templates [course standardization]	Use common course structure, "look and feel" for all e-learning functions, whether as part of a distance of blended learning experience.
Language	Use a common terminology. Helpful for student understanding from a local and global perspective.
Clear expectations	Expectations must be clearly indicated on the syllabus, and through email, discussion postings, chat, or weekly announcements. Asking questions of students to verify understanding of expectations is essential.
Cultural/socioeconomic background	Instructors must know the backgrounds of their students. Do they have high speed connectivity? Are they familiar with e-learning tools? Are they comfortable with communicating?
Instructor preparedness	Instructors must know not to simply put their notes online. They must become familiar with new forms of student interaction, expectations from students, and terminologies.
Incremental improvement	Content and technology changes. These changes must be updated every time a class is delivered. Incremental improvement, or continuous improvement is essential. Courses are not static, but dynamic.
Collaboration	Learners like a sense of belonging. Giving ample opportunity for either group work, or peer assessment are mutually beneficial to the learner.
Stand alone units	Learners like units which are independent that can exist and be understood on their own.

enhance the learning experience for the student and to change the way that the school internally deals with the increasing demand for knowledge. Knowledge management approach is adding values in the knowledge dissemination process, i.e., capture, refine, and transfer. Schools are very much like traditional business with internal processes and customers (students) and the value added services they offer to make a difference on whether a student attends the school over another. The bottom line is that the more effective existing knowledge is utilized, the better the value that the university can enable its staff, professors, and students to succeed.

CONCLUSION

We propose that instructors use the knowledge management approach to create a media-rich learn-

ing environment with opportunities for students to explore the fun of interactive learning and develop self-regulated learning habits. Instructors should consider various e-learning attributes, which are based on constructivist model with components from motivation theory, social learning theory and self-regulated learning theory. Following knowledge capture, knowledge refinement, and knowledge transfer, instructors can utilize a set of instructor-centered teaching aids embedded in the course management system to improve their teaching effectiveness. An instructor can further use the knowledge dissemination cycle to create a learner-centered learning environment for students to enhance their learning experience. Courses designed with modern learning theories and the knowledge management approach can add value to electronic learning modes by offering self-paced and a self-discovered learning environment. Specifically, self-paced courses can be taken at the

student's leisure and are good for self-motivated students. The benefit is more personalized learning and better deductive skills. These courses are well-suited for non-traditional students who have a busy working schedule.

There has been reluctance from some full time faculty to embrace online learning and some of the enhancements made by technological advances. Numerous studies have proven that e-learning technologies if used appropriately and effectively, can lead to as effective and some cases a more effective experience to today's learners. The key is to use the tools available with the new technologies effectively to add value and motivate our customers so that they have both a positive, quality experience, and learn the concepts presented in the classes.

E-learning is upon us. We must carefully consider how we are going to use technology to either enhance or deliver our courses. Technological capabilities are constantly changing, so the best solution today, may not be the best solution tomorrow. Through the literature, we can identify key characteristics which lead to a quality or satisfactory experiences for our students. Thus, as new capabilities and technologies evolve, we must review the accessibility of technology to our students, their familiarity with it, their particular learning styles, and technical support available to effectively use them in course delivery to our customers.

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Chapter 9

Anytime / Anywhere Online Learning: Does It Remove Barriers for Adult Learners?

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ABSTRACT

Even with the convenience of anytime/anywhere online learning, adult learners still encounter barriers and challenges. This chapter explores the growth of online education in higher education and the participation of adult learners. The chapter introduces K. Patricia Cross' research about the situational, dispositional, and institutional barriers faced by adult learners in the 1980s. The relevancy of these barriers to today's adult distance learners is examined. Characteristics of adult learners are discussed. New barriers for learners introduced by online education are explored, including social interaction barriers, technology barriers, student-support barriers, pedagogy barriers, and accessibility barriers. Suggestions for removing and/or reducing these barriers are discussed, including providing technical support services, offering online orientations, pre-assessing student readiness, providing professional development opportunities for faculty which model andragogy and online course methodology, and designing online courses to support learning preferences of adult learners. Recommendations are made for future research.

INTRODUCTION

What impact has distance education had on adult higher education and the barriers faced by adult learners? The objective of this chapter is to answer this question. First, the participation of adults in higher education and the growth of distance educa-

tion within higher education is discussed. Next, the situational, institutional, and dispositional barriers faced by adult learners (Cross, 1992) are analyzed as they relate to distance education. With this foundation in place, new barriers which adult online learners must overcome, including social interaction barriers, technology barriers, student-support barriers, pedagogy barriers, and accessibility barriers, are explored. Recommendations are provided for

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minimizing the barriers encountered by adult learners in distance education.

BACKGROUND

Adult Learners

Kazis et al. (2007) reported that 44% of United States college students are adult learners with possibly 37 million additional adults interested in continuing their education. However, these adult learners encounter obstacles since many institutions have designed their programs to support traditional-aged students (Addressing the Needs, 2006). Rudestam and Shoenholtz-Read (2002) reported that “most current online students are adult professionals looking for additional training” (p. 6). According to Levine and Sun (2002), adult students are suitable candidates for distance education and are bringing “consumer attitudes to higher education – convenience, service, high quality, and low cost” (p. 4). Results from a recent survey of community colleges conducted by the Instructional Technology Council indicated that over half of distance education students in the responding schools were non-traditional adult students (2007 *Distance Education*, 2008).

Growth of Distance Education

Distance education in the form of online learning is pervasive in higher education. According to Kazis et al. (2007), “on-line education programs and courses can be found in all higher education segments” (p. 12). Rudestam and Shoenholtz-Read (2002) stated “nearly every institution of higher learning has incorporated or intends to incorporate some aspects of online technology into its curriculum” (p. 9). Kazis et al. reported that from 2002 to 2005, enrollment in online courses increased by almost 250 percent. This includes enrollments in community colleges, public colleges and universities, non-profit private colleges

and universities, and for-profit colleges and universities. According to Levine and Sun (2002), online enrollments at the for-profit University of Phoenix “increased from less than 5,000 in 1997 to nearly 50,000 in 2002” (p. 5). Kinser (2002) indicated that the for-profit virtual institutions, such as Western Governors University represent a new model for postsecondary education. Kretovics (2003) suggested that the virtual institutions have begun to change the perception of distance education from just one of many delivery methods to the pedagogy in use throughout an institution of higher learning.

Due to being utilized at nearly every school, popularized by virtual institutions, and fueled by impressive growth, distance education has had a profound impact on adult education. Cross (1992) described barriers that adult learners face in higher education. The next section describes the barriers researched by Cross and explores additional barriers that are encountered by learners in distance education.

THE THREE BARRIERS

Cross (1992) studied adult learners in the 1980s and identified situational, dispositional, and institutional barriers encountered by adults in higher education. Situational and dispositional barriers relate directly to the student themselves. Institutional barriers are impediments created by the institution of higher learning and are typically out of the learner’s direct control.

Situational Barriers

Cross (1992) considered situational barriers as hindrances that “arise from one’s situation in life at a given time” (p. 98). Obstacles described by Cross in this category include lack of money, lack of time, too many home responsibilities, too many work responsibilities, child care issues, lack of transportation, lack of study area, and lack of

family or friend support. In general, situational barriers remain as issues for adult learners. In a study of adult e-learners, Mungania (2003) concluded that “situational barriers are the most prevalent” (p. 30). The situational barrier of “time and support for studies” (p. 38) was found by Muilenberg and Berge (2005) to be one of the top four barriers for distance learners. Tello (2007) reported that “work commitment” (p.58) was the reason provided by 30% of students who withdrew from an online course and that 62% cited other situational barriers. A study by Kimmel and McNeese (2006) about barriers to adult learners found that the top five barriers were all situational and related to their roles as caregivers for children and/or elders, financial concerns over childcare costs, concerns about student loans, and concerns about college costs.

The delivery format of distance education cannot alleviate situational barriers such as lack of family support, financial issues, or work-related responsibilities. However, distance education can help to mitigate some situational barriers. Since learners can complete their coursework and research at home, it is a logical expectation that they could continue to care for their children and/or elders, avoid school-related transportation issues, and study during the time otherwise spent travelling to/from school and attending classes.

Dispositional Barriers

Cross (1992) classified dispositional barriers as being “related to attitudes and self-perceptions about oneself as a learner” (p. 98). Cross noted beliefs such as being too old, lack of confidence, lack of energy, dislike of studying, weariness of school, lack of direction or goal, and concern over reaching too high or being too ambitious as dispositional barriers. Four of the eight most severe student barriers to online learning found by Muilenburg and Berge (2005) are dispositional barriers, including lack of social interaction, learner motivation issues, lack of technical skills,

and lack of academic skills. Distance education course delivery methods do not alleviate dispositional barriers and may even add barriers. However, the time saved by not needing to commute to school to attend classes may help with energy and weariness issues.

Institutional Barriers

Cross (1992) categorized impediments created by the educational institution as institutional barriers and described them as “practices and procedures that exclude or discourage working adults from participating in educational activities” (p. 98). Obstacles listed by Cross in this category include requirements for full-time enrollment, long length of time to complete a program, inconvenient course scheduling, lack of information provided to students, student difficulty with enrollment, and enrollment requirements that exclude learners. Although the anytime-anywhere nature of distance learning should reduce the barrier of inconvenient course scheduling, institutional barriers are still an issue for students. Kazis et al. (2007) cited the following barriers faced by adult learners: “Program structure and duration that make access and persistence difficult; Pedagogy and supports that do not meet adult learner needs; and Alignment of institutions and of courses and transferability of credits that slow progress to credentials” (p. 16). Two of the eight student barriers to online learning reported by Muilenburg and Berge (2005) are institutional barriers: administrative/instructor issues and technical problems.

The institutional barriers identified by Cross (1992) which are related to lack of information and online student services are still barriers at some schools today. In addition, new institutional barriers such as inadequate technology support, inappropriate pedagogy, and inaccessible course design are obstacles for some online learners.

STUDENT BARRIERS IN DISTANCE EDUCATION

The top four student barriers to online learning reported by Muilenburg and Berge (2005) in descending order of severity are: “(a) social interaction, (b) administrative/instructor issues, (c) learner motivation, and (d) time/support for studies” (p. 38). Other barriers described by Muilenburg and Berge include technical problems, cost and access to the Internet, technical skills, and academic skills. Of note is that five of the barriers described by Muilenburg and Berge are caused or intensified by distance education technologies, including social interaction, administrative/instructor issues, technical problems, cost and access to the Internet, and technical skills. Administrative/instructor barriers include a variety of categories such as support services, pedagogy, and accessible course design. The dispositional barrier of learner motivation is still an issue for distance education students. Barriers related to time and support for studies also continue to be a challenge even though travel time and class time savings are inherent in distance education. The following sections explore social interaction, technology, student support, pedagogy, and accessibility barriers introduced and intensified by distance education.

Social Interaction Barriers

Cho and Berge (2002) indicated that distance learners can feel isolated due to lack of learner interaction and communication. Muilenburg and Berge’s (2005) research found that the most severe barrier reported by online students is a lack of social interaction. Muilenburg and Berge reported that “social interaction is strongly related to online learning enjoyment, effectiveness of learning online, and the likelihood of taking another online class” (p. 45).

Institutional and instructor intervention is needed to build social interaction and community into a course – alleviating the feelings of isolation.

Hricko (2002) suggested that additional support for instructors (such as training and mentors) is needed. Additionally, Hricko advised that instructors “view the course from the student perspective” (p. 8) and plan carefully because “retention is greatly improved when the quality of instruction is planned and student centered” (p. 8). According to Maeroff (2003), utilization of discussion boards, chats, and even friendly e-mails promote interaction, communication, and collaboration – building a sense of community among learners. Tello (2007) concluded that interaction including “factors such as the timeliness of instructor feedback, appropriateness of instructor feedback, and the amount of course-related communications can positively . . . impact student attitudes” (p. 59). Today’s distance education learners must overcome barriers related to social interaction. Institutional policies that provide professional development opportunities for instructors can help them to use pedagogy that removes or minimizes the barrier of lack of social interaction.

Technology Barriers

Kazis et al. (2007) emphasized the opportunities for learning and innovation that the use of technology in distance education provides. However, if a student is uncomfortable using technology, the technology becomes a barrier to them. According to Mungania (2003), technological barriers prevent students from being successful e-learners. Mungania noted that a lack of computer competence and a lack of computer training are predictors of e-learning barriers.

Barriers caused by technology are pervasive in distance education. Three of the barriers described by Muilenburg and Berge (2005) are specifically related to technology: technical problems, cost and access to the Internet, and technical skills. When Miller and Lu (2002) interviewed online faculty about non-traditional student barriers in distance education, eight of the 14 barriers identified were related to technology, including lack of back-

ground with technology, lack of experience with online courses, lack of access to online support, the digital divide, course materials not accessible, expectations of technology use, outdated student home computers, and learners' lack of time to experiment and practice technology. These issues are a combination of situational (not enough money to purchase new computer and/or afford high-speed Internet access – an example of the digital divide), dispositional (lack of background and time and/or inclination to experiment), and institutional (insufficient online support, lack of accessible course materials). These technology-related issues did not exist when Cross (1992) studied adult learners decades ago. Miller and Lu commented that the issues “reflect the non-tangible aspects of supporting a culture of technology” (p. 10).

The next sections explore ways to support the culture of technology with the goal of preventing or reducing technology barriers, such as by providing technical support services, conducting online orientations, and pre-assessing student readiness for online learning.

Provide Technical Support Services. Muilenburg and Berge (2005) found that lack of technical assistance is a barrier to online learners. Hricko (2002) advised institutions to be prepared for technology issues and provide technical support. According to Miller and Lu (2002), when an adult learner runs into a “stumbling block ... [they] ... tend to not have the history, family, or support system necessary to overcome challenges” (p. 10). Institutions should provide support so that the “learner is challenged by the material, not the delivery of the material” (Miller & Lu, p. 10). According to a recent survey of community colleges, 91% of schools responding offer help desk and technical support for distance education students (2007 *Distance Education*, 2008). Technical support that is available 24 hours each day seven days a week will reduce student barriers to online learning.

Provide Online Orientations. Institutions can address some of the technology barriers by imple-

menting orientations to online courses in which students become familiar with the technologies, test their home computers, and become aware of equipment issues before the course begins. Results of a recent survey of community colleges indicated that 75% of schools responding provide online student orientation for distance education students (2007 *Distance Education*, 2008).

Pre-assess Student Readiness. Another approach is to proactively address student readiness and technical competence. Web-based tools such as the Readiness for Education At a Distance Indicator (READI) assess a student's readiness for online learning by measuring a variety of characteristics including self-motivation, time-management, typing speed, reading comprehension, time availability, and computer skills (Decade Consulting, 2008). These categories address both situational and dispositional barriers. Institutions could use an assessment of this type to identify students who might need remediation before beginning a distance learning program. In this case the technology itself is used to identify and warn about potential barriers to successful online course completion.

Student Support Barriers

Miller and Lu (2002) reported additional barriers to online learning related to student support issues, including insufficient student support, a lack of social systems, inadequate time, and a lack of academic experience. Kazis et al. (2007) stated that adult learners need a wide range of online support services, including “tutoring, financial aid advising, and personal counseling” (p. 17) as well as career counseling. Cho and Berge (2002) suggested that student “advisement, library services, admissions, and financial aid” (Student Support Services section) be available online. According to Rinear (2003), McCracken stated that “traditional institutions tend to treat distance learners as exceptions” (p. 4) and that “institutions ... originally developed for distance

education, have more complete infrastructures for distance learners” (p. 3). Rinear (2003) reported that services provided to distance education students should minimally consist of a “technical support system, on-line library services, on-line administrative support (such as registration and financial aid), and instructional support (such as on-line tutoring)” (p. 5).

According to a recent survey of community colleges, 96% of schools responding offer online library services, 89% offer online course registration, 86% offer online financial aid information/application, 86% offer online payment of tuition, 84% offer online admission, 75% offer online textbook sales, and 51% offer online counseling and advising (2007 *Distance Education*, 2008). Zirkle (2004) suggested that institutions continually evaluate their support services. By providing increased student support services and counseling, institutions can prevent barriers such as lack of student support and academic unpreparedness.

Pedagogy Barriers

Farnsworth and Bevis (2006) warned that not every classroom instructor will become an effective online facilitator; teaching online is different from teaching in a classroom. Zirkle (2004) stated that the teaching experience of many instructors is presentation-centric – a method not appropriate for an online course. According to Levine and Sun (2002), the interactive and individualized medium of online courses is not familiar to older faculty members and more professional development is needed.

Adult learners enjoy having discussions and relating course material to their lives (Addressing the Needs, 2006). Malcolm Knowles (as cited in Cross, 1992) defined andragogy as “the art and science of helping adults learn” (p. 222). Cross described the characteristics of adult learners according to the theory of andragogy: adult learners are self-directed, use their experience as a learning resource, are problem-centered, and prefer

“immediacy of application” (p. 223). Kazis et al. (2007) indicated that it is essential for instructors to “acknowledge the real-life experiences and knowledge that the students bring to class” (p. 17). Hricko (2002) cited epistemological challenges that prevent student success and emphasized that developing courses for distance delivery “is *not* the same as developing material for courses in a traditional classroom setting” (p. 8).

Institutions can address these pedagogical issues by providing professional development opportunities to faculty. Results from a recent survey of community colleges demonstrated that 96% of schools responding offer distance education training for faculty and 71% require faculty to participate in training in order to teach online (2007 *Distance Education*, 2008). Chao, Saj, and Tessier (2006) emphasized the importance of online course quality reviews. Zirkle (2004) stated that “coursework must be continually assessed and revised to meet the needs of diverse adult learners at a distance” (para. 9). The Illinois Online Network’s Quality Online Course Initiative (QOCI) provides a rubric at <http://www.ion.illinois.edu/initiatives/qoci/docs/QOCIRubric.rtf> to assist in the evaluation of online courses. The rubric lists categories such as instructional design, communication, interaction, collaboration, student assessment, learner support, and web design (*Quality Online Course*, 2006).

Accessibility Barriers

In a student-centered course, the material is not only relevant to learners, it is also readily accessed by learners. Horrigan (2007) stated in a PEW Internet & American Life Project report that “47% of American adults have broadband at home” (para. 3), 15% have dial-up access, and 29% do not use the Internet. Although the digital divide is shrinking, it still exists. Multimedia can be utilized to create content that accommodates varied learning style preferences. However, multimedia content that is appropriate for a broadband con-

nection is painfully slow over a dial-up line. In the excitement of the emerging trends of podcasting and vodcasting, it is important to remember to provide accessible versions of the material. Alternate formats of multimedia materials, such as text documents or accessible web pages are useful not only to provide for accessibility, but to provide an alternate option for individuals who may be using a dial-up connection or an outdated computer (Henry, 2006).

Hricko (2002) cautioned institutions to “recognize the importance of developing courses that do not create additional barriers for students with special needs” (p. 7). Physically disabled students may also experience barriers to distance education if accommodations, support services, and/or assistive technology are not available (Moisey, 2004). When an institution offers courses with material that is not accessible to all individuals, the institution has created a barrier for some students. Edmonds (2004) advised that institutions comply with federal and state laws which require accessible materials, including the Americans with Disabilities Act and Section 508 of the Rehabilitation Act.

FUTURE TRENDS

While some barriers, such as those related to situational time and location, have been reduced – the format and structure of distance education has added new social interaction barriers for students. Distance education instructors and course designers must work to use appropriate distance education pedagogy and course design techniques which are intended to foster student communication and collaboration – thereby reducing social interaction barriers and feelings of student isolation. Garrison and Anderson (2003) presented a Community of Inquiry framework which categorizes the educational experience into three types of presence: social presence, teaching presence, and cognitive presence. Garrison,

Anderson, and Archer (as cited in Garrison & Anderson), explained that social presence is the “ability of participants in a community of inquiry to project themselves socially and emotionally, as ‘real’ people (i.e. their full personality), through the medium of communication being used” (pp. 28-29). More research is needed to explore how the Community of Inquiry can enhance the experience of the adult learner in distance education.

As previously indicated, technology itself can act as a barrier to the initial enrollment and retention of adult learners in distance education. However, when used effectively and supported by carefully crafted institutional policies, technology could reduce barriers to distance education students. Institutional policies may help to alleviate some of the technology barriers by providing online technical support, online student support services, online orientations and pre-assessment of distance learners, professional development in distance learning pedagogy for online instructors, and accommodations for learners with disabilities. Best practices in online student support and online instructor preparation need to be further researched, documented, and shared between institutions of higher education. Institutions of higher education must make every effort to reduce barriers and support their distance education students and faculty members in order to help them take full advantage of the opportunities available to them.

CONCLUSION

Distance education has had a profound impact on adult education in higher education. Even though the 24x7 access has virtually eliminated most situational time and location barriers, today’s adult learners are still facing a new frontier – they must adjust and adapt to overcome the barriers to higher education introduced by distance education and technology.

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Chapter 10

The Evolution and Influence of Social Presence Theory on Online Learning

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ABSTRACT

The theory of social presence is perhaps the most popular construct used to describe and understand how people socially interact in online learning environments. However, despite its intuitive appeal, researchers and practitioners alike often define and conceptualize this popular construct differently. In fact, it is often hard to distinguish between whether someone is talking about social interaction, immediacy, intimacy, emotion, and/or connectedness when they talk about social presence. Therefore, this chapter outlines the evolution of the construct of social presence in an effort to understand better its relationship to online learning.

INTRODUCTION

People are social creatures (Brown & Duguid, 2002; Read & Miller, 1995). They learn and work in groups (Read & Miller, 1995). The Internet evolved out of an effort to connect computers and information and therefore people. Since its early days, the Internet has grown exponentially (Madden, 2006). However, unlike the early days when only scientists used it, people use the Internet today in a variety of different ways, including communicating with friends, family, and co-workers. In addition to connecting

with current friends and family, people also use the Internet to form new relationships (Madden & Lenhart, 2006). As a result, some researchers have begun to describe the Internet as a social medium (Baym, Zhang, & Lin, 2004; Walther & Parks, 2002).

However, just as the Internet can bring people together and be described as “social,” it can separate people and be described as isolating and impersonal (Kraut, et al., 1998; Morahan-Martin & Schumacher, 2003; Nie, 2001). Some researchers have reported cases of Internet addiction and dependence (Hiltz & Turoff, 1993), and others (Nie & Erbring, 2002) have found that the more time that people spend on

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the Internet, the less time they spend with people in face-to-face social situations. Further, van Dijk (2006) determined that the Internet invites certain types of people to withdraw into the computer. Whether the Internet is a social medium, therefore, remains a heated debate in many ways (Kraut et al., 1998; Nie, Hillygus, & Erbring, 2002). As states like Michigan begin to require high school students to take online courses to graduate (Watson, 2006), and online enrollments at the college level continue to grow (Allen & Seaman, 2006), the sociability—or isolation—of the Internet remains a nationwide concern.

The theory of social presence is perhaps the most popular construct used to describe and understand how people socially interact in online learning environments. However, despite its intuitive appeal, researchers and practitioners alike often define and conceptualize this popular construct differently. In fact, it is often hard to distinguish between whether someone is talking about social interaction, immediacy, intimacy, emotion, and/or connectedness when they talk about social presence. Therefore, the focus of this chapter is on outlining the evolution of the construct of social presence in an effort to understand better its relationship to online learning.

BACKGROUND

In the late 1980s and early 1990s, researchers began to study the effects of computer-mediated communication (CMC). Some concluded that CMC was inherently antisocial and impersonal (Walther, 1996; Walther, Anderson, & Park, 1994). While Hiltz & Turoff (1993) acknowledged that interpersonal relationships might be fostered through CMC, early research suggested—and convinced others—that CMC was better at task-oriented communication (Walther & Parks, 2002). These early CMC researchers turned to social presence theory to make sense of their findings.

Social Presence Theory

Short, Williams, and Christie (1976) originally developed the theory of social presence to explain the effect telecommunications media can have on communication. They defined social presence as the degree of salience (i.e., quality or state of being there) between two communicators using a communication medium. They posited that communication media differ in their degree of social presence and that these differences play an important role in how people interact (p. 65). They conceptualized social presence primarily as a quality of a communication medium that can determine the way people interact and communicate. From their perspective, people perceive some media as having a higher degree of social presence (e.g., video) and other media as having a lower degree of social presence (e.g., audio). More importantly, they believed that a medium with a high degree of social presence is seen as being sociable, warm, and personal, whereas a medium with a low degree of social presence is seen as less personal. CMC researchers later used this theory to explain that CMC was inherently impersonal because nonverbal and relational cues—common in face-to-face communication—are filtered out of CMC (Walther & Parks, 2002).

The Role of Context and Setting

Early researchers, though, studied CMC primarily in organizational or business settings; that is, early on, they conducted very little research on CMC in educational settings. Educational settings—specifically classroom settings—have different dynamics that researchers consider when studying CMC because no such thing as a typical CMC message exists (Herring, 2007). Much of the meaning and significance of CMC depends on its surrounding discourse (Herring, 2007), and the surrounding discourse in educational settings—specifically online educational

settings—is very different from that in business settings (Gee, 2007).

Education is a social practice (Lafey, Lin, & Lin, 2006; Shea, Frederickson, Pickett, & Swan, 2001); consequently, any formal learning environment must be able to support the social practice and process of learning (Shea et al., 2001). Earlier on though, people criticized online education because they believed that the absence of social cues would interfere with teaching and learning (Berge & Collins, 1995). Despite this criticism, online education continues to grow as access to the Internet increases; in fact, enrollments in online education continue to grow each year (Allen & Seaman, 2006; Tallent-Runnels et al., 2006).

However, despite occasional reports of loneliness and isolation (Grubb & Hines, 2000; Robinson, 2000), proponents and practitioners of online education argue that online education and CMC can support the social practice of learning. Even though nonverbal and relational cues are filtered out, these researchers have argued that CMC can still be very social and interpersonal (Gunawardena, 1995; Gunawardena & Zittle, 1997) and at times even hyperpersonal (Walther, 1996). Further, as researchers (Gunawardena, 1995; Tu, 2000) began examining the sociability of online education, these new researchers began to question the degree to which the attributes of a communication medium—in this case the cues filtered out of CMC systems—determine how people socially interact and are perceived as “being there” when communicating online (Danchak, Walther, & Swan, 2001; Gunawardena, 1995; Gunawardena & Zittle, 1997; Richardson & Swan, 2003; Tu, 2000).

The Evolution of Social Presence Theory

As a result, these researchers began questioning and further developing the theory of social presence developed by Short et al. (1976). They

argued, based on their experience and research, that participants in online discussions, using text alone, are able to project their personalities into online discussions and create social presence (Swan, 2003; Swan & Shih, 2005). They found that online learners are able to present themselves as being “real” as well as “connect” with others when communicating in online learning environments by doing such things as using emoticons, telling stories, and even using humor (Rourke et al., 2001; Swan, 2003). Thus, a user’s personal perceptions of social presence and the behaviors used to make up for the cues that are filtered out matter just as much, if not more, than a medium’s supposed capabilities. This new line of research sparked a renewed interest in the sociability of online learning, social presence, and CMC as evidenced in the increased amount of literature focused on social presence.

Social presence is now a central concept in online learning. For instance, social presence has been listed as a key component in theoretical frameworks for learning networks (Benbunan-Fich, Hiltz, & Harasim, 2005) and distance education (Vrasidas & Glass, 2002). Researchers have shown—in varying degrees—a relationship between social presence and student satisfaction (Gunawardena, 1995; Gunawardena & Zittle, 1997; Richardson & Swan, 2003), social presence and the development of a community of learners (Rourke, Anderson, Garrison, & Archer, 2001; Rovai, 2002), and social presence and perceived learning (Richardson & Swan, 2003). Just as earlier researchers of CMC (Kiesler, 1986; Kiesler, Siegel, McGuire, 1984) used social presence theory to explain why CMC was inherently impersonal, later researchers (Gunawardena, 1995; Tu, 2000) reconceptualized social presence theory—focusing less on the medium and more on people—to explain how CMC in online learning environments can be very personal and social.

SOCIAL PRESENCE AND ONLINE LEARNING

Social presence theory has a complex history. To understand better how this complex history has evolved over the years, it is important to look at influential and related research on social presence, competing theories of social presence, and finally some ways that contemporary researchers define, operationalize, and study social presence.

Influential and Related Research on Social Presence

Short et al. were members of the Communications Studies Group (CSG) at the University College in London. The CSG consisted of roughly 30 researchers conducting experiments in the 1970s on communication media (Pye & Williams, 1977). Interestingly, *The Social Psychology of Telecommunications* appears to be the only joint publication of Short et al. Despite this, each of them conducted a number of studies on the effects of communication media during the 1970s (e.g., Short, 1974; Christie & Holloway, 1975; Christie & Kingan, 1977; Williams, 1975; Williams, 1977; Wilson & Williams, 1977).¹ Their research focused on comparing people's attitudes toward different communication media (e.g., face-to-face, audio, video). The following paragraphs will briefly summarize a few key findings from this early research that later influenced the development of and people's understandings of social presence theory.

The majority of their early research focused on the assumed importance of the visual channel of communication. Short (1974), Christie (1974), and Williams (1975) initially found that communication media were strengthened by the addition of a visual channel. Christie (1974) reported from one study that,

visual media were ... more useful for complex group discussions, private conversations and

non-private dyadic conversations. Thus, the presence of visual channel appears to be perceived as an important advantage of a communications medium. (p. 367)

However, as more research was conducted (e.g., Christie & Kingan, 1977; Williams, 1975), it became apparent that the value of a visual channel was more situational than originally thought. For instance, research began to show that the importance of a communication medium depended largely on the task at hand. In fact, according to Christie (1974), "it is clearly misleading to conceptualize different media as lying along a single dimension of acceptability or usefulness. Their perceived usefulness varies according to the application considered" (p. 368). People might want a less intimate or immediate communication medium for certain tasks (Williams, 1975). For instance, Williams (1975) suggested "that with tasks of very high intimacy—perhaps very embarrassing, personal or conflictual ones—the least immediate medium, the telephone, would lead to more favorable evaluations than either or the more immediate media" (p. 128). Further, Williams (1978a) showed that tasks that are low on interpersonal involvement and cooperative in nature can easily be accomplished by audio or video conferencing; however, tasks that are higher on interpersonal involvement "are sensitive to the substitution of telecommunications for face-to-face interaction" (p. 127).

For the most part, these early communication researchers were not concerned with the role the visual channel of communication had on educational or instructional tasks. Williams (1978a) though argued that "tele-education seems especially promising since educational activities are primarily for cooperative problem-solving and the transmission of information—activities which have been shown to be almost unaffected by the medium of communication used" (p. 129). Williams (1978a) intelligently pointed out though in the very same article that our knowledge about

the role of mediated communication is far from complete—as was our understanding of how people learned in the late 1970s.

Their later research, among other things, showed that while visual cues are helpful, they are not necessary for people to communicate effectively (Christie & Kingan, 1977, p. 272). Also, contrary to previous theories, Williams (1978b) found that physical presence may be even more important for people communicating than visual communication (p. 101). Results like these began to call for a more complex explanation for the role of visual cues in the communication process, which Williams (1978b) thought might be found in social presence theory.

Competing Theories of Social Presence

The theory of social presence developed by Short et al. (1976) was only one of a number of theories used to explain the influence communication media have on communication. Three popular competing theories of social presence—especially during the 1980s—were *Cuelessness Theory* developed by Rutter (1984, 1987), *Media Richness Theory* developed by Daft & Lengel (1984, 1986; Daft, Lengel, & Trevino, 1987), and *Social Information Processing Theory* developed by Walther (1996; Walther & Parks, 2002). The first two theories (like Social Present theory) have been described as deficit models because they focus on the cues that are filtered out while idealizing face-to-face communication as the gold standard of communication (Thurlow, Lengel, & Tomic, 2004). Each of these competing theories will be addressed briefly in the following sections in an effort to illustrate the zeitgeist of the 1980s and early 1990s—a time that led to the reconceptualization of Short et al.'s theory of social presence.

Cuelessness. Working from a similar theoretical framework as Short et al. (1976), Rutter (1984, 1987; Rutter, Pennington, Dewey, & Swain, 1984; Kemp & Rutter, 1986) developed

the cuelessness model. Rutter was concerned with the over-emphasis placed on the importance of eye-contact when two people communicate. As a result, he and his colleagues (1984) set forth to challenge the intimacy model developed by Argyle and Dean (1965) and later Argyle and Cook (1976). They argued that previous research had focused too much on looking and eye-gaze and not enough on the mutual gazing back and forth. Like Williams before, Rutter et al. (1986) found that what matters when communicating is visual access to the entire person rather than simply access to another's eyes. Rutter et al. argued that it was the combined social cues—from vision and other senses—that mattered more than simply eye-contact.

The cuelessness model essentially claims that the fewer the number of social cues, the greater the psychological distance between two communicators (Rutter et al., 1984). Further, Rutter and his colleagues argued that the greater the psychological distance between two people the more likely communication will be task oriented and depersonalized (Kemp & Rutter, 1986; Rutter, 1984; Rutter et al., 1986). In fact, Rutter (1989) and colleagues found that the number of social cues—that is, both visual and physical presence cues—decreased when people used a closed-circuit television (i.e., visual cues), versus a curtain and wooden screen (i.e., no visual cues), versus audio (i.e., neither visual or physical cues) to communicate with each other.

Media Richness. Another competing theory that emerged during the 1980s is the theory of media richness. Daft and Lengel (1984, 1986) developed the theory of media richness. Whereas Rutter and colleagues were aware of the work of Short et al., Daft and Lengel never explicitly acknowledge the work of Short et al. (1976). Daft and Lengel (1984) were focused primarily on information processing behaviors in organizations. More specifically, they were interested in a concept they called information richness

Richness is defined as the potential information-carrying capacity of data. If the communication of an item of data, such as a wink, provides substantial new understanding, it would be considered rich. If the datum provides little understanding, it would be low in richness. (p. 196)

They posited that communication media can determine the richness of information (Daft & Lengel, 1986). They argued that face-to-face communication has the highest richness whereas numeric communication (e.g., spread sheet with numbers) has the lowest. According to Daft and Lengel (1986), a “medium’s capacity for immediate feedback, the number of cues and channels utilized, personalization, and language variety” (p. 560) all influence its degree of information richness.

Social Information Processing. The last of the three competing models is the social information processing model developed by Walther (1992, 1994, 1996). Walther developed his model in response to the previous “deficit” theories. Whereas previous researchers were interested in media effects across various communication media, Walther focused primarily on CMC. He criticized previous research, like that addressed earlier in this chapter, for a number of reasons. First, the majority of the early research was conducted in experimental settings that failed to mirror how people communicate with different media in the real world (1992). Second, these early studies and researchers assumed that the absence of visual cues led to an absence of sociability. Third, they assumed that task-oriented communication lacked relational and social communication. And fourth, they failed to acknowledge that just as cues are filtered out, other cues are filtered into CMC and therefore CMC has some affordances that face-to-face communication does not (Walther, 1996; Walther & Parks, 2002).

Walther (1992) argued that human’s social nature is the same in CMC and face-to-face environments. Given enough time, he believed

that people will find ways to compensate for any cues that are filtered out in CMC. The social information processing model essentially posits that given enough time, CMC can be very personal and even hyperpersonal (Walther, 1992, 1996). Previous research tended to put time restrictions that Walther believes diminished the possibility of interpersonal and relational communication. Walther also found that previous interaction between communicators influenced how people communicated online. Further, Walther (1994) found that the possibility of future interaction influenced the degree to which people socially interacted online. Finally, he found that the way users used emoticons also influenced interpersonal communication online. In summation, Walther’s social information processing model argued that “given the same investment of time and commitment, relational quality in CMC will be the same as face-to-face communication” (Thurlow, Lengel, & Tomic, 2004, p. 249)

These competing theories, as illustrated in Figure 1, help illustrate the way that thinking about a medium’s effect on communication—especially interpersonal and social communication—changed over time. Research on social presence and online learning, that began with the work of Gunawardena (1995; Gunawardena & Zittle, 1997)—which I consider the third phase of social presence research (see Table 1)—was influenced by this previous research and theories, especially that of Walther. Rather than conceptualizing social presence as Short et al. (1976) did, Gunawardena and those that followed her (most notably is Garrison, Anderson, and Archer, 1999) began reconceptualizing social presence theory—moving away from a technological deterministic conceptualization of mediated communication.

Defining Social Presence

Given the evolution of social presence theory, it is probably not surprising that there is not a clear, agreed upon, definition of social presence (Rettie,

Figure 1. Timeline of competing theories of social presence



2003; Tu, 2002b). In fact, nearly everyone who writes about social presence seems to define it just a little differently. To complicate matters, related terms such as presence, copresence, and telepresence are used to describe similar things (and sometimes even the same thing) as social presence.

Presence is a key theoretical construct used in a variety of disciplines besides communication and online learning—most notably virtual reality (see Biocca, 1997). In fact, Lombard and Ditton (1997) identified six interrelated (and cross-disciplinary) but distinct ways people understand “presence”: (a) presence as social richness, (b) presence as realism, (c) presence as transportation, (d) presence as immersion, (e) presence as social actor within medium, and (f) presence as medium as

social actor. They even attempted to create one *all* encompassing definition of presence. According to Lombard and Ditton, the following definition takes into consideration all six ways presence is understood; presence is “the perceptual illusion of nonmediation” (presence explicated section). To date, though, Lombard and Ditton’s all encompassing definition has not received wide spread adoption—especially by researchers of online learning. Lombard and Ditton, though, were not alone; Biocca, Harms, and Burgoon (2003) also recognized the different ways researchers across different fields defined presence. They also created an all-encompassing definition of social presence; they defined social presence as simply the “sense of being with another” (p. 456) whether that other is human or artificial.

Table 1. Phases of social presence research

Phase	Period	Key Figures	Focus of Research
Phase 1	1970s	Short et al.	Focused on Telecommunications
Phase 2	1980s-early1990s	Rutter Daft & Lengel Kiesler Walther	Focused on CMC
Phase 3	Early/mid 1990s-Present	Gunawardena Rourke et al. Tu Swan	Focused on Online Learning

Despite attempts by Lombard and Ditto (1997) and Biocca et al. (2003) to develop some conceptual clarity about presence in general or social presence in particular, researchers of social presence and CMC in educational environments continue to redefine and categorize social presence (Picciano, 2002). For Gunawardena (1995), social presence was “the degree to which a person is perceived as a ‘real person’ in mediated communication” (p. 151). Garrison et al. (2000), on the other hand, defined social presence “as the ability of participants in a community of inquiry to project themselves socially and emotionally, as ‘real’ people (i.e., their full personality), through the medium of communication being used” (p. 94). Tu and McIsaac (2002) defined social presence as “the degree of feeling, perception, and reaction of being connected by CMC to another intellectual entity through a text-based encounter” (p. 140). Finally, for Picciano (2002), social presence in an online course “refers to a student’s sense of being in and belonging in a course and the ability to interact with other students and an instructor” (p. 22).

Definitions of social presence, at least for researchers of social presence and online learning, tend to fall on a continuum. At one end of the continuum, researchers tend to conceptualize social presence as the degree to which a person is perceived as being “real” and being “there.” These definitions tend to focus on whether someone is able to project him or herself as being “real” in an online environment and whether others perceived this person as being there and being real. In fact, Williams (1978a) defined social presence in this way when he defined social presence as “the feeling of contact obtained...” across various communication media (p. 127). At the other end of the continuum, researchers tend to go beyond whether someone is perceived as being “present”—that is, simply “there” or “real”—but focus on whether there is an interpersonal emotional connection between communicators. It is important to note, though, that on this end of the continuum, there

tends to be an assumption that the interpersonal and emotional connection that communicators establish when there is social presence is a positive connection (Wise, Chang, Duffy, & Del Valle, 2004). Finally, like most continuums, the majority of researchers find themselves somewhere in the middle—placing a little bit of emphasis on an emotional connection—rather than on the ends of the continuums.

Operationalizing and Measuring Social Presence

The differences in how researchers define social presence might seem minor but they end up having significant consequences on how people conceptualize social presence. For instance, Garrison et al. focused on students (or instructors) ability to project themselves as “real” whereas Picciano focused more on student’s sense of belonging to a community. Issues of definition are important because the way researchers define social presence influences how they measure social presence and the conclusions they draw.

After all the theorizing, researchers need to be able to identify, measure, and test their theories about social presence. As researchers of CMC and online learning began to reconceptualize social presence, rather than use the techniques developed and utilized by past researchers—perhaps in part because of Walther’s critique of these techniques—they began to look for new ways to study social presence. Gunawardena and Zittle (1997), Rourke et al. (2001), and Tu (2002b) have each been very influential in developing ways to study social presence. But just like in the mid-1970s—when researchers either studied social presence by observing user behavior or examining users attitudes (Christie, 1974)—researchers in this third wave of social presence research have tended to either focus on user’s attitudes or behaviors online. For instance, Gunawardena and Zittle as well as Tu focused primarily on studying user’s attitudes whereas Rourke et al. focused on

studying user's behaviors. Regardless of their focus, these researchers have heavily influenced most of the studies on social presence and CMC. Therefore, in the following paragraphs, I briefly summarize how each of these researchers studied social presence.

Social Presence Scale. Gunawardena (1995; Gunawardena & Zittle, 1997) conducted some of the earliest studies on social presence and CMC in an education setting. In her first article, Gunawardena (1995) had student's rank 17 bi-polar scales on a 5-point likert-type scale (from negative to positive). For instance, she asked students whether CMC was more socialable or unsocialable or more warm or cold. The bi-polar scales she used appear to focus on user's perceptions of the medium more than the degree to which others are perceived as "real" or "there." In a later more influential article, Gunawardena and Zittle (1997) reported on additional data collected with an instrument called the Social Presence Scale. The Social Presence Scale was similar to the previous scale used by Gunawardena, but instead of responding to bi-polar scales (which were similar to the semantic differential technique used by Short et al.), students were asked to rank 14 questions on a scale of 1 to 5. For instance, one question asked students to rank, on a scale of 1 to 5, to what degree they agree or disagree that, CMC is an excellent medium for social interaction. The Social Presence Scale was tested for internal consistency ($\text{Alpha} = .88$); Gunawardena and Zittle concluded that it investigated the construct of social presence more directly than the previous scale.

Social Presence Indicators. Unlike Gunawardena and Zittle who measured social presence through a self-report questionnaire, Rourke et al. (2001) sought to measure social presence through analyzing online discussions. Rourke et al. identified three different categories of social presence: affective responses, interactive responses, and cohesive responses. They then developed twelve indicators that researchers could use to analyze transcripts of CMC (primarily through content

analysis). For instance, the indicators of affective responses are the expression of emotions, use of humor, and self-disclosure. Rourke et al. developed these categories and indicators based on their previous work (Garrison, Anderson, & Archer, 1999; Rourke, Anderson, Garrison, & Archer, 2001), other literature in the field, and finally their experience reading online transcripts.

Rourke et al. tested and measured the "efficacy and reliability" of their categories and indicators by using them with participants in two graduate education online courses. Other than latent variables (e.g., expression of emotion and use of humor), they had high interrater reliability. However, Rourke et al. cautioned readers about generalizing their results because their main purpose was to "develop and test the efficacy of a tool for analyzing the social presence component of educational computer conferences" (Discussion section) rather than to draw conclusions specifically about the samples in question. They also acknowledged that they were still unclear whether all 12 indicators should be weighted equally—which later researchers have questioned (Hughes, Ventura, and Dando (2007)—as well as whether or not there is an optimal level of social presence. In fact, Garrison mentioned in a round table presentation at the 2008 annual meeting of the American Educational Research Association (AERA) that these indicators might need to be revisited to ensure that they do not need to be revised (Arbaugh, et al., 2008).

Social Presence and Privacy Questionnaire. Tu (2002b) criticized early research on social presence that used the same semantic differential technique as Short et al. (1976) (e.g., Gunawardena, 1995). Tu argued that this technique is not an adequate measure one's perception of social presence when it comes to CMC. He also argued that the Social Presence Scale developed by Gunawardena and Zittle (1997) failed to take into consideration different variables cited in the research (e.g., recipients, topics, privacy, task, social relationships, communication styles). As a

result, Tu (2002b) developed The Social Presence and Privacy Questionnaire (SPPQ).² Tu developed the SPQQ by using parts of Steinfield's (1986, as cited in Tu, 2002b) CMC attitude instrument and Witmer's (1997, as cited in Tu, 2002b) perceived privacy instrument.

Tu tested the content validity and the construct validity of his instrument. Five factors emerged from the factor analysis: social context, online communication, interactivity, system privacy, and feelings of privacy; these five factors accounted for 82.33% of the variance with Cronbach's alpha values ranging from .74 to .85. While Tu acknowledged that online privacy had a weak correlation and therefore might need to be removed as a dimension of social presence, he continued to use online privacy as a dimension of social presence in later studies (Tu & Corry, 2004; Tu & McIsaac, 2002). Despite the strengths of his survey, Tu and McIsaac (2002) later determined as the result of a mixed method study, using the SPPQ and a dramaturgy participant observation qualitative approach, that there are "more variables that contribute to social presence" than previously thought. Therefore, Tu and McIsaac concluded that social presence was more complicated than past research suggested. Specifically, they found that the social context played a larger role than previously thought.

These three examples are evidence that there is still little agreement on how to measure social presence (Lin, 2004; Stein & Wanstreet, 2003). Just as Tu criticizes how Gunawardena measured social presence, others have criticized and modified Tu's work (Henninger & Viswanathan, 2004). Also, while social presence has been presented as a perceptual construct, Hostetter and Busch (2006) point out that relying solely on questionnaires (i.e., self-report data) can cause problems because "respondents may be providing socially desirable answers" (p. 9). Further, Kramer, Oh, and Fussell (2006) point out that self-report data "are retroactive and insensitive to changes in presence over the course of an interaction [or

semester]" (p. 1). But at the same time, even the scale created by Rourke et al. (2001a) has been modified by Swan (2003) and later by Hughes, Ventura, and Dando (2007); moreover, Hughes et al. also questioned the usefulness of "reducing social presence to an overall number" (p. 27) as Rourke et al. did.

Researchers need "a multifaceted presence instrument, one that examines presence more than single items and addresses the construct more by evaluating specific behaviors rather than a global effect" (Russo & Benson, 2005, p. 60). However, it is likely that any multifaceted instrument would be influenced by the work of Gunawardena and Zittle (1997), Rouret et al. (2001), and/or Tu (2002b) because most researchers continue to use (or adapt) the instruments created by these researchers. Therefore, any study of social presence should at least acknowledge how its methodology has been influenced by these early pioneers.

FUTURE TRENDS

Despite failing to meet initial estimates of growth (Shank & Sitze, 2004), enrollments in online courses and programs continue to grow dramatically each year (Allen & Seaman, 2006; Tallent-Runnels et al., 2006). This growth, coupled with the people's concerns with the Internet, will nearly ensure that researchers, policy makers, and practitioners will continue to debate the sociability of the Internet and the role that online learning should play in our future (Wray, Lowenthal, Bates, & Stevens, 2008). The third wave of research on social presence will likely give birth to a fourth wave of research on social presence. During the fourth wave, it is likely that researchers will begin to employ multiple and mixed method approaches (e.g., like the work of Swan and Shih, 2005) of studying social presence that focus on, among other things, the socially situated and contextual nature of social presence. Further, researchers and practitioners alike will have to consider a

new host of things related to social presence with the continued blurring of boundaries between classroom and fully online courses as well as between course bound communication tools (e.g., discussion forums) and non-course bound tools (e.g., Facebook and Twitter) (Dunlap & Lowenthal, 2009; Lowenthal, 2009a; Lowenthal & Dunlap, 2007;).

CONCLUSION

Despite initial concerns about the sociability of the Internet, researchers of social presence and CMC have demonstrated that indeed online learners can project themselves online and be perceived as being there and being real (Lowenthal, 2009b). However, given the history and evolution of social presence theory, coupled with the multitude of ways that researchers define and operationalize social presence, researchers as well as practitioners must begin to question what we know and do not know about social presence. Regardless of one's perspective, one thing is clear, researchers need to continue to study social presence using multiple and mixed methods as well as how it manifests and changes in different contexts.

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ENDNOTES

- ¹ They each appeared to have taken part in and written a number of studies with the Communication Studies Group. See Williams (1977), Pye & Williams (1977), and Johansen (1977) for a summary of the results of some of the unpublished research conducted by Short et al.
- ² In a different article, Tu (2002a) refers to the SPPQ as the CMC Questionnaire; however, he tends to refer to it more often as the SPPQ and therefore SPPQ will be used to refer to this instrument.

Chapter 11

Pedagogical Mediator as the Strategic Competence at University Professors Building in Constructionist Online Environment

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ABSTRACT

The rapid dissemination and integration of the World Wide Web (also known as Internet), and its related technologies, has resulted in major growth of the educational field through the Internet in such areas as e-learning and e-training. In August 2002, the Ministry of Education established the rules for distance education courses at the university level (Portaria n° 2.253) allowing up 20% of the total course hours to be administered through distance education. At the same time, the Comitê de Educação a Distância from the Distance Education Secretary – SEED/MEC published the Distance Education Quality Indicators, which presents pedagogical guidelines that are clearly constructionist, consistent with those adopted by the Brazilian informatics in education program developed during the 1980's and 90's. However an important question remains: how to prepare university professors to be able to function in highly interactive constructionist learning environments? How to develop competencies as planning, designing and implementing such constructionist courses? This research has simultaneously investigated two aspects: developing, implementing and evaluating the characteristics of a constructionist environment and, at the same time, the use of this environment as part of an introductory on-line course to prepare a group of professors from Universidade Cidade de São Paulo (Brazil) to be able to function as mediators in the constructionist online learning environment. The findings indicate that it is possible to create a constructionist learning environment and to prepare university professors through online courses based upon Inverted Symmetry concepts and upon the in-service course based on the estar-junto-virtual (“virtual being together”) approach, to build what we called IN-VISIBLE REFLECTIVE NETWORK, thus allowing the professors to assume new roles not only in the online environment but in the face-to-face education situation as well. This course is the first step for continuous long life learning to be a “ciber teacher”.

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1. INTRODUCTION

In Brazil, since the 1980s, the use of technology in the education has been based on a more pedagogical approach rather than a technological or a technical one. Chiefly since the settlement of the Programa de Informática na Educação (*ProInfo* - IT Program in Education) in 1997 up to the present moment, the groups of researchers from private and public universities have been guiding their projects from social–interactive learning / teaching assumptions: the development of educational software or educational actions with the use of technology. The results of this research continue to be the basis of the main policies articulated by the Ministry of Education and Culture (MEC), the institution in charge of the follow-up, feasibility, and the implementation of the decisions nationwide.

In the Brazilian program, the role of the computer is to provoke deep pedagogical changes instead of the making the learning process unconscious or preparing the student to work with Educational Technology (Valente, 1999). The challenge of the past, today a more disseminated practice, was to develop a pedagogical approach that could motivate ICT use in an encouraging environment. In this environment, the student could develop meaningful activities mediated by the computers and with the help of teachers, so that it could reflect her/his understanding on what she/he would be doing, and the student would also be conscient of her/his constructive process that being the only way through which students could learn to learn.

With the increase of internet connection rates, an approach called “*virtual-being-together*” (Valente, 2001) was developed which favors high interaction among students and students and facilitator, producing a stimulating, challenging and highly reflective environment that can allow increased learner awareness in relation to his/her learning process.

To adapt such environments in accordance to the “*virtual-being-together*” approach, com-

petences and knowledge are required from the teacher and/or from the team involved in its accomplishment that are not rapidly developed in order to create a *mediator-designer*. The *mediator-designer* will be the responsible for the shape of the environment from its pedagogical purpose with clear learning goals, based on social-interactive theories and on the students’ own needs and their context of origin. These dimensions result in a **guiding-concept** that leads the invisible reflective network (Rezende, 2004) which ensures the raise of consciousness by the student of his/her meaning-making process.

Modifying teaching practice (from knowledge transmission by the teacher to the construction of the knowledge by the student) has required, and still does, that the teachers transform their ways with “teaching” whether they work with children or adults in universities. In order to do so, they should learn how to use the technology to enhance their pedagogical action and the process of meaning production of their students.

Since 2004, the *Universidade Cidade de São Paulo* (located in eastern São Paulo) has been preparing the faculty to work within the distance education paradigm through the *virtual-being-together* approach. This preparation process has caused an impact in the bricks-and-mortar classroom translated into different uses of the ICTs and increased meaningfulness in the learning/teaching processes.

It is possible to say, from these experiences and other, that the transformation towards an active and reflective education that develops autonomy and contribution among students and teachers is possible and feasible as long as the instructional environments, both the one where teachers are trained and the ones resulting from their practice, is coherent with the *virtual-being-together* approach and with its methodological principles oriented towards the construction of an *invisible reflective network*.

2. PEDAGOGICAL MEDIATION

The introduction of computers in the education generated big changes in the classroom but there are still a lot of misunderstandings, misconceptions and a lack of pedagogical knowledge among the teachers as to how to apply the technological resources into formal education, mainly in the universities.

Well-prepared teachers are a key-factor in the distance learning field (graduation courses) specially when changes in the quality of the learning process are required.

This required change is larger and more complex: it demands the pedagogical understanding of the mediated learning/teaching process, and the development of *special competences* and *skills* from the teachers as well as from the students is needed. Consequently, it is not enough to use alternative resources, the latest technologies, if strategic capacities of **how** and **when** to use those resources (teaching/learning process) are not developed (Pozo, 2000). In particular, distance education demands that the teacher know how to transport her/his real practice to the telematic networks mediated environment. Therefore, the *teacher's development* should be seen as a *strategic component* of change in the introduction of quality distance education and it implies in an education with the focus on the learning process of each student.

To mobilize strategic capacities in a controlled way (and not automatically or through pure intuition) means: maintaining objectives and aims, defining the initial state, identifying adequate strategies, selecting more effective procedures and resources and the control of simpler techniques to creatively solve problems and evaluate the accomplishments after the application of the strategies. It also implies continued planning, accompanying and evaluating of the process and the product. The person who is learning should understand **what** he/she is doing and **why**, and it will require a conscious reflection, a *metaknowledge* on the

adopted procedures (Pozo, 2000, p.235-236).

This mobilization also involves changing the process of **pedagogical mediation**: a new stance by the agents of the learning process (teachers and students) in face of the simplest as well as most complex situations. In addition, it implies the commitment of the institution and its administrators with the idealization of political-pedagogic projects that support learning-centric approaches.

3. THE LEARNING PROCESS IN CONSTRUCTIONIST ENVIRONMENT

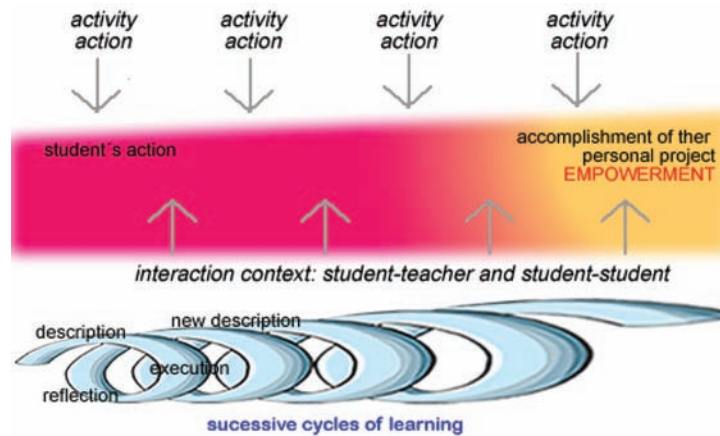
The virtual environment (learning/teaching) is something recent in the history of Education, so that is vital for those teachers who wish to work online to learn (collectively) to explain the construction of the process of the mediation (to know how to do) changing it into shared pedagogical knowledge, which, according to Bolzan (2002, p.151), is possible to be accomplished in *constructionist* virtual environments.

[Papert] used this term [constructionism] to show another level of knowledge construction: the one that happens when the student develops an object of his/her interest, such as a piece of art, an experience report or a computer program. Papert's notion of constructionism comprises two ideas that make it different from Piaget's. First, the learner *builds something*, that is, learning happens through getting the things done. Second, the learner is *builds something of his/her own interest* which makes him/her extremely motivated. The affective involvement makes the learning process more meaningful. [Valente, 2001, p.34; my italics]

In constructionist virtual environments, during the process of creating something according to the student's interest, helped by the computer and a more experienced (2) person (such as a teacher), the student would produce something concrete and set into a context of her/his interest, and having as a result a feeling of empowerment that she/he

Pedagogical Mediator as the Strategic Competence

Figure 1. The process of accomplishment of something related to a personal interest results in a reflective process and in a feeling of (student) empowerment



is capable of accomplishing something and can always improve. The feeling is now the engine that drives the student towards new and challenging situations, therefore making her/him continue to learn and to improve the capacity of thinking and carrying out new tasks. (Valente, 2001, p.38).

Figure 1 indicates successive actions that happen in the process of accomplishment of the product (according to the student's interest) while she/he is assisted by someone more experienced, resulting in a feeling of empowerment.

The constructionist environment should allow for the student to acquire knowledge about her/his own learning process (**how do I learn?**), that is, the *mathetic* knowledge that constitutes the art of learning, the teacher being expected, from this perspective, not only to evaluate the learner, but above all, to assist her/him in developing awareness that he/she is able to carry on learning and making progress throughout his/her life (Valente, 2001).

The design of the constructionist environment must privilege the quality of the *interaction*: the dialogue between the student and the teacher and among the students themselves at its *highest degree*. It should not *previously* establish strict learning objectives, based on preconceived products that only promote the development of narrow

and inflexible competences and skills, making the transfer of knowledge to other contexts more difficult (Cunningham, 1992, p.38-43). On the contrary, the *activities* should give space of decision to the student (in a negotiated way), so that the student can develop projects that interest her/him, and those projects can be guided by the student together with the teacher. To make it possible, the objects and the activities should be stimulating in order to involve the learner; they should also provide opportunities for the student to explore them and allow the teacher to pose challenges to the students by means of which the quality of the *interactions* in the environment can be altered and enhanced (Valente, 1999, p.141).

The mediator role reserved for the teacher (that can now interfere in the zone of proximal development of the learner, through an affective dialogue, encouraging the changes) and how he organizes the educational context around the students (with certain dynamics, actions and languages) can allow **meaningful and shared learning processes** that would characterize constructionist environments.

The application of telematic networks made the teacher and the student closer while endowing the constructionist environment a different dynamics (mediated by the teacher) which favors

the student in her/his practices (making them reflective and conscient). Valente called this approach *VIRTUAL-BEING-TOGETHER*, because the interaction among the members of a certain community get new dimensions basically if they (the interactions) are assisted by the managing software constructed based on the ideas of constructionist assumptions, as it is the case of the Teleduc (3) environment. With the changes in the technology (from an educational software installed on one computer to computers connected through telematic networks), the visibility of the interactions was amplified and so did the *learning cycles* (Valente, 1999) and the learning spirals fed by **high interaction** via **dialogue**. From the experiences in telematic networks, Valente and Prado (2002) enhanced the notion of *learning spiral*, transforming it into a *learning whirlwind* while demonstrating the exponential movement that is the result of an educational practice in an assisted environment via telematic network.

The *virtual-being-together* approach demands that the **pedagogical mediation** (responsible for the configuration of the environment when making interrelations among pedagogical resources, activities and interactions) must be articulated in an integrated way according to the conception of the teaching and learning processes. The pedagogical mediations with an *emphasis on the dialogue* constitutes, therefore, the main component of shaping of constructionist learning environments. And the TEACHER-MEDIATOR-DESIGNER is now a key component of this process.

4. MEDIATION AS A KEY COMPONENT IN THE TEACHERS' DEVELOPMENT PROCESS

Our online course meant to help teachers become mediators-designers was based on the concept of **inverted symmetry** (Mello, 2000). This decision derived from our belief that highly-interactive technological environments favors the transfor-

mation of the in-service student-teacher through successive contextualization and decontextualization in learning cycles in line with the *virtual-being-together* approach. In other words, in order to learn to be a *teacher-mediator-designer*, it is necessary for the teacher to act both as an online learner and as an online teacher. Besides allowing familiarization with the digital environment, the *inverted symmetry* allows for the student-teacher to acquire consciousness of the necessity of reflecting *about his/her practice, while practicing, at the moment of the practice* (Prado, 2003) during all the process in order to transform not only her/his practice in the classroom as well as her/his role and practice in virtual environments. The learning management software Teleduc presents essential tools to generate collective and individual reflective projects through different interaction channels. In a single graphic interface, with a simple click on the tool bar, it is possible to alternate from the *student's view* to the *educator's view*; it also allows the modification from the student into a teacher, reducing the cognitive and emotional energy of the teacher-learner.

The mediation in virtual constructionist (learning/teaching) environments demands that the teachers avoid routines, fixed answers and habits. It consists of presenting problems to the students without teaching them the solutions, aiming at provoking some instabilities and challenges. The teacher takes over the role of investigator, researcher and student's adviser promoting to the student's self-control and autonomy. The teacher should have a close relationship with the student, observe their behaviors, talk more than answer, allow the questions (by the students) in order to make them accomplish their learning process and development (Mizukami, 1986, p.76-79).

To practice the mediation it is fundamental, however, that the teacher has an in-depth knowledge of the content of her/his discipline, or it will not be possible to propose real unstable situations to the students. By "content" what is meant is the epistemology that permeates the

knowledge (discipline or group of disciplines), so it is implied that the teacher must have a very clear idea about the following topics: the object, the method(s), the languages, several expressive forms, the processes and the history of the theories that form the knowledge to be taught and learned. All these aspects are true to the face-to-face environment and fundamental to the mediation in virtual environments (Rezende, 2004).

According to Masetto (2000), to act (ideally) as a pedagogical mediator in constructionist learning environments, the teachers would have to develop characteristics, competences and skills such as: understanding that the learning process is the focus of her/his educational action; being able to build “student-teacher a relation based on trust and empathy and mutual assistance; building a relation of partnership with the student during all educational action; knowing how to plan, perform and evaluate; emphasizing the cooperative strategies of learning in an environment of equalitarian relation with the students; having a deep knowledge of her/his area, that is, having epistemological competences, incentivating the research among the students; being creative and knowing how to involve the students in new and critical solutions while at the same time being open to the new and unexpected proposals of the students; being open to dialogue at any moment and place; knowing how to develop interpersonal communication that considers the subjectivity and the individuality of the students; knowing how to build communication that supports distance learning, which implies using words and expressions that help and incentivate towards the knowledge construction: implementing projects, sharing problems without pointing solutions and prescribed answers, promoting reflective thought and raising the consciousness of the student along their journeys. In summary, being a **pedagogical mediator** in the *virtual-being-together* approach.

Nevertheless, we can not (and should not) idealize the online educator. A beginner teacher, as most are, would never be able to develop all

those characteristics during one course only. On the other hand, while trying to mirror herself (himself) on Masetto’s list, a beginning teacher could end up simply give it up.

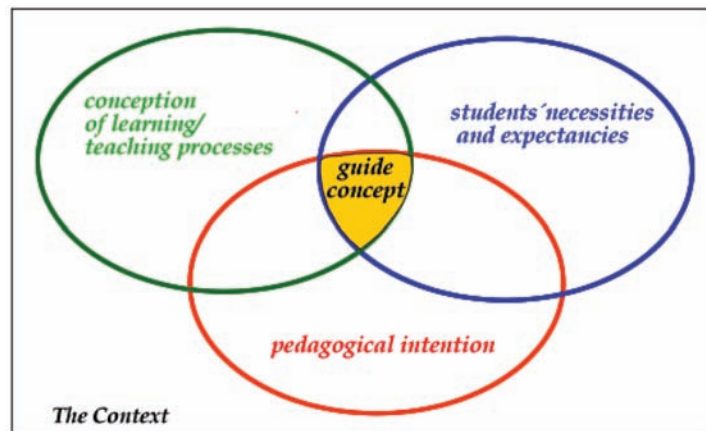
Hence, the main issue faced by those willing to become online teachers would be the conscious appreciation that, in order to be an online mediator, one should get ready to: **1)** develop pedagogical knowledge (learning theories) that would make him/her capable of acting as assistant tool of teaching/learning, using the computer as support; **2)** acquire theoretical consistency of the subjects (content) that will be taught and **3)** learn, gradually, to transport the real practice into the virtual one, through concrete experiences with a reflective posture in the action, not accepting already established models (finished and ready). In addition, developing the competencies pointed out by Masetto should be viewed as professional goals that will be naturally developed within a coherent and consistent praxis.

5. TEACHERS DEVELOPMENT IN THE CONTEXT OF UNIVERSIDADE CIDADE DE SÃO PAULO

Transforming the vision and the pedagogical practices of the teachers in relation to the students’ learning processes, in the face-to-face environment, as well as in the virtual (networked) one is the challenge of the directors and NEaD’s (Distance Education Group) staff of Universidade Cidade de São Paulo.

In 2002, the Academic pro-Dean’s office in association with the directors and the teachers concluded a two-year process of collective construction and launched the new pedagogical project in the university: the competence curriculum. In that year, it was decided that the virtual modality should be implemented in the graduation course. The Distance education group (NeaD-Unicid) was created to be responsible for conceiving, producing, disseminating, evaluating and manag-

Figure 2. Guide-concept: the intersection space of the 3 references in the context



ing, as well as proposing innovative experiences in Distance Education with the professors of the institution. In that context, a course to prepare online teachers (FP-Unicid) was proposed as a part of the strategy for the teachers' continuing education.

The course was conceived as a beginner's one and was organized for the first time in January 2003, with its organization (content) as well as its objectives being designed in order to attend the needs of the inverted symmetry and the student's consciousness in the *learning cycle* (Valente, 1993). This was organized so that a change of the pattern would be noticed as connected to Distance education in the Institution. Thus, the course presents two moments, or visions – from the *student and the teacher*– to accomplish the concept of *inverted symmetry*.

To shape the environment, the actions of the TEACHER-MEDIATOR-DESIGNER had to be based on a *lead*: the *course concept*. The concept of the environment must be the reference of the mediator-designer, mainly when flexible adaptations of the virtual space are required. It is that concept which allows the added elements (environment's change) to be kept coherently joined and integrated.

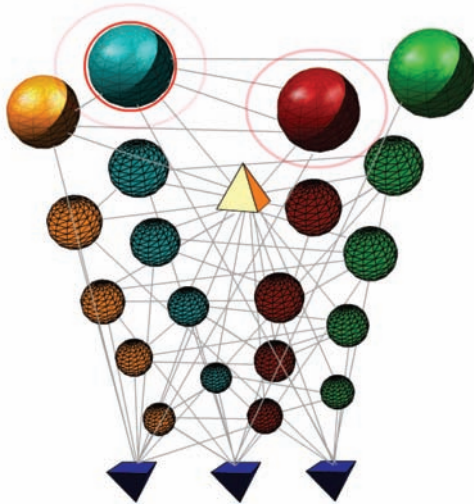
In order to determine the learning environment CONCEPT of **FP- Unicid** (figure 2) three

aspects have to be considered: 1) the conception of teaching and learning (in this case, the theoretical references to Vigotsky, Piaget and Papert); 2) the students' interests and needs (in our case the possibility of becoming an online teacher) and 3) the pedagogical intention which is intrinsic to the course (the learning objectives: the transformation of the teaching practice) in relation to the pedagogic and political *context* of Unicid.

In this course, considering its duration, the interrelation of the teachers – students necessities with the pedagogical intention and the constructionist features, the guide-concept was established as: *to present the reflection upon and over the teaching action in order to generate the transformation of the pedagogical practice in the students-teachers*.

In order to guarantee a coherent articulation of all elements with the concept, a REFLECTIVE IN-VISIBLE NETWORK is constituted (Rezende, 2004), represented in figure 3. It is about about a nonlinear web that aims to integrate the activities connections (blue triangles), the material resources and the pedagogical mediation actions during the course, transforming them into whirlwinds of knowledge whose exponential movement of cooperation and assistance results in the construction of individual and collective meanings of the agents-students and the teacher (spheres and yel-

Figure 3. In-visible reflective network



low pyramid). In other words, a web that could weave as many situations as needed by means of pedagogical strategies (activities and material resource) and the conversation in order to raise the students consciousness (acquire visibility) that something would be transformed in his/her individuality and successfully (empowerment).

In the scope of the net, the reflections upon and over the action should contribute to the upward vertical spiryal movement in the agenda and a horizontal movement during the course, connected to several other reflective spyrals provoked by teacher-student and student-student interactions provided by the activities and by each personal expression and representation resulting from readings and material resources allocated in the environment. The spyrals should form *reflective nodes* in each student, unpredictable ones, according to their development and learning (the learning singularity of each student), generating moments of *meeting* (Furlanetto, 2002). The *reflective nodes* (red circles) would represent the opportunity of constructing new knowledge.

Once the **guide-concept** and the *IN-VISIBLE REFLECTIVE NETWORK* were established, in the course of the interaction among the instructors-

students, the activities were redesigned in order to guarantee the transformation of the student from his/her own expression and personal reflections. The mediator was responsible for creating *high degree interaction situations* in the environment to make the instructors-students express their own ideas, registering them in the system through the most adequated language (or multiple ones) – verbal or non-verbal. The *interaction* (assistance and cooperation) as a rule helped the learner reflect on the stored records in the environment in order to: 1) identify her/his transformation path; and/or 2) formalize the concepts, albeit temporarily.

The macro-strategy was to divide the environment into two interconnected moments to attend the inverted symmetry principle during which the instructors-students would be guided in their activities to act on something (a concrete project), continuously giving it different meanings in personal language that, notwithstanding, had to be understood by the other in a high interaction atmosphere.

Throughout its development, educational authoring (*IHMC Cmap Tools*), on-line research (*Nestor*) and synchronic communication pieces of software were allocated in the environment as a low cost information database, and as tools to help the construction of meaning by the student. However, when the mediator noticed that the instructors – students built their projects with texts only, she suggested new URLs to make the students notice the possibility of applying material resources in non-verbal languages. The possibility of expressing their ideas in several “drafts”, many visions, from different forms, with conceptual maps and electronic forms was something new to the instructors-students⁴.

The records left in the environment allowed us to notice that the dynamic of doing and understanding is visible in the proposed activities (course environment): to each activity corresponds certain reflective activities that, mediated by the facilitator, generate conditions for the understanding of the constructive process by the student-teacher to

happen, opening space to the creation of learning spirals and whirlwinds (*conversational dance*).

The high level of interaction given by the activities and the pedagogical resources, together with the assistance and the cooperation environment, based on trust and respect generated in the environment were responsible for the transformation of the projects and the participation of many students- instructors.

6. FINAL CONSIDERATIONS

To be an online teacher, it is necessary to know how to transport. That means that it is not enough to a teacher that only carries out repetitive and single tasks. It is necessary for the teacher to use her/his communicative pedagogical, scientific and creative competences and skills in order to teach in different contexts, shaping a new environment of learning and teaching;

However, this **knowledge** (the awareness about one's own practice) is not obtainable in the short run. The construction of knowledge about mediation and pedagogical transposition in distance education is a slow process that is achieved in a continuous reflective process from experience to experience, stemming from the individual knowledge of the participants and throughout their professional life, in the context of the sociological and pedagogical environment which guides the transformation and the appropriation of the process.

Thus, we suggest that the online-instructors' training courses take place at an introductory, beginner level, at which conditions are granted not only for the construction of pedagogical knowledge according to the constructionist needs, but also for the beginning of *the transformation of an interpersonal process into an intrapersonal one [that] involves adjusting and re-elaborating what the individual brings in and what he/she is able to capture and to learn from the collective*

activity, favoring a shared construction (Bolzan, 2002, p.154) which is to generate a change in educational action from the traditional to the virtual and, consequently, from the virtual to the traditional.

However, changing the action of teaching and learning demands an administrative, pedagogical, and political context that is coherent with the focus on the process of learning and has a goal in the development of the pedagogical mediation competence among teachers. It would demand the shaping of environments with features connected to the learning process, as for example, the ones idealized in the *virtual-being-together* approach.

NOTES

1. Master's dissertation presented in October 2004 in the Master degree course of Multimedia – Instituto de Artes – *Unicamp* (*Universidade Estadual de Campinas*) - adviser PhD José Armando Valente (<http://www.iar.unicamp.br>)
2. The action must be guided according to the theories of Piaget, Vigotsky to help the students raise the awareness of his/her learning process.
3. Teleduc is a free (GNU licensed) learning management system developed by the researchers of NIED and *Instituto de Computação – Unicamp*. (<http://www.nied.unicamp.br>)
4. In 2006, the students will be able to use *Talk and Write*, a synchronous on-line communication tools that allows for real time conversation among the peers and also includes audio and images during the dialogue. (<http://www.talkandwrite.com>)

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Chapter 12

The Paradigm Shift for Adult Education: From Educational Slavery to Learning Freedom of Human Brain with Synaptic Learning

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ABSTRACT

This chapter starts with the metaphor of educational slavery to indicate conventional mode of teaching practiced in the class room with a teacher-centric approach and proposes a brain-based synaptic learning approach for student-centric that leads to learning freedom. The chapter describes the basic functions connected with the anatomy of human brain and then crystallizes it to three main functions, namely, perception, cognition and interaction. The three functions are then related to three sides of the pedagogical framework of learning cube. With the learning cube pedagogical framework author proposes an adaptive learning approach that enhances the synaptic activity in the human brain leading to long term retention for adult learners. A proposal is made to create a five-factored cognitive ability chart based on diagnostics of perception, cognition, interaction, memorization and assimilation. The cognitive ability chart is then used to create individualized prescription for enhancement of adult learning using synaptic learning environment. The chapter concludes by providing a road map for achieving learning freedom for human brain with synaptic learning.

INTRODUCTION

Educational slavery has been prevalent in the human society for hundreds of years. The current systems where the “sage on the stage” makes all subjective decisions on the fate of slave students, has perpetuated the myth that learning happens by

mere recitation of the content and facts in a lecture recited in a passive learning environment. Learners are required to follow and adhere to instructors teaching method and survive through the course without any freedom for their individual preferences of learning process.

This authoritarian approach by instructors leads to “**educational slavery**” not conducive to the freedom of individual learning preferences. The

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current model does not encourage challenging the authority of the instructor, open discourse and exploration of knowledge.

Regurgitation of the facts and information with no connection to the real world situations has made educational experience a dull, boring, and somewhat irrelevant exercise just to get a degree which validates, nothing, but your ability to memorize and reproduced theoretical facts in the world of academe. The intellectual superiority even in the world's top institutions is measured by your mathematical ability to solve esoteric problems which may never be used after a student graduates from the University/College (Dewey, 1933)

It is indeed high time that we make the paradigm shift to individually free form of education that is conducive to the learning, and provides ample nourishment to the curious minds at all ages. It is time for “sage on the stage” to become “guide on the side”. It is time for educational technology to fulfill its promise. It is time for learning to be “free” from the undesirable artifacts created by the defunct educational organization that kills the curiosity and makes each potential student a fatality of “bell shaped curve” where only few conformists succeed.

This state of the affairs has made schools a dreaded place for **adults learners** who hate to even participate in the educational process. We must work towards a better, adaptive and individualized educational paradigm that brings an effective organizational structure for the stimulating educational inquiry where learning is at the center and is free from all artificial barriers (Cremin, 1961; Gardner, 1991)

The shift to a brain based **synaptic learning** paradigm will accommodate the learning preferences of each individual learner by providing them a personal experience, as compared to, inefficiency of “one size fits all” approach (Brusilovsky, 2001; Kinshok and Lin, 2003; Sonwalkar, 2005, 2007, 2008).

a. State-of-the-Art

The current educational system that dates back to several hundred years depends primarily on the skills of the instructor (Dewey, 1933, Cremin, 1961). There are instructor/teacher who have facility with the words and good black board writing skill and can articulate concepts well, and, as we all have suffered through, many more instructor who are at loss of words, confusing, with poor black-board techniques, and regurgitate the content already given in the prescribed textbook.

The good instructors, who can motivate the class-room learning, are few and majorities are those who merely meet the minimum standards of learning and teaching. The wisdom of having small class size to teacher ratio goes only so far to remedy the situation where the instructor's style of teaching does not match with the style of learners. In most cases, students who are not able to relate to the instructors style of teaching have no alternative, but to depend on their own resources (Schank and Cleary, 1995).

The subjects who are abstract in nature, such as, mathematics and science suffer even more when the instructors are not able to motivate and explain the necessary concepts in the limited time given during the lecture sessions of 60 to 90 minutes.

As we all know, the class-room experience is mostly passive listening experience, with few picture drawn on the board and almost 10% or less time of the class spent on the real discussions. Except the classes those are completely case-study based and encourage role playing. Majority of learning process in the class-room is one-way and delivered by – “sage on the stage”.

Let us look further, the instructor is given a set-of-curriculum standards and requirements that he/she needs to meet in a given semester or year. The lectures, home assignment, and recitation session are organized in fast paced environment where student is subjected to five to seven subject matters.

The students is given finite time to learn concept and apply them on the given set assignments and papers. Then come the scary part of assessment. The instructor is obliged to conduct mid-term exams and a final exam along with weekly assignments.

From teachers, perspective the assessment and grading activities take bulk of their time outside the classroom leaving little time to prepare for lectures. The assessments are created by using the questions/ quizzes/ exercises given in the text book where the instructor manual provides all the answers to the instructor, leaving very little room for instructor to come-up with ingenious idea for assessments. The Bloom's taxonomy which itself is as old as 50 years is till used to formulate quiz questions (Bloom, 1956).

From student's perspective, the exams are a major burden for the students to learn a subject matter in a half backed way and to ace the mid-term exams and quizzes to be ahead of the classroom.

In the process described above, there is little room for improvisation and change in the curriculum content and course structure.

b. The Learning Process: The Pedagogy

The obvious question arising from the discussions in the previous sections is what is the process of learning? And how one can encourage learning itself? For answering these questions we take help of the educational literature describing the process (Bloom, 1956, Cramin, 1961, Gardner, 1991, Schank and Cleary 1995).

The learning for the most part does not happen just by gathering information. Information can be accumulated and kept in human brain as facts. The process of learning begins when the human brain engages in the activity of "making sense" out of the jumble of information collected. The survey of the information objects slowly starts to make sense by finding a pattern, association, connec-

tion, that leads to condensation of the information using a cognitive process. The cognitive process involved organizing the apparent patterns, associations, connections that make sense to realm of the existing human knowledge.

A further exploration in the realm of human knowledge indicates logical organization of the information that can be used to answer a given question on the subject matter contained in information. The "making sense" is therefore, the cognitive process that is necessary to convert information blocks into useful knowledge that can be applied to solve problems or answer questions.

c. The Process of Adult Learning: The Andragogy

The "making sense" may differ with the maturity of the learner facilitated by the past learning experience and reservoir of memory aiding in the learning process. The Malcom Knowles (Knowles, 1980, Daloz, 1986) proposed the concept as andragogy to differentiate between the childhood learning to adult learning. His theory included self, experience, readiness, orientation and motivation which led to debate and refutation that the **andragogy** is not a new theory but a model for better adult teaching (Tennant, 1988, 1996). Although, it is important to recognize the difference caused by the life experience and maturity of the learner it will become clear that the brain-based learning goes beyond the pedagogy and andragogy debate and focuses on the processes that enhance the formation of neural networks that enable learning irrespective of age and experience (Dewey, 1933, Boud et. al., 1985)

d. Making Sense out of Information Jumble

The process of making sense is a subjective process tied to the individual preferences. The individual strategy that can be used to convert pieces of information into useful knowledge can be done

in several ways. These different ways are termed as the learning styles or learning strategies. The subjectivity in the learning styles preferred to “make sense” come from various influences that were predominant during the growth of human brain from the child hood (Gardner, 1991, Stillings, 1995, Merrill, 2000).

The human brain of an infant is like a clean slate that is constantly bombarded by the sensory information collected by the five sensory organs, namely, eyes (visual), ear (audio), nose (smell), skin (touch) and mouth (taste). The sensory organs collect random information from the environment and send it to out central processing unit – brain. The gray matter between our ears is termed the brain, and is possibly the most complicated and least understood part of the human body. The each area of human brain represents different activity of the body. The brain cells are connected through synaptic dendrites which carry electrical signals and fire millions of neurons that carry information from one brain cell to millions of brain cells. Without going into the gory details of the anatomy of the human brain itself, it suffices to say that the human brain uses biological processes to collect, analyze and store information (Penrose 1984, 1994).

Based in the experience gathered and skills developed through early childhood development the adult brain develops a preference on process of “making sense” out of any new information jumble. The processes that are dominant are:

1. Reduction of information into few steps
2. Reduction of information in terms of a contextual case-study
3. Reduction of information into a solved example
4. Reduction of information into an application
5. Reduction of information into a parametric experiment

These preferred processes of reduction of information into model that “make sense” to an individual are the five learning model termed as apprentice, incidental, inductive, deductive and discovery based systems (Sonwalkar, 2004).

It is important to note that both the mode of information acquisition through well known auditory, visual, and kinesthetic means and the conversion of information into knowledge (making sense) using five conversion strategies are important for the final understanding of the subject matter at hand (sonwalkar, 2007, 2008).

THE BRAIN ACTIVITY AND THE MEMORY

When we aspire for a shift in the human learning, it is important to understand the structure and functioning of the human organ responsible for learning – the human brain. The neurophysiologists and neurosurgeons have done considerable amount of clinical and anatomical work to define so called “gray matter between the ears” (Carter, 1999).

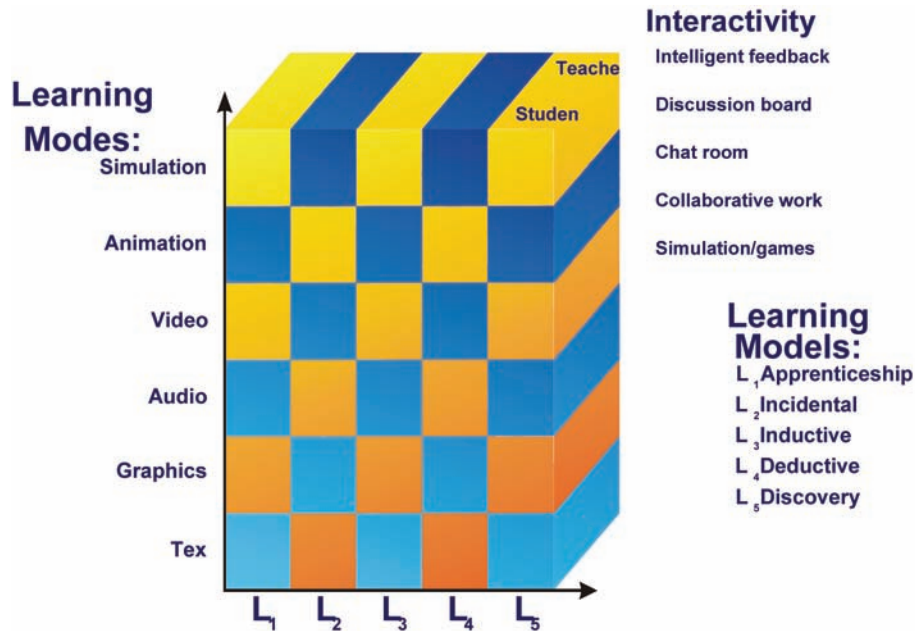
The top part of the brain that is gray is termed as *cerebrum*, observing from the top the human brain is clearly is divided into two regions popularly known as

- left brain and
- right brain, essentially are left and right **cerebral hemispheres**.

As shown in Figure 1 from front to back there also divisions that can be identified as four lobes,

- frontal
- parietal
- temporal
- occipital

Figure 1. The pedagogical learning cube framework (Sonwalkar, 2004)



The portion at the back and below these lobes are:

- cerebellum
- pons and
- medulla,

These lower regions further are subdivided into following organs such as:

- brain-stem
- thalamus
- hypothalamus
- hippo campus
- corpus callosum

Brain, being the most complicated, sophisticated, and complex part of the human anatomy is filled with intricate regions that all run the every part of human existence, from the routine bodily functions to the complex intellectual pursuits (Carter, 1999, Penrose, 1999). For a graphical presentation of the **brain anatomy** refer to book

“Mapping the Mind” by Carter, 1999.

a. The Information Crossover

The interesting aspects of the human brain that is strange yet interesting, is that the left cerebral hemisphere controls most of the right part of the body and right cerebral hemisphere controls the left part of the body. For example, information from right eye, ear, hand and leg is controlled by responsible cortex situated in the left cerebral hemisphere, while the left eye, ear, hand and leg is controlled by the responsible cortex in the right cerebral hemisphere, except nose which keeps the left nostril information in the left Olfactory cortex and right nostril information in the right Olfactory cortex. The information cross-over between the two sides which brings information from two eyes, two ears, two hands and two legs, provides a comparative assessment of information to accomplish numerous advanced cognitive ability. For example the binocular vision provides the sense of depth and distance leading to three

dimensional vision, the two ears provide the sense of direction for the sound source received by ears, the two legs provide necessary shift in the way of body to walk and run efficiently and two hands with fingers together by comparison of hand eye coordination provide ability to catch flying objects.

It is important to note that even the most sophisticated robots with the most advanced artificial intelligence (AI) or artificial neural networks (ANN) cannot do some of these simple tasks done routinely by human beings, because, of the power of human brain to process comparative analysis of signals received from the pair of perceptive organs respectively and combination of them to perform even more complex tasks, such as, playing baseball (Winston, 1995, Minsky and Papert, 1990, Stillings, 1995).

b. Human Sensory Perception and Brain Regions

The basic perception and the perceptive organs of human race can be regarded as vision, hearing, taste, smell and touch and movement.

The brain activities generally happen at three levels. The primary level has the basic sensory information that includes, visual, auditory, olfactory, somatosensory and motor information, which then get analyzed by the secondary regions which are related to each sensory perception cortex and the analyzed information then is passed on to tertiary region (association cortex) where the actions are created, memory is generated for temporary function, and memory of the analyzed information is stored for the long term purpose (Carter, 1999).

The memory in particular is an important supporting function that enables learning to remain within as a result of human experiences and exploration, which resides in hippocampus.

The speech capabilities that are essential for linguistic capabilities for storing information in a script form is located in the lower rear part of the

frontal lobe called Broca's area and at the upper rear part of the temporal lobe. The Broca's area is responsible for the formation of the sentences and the Wernicke's area has been found responsible for the language comprehension. The two areas are connected by a bundle of nerves called the *arcuate fasciculus*.

The lower part of the brain cerebellum is responsible for the precise control and coordination of the human body, leading to advanced athletic, tactical and artistic movements. The actions of the body that are learned by practice have two stages, the first when thinking about the action is involved that action is performed by the cerebral region, when the practice becomes a "second nature" the learned skills are activated by the cerebellum. It is important to note that the information cross-over is limited to the cerebral activities, once the activities are learned and passed over to cerebellum the right part of the brain controls the right part and left part controls the left part. Therefore, when one starts thinking about a learned skill or become conscious about a learned skill, the action becomes more difficult and often clumsy, as the cross-over confusion creates an awkward behavior.

The long term memory is the main function of the hippocampus. The short term memory is retained in the cerebral regions close to the sensory perception cortex but a long term memory or impression gets stored at the hippocampus.

Left hemisphere and right hemisphere need to also exchange information in order for secondary and tertiary regions to "make sense" of the collected input, this information exchange is facilitated by corpus callosum.

The emotional responses, such as, fear, anger, pleasure, despair, hunger are managed by the hypothalamus. The hypothalamus also sends information to the body and cerebral cortex of the emotional states that has direct effect on the bodily functions. A sense of fear can make bodily functions to go in a state of temporary shock, which is the information disseminated by hypothalamus.

The nerves throughout human body also send electrical signals to the brain. The information from the nerve centers are sent to brain region called thalamus. The thalamus sends this nerve sensory information to the cerebrum for somatosensory or motor action.

The general alertness of the brain is controlled by the reticular formations. Even in the state of sleep the reticular formations are sending signals about the surroundings to the cerebrum.

c. Functional Memory

Information is received through the sensory organs is received by various perceptive regions in the brain cortex. The information from primary cortical region is sent to secondary region where it is used to create associations and comprehension. Then the information is used in action by the tertiary brain functions acted upon by the cerebellum regions using various interactive activities. There are two major part of the **memory** processes, namely, declarative memory and procedural memory.

The declarative memory deals with the two different kinds of memory systems episodic memory relates to the experiences that are recorded by the hippocampus and brought to the cortical area when needed based on associated events that represent the experience. The semantic memory, relates to keeping facts. These facts are related recorded by the cortex and stored in the cortical area in the temporal load.

The procedural memory keeps the information related to the day-to-day operations, skills like driving car, and swimming, these memories are kept in the cerebellum.

The research shows that the declarative memory that deals with the long term retention is operated by the hippocampus and the short the non-declarative memory is related operated by amygdale region of the brain.

The synaptic connectivity plays important role in the creation of memory and its retention. The re-

petitive tasks lead to strengthening of the synaptic connectivity which helps in storing information. The synaptic connectivity can also increase the bond at the synaptic cleft and generate new protein structures to keep long term memory.

COGNITIVE PSYCHOLOGY OF MAKING SENSE

In the last decade the debate has been vigorous between three dominant schools of adult learning theories, namely, behaviorist, constructivist and cognitivists. The Table 1 lists some of the dominant theories and researchers that have made major impact in the defining the cognitive psychology of making sense (learning).

a. The Learning Cube Pedagogical Framework

As shown in Figure 1, the human brain has three distinct functions – the primary function is to collect information using sensory organs. The secondary function is to make sense from the collected information called cognition, and the tertiary function is to interact and utilize this synthesized information. The primary function of the brain is responsible for acquisition of information in auditory, visual and kinesthetic modes, the secondary function is responsible for processing collected information using cognitive processes and the tertiary brain function is responsible for higher thinking and skill building. The dimensions of the brain based “Learning Cube” educational framework are geared towards enhancement of brain-function with multi-media, cognitive learning strategies, and interactivity as shown in Figure 2 (Sonwalkar, 2004).

Figure 2 depicts the connection between the three functions of human brain – perception, cognition and interaction with the three dimensions of the learning cube – multimedia, cognitive models and interactive feedback.

The Paradigm Shift for Adult Education

Table 2. Leading cognitive learning models

Behaviorist	stimulus/response	Skinner et. al. (1953)
Situated	cognitive apprenticeship	Dewey (1933)
Constructivist	collaborative, incidental, discovery	Piaget (1955), Bruner (1990)
Cognitive Flexibility	inductive reasoning	Spiro et. al. (1990)
Component Display	deductive reasoning	Merrill et al. (2000)
Multiple Intelligence	multiple intelligence	Gardner (1991)

Table 1. The human perception and brain

S.N.	Human Perception	Human Organ	Responsible Brain part
1	Vision	Eyes	Visual cortex in occipital lobe with cross over
2	Hearing	Ears	Auditory cortex, left temporal lobe with cross over
3	Smell	Nose	Olfactory cortex, front of cerebellum with no cross over
4	Taste	Tongue	Broca's area, left part of the frontal lobe
5 a	Touch	Skin	Somatosensory cortex, parietal lobe near the division of frontal and parietal lobe with cross over
5 b	Movement	Hand, legs, body	Motor cortex, between parietal and frontal lobe

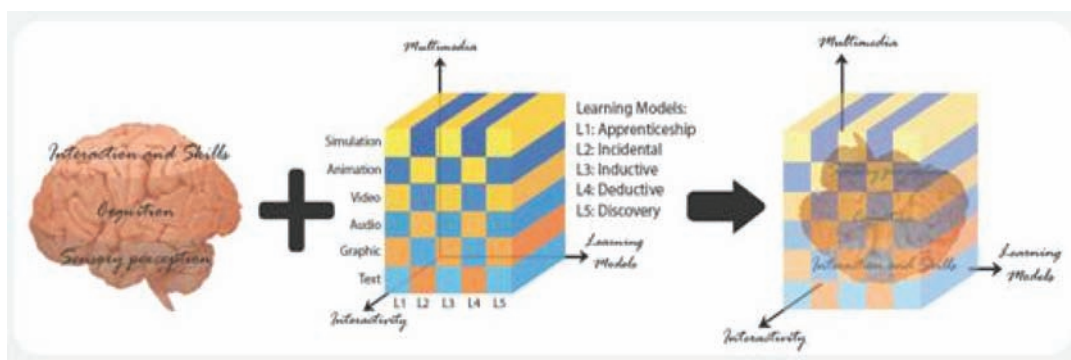
THE PROCESS OF MAKING SENSE

From the perspective of the human brain, now we connect back to the issues raised earlier, how we make sense out of the jumble of information? As we discussed the sensory perceptions through the five primary sensors of the body collect information, now the collection of the information itself depends on the perceptive ability of the individuals.

Based on the structure of DNA which is unique for every individual and is a unique sequence, but is inherited in parts from the parents, the human perception about visual, auditory, olfactory, somatosensory and motor skills are a result of the embryo and post natal development of an infant (Dewey, 1933, Piaget, 1953).

Besides the collection of the information through the sensory perceptions, the informa-

Figure 2. The connecting brain-based learning with learning cube pedagogical framework



tion digestion is carried out by the secondary and tertiary level of brain activities that involves language skills, short term and long term memory, and emotional state of the brain. It becomes extremely clear from the neuro-physiological research that every human brain is unique in forming pathways to make sense, leading to a preferred learning style (Stillings, 1995, Penrose, 1999).

Although there are attempts made by the community of brain based models on the left hemisphere and right hemisphere of the brain, where the spacio-visual information is dominated by the right hemisphere and the mathematical and linguistic capabilities are dominated in the left hemisphere, the activities in the brain are more distributed then left or right. From the clinical research it is clear that brain does have ability to rewire processes if the left hemisphere is damaged during the rehabilitation process (LeDoux, 2002).

a. Simplified Synaptic Learning Process

The learning model then can be then simplified into following processes.

- The sensory organs bring information signals to brain in the form of audio, visual and kinesthetic impulses
- Primary processes involves collection and acquisition of the sensory information
- Secondary brain processes involves cognition activities to decipher information collected in the primary process
- Tertiary processes involved in the activities leading to skills development which requires revision, repeats and remediation.
- The storing of synthesized information into semantic, episodic and procedural memories
- Utilization of the learned skills into social interactions, such as discussions, discourse,

dialogue, presentation, articulation.

Figure 3 depicts a schematic diagram of the proposed simplified synaptic learning process.

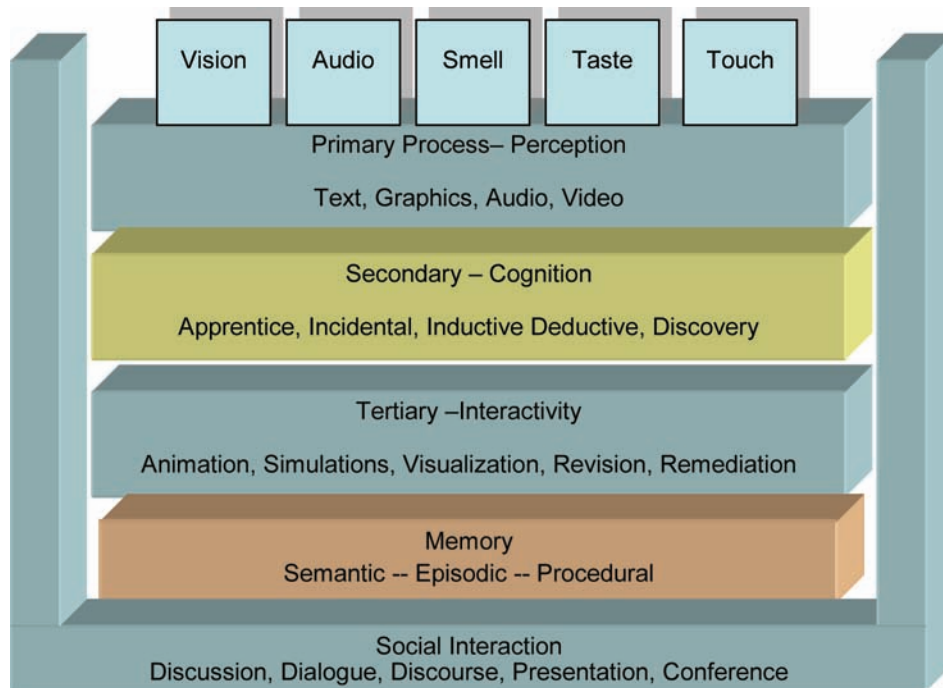
b. Neurophysiology of Synaptic Learning

While the discussions so far is concentrated at the macroscopic process related to the anatomy of the brain, the brain functions and the processing of information collected form the sensory organs, now we look at more details on how neurons get fired to send electrical pulses to send information to different part of the brain.

The neurons are the biological elements that have a central bulb like structure call “soma” connected to a long connecting fiber like structure called **axon** that separates into several connecting fiber like connections that connect at junction called **synapse**. The signal from one neuron to another is passed through synapse, through the synaptic cleft. The synaptic cleft is a small channel that uses the ionic dipolar interaction to transmit information from one neuron to another. It is important that sufficient threshold of ionic charged is reached for a neuron to fire electrical impulse to another neurons. The central bulb-like structure us surrounded by small fibrous structure called **dendrites** (Penrose, 1999, LeDaux 2002).

The synaptic connection is made between neurons (cell) either at central cell soma or at the dendrites. The synaptic cleft at each synapse junction uses biochemical neurotransmitters to transfer ionic chargers from one neuron to another and reinforce the signal to reach a necessary threshold. Some of the neurotransmitters enhance the signals to reach a threshold or to inhibit the signals to reduce signal transfer. The synaptic connections also have properties of either acquiring strength with continuous reinforcement or loose its strength over a period of time. The strengthening and weakening of the synaptic connections is also

Figure 3. A schematic diagram of simplified synaptic learning process



attributed by researchers to the brain plasticity (Penrose, 1999).

c. The Connectionist and Symbolists Models

The connectionist models have tried to mimic the neurons, axon, synapse and dendrite into artificial neural networks (ANN) (McCallach and Pitt, 1943, Frank Rosenblatt, 1962). The process of the ANN however, required a systematic learning rule that describes the process of reaching a threshold for node of neural network to send information to another layer of neural nodes. The symbolic approach to mimic the learning process was to follow the knowledge representation that can be used by an inference engine to make decisions that a human expert is likely to make (Minsky and Papert, 1969, Winston, 1995). Such systems became heart of the Artificial Intelligence and led to the development of frames, semantic networks, knowledge based expert systems and case-based reasoning.

The ultimate goal of all the research conducted by connectionist and symbolist community is to mimic the functionality of human brain and to understand process of “making sense” and applying the understanding to solve difficult real world problems. In the recent history the research conducted by Roger Penrose and his groups/ followers, concentrates on the connecting the computability, human brain and quantum computing. The discussion on these topics can be found elsewhere (Penrose, 1999).

IMPLICATIONS OF SYNAPTIC LEARNING APPROACH

Of course, the discussions about the brain with numerous difficult terms to remember sounds very interesting, but the question that we must pose often, is how does that matter to us. The answer comes from the simple fact that the learning diversity is a real challenge for the current educational

systems that needs to be addressed for successful utilization of the growing technology enabled on-line education directed toward adult learners. It is author's opinion that unprecedented opportunity lies ahead to overcome the educational slavery to a learning freedom that allow every human mind to reach its full potential during the adult years (Sonwalkar, 2005, 2007, 2008)

a. Enhancement of Adult Learning

The goal to reach the full potential of human brain is to learn effectively and efficiently. This goal can be reached with the development of a fundamental model of learning. Such a model can provide a process of developing neurological map of individuals learning potential. These neuropsychological maps then can be used to provide a prescription for adult educational enhancement (DeLaux, 2002).

The prescriptive approach is expected to focus on the two aspects 1. Existing cognitive map that is most likely to be successful based on the DNA analysis and fMRI of the brain of adult in post-development phase, 2. What needs to be enhanced in order to achieve full learning potential, based on the observed weakness in the cognitive map? For example if the need is to enhance perception then a rich multimedia presentation of learning domain will provide good results. If the need is to enhance cognition then representation of learning domain in multiple learning strategies will be achieve the desired results, and if the need is to develop skills, then a simulated learning environment with ample interactivity (e.g., second life) will be necessary.

b. The Cognitive Ability Chart - The Pedagogical Effectiveness of Learning

1. Primary brain – sensory perception map
2. Secondary brain – cognitive ability map

3. Tertiary brain – skills building ability map
4. Memory -- the memory capacity map
5. Assimilation --- social intelligence map

The can be calculated based on an instrument created similar to the Pedagogical Effectiveness Index (PEI) by the author elsewhere (Sonwalkar, 2002)

c. Dynamic Organization of the Knowledge Domain

The cognitive ability chart based on the five factored maps as described above will provide a basis for the development of the prescriptive analysis for the synaptic learning systems. The synaptic learning systems will then be based on the self-organizing maps providing facility for dynamic, real time, organization of the knowledge domain based on the cognitive ability needs of an individual learner. The content once meta-tagged with appropriate taxonomy then can be used to collect necessary learning assets and assembling them on the fly to create learning pathway that can enhance process of synaptic learning (Sonwalkar, 2004, 2008).

d. Cognitive Ability Enhancement Prescription for Adult Learning

The cognitive ability chart based on the five factored analysis then can be used to develop a cognitive ability enhancement plan for adult learners. These learning paths then can use the ability of brain to develop cognitive skills by engaging in the cognitive activity based exercises that will bring the enhancements in the **perception, cognition, interaction, memory and assimilation.**

CONCLUSION

The studies conducted in this chapter lead to following conclusions:

1. The conventional model of learning leads to teacher-centric approach that can be called as learning slavery in a metaphoric sense where students have restricted freedom to explore their own learning preferences
2. The learning in human brain is a multi-dimensional process with different mental make-up for adult learners.
3. The brain anatomy indicates the map for perceptivity which is localized in specific regions of the human brain
4. The brain functional areas are connected through neuronal network with a left and right brain cross-over. The three gross functions of the brain being – primary - perception, secondary – cognition, tertiary – interaction that leads to memorization and finally social assimilation.
5. The learning process enabled by the brain functions can be enhanced by the three dimensional learning cube pedagogical frameworks by providing multimedia, cognitive learning strategies, learning interactivity respectively.
6. A simplified brain-based learning model is proposed that can enhance the synaptic learning processes in the brain leading to enhancement of cognitive ability of the adult learners.
7. A diagnostic test that can map the five factored cognitive ability of the learner for perception, cognition, interaction, memorization and social assimilation then can lead to mapping of gaps in the cognitive ability.
8. Based on the cognitive ability map then a synaptic learning environment a learning path can be prescribed for the best learning outcome for adult learners.

With the growth in adult learning, it is high time to revisit the learning paradigm for accommodating individual pathways that can be accommodated by synaptic learning approach. The proposed model has the necessary flexibility and functional pedagogical framework to create technology enabled learning interfaces with ability for adult learner to learning goals with high degree of engagement, effectiveness and efficiency.

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Chapter 13

Empowering the Culture of Quality Research within Ethical Standards in Distance Education

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ABSTRACT

Fundamental in today's Distance Higher education (DHE) in the African sub-regions, is how to continue to harness the dividends inherent in the multi-dimensionality of empowerment, for inducing a virile tradition of research, through the shared-benefits of academic/intellectual symbiotism. In such atmosphere, the mentor is less egoistic and willing to provide leadership as a motivator for a value-driven research orientation of the committed protégés. Using the cyclical model, while the novelty of early academic irritants are to be acknowledged, learners' emotionality is identified as raw material for boosting both qualitative and quantitative research skills, within clearly defined workplaces' standards. The acquisition of relevant skills and its benefits is therefore sinequanon for nurturing and sustaining research culture especially in DHE.

INTRODUCTION

Creating and sustaining a credible research culture and or behaviour, especially in Open Distance Learning (ODL) is a regular discussion in Higher Education (HE). Such discussions are conjecturally maintained, due to the peculiar circumstance of the teaching-learning instructional environment that highly minimises the potential for physical contact. Additionally, while the notion doubting

the academic competence and or professional behaviour of the recipients of the ODL is presently on the wane, adequate arrangements to boost and sustain high premium in terms of its scholarship are however, on-going. Specifically therefore, the broad spectrum of this chapter is to investigate (a) how to stimulate novelty in academic irritants and a virile research tradition in ODL; (b) emotionality versus empowerment of research tradition; (c) empowering the culture of research within ethical standards; (d) mentorship, empowerment and research tradition in ODL; (e) modelling for qualitative and quantitative

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research in open distance programme (ODP); (f) operationalisation of feedback in empowerment; and (g) the cyclical model in research empowerment.

BACKGROUND

A vital part of academic activity and or credibility is the regular validation of the expected outcome of meaningful teacher-learner interaction in, especially Higher Education (HE). Amidst the expectations, is harnessing the best method for initiating the tradition (otherwise, culture) of research behaviour in especially the Open Distance Learning (ODL). Another of such outcome arguably reflects on the learners' potentials in their abilities to choose and decide feasible research topic (s) which, they are expected to pursue to its logical end. Important in the dimension, is also the notion that the research outcome must for instance, have value, for the immediate community and or society's (otherwise, national) avowed determination for survival, growth and continued relevance among, especially the committee of nations. For research to be of immense benefits, particularly to the global community, its outcome must possess an in-built mechanism for authenticating its dividends. Authenticating the impact of such research should therefore evolve from the background of its ability to be specific, measurable and with the potential for a long-lasting effect for the entire community socio-economic advancement. Developing research skills and its utility in learners, especially in distance higher education DHE, is a significant by-product of functional teacher-learner interaction, intentionally and holistically instigated through multi-purposed and positively oriented empowerment strategies for the stimulation and nurturing of functional research culture among academics.

Fundamental in the various empowerment skills (otherwise, re-tooling prowess) that HE and or DHE ensures, is the opportunity for the

acquisition of multiple developmental academic skills, some of which include, learners' ability to know and select appropriate and feasible research topics and designs with a concomitant statistical methods for data quantification. Preparing and empowering learners in research skills, especially from the backdrop of the Open Distance Programme (ODP), is not only important for human development and behaviour change, but, an urgent demand to induce the public confidence in the academic (with particular emphasis on research) and the professional behaviour of learners. Boosting the public confidence vis-à-vis the ODP, through adequate research ventures, testable and or verifiable research outcomes as well as research dividends, is not merely timely and necessary, but, it is an indubitable requirement for professional acceptability, credibility and the sense of belongingness. One important dimension for positive imaging of the ODP in Africa therefore, and in particular, the DHE cum its beneficiaries, is the initiation and a dogged pursuit of a sound academic tutelage for a culture of research empowerment. Such facility for empowerment and or re-tooling in research is supposedly nurtured at the baccalaureate programmes in ODP which graduate studies, unequivocally and expectedly should advance through appropriate machineries within ethical standards.

Empowering learners and especially, the recipients of Open Distance learning (ODL) in Africa, is however, a regular challenge at least, in both HE and or DHE (Brammoh and Osiki, 2008). Though the concept 'HE' has multiple definitions, depending on how the sub-regions and or countries have conceptualize its scope, the challenges in the ODL however, are rather peculiar especially when compared to those within the conventional programmes. Astronomically for instance, while the enrolment in the ODL is becoming very frightening, especially within the African sub-regional paradigm (otherwise, world-wide), learners within the conventional programmes are easily available for academic tutelages, by the mere

fact of their residency and or physical proximity. Adjudged from this perspective therefore, and for the emphasis on qualitative education, the notion of functionally empowering the research culture and or the re-orientation of the recipients of the ODP, while contending for the marginal utility of such researches, within ethical standards, has been expressively conjectural.

Prominent in the conjectures, is the growing trend on the value and avenue for expanding the programmes and or scope in today's HE that has a concomitant implication for ODL. The challenge of having an all-time extensive programme encapsulated in Open Distance Education (ODE) in Africa, while retaining the status quo of old structures as it were, is a stormy issue, when adequate and reasonable research tradition and its concomitant empowerment is envisioned. This is due to fact that while programmes under the ODE are increasing, just as, there is a simultaneous enrolment shoot; its resources (i.e. human and materials) are not. While the contextualization on the modality for such gargantuan of academic programme in the ODE may be a future responsibility, establishing a convenient modus-vivendi and or modus operandi, especially for a transforming research output, with the capacity for regional and or national (otherwise, global) utilitarian value should unequivocally, be the vogue and an urgent issue for our collective attention.

Second, the doggedness required in the operationalisation of adequate empowerment of research culture, especially in the DHE and or the ODL, and its possible challenges, are getting more obvious and frightening. So the issue is, how does the system empower, in very strict and concrete terms, research culture in the very obvious sustenance of imbalances in the programme with negatively oscillating facilitators (PF)-DLs ratio? Pretence from the perspective of governments' funding may be exaggerated but not so much with academic standards versus professional behaviour. The status of any DHE can be imaged using a number of indices; one of which is research com-

petence. Lowering of academic standards due to an uncontrollable enrolment in ODL may though, in the immediate, bring in a lot of money, but on the long run, deplete on its credibility, relevance and professional behaviour.

Stimulating Novelty in Academic Irritants and a Virile Research Tradition in ODL

Research ventures begin, with the individual attempts to find solution (otherwise answers) from often generated, though initially haphazardly and originally stimulated ideas (otherwise, research irritations). Within a contextual definition of the term 'research', especially *applied research*, that is serious, meaningful, impactful and scientifically-oriented, it is an all-involving and a painstaking activity. Doing research is though, without doubt not easy; but its dividends are germane to human survival. The word '*research*' is arguably bedevilled with the prefix 're' to hurriedly mean that *it is a type of search and or investigation that is started over again and again but with some directed purposes, geared toward a meaningful and beneficial impact politico-socio-economically as well as overall human wellness (as typified in medicine) through varying surveillance studies and drug-trial testing. It sometimes follows the cyclical order until a responsible and meaningful as well as acceptable path is charted.* Although the collective survival of human beings depends on the marginal utility and or outcome of validated research, and that researchers may be hard to come by always, stimulating/developing and or empowering the culture of research, especially in the ODL, should be the most welcome gestures. Though such studies as 'Pew Global Attitudes Project' (2008) and Chad, Akula & Bugbee (2003) have provided very fundamental, but, differential information following their investigations, in ODL, academics (i.e. Distance Learners-DLs) can be encouraged to generate as many research ideas, topics, questions no matter how faintly

and or poorly developed/organized for submission into what could be tagged 'ODL Research Irritation Bank' after those ideas are re-appraised and refined. Such suggestions and or research irritations could be gleaned from common community socio-economic challenges, health and politically-related issues as well as fate-prompted difficulties that affect their overall human and useful living.

Instigating a very formidable and virile tradition and or culture of research in ODL can be advanced from the background of little ideas that are generated by the DLs. Some of such ideas, when initially generated and or presented by the DLs, may be poorly organized, disjointed, unmotivated and or meaningless; but their novelty should be acknowledged and galvanized as part of their entry behaviour. When senior academics fail for instance, to acknowledge such little ideas and or overtly criticize to a ridiculous level, younger academics and or learners, such individuals may find it difficult to come up with topics and or ideas in the future. In some instances, the academics may spend a decade or more to finish through a research graduate programme that should have been a three, four and or five year-programme. Supervisors' pressurization may also impact on others to plagiarize while the majority would quickly offer through contract, their theses, dissertations and or project report-writing to paid agents who then facilitate on their behalf, the dissertation requirement for degree certification in their respective universities.

In the earlier studies of Osiki (2008, 2001) and that of Braimoh & Osiki (2008) for instance, and in particular, for re-echoing on the unfathomable research difficulties that often confront learners, they were quick in the identification of some of such challenges. Prominent among the research challenges of the DLs, specifically identified in Osiki (2008), was the difficulties in 'writing and reporting project/dissertation/theses'. Using the Research Status Inventory (ReSI, 2007), Osiki (2008) adopted the 19-item classification of DLs'

research behaviour which ranges from 'choosing feasible titles/topics' to the 'discussion of research findings'. In analyzing its findings that was specifically administered to the DLs, university of Ibadan, Nigeria, the study reported that out of 988 participants, 971 (98.3%) as against 17 (1.7%) reasoned that research theses/dissertation/project report-writing should be made optional. Furthermore, while out of 416 participants, 349 (83.9%) indicated that they detested research methodology/project, another 78.4% said that they did not like the aspect of writing and reporting projects. What these findings epitomizes in the immediate, is to support the fact that while academic research is very demanding and tasking, the little research behaviours that learners manifest, while they may be nonsensically frivolous, and or spurious in language usage, such efforts should be acknowledged especially in DHE for the nurture, development and stimulation of creative spirit for prompting adequate and responsible research behaviour and culture.

Emotionality Versus Empowerment of Research Tradition

A stupendous number of research has been facilitated, especially involving empowerment (Braumoh and Osiki, 2008; Osiki, 2007; Adetoun, 2005; Page & Czuba, 199) though its interconnectivity, with learners' emotionality, and how that can induce and continue to sustain a culture of research among academics, is little known. While Page and Czuba (1999) reasoned that the term "empowerment" is a process that challenges the assumptions about the way things are and can be, they also submitted that, the central contention in the definition bothers on '*power and the product of power that is held in relation to the people and other things*'. In their treatise, Page and Czuba's contention that: (a) power can change; and where it does not, it means that there is no empowerment; and (b) that empowerment also depends on the idea that power can expand

(i.e. power got at the expense of others-“the zero-sum theory”) epitomises Max Weber twentieth century maxims that: (i) “*power is related to our ability to make others do what we want, regardless of their wishes or interest*”; and (ii) “*power will remain in the hands of the powerful unless they give it up*”. Whether among the powerful and or the powerless however, and from whom the product of power is traded, one fundamental logic remains unattended to. Central to this logic, is the dimension of individual emotion which, arguably, is the engine house of all human actions (whether favourably and or otherwise, but herewith, directly considering its obvious impact for instigating research tradition among African learners in ODL).

A common phenomena, particularly in HE and or DHE, in most parts of the world, is the presentation of a some what ‘blank programme cheque’ where the potential applicant and or learner is permitted and granted his/her choice of academic degrees. For instance, in some higher education institutions of learning (HEIL), the academic offerings at the graduate level in particular, may range between purely academic and research sub-programme types. Some of such available options are: (a) research consultation (i.e. dissertation with limited course work); (b) research consultation (i.e. course work with dissertation component); (c) dissertation/thesis only; (d) course work only; and (e) Selected number of publishable articles only (i.e. ranging between 3 and 5 publishable articles). Having such a pre-determined and varied academic arrangement summarizes the notion that: (i) the difficulty of conducting research, especially result-oriented type is acknowledged; (ii) everybody can not be expected to conduct research; (iii) certain programmes in HE are not research-driven; (iv) research in HE can only be empirical (surveys and interventions); (v) conducting and writing/reporting of research implicates the active involvement of a researcher’s emotionality; and (iv) success in any research is a function of individual emotional status.

Considering the etiological importance of one of the earlier events, at the National University of Lesotho (NUL), Southern Africa, for instance, and where research training workshop was held (NUL Bulletin, 2008), its impetus, supposedly might have been the direct and or indirect import of learners’ emotionality in research ventures. Even though the learners’ emotionality was never directly and or otherwise the emphasis, younger academics also under-going further graduate studies are also consequentially impacted and motivated. Screening the theme of the workshop which was tagged ‘*Demystifying the Ph.D*’ therefore, and which was posted for all her academic staff members and in particular, the postgraduate students, one of several conclusions are derivable; and these are that: (a) there is a low application level and or dearth of graduate entries in Faculty/university postgraduate programmes; (b) the low entry into graduate programme might have been muted on the single rationale that potential applicants lack the courage of venturing into post-graduate programmes for the apparent reason, that they dread the research component of graduate programmes; and finally(c) the unreported fear (otherwise, emotional distortions) that, learners may not be able to actualize their dreams for a graduate degree.

Critically analysing the aforementioned inferences, and without doubt, its concomitant implication, simply explains one of the reasons why there are usually dearth of graduate programmes and or an infinitesimally reduced graduate enrolment in some HEIL. An example of such Institutions of Higher Education (IHE) is the National University of Lesotho (NUL), Southern Africa where graduate enrolment is presently low. In Braimoh and Osiki (2008), only about 15 doctorate degree students may be on enrolment, with over 70% of this coming alone from the Faculty of the Humanities, NUL. While underpinning the importance of the discussion on learners’ emotionality for directing research empowerment in ODL, neglecting how the learner learns, how he/she prepares to learn has

always constituted an immense setback for stimulating research tradition especially in DHE.

Examining the implication of psycho-emotional preparedness on the girl-child education, Osiki (2008) argued that the child learns meaningfully when he/she is mentally stable and happy. In defining emotionality and or emotional preparedness/ status, Osiki said it is the total feelings that predispose the learner's mental alertness and readiness to ensure productive learning; and that, it is the function of the individual personal relaxation which can be affected by the attitude of significant persons (i.e. teachers, parents, etc) within the school system (i.e. since that is the present focus of the study). Learners' academic and or professional behaviour and, in particular, research empowerment would receive the expected impetus when their self-perception and how they are perceived by others correlate positively. Learners' self-perception, how they perceive their self-worth with a concomitant relationship to how they are perceived, their mental wellness, overall happiness, the happiness of others, positive and or negative regards of others, as well as the differential level of personal attitude of significant people are part of the cumulative indices of emotionality which, functionally affect their availability and commitment to research especially in DHE. Thus in consequence therefore, and as epitomized in Osiki (2008 b), the triplex factors predicting emotional trends are: (a) presence of environmental stimulus; (b) sense of heightened physiological arousal; (c) personal idiosyncrasies; and (d) cognitive appraisal of any given situation.

Before now, and as it were, the practice in the majority of HE and or DHE, programme facilitators (PFs) are known to render the triplex instructional model without any recourse to knowing how the learner learns (i.e. his/her emotional wellbeing), what he learns, the outcome of that learning both for his holistic adjustment and the community survival. Using the triplex model in facilitating teaching-learning behaviour, the PFs' activities can be summed up thus: (a) as a selector

and or designer of curricular; (b) dispenser and or teacher/presenter of the product of the curricular; and (c) curricular evaluator (programme assessor). But of course, the fact that meaningful learning can be subsumed via multiple routes is undeniable. Ensuring adequate research behaviour that would be notable, comprehensive and have marginal value, especially in the twenty-first century ODL, the aspect of empowering research tradition would therefore be pursued through the enabling hygiene-factor, that would harness the benefits of the academic motivator, disputation (otherwise, challenger), and or critic (i.e. objective appraiser) which impact and enhance academic behaviour as well as professional credibility. Demonstrating the peculiar benefits both in research and overall academic and or professional competences, in 'Engines for Education' (2008), the roles of such other factors, as the brainstormer, manager and leader (noting the peculiar qualities and mannerism) should be extensively included for a virile HE and or DHE scholarship.

Reliable research, that has relevance for continuity as well as derived value, begins the day academics are equipped to appreciate the marginal advantages of the importance of the motivator rather than that of the expert in academic competence and professional responsibility. The motivator in any academic environment sets realistic, concrete, achievable and specific goals for learners through directed and guided behaviour; and through a relationship of symbiotism, work through supportive and acceptable compromises. Having the same frame of mind with the learners, the academic and or the motivator adequately knows therefore how to engineer and prompt needed research-related responses from the young academic. This seldomly happens with the expert who, most of the times, by virtue of their superiority and knowledge facilitates research/academic behaviour in an almost untherapeutic gesture, while displaying self-egotism. Many supporting programmes in HE and or DHE or ODL that are particularly geared towards the creation

of enabling academic environment, are actually met to boost the learner's emotionality through counselling and guidance services they render.

Empowering the Culture of Research within Ethical Standards

Research information on empowerment, whether in education, socio-culturally and or eco-politically and wellness/mental health/medicine are quite enormous (Chamberlin, 2008; Commonwealth of Nations, 2007; Sazama and Young, 2006; Fletcher, 2005). Fundamental in the various discussions on empowerment however, and or the stimulation and sustenance of research tradition especially within DHE or IHE in general, is the indubitable fact that defines, directs and restricts its tenets within workplace standards and or practices. Workplace standards and ethics specifies *what must be done, the 'how' 'when', 'where', 'its frequency' as well as the facilitators of whatever programme that may need to be implimentable within acceptable workplaces' regulations.* Although the Commonwealth of Nations, in their plan Action for Youth empowerment (2007-2015), conceptualise the term empowerment when it said *'young people are empowered when they acknowledge that they have or can create choices in life, are aware of the implications of those choices, make an informed decision freely, take action based on that decision and accept responsibility for the consequences of those actions'* that on Mohawk Valley Community College (MVCC) (2008) presented a more focused orientation especially, for IHE example. The work contents of the MVCC, among others, defined how learners are assisted through professionals and peer tutorship in deficient and weak areas of their academic responsibilities including reading, writing, mathematics, chemistry and biology. Professionals and peer tutors, using the MVCC as a referent point, within a well conceptualized norm, usually provide supplemental instructions to ameliorate learners' challenges as well as their

emotional conditions predicating poor academic performance.

When Osiki (2006) perceive the term 'empowerment' as an all-embracing but varied strategy employed in the different form of acquisition, awareness creation/generation, knowledge-generation and creatively-tested ideas designed to instigate independent, meaningful and useful living both for individuals and the family, he also did not compromise on the benefits of re-tooling individual skills and or that of a group of individuals outside any known and well established workplaces ethics/standards; but on the contrary, its implication. Osiki's position, though was originally intended to economically, through the acquisition of relevant skills for multiple income-generating activities, empower the girl-child, by implication, the study argues that the best method for the empowerment of an individual, is by creating opportunities for personal exposure and growth (otherwise subsumed in what John Dewey called "learning by doing", an example of the pragmatic approach). Learning-by-doing paradigm is atypical to either plagiarism and or mutilation of library collections which easily summarises an unbecoming excess academic behaviour. Behaviour excess in academics typifies actions and activities of individuals (whether they are teaching and the non-teaching members of staff as well as the learners) that are carried on, but, in the strictest sense, contravenes the fundamental rules, regulations and or workplaces standards/practices. Some of the behaviour excesses especially in HE/DHE are academic dishonesty, plagiarism, pilferage, mutilation of library collections, and other form of cheatings.

So many workplaces organized abuses (otherwise, shortcomings) are profoundly inherent in most academic institutions of Higher Learning (AIHL) globally today; and without any misgivings, such abuses constitute one of the greatest challenges in ODL. Some of such shortcomings range from academic indolence to cheating of various shapes, some of which are: plagiarism (partial and full) taken from library materials as in

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textbooks, journals, theses/dissertation/projects as well other classified bibliographic sources either through physical contact with the reference sources and or via the online. Others include sharing information passed on and or shared through private e-mails and the mobile sets. Thus, as the culture of research, especially among recipients of ODL is becoming an urgent consideration, empowering a versatile DLs, with the propensity for participation in a value-driven and community-based research activities, being involved in such goal-directed researches, especially as it affects our collective emancipation, socio-economically and or politically as well as healthful living/medicine should therefore no longer constitute any threat within the academia.

An indirect implication to academic (i.e. research potential inclusive) empowerment was referred when Abbott, Siskovic, Nogues & Williams (2000) submitted that cheating was one of the most pervasive issues that confront educators when the discussion on ethical practices in assessment came on. Making a further ravage, other studies, with an index-comparison on earlier survey, gleaned from Who's Who Among American High School Students found that out of 3,123 students, 80% of them "*admitted to cheating on an examination*" (McMurtry, 2001) while another 50% of them "*did not believe that cheating was necessarily wrong*" just as 95% of those who had cheated said "*they had never been caught*" (Kleiner & Lord, 1999). In Eissens and Stanislaus (1999) investigation on which methods of cheating are most common, especially at the University of North Carolina (UNC)-Chapel Hill, a 14-points List as shown below was provided:

- getting an answer from someone else's paper during a test
- turning in the same paper in two different classes without making sure that it was all right with the teachers
- copying someone else's paper (for instance, lab reports or group projects)
- plagiarizing parts or all of a paper
- knowing that someone else was cheating but not reporting it
- giving or receiving unauthorized help but still signing the Honor Pledge
- looking at the answers to a test beforehand
- using unauthorized information sources during a take-home exam
- exceeding the specified time limit on a take-home exam
- turning in a paper that was written by somebody else
- allowing someone else to cheat off of one's own exam paper
- giving one's own paper to someone else to turn in as his or her own
- taking a cheat sheet into a test
- ordering or downloading a paper from an online term paper service

Gleaning through the Eissens and Stanislaus' 14-points list, empowering academic research can be rather complex where, the product of the bequeathed power are plagiarized and disseminated to young and unsuspecting academics and or learners. Worse and more academically dangerous, especially for a dynamic and viable ODL, is the condition where both the learner (otherwise, young academic) and the PFs remain the product of a long standing academic fraud down the ages, but, who, at no time were neither caught nor punished for any misdemeanor. Empowering learners, especially in the twenty-first century ODL, would therefore need to promote avenues, for recognizing individual and or collective opinions independent of academic dishonesty while various ethical committees would continue to specify, modify, regulate and recommend workplaces standards. Hinman's (2000) recommendations, though originally designed for curtailing academic dishonesty, have implications, especially, however, for improving the overall workplaces practices. The triplex para-

digm Hinman suggested is (a) virtue approach; (b) the preventive approach; and (c) police approach. While the virtue theory was patterned in developing and supporting younger academics who are wearied of academic indolence, fraud, plagiarism and or dishonesty, research empowerment, in ODL, would therefore, unequivocally, maximise its gains when every preventive steps are taken, through specific workplaces standards in fostering academic and professional credibility. Scholarship, within such academics, would be recognized by setting workable standards for the administration of premium and or credits for deserving researchers with the concomitant and appropriate machineries for punishing breaches.

Mentorship, Empowerment and Research Tradition in ODL

Prominent among the discussions in ODL is the concern on how mentors would concretize their efforts through the over-stretched importance of empowering the mentee who may be several miles away. Though the terms 'mentorship' and 'empowerment' are two interdependent terms with semantic proximity, essentially, the positive outcome of mentorship is the product of skill acquisition that predict our marginal utility whether through total research and or academic/professional behaviour. Mentoring, typified as part of any institutional responsibilities, is the informal educational and or organisational process which promotes personal and intellectual (otherwise, management) growth, including professional development through empowerment and confidence-building techniques for the achievement of academic, professional, workplace and other organisational competence (Braumoh & Osiki, 2008). Mentorship, without doubts, ensures personnel commitments while directing at the same time collective efforts to a vision-driven organisational goal. The triple terms "mentor", "mentee" and "mentorship" convey several meanings to different people, even in academia. While the word 'mentor' is a construct

that may be too acceptable in any social setting, the dupletic terms 'mentee' and 'mentorship' do not easily attract the least applaud. The reason is that those who mentor are perceived to possess too superior and very rare knowledge, wisdom and skills which they can use within the slightest provocation for influencing workplaces standards and decisions. On the contrary, the mentee may be regarded as a novice who must be taught and regularly instructed since he/she does not and or may not have knowledge (otherwise, reasonable knowledge) germane to organisational vision, growth and success.

Since doing research, especially within the backdrop of the ODL, among others, essentially means an investment on knowledge for its marginal benefits, etymologically, mentorship (otherwise, mentoring) and or empowerment have high premium for instigating the continue research dividends both for the individual and community survival through the cyclical order as the term 'research', arguably connotes undertaking, in a repeated format, but differentially- sound and scientifically accepted method, an investigation again and again. It is searching again (i.e. 'Re'+ 'search'); but which involves meaningful and goal-directed search with the propensity to benefit mankind. Etymologically, the term 'mentor' or the story of mentor was originally derived from Homer's Odyssey mythology. According to the mythology, the term 'mentor' was got from '*mentes*' a sort of care provider (who had served as teacher and overseer of Odysseus's son, Telemachus during the time when Odysseus, King of Ithaca, went to fight in the Trojan War). In time, the word 'Mentor' became synonymous with such terms as '*trusted advisor*', '*friend*', '*teacher*' and '*a wise person*'.

Added to the etymological issue however, is another question that bothers on the generic meaning of the term 'mentor' which, many, claimed is more of masculine rather than feminine. Although while importantly tracing the genesis of the term, its derivative meaning, got from '*mentes*' portrays

the attribute and or name of the goddess Athena who had disguised as a Taphian chieftain named Mentos in Odyssey mythology to assist Telemachus, the son of Odysseus, the king of Ithaca (Burgess, 2004). Related to this argument is the juxtaposition, of a most likely substitute, though not commonly and seldomly taken especially in studies, of the term 'womentor' captioned from the supporting network of female organizations whose objectives are directly devoted to promoting and advancing issues related to the girl-child interests and empowerment.

In the family however, a mentor can be one's father or mother and or other significant persons who, by virtue of their age, life experiences and exposure, are endowed to facilitate needed guidance, counselling, leadership and trust. In every workplaces (i.e. academic institutions inclusive) for instance, mentorship, from knowledgeable and or experienced members of any known organisation is provided both to contemporaries and the inexperienced, new entrants and the younger majority. Though modern usage of the term prefer to use *pari-passu* such words as 'experienced', 'senior', 'leader', 'manager', 'director', 'head', 'professor', and or 'registrar' to qualify who should provide mentorship, and depending on the background being referred to, a mentor may not necessarily be the head of any organisation. In HE and or ODL in particular, the mentor should be the academic and or non-teaching member of staff who has superior knowledge to influence needed decisions, support both staff and students, facilitate organizational goals and dreams, and liaise with others in directing research needs and or efforts. The mentor is unequivocally, a personified model who is friendly, easily accessible and always willing to lead. According to the United State Army Warrant Officers Association (USAWOA) (2008), the mentor is a teacher, tutor, coach as well as a close, trusted and experienced counsellor. Mentorship, according to USAWOA is a voluntary developmental relationship that exists between a person of greater experience and a

person of lesser experience that is characterized by mutual trust and respect. USAWOA went further to say that:

- Mentorship provides a non-threatening avenue to seek advice.
- It enhances and accelerates the leader development that's conducted routinely within
- the chain of command.
- It enables individuals to reach their full capability and skills.
- It helps increase confidence and self-awareness.
- It increases opportunities for networking and promotion.
- It is a combat multiplier that improves readiness and retention of our Army.

Considering the enormity of the function/task of the mentor, particularly as it relates to the twenty-first century HE and the ODL specifically on one hand, and the challenges before the mentee (otherwise, the protégés) on another, certain qualities, as part of the accepted indices for an apparent mentor-mentee relationship are necessary. Having these qualities curtail the possibility of egotism among mentors while at the same time, it reduces unscrupulousness in potential mentee (protégés). Knowing the aforementioned underscores the importance of the notion that, in research and or academics generally, there are no perpetual academic highlands. This is because, in academics and research activities, while everyone is a learner and continues to learn, functional research is the product of shared knowledge and symbiotism. While learners and or the younger academics (otherwise, junior members of staff) are influenced unequivocally and usefully by their respective research and academic facilitators (i.e. supervisors/advisors, professors, teachers, etc), most times, the mentor also benefits from his/her relationship with the mentee.

According to Melanson (2008), and talking from the background of Military Officer, defined mentoring as a partnering relationship where a senior, more experienced officer provides guidance and advice to a junior officer in order to foster professional growth in the subordinate. Discussing more on what he called the '*kernels of wisdom*' for the mentoring relationship, haven been both a mentor and protégé himself, a 10-commosensical maxim/rules each, for both the mentor and the protégé were summarized; and those for the mentor are:

1. It is not about you
2. Always Maintain Confidences
3. Set and Enforce Boundaries
4. Know Your Limitations
5. Keep Your Promises
6. Listen and Ask Questions
7. Reach out to Junior Officers
8. Don't Sugarcoat Feedback
9. Be Yourself
10. Commit to Continuous Learning

The juxtaposition of the rules for the protégés shows that he/she must: (a) cherish the mentor's time; (b) always maintain confidences (i.e. mutual trust); (c) learn from personal mistakes; (d) be receptive to feedback; (e) keep promises; (f) genuinely consider advice given; (g) clarify your expectations; (h) respect the chain of command; (i) bring more than just your problems (i.e. coming armed with potential solutions; and (j) be committed to continuous learning.

Understanding the mentor-mentee relationship, and how that structure should subsist, within the twenty-first century ODL in particular, should be an interesting dimension for modeling sound scholarship tailored toward result-oriented research. Although the location of both the mentor and or mentee has been defined by virtue of the nature of ODL programme, adequate utilization of the blended method in the dissemination of information can be harnessed in articulating the

marginal benefits of research through mentorship. Using the traditional and or the team paradigm of mentoring for instance, sometimes, it may become important to call an assemblage of DLs, as a follow-up for some pre-determined and or routine seminars/conferences in validating and re-validating, within regular intervals, the effect of mentorship on a comprehensive manner and or in holistic academic/professional behaviour.

Modelling for Qualitative and Quantitative Research in ODP

What should our research approach be in the twenty-first century ODL? Several questions are very often generated each time the issue of research was given premium as graduate (otherwise, baccalaureate) applications are being scrutinized for admissions. The same confusion usually agitates young academics seeking approval for research topics and or titles (otherwise whenever publications are sought for career improvement in the workplace). Some how, it is the human attempt for solace that offers explanation for the difficult circumstances of academic fraud and or dishonesty in HE and or DHE. Earlier studies (NUL, 2008; Osiki, 2008) have shown that doing research for pleasure is a continuous challenge not only in ODL, but HE generally. If doing research was easy, then, of course, every graduate programme would have the component part of research rather than the situation where, the individual applicant for graduate studies chooses between having a graduate programme with or without dissertation. Some other graduate programmes are designed for the choice of retaining partial and or limited dissertation. The argument that '*everybody in HE does research*' is therefore a nullity and very misleading; otherwise, research would amount to become the mere collection of written stories and or collection of poems. Scientific research is not only more than this, but rather, it exemplifies the meaning and value that life has; and that, moreover, it is what,

on a regular basis, is added to life qualitatively and or otherwise.

Even though in Osiki (2008), reporting the outcome of an earlier intervention study, had itemized some of the difficulties and challenges that the DLs have during their research/project report-writing, important in DHE however, should be the continuous attempts to ameliorate these challenges both, for academic/professional credibility and for adding value to the quality of life. Paramount therefore in these suggestions, is how the DHE programme, through a method of *'learning-by-doing'*, should be able to model research inclination in learners. Through regular, but productive joint and collaborative efforts, the DLs and the younger academics/colleagues for instance, can develop, construct, validate (through appropriate psychometric methods) and apply the details of such outcome for empirical publications. Empirical publications and or studies are outcome investigations that either take surveys (whether descriptive and or correlational sub-type) and or the intervention type. Intervention studies have their background in either purely and or quasi-experimental researches; some of its examples include the various surveillance studies, drug control trials, psychotherapeutic studies, etc; and are useful both for the development of theories and or models as well as theory-testing/verification. Studies of this nature are therefore either qualitative and or quantitative. Whether the study utilises qualitative data or quantitative information and or both, DLs importantly, especially in the twenty-first century must have the research orientation nurtured for growth and development if the DHE would continue to lead in human development programmes while retaining its relevance. Qualitative methods combined with quantitative ones can provide particularly rich and robust inquiries. Either alone or in combination, both qualitative and quantitative research are often conducted with a lot of methodological rigor.

Though such studies as Sechrest (2001) and Mittman (2001) have discussed some of the challenges inherent in the conduct of especially the qualitative research, by implication that involving quantitative research methodology was equally considered. Importantly therefore, when the DLs are to be trained and or modelled particularly in the scientific method of research, basic information on how to generate research topics/titles, meaning and type of research/ research issues related to the peculiar area of the specialization of programmes, the necessary steps required in conducting research must be provided within the best and less complex methods and or practices. The importance of research as well as the fact that doing research can be an interesting activity should, without doubt, be a foundational programme. The value that is regularly added to human life technologically, economically as well as socio-politically is the function of meaningful and impactful researches world-wide. The selection of some very basic statistical terms, its critical elements (i.e. use of labels, titles, sources/references and or bibliography); what research measures/instruments are and how they could be functionally designed/constructed, developed, validated and adopted arguably should form important section in the discussion. Using statistical summaries and how dissertation report-writing in scientific investigations are applied becomes additional emphasis after the learners are dully informed on the application of parametric/non-parametric statistics and or descriptive and inferential statistics; which all, have their peculiar merits and limitations. The judicious recommendation/selection of relevant text materials (e.g. Olayinka, Taiwo, Raji-Oyelade and Farai, 2006); would facilitate and compliment, in a more adequate and detailed manner, what the DLs need for a sound professional competence that is typical of qualitative and quantitative research methods.

Operationalisation of Feedback in Empowerment

Are feedbacks necessary for facilitating the product of research empowerment? Important as the leading question may be, HE and or ODL is interestingly, the embodiment of differential-administration of feedback some of which can either be described as ‘the scrupulous’ and the ‘unscrupulous’ depending on who the research/dissertation/project advisor (s) is (are). Higher education feedback, particularly if it is the product of sound scholarship, evolving from the interpersonal relationship between a mentor and his/her protégé can be result-oriented and a strong foundation for capacity building. When feedback to either the learner and or the younger academics is haphazardly administered, may be due to the inexperience of the advisor, and or provided when there is a conflict (otherwise, as the case could be when transference and or counter transference) between the supervisee and the advisor, then its outcome, could be too unscrupulous. Sometimes, the situation may equally arise, where imbalances between advisors -supervisee ratio may subsist; and where the advisor would be compare to react under some workplace pressure. Without equivocation however, in the circumstance of plagiarism, which is much the vogue today in most of the e-learning, the advisor should be meticulous and be observant.

Feedback, essentially, is the various information, which depicts the outcome of the advisor-supervisee relationship, provided for the enhancement of overall productivity. Feedbacks are given in various forms, depending on whether it is or not computer-based. In general terms, feedback is any message generated in response to a learner’s action. Among the most important outcomes of feedback are helping learners identify errors and become aware of misconceptions. Feedback is also a significant factor in motivating further learning (Mason & Bruning, 2008). As described by Cohen (1985), feedback is one of the more

instructionally powerful and least understood features in instructional design. In examining the literature on feedback in computer-based instruction, Mason and Bruning (2008) grouped feedback into seven clusters: (a) knowledge-of-response, (b) knowledge-of-correct-response, (c) answer-until-correct, (d) topic-contingent, (e) response-contingent, (f) bug-related, and (g) attribute-isolation. A theoretical framework based on the research was provided to assist designers, developers, and instructors in creating effective feedback in computer-based instruction appropriate to a variety of conditions. Variables to be considered in determining the type of feedback and level of elaboration include (i) student achievement,(ii) task complexity,(iii) timing of feedback, (iv) prior knowledge, and (v) learner control (Mason & Bruning, 2008). The Open University (OU), United Kingdom (2008), discussing the potential advantages in skill improvement through available feedback said that the learner is enabled in facilitating response to the following items: (a) are the comments expected? (b) Do you agree with the comments? If not, in what ways do you disagree? (c) What steps can you take to address the issues raised in the comments?; and finally, (d) what specific skills do you think you need to improve?

In today DHE and or HE generally, the need to operationalize feedback is urgent and a current attention. Considering the continue spate of Government and non-Governmental agencies’ funding in socio-economic parlance, politically, mental health and or general medicine and the threat to human survival in health, agriculture (i.e. the current debate in food crises) as well as the effort to curtail the effects of some natural disasters, the provision of regular feedback is a check on our collective commitment to the achievement of pre-determined goals. Behavioural studies (Osiki, 2008; 2008c; 2007; Osiki & Braimoh, 2008; Adetoun, 2005), utilizing the benefits of multi-behaviour techniques and or psychotherapies intermittently provide a lot of information on the

impact of feedback in a step-wise manner, and following each of the stages during psychotherapeutic encounters. How these studies are done as well as their outcome needed for the follow-up responsibilities of PFs in relation to future studies; and the decision of DHE libraries for effective classification and documentation are important dimension in HE research feedback.

Cyclical Model in Research Empowerment

Empowering research culture, to the point and or desired level, especially in DHE, depends on quite a number of factors. Professional commitments, mentor's(s) willingness, protégés'(s) ready availability and respect/teachableness, supportive academic environment and regular and generous research funds, are part of the motivation that a virile tradition of research, especially in ODL needs. How research funds that are disbursed and applied for quality research are additional consideration that should retain an in-built mechanism for regular feedback. Although Osiki (2007b) once submitted that one of the greatest challenges confronting academics generally, and in particular, the DLs, is the issue on how to select and construct a feasible title for a research project and or thesis. The report further iterated the fact that, too often, learners dread embarking on research activities; and would prefer to contract the task of their research investigation to paid agents. Paramount in the findings however, is the urgent implication that should utilize the multi-psychological techniques for boosting the learners' emotionality. While dealing and effectively combating the overt influences of the egotist mentor, empowering the culture of ODL research should therefore be multi-dimensional and transparently transformative.

Using the term 'multi-dimension' and 'transparently transformative' paradigm for inducing research tradition in especially DHE, is to advance the annexation of the vantage application of the

non-judgemental, but friendly mentor-protégés-community research appreciation symbiotically subsumed mainstream. In the paradigm, which is to be functionally carried on following the cyclical model (see appendix), the pursuit of empowering research atmosphere is therefore the re-direction of a workable, tension-free and a robust collective responsibility, following a new awakening in organisational commitment, support and a ready funding geared toward the realisation of a common research-driven goal. In the cyclical paradigm the academics (whether among the DLs, PFs (i.e. teaching and non-teaching members of staff) would be goaded to render selfless services with a new dawn of academic environment that should be answerable to global, national and or regional research challenges in mental health/health generally, socio-economic and political arena with a ready tool for equanimity.

Adapting the cyclical model and or orientation, and as it is applied to boosting a new atmosphere of generation of researchers, especially in DHE, the apparent consequence may have implication for the functional translation of the four pillars of education; and which of course is directed at a more egalitarian and sustainable growth and development. Inherent in the four pillars, should be the supposition that, in my opinion, education should be annexed in the total transformation of man, in the realisation of the society, sub-regions as well as national, and or global dream for safety, peace, wealth, abundance and enhanced quality of life. The UNESCO document for education (UNESCO, 2008), had also said among others, that quality education is a prerequisite for education for sustainable development; and which also has four major thrusts: (a) promoting and improving basic education; ((b) re-orienting existing education programmes at all levels to address sustainable development; (c) developing public awareness and understanding of sustainability; and (d) providing training. One of the likely inferences from the thrusts therefore, is that empowering the culture of research in ODL in particular and or

DHE in general would attract the commitment of important stakeholders which are, the teaching and the non-teaching members of staff (which equally include the management staff), the DLs, and funding agencies (e.g. the government).

The four pillars, upon which the aforementioned goals could be anchored, as it were, especially when the cyclical model is doggedly pursued, has it overall, that education should be functional by equipping the populace (otherwise, all); and which, by implication, also includes learners in DHE and or HE through: (i) learning to know; (ii) learning to do; (iii) learning to live together and with others; and (iv) and learning to be. Learning to know implies “*learning how to learn by developing one’s concentration, memory skills and ability to think*” while ‘learning to do’ means *occupational training (i.e. how we should adapt education so that it can equip people to do the types of work needed in the future)*; and it arguably emphasizes personal initiatives. Though several perspectives have re-emphasized some of the inputs inherent in the pillars, it doctored how practical skills for research potentials necessary for impacting academic and professional behaviour can be directly nurtured in ODL. When mentors intentionally pair up with their protégés in seminars, workshops and conferences, the mentee, without any equivocation, within such tutelages, are taught the reality of research empowerment. But for that on ‘*learning to live together*’, emphatically relates to how the basics of education could be directed to teach pupils and students and or DLs about human diversity and to instill in them an awareness of the similarities, differences and the benefits of interdependence of all people. Apart from the fact that the nations of the world benefit immensely on this paradigm for instance, it also importantly re-echoes, the essence of inter-varsity (university) libraries book loans facilities as well as university exchange programmes world-wide where learners are exchanged across cultures learn other peoples’ culture while applying the direct benefits for individual, university, regional and global advance-

ment technological, socio-economically, political and or in medicine. With an in-built mechanism for the juxtaposition of human rights along with their responsibilities, it also portrayed that when people work together on exciting projects which involve them in unaccustomed forms of action, differences and even conflicts between individuals tend to pale and sometimes disappear. *A new form of identity is created by these projects which enable people to transcend the routines of their personal lives and attach value to what they have in common as against what divides them* (<http://www.unesco.org/delors/ltolive.htm>).

The fourth and pillar teaches that the education of individuals should be facilitated by equipping them, to ‘learn to be’. This implies that, at its very first meeting, the Commission powerfully re-asserted a fundamental principle that: ‘*education should contribute to every person’s complete development - mind and body, intelligence, sensitivity, aesthetic appreciation and spirituality*’. All people should receive in their childhood and youth, an education that equips them to develop their own independent, critical way of thinking and judgement so that they can make up their own minds on the best courses of action in the different circumstances in their lives. The important logic of the aforementioned analogy was that, in the multi-dimensionality of the cyclical model, concretizing the dividends of empowerment of research tradition should become especially the vogue, in DHE and or HE, while without dubiety, facilitate the apparent atmosphere of academic/intellectual symbiotism where, the mentor would not be too egoistic while the learners and or younger academic (protégés) is (are) teachable. The mentor would not therefore be a mere programme selector, presenter and evaluator in ODL but, more importantly, he/she (otherwise, they) would be the motivator (s), challenger (s), critic (s), brainstormer (s), manager (S) and leader (s) respectively.

CONCLUSION

The paper has identified and discussed how the dividends of the multi-dimensionality of empowerment can be harnessed in creating, sustaining and boosting the culture of research in DHE generally and the ODL, Africa in particular. This should be a welcomed gesture especially for the global re-alignment of ODL, amidst its relevance in the millennium development goal. The ODL has continue to expand on its offerings globally while concomitantly, disproving some hither-to organized aspersion, in terms of the academic competence of its recipients world-wide. Improving the different aspects of its workplaces standards, through value-driven researches that annexes the benefits of the application of the multi-dimensionality of empowerment of the protégés (whether among the DLs and or young academics within the system, the ODL would continue to remain viable for impacting on the general academic credibility and professional competence of the learners with a transformative and positive research outcome. To sustain the benefits of the transformative dividends, which overall would continue to impact on our individual and collective development and growth, whether within the community and or sub-regions, national and or global, socio-economically, politically, general improved quality of life, world peace, eradication of poverty and its attendant squalor and or health, creating and facilitating a research stimulating academic environment, through a symbiotism of intellectualism, the ODL and or the DHE would continue to make strides. Having a collectivation of useful academic strides presupposes that, in mentor-protégés tutelages and or relationship, premium would be given to harness the earlier signs of the mentees' emotionality as well as irritants, in boosting mentorship and research commitments.

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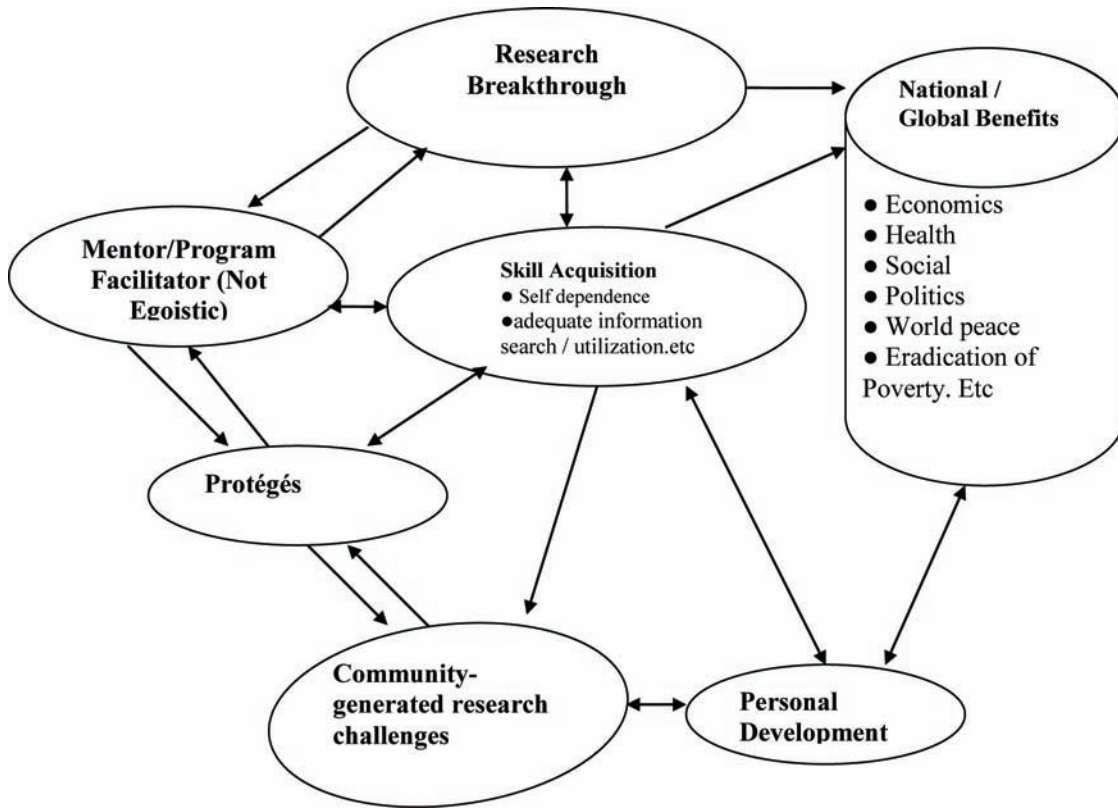
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APPENDIX

Figure 1. Cyclical model in academic research empowerment



Chapter 14

Developing Social Skills through an On-Line Learning Environment: A Qualitative Study

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ABSTRACT

The rapid pace of social change deriving from technological and financial revolution and globalization, effects greatly people's lives. Adults nowadays need to stay relevant with their environment, to be proactive and to take important decisions that affect their personal and professional future. Thus, they need to be equipped with advanced social skills such as time management, leadership, communication, teamwork, problem solving, flexibility etc. Such skills can be developed through training programs, designed and delivered upon the Adult Education and Experiential Learning theories and principles. A central aim of this chapter is to highlight the methods through which e-learning can contribute to the development of social skills, implementing at the same time the above mentioned principles, in the context of a large organization.

INTRODUCTION

The general goal of this chapter is to pinpoint the essentiality of social skills development through training programs which are designed and delivered according to the adult learning theories. It will

also present a case study in which on line training seems to respond successfully to the learning needs of the employees working in today's demanding environments.

The chapter's specific aims are:

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1. To bring out the necessity of social skills development for adults working in contemporary and complex environments.
2. To elaborate on the preconditions demanded in order for social skills to be developed in the context of large organizations.
3. To explicate the emerging obstacles during social skills development.
4. To analyze a case study which shows that e-learning can enforce and ensure most of the Adult Training and Experiential learning principles.
5. To present results demonstrating the effectiveness of developing a collaborative and creative on line learning environment.

A. The Necessity of Social Skills Development in Contemporary Complex Professional Environments

Contemporary social conditions and constant change are greatly and variously influencing adult lives, often resulting in professionals' difficulty to stay relevant and meet their career demands. Caffarella & Lewis note that: "*In a society of constant change, like ours, learning and preparing for new challenges has become an industry targeting to all citizens and ages. Furthermore, and contrary to previous times, adult lives and choices are far more complicated and of a broader range.*" (in Brockett & Knox, 1994, p. 1)

According to bibliography¹ such changes concern three major areas: social structure, financial globalization and rapid technological progress.

Constant *sociological* changes create the need for ongoing adult training and development so that citizens can face contemporary demands. Goleman (2000) supports that in times of employment instability, where the term of "labor" is replaced by the term "transferable skills" such skills are becoming of great importance allowing adults to ensure their present and future employment opportunities and progress. This means that members of the society should be armed with advanced

skills in order to manage changes – both voluntary and involuntary – and must be flexible and fast learners. Furthermore, adults need to own such skills not only for surviving in today's society but also in order to lead a creative life, feeling content, utilizing a wide range of employment and personal development opportunities, and successfully encountering potential threats.

Equally the increase of competition and institutionalization of *globalization* affect the world economy. Organizations aim at decreasing costs and increasing the quality, as well as the variety of their products. Achievement of such aims can be pursued through human resources who can undertake multiple and complex roles and duties and thus should be characterized by self motivation and creativity, flexibility and problem solving skills, in order to overcome crisis and demanding work conditions (Phillips, 2006).

Last but not least, *technology* catalytically influences knowledge, entertainment, employment, economy and government. The necessity for technological conversance and new information technology practices daily entering working environments as well as the continuous data creation lead to rapid depreciation of existing professional skills and knowledge, (Meriam & Caffarella, 1999, p. 15).

Due to the above mentioned changes new working conditions are being created leading to the necessity of Social Skills for various employment roles. The term Social Skills refers to a group of skills – excluding knowledge, qualifications and work experience – that each professional should be armed with in order to meet the demands of his/her role and duties. In an attempt to clearly define the term Social Skills through Bibliography research, one often detects an indisputable core of skills containing abilities such as communication, teamwork, leadership, time management, flexibility etc. (Brookfield, 1986).

Goleman, (2000) reports some quite distinct examples in order to show the necessity of Social Skills in contemporary society:

- “In a modern technology company the group of employees dealing with the feed-stock storage should carry skills such as active listening, comprehension, flexibility and cooperation within a team.
- In a medical centre, technical training and analytical skills are considered to be invaluable. However, emotional skills such as interpersonal abilities, innovation, effective leadership and cooperation with various institutions within a broader context surrounding the medical centre, are also quite important.
- In a large petrol industry, analysis and expertise are considered essential skills in order to succeed in the fields of mechanical engineering or information technology. Equally important are skills such as self-confidence, adaptability, goal setting, provision of quality service, teamwork, exerting influence, and personnel development.” (p. 59).

Training and development can highly contribute in the exploitation of new opportunities and the successful encounter of potential threats. Jarvis, (1999) remarks that training can aid adults in achieving a more creative relationship with modern reality, enhancing their lives and eventually conquering the above mentioned social skills. However, which kind of training is considered to be more effective in the development of social skills? What kind of training techniques, principles and preconditions will assist adult trainees in developing social skills and consequently coping with their demanding career roles?

B. Basic Preconditions for Social Skills Development (Adulthood and Experiential Learning)

The previously described essential social skills that a professional must demonstrate in the workplace cannot be developed through the mere reading of

a book or the participation in a relevant lecture. Carefully designed training should be delivered in order to cover the special training needs of the participants. Research reveals that personnel’s training has not always been appropriate for the accomplishment of the above aims. Corporate training programs often target in plain knowledge acquisition using traditional learning techniques and thus their effectiveness is considered low. Sometimes organizations train their employees in leadership, creativity, change management and active listening, with seminars that are completely based in theory and lack of practice. It has been proven that such seminars have actually a negative effect rather than a positive one (Goleman, 2000).

On the other hand, the difficulty of the social skills development is a given fact, since it involves changes in a person’s attitudes and behavior. It has pinpointed that laborers often participate in well designed training programs and courses, while employees working in an office environment dealing mainly with people rather than products, rarely participate in training. This is due to the fact that their development is considered difficult since it involves skills instead of technical knowledge. Their social skills are developed mainly through “trial and error” rather than the participation in a series of training events (Argyle, 1998).

Many scholars in the Adult Education field recognize that the social skills development itself as well as the nature of adulthood and the characteristics of adult learners, dictate a specialized training approach. It is noted that in order to develop social skills through training, student centered techniques must be adopted. Such techniques promote the active participation of the trainees and provide them with the opportunity to discover and mainly experience change before they are asked to put it in practice. Experiential learning and the training techniques involved in it seem to be quite effective not only in relation to the social skills development but also in regards to the profile of the adult trainee himself (Phillips, 2006).

The following factors and characteristics signal adulthood and create the need for a training design (either in classroom or through e-learning) that will satisfy its specialized conditions.

Adults participating in training have often recognized the need for it. Thus adults come in training with *particular goals*. If they don't manage to cover their goals, sooner or later they will terminate training (Rogers, 1999). Another characteristic of adult trainees is their *desire for action*. Thus, in adult training programs the trainer should share the responsibility of the training process, training goal setting and methodology with the trainees (Jackson & Caffarella, 1994). Another factor impacting the training process is the adult learner's demanding life and its *exigent obligations*. The training programme they are participating in is not their major activity. Thus they exhibit concentration difficulties especially if the training process seems uninteresting or does not require their immediate participation. When the trainer treats them as passive receivers they quite easily lose concentration and are more likely to reflect on their following day's concerns (Jackson & Caffarella, 1994).

The more important characteristic of adults that seems to mainly affect their training is their accumulated *experience*. Rogers (1999) mentions that trainees' experiences can have a motivational function in the training process. The trainer can easily associate any matter with their personal experiences in order to maximize their interest in the training process and subject matter. In fact, such experiences should not be ignored since they depict the trainee's lives, in which they have sentimentally invested, and when disregarded they feel that their personality is being questioned.

The above mentioned characteristics are immediately related to the imperativeness of the trainees' active participation in the learning process, either by exploiting existing experiences or by creating new ones. Courau, (2000) describes active participation as one of the seven preconditions in adult learning. Noyé & Piveteau (1999) also support

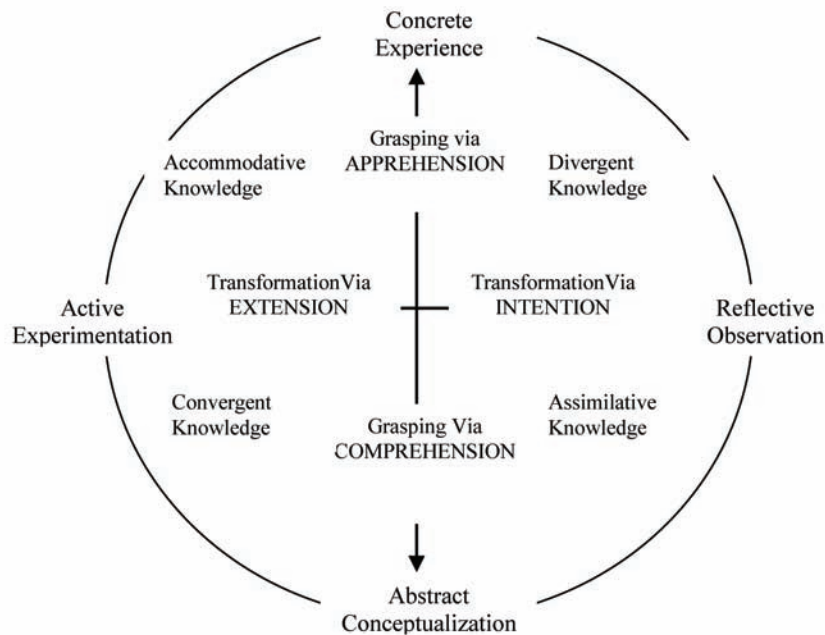
this position adding that the more participative the process the more effective the development and knowledge acquisition. Likewise, Piaget (in Merriam, & Caffarella, 1999) mentions the importance of the trainee's active role in the construction of his/her personal knowledge and abilities.

Freire, (in Kolb, 1984) also supported the necessity of *praxis* in the training and learning process. According to him action means reflection and participation in the real world in order to succeed personal transformation. Such learning and transformation can only be achieved through action (Merriam & Caffarella, 1999). Experiential learning seems to greatly meet the above mentioned preconditions of adult learning, since it is defined² as learning through experience or learning through action. Trainees are firstly exposed to an experience and then are encouraged to reflect upon it in order to develop new skills, behaviors or ways of thinking. Under these circumstances, trainees are mainly asked to act instead of listen and are motivated to analyze and reflect on their actions (Jackson & Caffarella, 1994). According to Dewey, (1997) - one of the first scholars to intensively research the importance of experience in learning - experience is created through interaction between the person and the environment. The experience obtained shapes, enriches and reconstructs the person's sentimental world.

Kolb, (1984) created a theoretical model on experiential learning known as the "Experiential Learning Cycle". According to this model the experiential learning process can be described as a cycle encompassing four learning functions: (a) concrete experience, (b) reflective observation, (c) abstract conceptualization and (d) active experimentation (p. 42). The main idea of this model is that learning results from the combination of grasping experience and transforming it into a form of knowledge. Kolb's (1984, p. 42) theoretical model is depicted in the following schema:

Experiential Learning's substantial difference from other types of active training is that all four stages should be implemented during the training

Figure 1. Kolb's learning cycle



process. Also, the stage of critical reflection is considered to be of great importance and if omitted the training event can not be characterized as experiential. Mintzberg (2005) studied the input of training programmes in the development of managerial staff and reached the conclusion that “although managers cannot be created in a classroom, existing managers can further develop there. Their experiences can turn the classroom into a rich arena for learning. Thus, through experiential training techniques such as Case Studies, for example, can help managers see their experiences in other contexts, while theory can help them generalize from their experience” (p. 243).

According to Jarvis (1999) developing skills—in the sense of someone being able to do something—can not be identified with memorizing theory but with an active nature of training. He supports that in order for someone to be able to do something in the workplace, she/he must have the experience of trial and error during his/her training, and to be able to experience its practical implementation. If a trainee just observes someone practicing a skill or

listening to his instructions of how to go about it, it will not ensure its successful practical implementation from the trainee. Mintzberg (2005) comments that ““Transmission” is not the most important part of training but just a part of the process. Learning does not flow like electricity. And learners should no more be seen as “recipients” than trainers should be seen as “senders”” (p. 242). He also remarks that developing competencies – training for skills – is not a straightforward business. It can be difficult and time-consuming, requiring learning the basic idea, experimenting, being coached, receiving feedback and carrying that learning on (Conger 1992 in Mintzberg 2005 p. 257).

It is therefore concluded that both the nature of adulthood, which requires an active participation in the training process, as well as the importance of critical reflection upon experience, make experiential learning appropriate for social skills development. For this reason, many organizations worldwide have adopted experiential learning techniques during their in house training processes.

Extensive work has been carried out by the scholars of experiential learning, regarding its preconditions of effectiveness and the techniques which serve best its intentions.

A very important element determining experiential learning's effectiveness is *content*. Silberman (1998), argues that experiential learning programs should be selective, choosing the "need to know" before the "nice to know". They have a lean curriculum since they concentrate on the critical learning areas – those elements of the subject that provide the essential basis for building later. When the content level is kept moderate, the trainer has the time to design activities that introduce, present apply, and reflect upon what is being learned (p. 13).

A next precondition refers to the *variety* of learning techniques and approaches and the *balance* between them (Silberman 1998, p. 13). Using different learning approaches is likely to be more effective than a single approach that may work for some but not for others. Also, the trainer must design a balanced program allowing time for reflection. A program full of activities but no time for reflection will tire the trainees and will not give them the opportunity to consider how these techniques have worked for them and their skills development.

The techniques used in the program e.g. Role plays, case studies, simulations and games need to be *relevant* to the participants' factuality and interests (Silberman, 1998, p. 128). Real experiences are deeply felt by the person who has lived it and yet easily shared with other trainees who have lived similar experiences (Mintzberg, 2005, pp. 266-267). The design and delivery of training techniques and the aims achieved by them should be closely related to the specific training *goals*. In order for experiential training techniques to be successful they should meet specific training purposes (Jarvis, 1999).

Negative feelings or conflicts may emerge during a training event, due to the experience of new situations or the relive of existing ones.

Thus, the trainer should be fully *informed* of the trainee members. This will assist him/her in choosing experiences and activities that will not make participants feel uncomfortable or create an unpleasant situation for them. At the same time, the trainer should be armed with skills that will help him/her handle such situations and manage crisis within the training team (Phillips, 2006).

Another precondition for effective experiential learning concerns the *directions* given prior to a learning activity. They should be carefully thought out in order to have the desirable impact on the participants (Silberman, 1998, p.131). Experiential Learning involves the effort of change and fear for such change may affect negatively the trainees. Therefore, they should be absolutely certain of the task they have to complete in order to feel confident and safe.

Due to all of the above preconditions the *learning environment* should be carefully chosen. Its role is important and should ensure an atmosphere of creativity and teamwork in order to avoid traumatic experiences. Studies showed that learning was greater and more effective within organizations with a positive environment characterized by autonomy and development opportunities (Kolb, 1984). Contrarily, when the environment is not encouraging many learning barriers emerge. Kirkpatrick (1998) clearly pinpoints the importance of the environment: "In order for change to occur, four conditions are necessary:

1. The person must have a desire to change.
2. The person must know what to do and how to do it.
3. The person must work in the right climate.
4. The person should be rewarded for changing." (p. 21).

Under no circumstances should the *reflection* upon experience stage be omitted. When reflection is ignored, the trainees cannot define what they have actually learned and achieved through the activity they have experienced (Merriam &

Caffarella, 1999). T.S. Elliot writes in one of his poems “We had the experience but missed the meaning” (in Mintzberg, 2005, p. 254).

After the completion of the program trainees will return to their work place and will be asked to put into practice the knowledge and skills acquired from training. Silberman (2005) suggests the creation of an *action plan* regarding the “steps taken by participants and the obstacles they will face as they implement new ideas and skills” (p. 15). Thus the trainer should involve them in such future planning at the end of the training program.

C. E-Learning for the Development of Social Skills: How Successful Can It Be?

Although Information and Communication Technologies (ICT) were not particularly developed for the enhancement of learning, their potential over time shows that in the near future learning will be closely associated with the “e” prefix (Cedefop (a), 2001, p. 3). E-learning emerged in the early years of ICT development, in the form of Computer Based Training (CBT) or stand-alone multimedia Cds. Nowadays, many different types and approaches of technologies, tools, and ideas have arrived on the scene. Researchers are trying to identify models and theories in order to reach excellence and best e-learning practices (Ehlers et al., 2005, p.12). However, this is not an easy task. Even when examining “conventional learning” one finds a variety of theories each one attempting to explain the process of learning from its different point of view.

As far as e-learning is concerned, even the definition of the term is a controversial effort. Moreover, when researching relevant bibliography one finds more than one term: computer based training or computer assisted learning, blended learning, virtual learning environments, online learning and internet based learning, learning packages, learning management systems, are only

few of them that may be connected (Coulon et al., 2004, p. 15-18). In the current chapter the e-learning term is associated to the use of technology for the support and enhancement of the learning practice during any stage of the learning experience and with the usage of any e-tool (Mayes & de Freitas, 2004, p.5).

Many e-learning implementations and designs were originally developed by computer experts and not by learning specialists. This led to the creation of non pedagogically-based learning practices, which in turn arouse many difficulties to the development of the new emerging discipline. Although such practices were not supported by educational and training principles, the field was technologically innovative and hence developed rapidly. However, after several decades of inquiry and research there now seems to be an effort to frame the several models of e-learning within certain educational principles. Such effort allows e-learning to mainly serve the “learning” part of the term, rather than the “e” part (Coulon et al., 2004, p.14; Ehlers et al., 2005, p.31, 71). More specifically, there are three basic perspectives that generate different e-learning strategies according to the assumptions about what is crucial for understanding learning. These are:

- the associationist perspective (learning as activity),
- the cognitive perspective (learning as achieving understanding) and
- the situative (learning as social practice).

The above perspectives have been respectively connected with relevant learning theories (Mayes & de Freitas, 2004, p. 7-10). The first perspective is connected with Associationism, Behaviourism and Connectionism research traditions, which are mainly based on a bottom-up approach where learning starts from small and logically ordered chunks and moves to more complex and interconnected meanings. The second perspective is based on Information Processing theories where learning

takes place when new forms of understanding are built through activities. New experiences help the learner to construct new meanings and understanding upon already framed structures. The last one is connected to a Social perspective and is based on communities of practice and situated learning that is created amongst groups of people. According to Mayes & de Freitas (p.10) these perspectives are not necessarily contradicting. However, the important fact here is that every e-learning design should be characterized by one (or more) of the above mentioned perspectives. This will assist the alignment of the e-learning strategy with the specifically designed learning outcomes which can be achieved through learning practices and processes.

As mentioned previously, the development of social skills in the contemporary professional arena is of great importance; however certain limitations and boundaries can lead to non effective training interventions. Such boundaries can be of practical nature (time, place) and may create substantial difficulties during the learning experience (lack of or limited participation, training effectiveness etc). Important obstacles such as distance between the seminar room and the working environment may be aroused. Such obstacles may be overcome with the exploitation of e-learning tools and their particular training advantages (flexibility of time and place, collaborative constructed knowledge, development of best practices in real-life cases etc.). The approach of the research presented in the current chapter, has mainly adopted the Cognitive and Situative perspective, and at the same time it attempts to incorporate the adult characteristics and experiential learning principles and preconditions described earlier, in order to overcome the mentioned barriers.

The program design proposed in the current research embraces the theories of adult education and experiential learning, wishing to support more effectively our learners and provide them with suitable learning experiences. More specifically, the fulfilment of the adult characteristics and the

effective learning principles mentioned in the chapter's earlier stages is succeeded through the following:

1. **Adult learners come in training with *particular goals*.** In the proposed design of the e-learning program trainees are asked to clearly and openly state their personal training needs to the rest of the team. These statements are marked on a separate discussion board accessed at any time during the learning event. At the same time the board with their mentioned needs help participants assess their progress during training.
2. **Adult learners have a *desire for action (praxis)* related to their real life context that will provide them with new experiences to reflect upon.** Their training program has been enriched with several practical ideas for implementation in their everyday working place. Participants are asked to share, discuss and reflect upon these ideas. The added value of an e-learning environment is that even if trainees being in their own environment they can simultaneously participate in a learning event. Thus, they do not experience the gap between real life and training which makes their contributions more specific and their discussions more effective.
3. **Adult learners live demanding lives and have *exigent obligations*.** Although the training program has a weekly curriculum, flexibility is assured through the absence of definite deadlines. Also, group discussions amongst trainees are arranged on certain times; however, opportunity for feedback is given, even for the latest submissions, allowing them to work at their own pace.
4. **Adult learners come to training with accumulated *experience and existing beliefs and ideas*.** The designed activities are based on their personal structured concepts and give opportunities to reflect

upon their assumptions and life decisions. The e-learning environment allows them to think and re-think over their assumptions and observe their progress.

5. **The training process should refer to the participants' real life events.** The learning activities require participants to share personal working experiences and events, and propositions regarding best working practices, processes etc.
6. **Experiential learning needs extended duration to contribute effectively to ones personal development.** The e-learning environment gives the opportunity to participants to keep in touch with the subject matter, their tutor and their colleagues for as long as they wish.
7. **Experiential learning should be followed by an action plan for implementation in the work environment.** The e-learning environment gives the opportunity to participants to prepare an action plan on a calendar and stay in touch with it and with their personal learning goals, even when they return to their workplace.

The principles analysed above and the related actions taken into account in the design of the course are clearly connected with the socially mediated constructivist perspective to e-learning (Muirhead, 2002). According to Mayes & de Freitas (2004) the cognitive perspective views learning outcomes as an interaction between new experiences and the structures for understanding that have already been created (p. 9). This is connected with several of the above principles (2, 4, and 5). Also they state that new forms of understanding are gained through activity, which is also reflected in the experiential learning principles we tried to turn to advantage in our design. Participants work to discover broad principles and construct meaning through their experiences. All these can be achieved in a col-

laborative environment where trainees share what they gain during the learning process.

Moreover, some of the basic principles of this overall design derived from Anderson's ideas on freedom and social presence. To succeed and gain the participation of employees to a project with no extrinsic motivation, we should give them maximum freedom and flexibility and at the same time offer them the greatest opportunity for learning, participation and communication (Anderson, 2005, p.1). With the e-learning method participants obviously gain flexibility of space and time. With lack of fixed deadlines they also have freedom of pace. As far as freedom of media is concerned, many usability constraints can appear that may hinder the learners. Yet, a significant effort to find new and flexible ways to learn is possible, using alternative tools. Freedom of access was an important success of the presented e-learning project mainly due to the fact the banking organization in which it took place, made the application available through the internet, meaning that no extra cost was added to neither the participants, nor the organisation. Freedom of content can also be achieved. Although participants in this project, did not have the opportunity to change the instructional style, they had alternative choices over where to post (blog or discussion forum) and if it should be public or not. They also had several opportunities to enrich the content by adding some of their favourite material relevant to the subject matter. Finally, freedom in creating relationships was an immense benefit for the learners. New and close friendships were generated amongst participants and partnerships initiated in order to perform stress-release activities, followed by briefing to the non participant members of the team, regarding their experience. Some of the trainees chose to be more discreet in creating relationships and opted for posted messages in discussion forums restraining from closer contact.

D. The Case Study: A Collaborative E-Learning Environment in the Context of a Banking Organization

D1. Description of the E-Learning Course Provided within the Organization

The designed e-learning course presented here is provided to the employees by the banking organization they work for. The course theme is “Stress Management” and is available to all staff occupying clerical and non managerial positions. Most of them are graduates of management or financial university degrees and have a good level of ICT skills. However, they have limited prior e-learning experiences. They are positioned in quite demanding posts, with many customers to serve and need to deal with multi tasks simultaneously.

The e-learning course’s goals are to:

- Understand the definition of stress and how it affects their lives.
- Realize their stressors and symptoms of stress that they personally experience.
- Develop their self-awareness in regards to stress.
- Identify the stress release techniques that suits them best and implement them in their everyday professional and personal lives.

The duration of this e-learning course is four (4) weeks. Each week deals with a particular subject matter (**Week 1:** Defining stress, **Week 2:** Basic stressors, **Week 3:** Fundamental stress symptoms and **Week 4:** Effective stress management techniques).

The structure of the program and the main area where the activities are held is a Moodle Virtual Learning Environment³. The main technologies used for the set of activities proposed are: Discussion Forums, Wikis and Blogs. The Moodle site provides a unifying accessible space which learners can visit in order to be informed about the

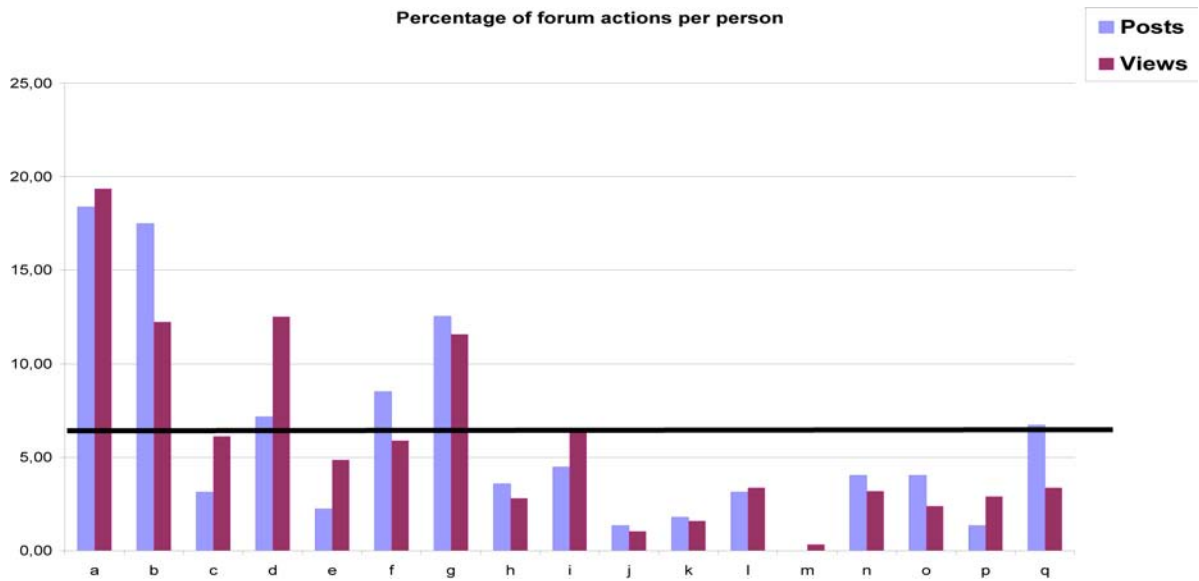
program, the activities and the study resources. Through the same space they can access discussion forums, the wiki application and a blog facility. Especially for the blog facility, which is embedded in the Moodle application, its affordances are bounded if compared with usual blog providers, and it is preferable to use a more convenient one for related activities. Moodle also provides a suitable place for building communities with several communication facilities (one-to-one, one-to-many, many-to-many) and content management tools (building wikis, databases, glossaries etc.) that can serve fully the socially-mediated constructivist approach (Moreno, et al., 2007, p. 893).

Some other key issues that have informed the design derived from Goodfellow’s report on Computer Mediated Communication and the lessons that were learned about it in the OU (Goodfellow, 2006). The main purpose of this e-learning project was to give an opportunity to participants to work together and stay in touch with the subject studied in a more interactive and long-term way, than the one-day classroom seminars. A major issue that also arose was the amount of workload that would be added to their existing demands of their personal and professional lives⁴.

D2. Data Collection

The data presented and analysed was collected during a pilot phase of the course. In this phase 20 participants were randomly selected and invited. The data collected by Moodle and used in the analysis below were the logs of the group’s actions (views and posts) regarding resources and forums. Also, an open-ended questionnaire was distributed at the end of the program, which participants anonymously filled out. This aimed in evaluating their learning experience. Lastly, all the discussions held in the forums were available for analysis.

Figure 2. Percentage of forum use (posts, views) per participant



D3. Data Analysis

Analysing data gathered from a case study is a difficult task and many pages of information and remarks can be collected. In the current case study focus is given on analysing the users' log files and on cross examination of these findings with the statements of participants presented in their evaluation questionnaires.

a. Forums

The use of forums was one of the most interesting and indicative aspects of the study. The forums' log files were processed in two different categories as shown in Chart 1.

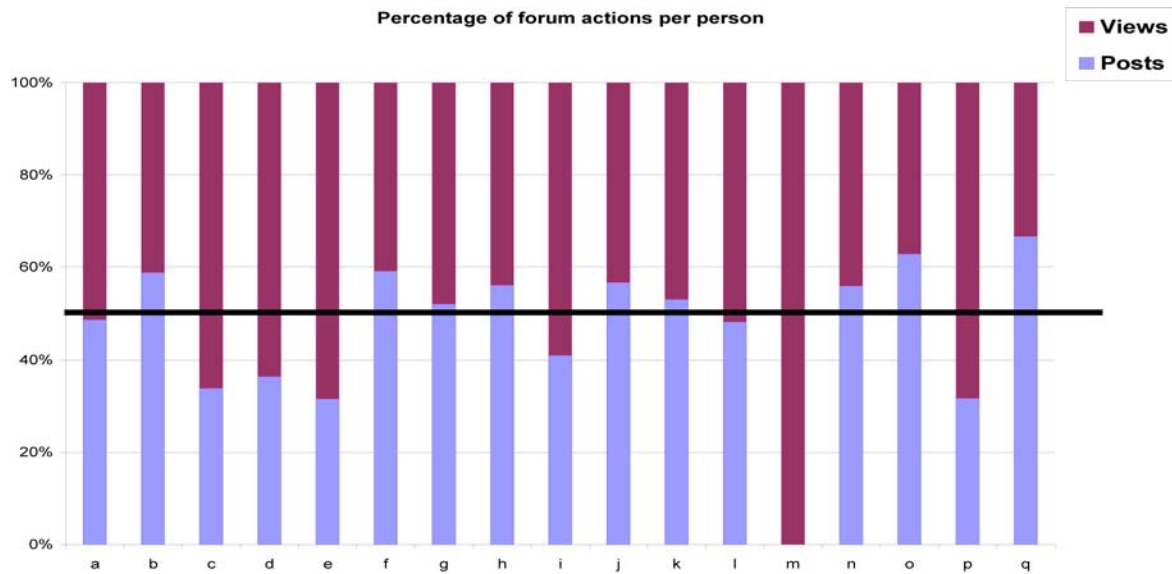
The horizontal line in the Figure 2 indicates the average forum use. Amongst the group members one can find participants with very high activity, as well as participants with average or low activity. However, the following interesting point is detected: there is a great variety of behaviour when comparing percentages of posts and views. More explicitly, there are participants with similar patterns of access and postings, others with similar

patterns only and those that have either a higher preference in access or others with a higher preference in postings. Even though one would expect the percentage of views to be higher or similar to postings, this is not the standard case. Moreover, those with the greatest difference (higher percentage of postings compared to views) are those who are employed in the bank's branches. This fact could be an indication that participants who are branch employees accessed the site in a more "effective" way. On the other hand, those participants that are occupying positions outside the bank's branches (e.g. Headquarters, administration and support positions), have a more frequent access record, even though such access was made just to check out whether other participants were posting something or to just browse the site.

The above results are depicted in Figure 3. The horizontal line indicates the dominant behavioural pattern for each participant.

The most frequently accessed forums were the ones serving introductions amongst participants. The forums created by the participants themselves in order to include information they personally gathered in relation to stress, were also, frequently

Figure 3. Percentage of forum use comparing post actions and view actions per participant



accessed. The highest activity was reported during the fourth week's forums. Such finding could be predictable since during the fourth week the most valuable and interesting topic was discussed and analysed: the basic techniques used to manage stress. However, this high level of activity was not focused on accessing the fourth week's relevant recourses and advices on stress management provided by the training programme itself. Instead, participants entered forums in order to discuss their personal experiences and methods that worked best for them in their stress management pursue.

b. All Actions

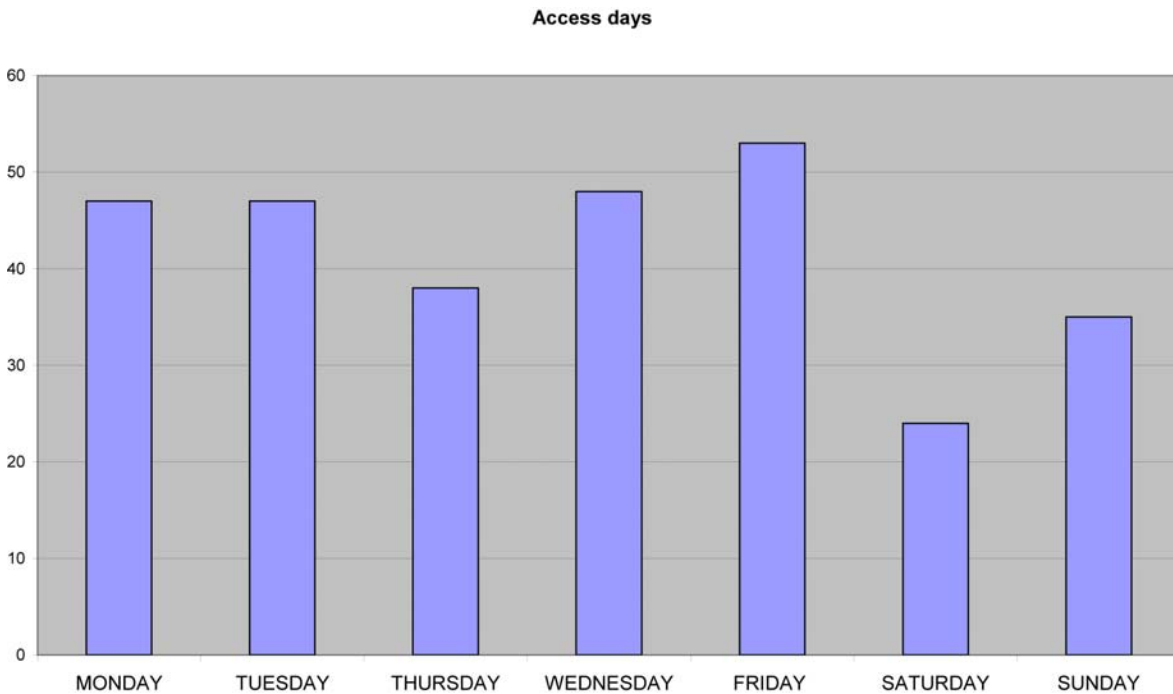
An interesting finding concerning the evaluation of log files is that the actions taken from participants occupied in positions other than the bank's branches (e.g., headquarters, support and administration) are of greater quantity than the actions taken by frontline employees positioned in branches. Such finding could indicate that work pressure and work load is greater in frontline

positions, thus hindering participants' learning process and progress. Moreover, the average site use by female participants was double in quantity compared to use by male participants.

It is worth mentioning that even though the most interesting and important recourses (articles etc.) provided by the training programme, were available during the fourth and last week of the learning event, they were least accessed by the participants. However, the forums of this particular week were the most accessed ones (as mentioned earlier). On the other hand, the most frequently accessed recourses were those of introductory remarks, first theoretical approaches to stress and the database with advices and ideas to managing stress.

A description of access in relation to each weekday is presented in the following graph. One can see that weekends are the least popular regarding the participant's preferences. It is also indicative that trainees with children never accessed the site during weekends. This may be interpreted that the course is considered by them as strictly professional concerning solely their

Figure 4. Percentage of participants' access in weekdays



career, while weekends are dedicated to personal interests and family members.

c. Questionnaires

One of the findings emerged from the questionnaire⁵ analysis is that participants need to see adult education and experiential learning principles and techniques implemented in e-learning training.

More specifically, all of the participants mention (directly or indirectly) that the main benefit gained from the course was the opportunity to interact with colleagues. They also report that their greatest payoff was their active participation and the substantial role given to them in the construction of knowledge through the learning process. An example supporting such evidence is that the first question, dealt with the course content and the trainees' views regarding it. Participants' answers did not focus on evaluating the content provided in the internet but on the fact that they

had many opportunities to contribute to learning, to create their personal knowledge and to taking action (praxis).

Their answers regarding details about the actual knowledge gained include peer learning as one of the greatest course advantages and they consider interaction as a main factor of developing their self-awareness. Only one third of participants mention details regarding actual knowledge gained. It seems that their main criteria for measuring the course success is the attitudes developed towards themselves, other participants and the subject of stress.

Additionally, in the second part of the questionnaire, participants opt for even more praxis and communication opportunities amongst them. This is also indicative of their priorities, especially if their answers are associated with the many drawbacks of the system's usability and efficiency.

It is also important to analyse their answers given to those questions concerning the differ-

ences participants detected between this e-learning procedure and other more traditional classroom courses attended in the past. Their answers can be classified in three categories. The first category is related with the opportunities given for experiential learning. The second category is related to access and flexibility of the course that gave them the opportunity to involve themselves in further critical thinking. Finally the third category is related to the opportunities given for interaction amongst participants. These three categories of answers are aligned with we described earlier as important preconditions for adult learning, and from their answers it is obvious that the program succeed in providing them.

Answers to the question relating to problems and difficulties participants faced during the training event, are associated with two major barriers: a) lack of time and plurality of professional or personal obligations, and b) system difficulties regarding access or limited experience on dealing with similar technologies. These answers completely agree with the adult learner's profile prescribed earlier in the chapter (high level of obligations, limited time, difficulty with changes and new technology etc).

D4. CONCLUSION

Change in practices come real slow in large organisations, due to the fact that the work environment learners return to is not supportive enough to help them retain their progress (Mintzberg, 2004, p. 242, 257). In this framework we tried to present a case study in which e-learning seems able to enhance the learning processes and to help adults overcome obstacles restraining them from effective training. The necessary prerequisites for the design of the e-learning course derived from the Adult Education and the Experiential Learning theory.

The necessity for employees' social skills development, whether they are working in a large

or a small organization, has been proved to be a critical factor for a company's advancement. However, such skills development is a quite demanding project. Contemporary rapid financial changes do not allow for a student centered training culture, when it comes to personnel's development. Hence, it is accustomed to encounter poor and superficial learning practices in order to manage more efficiently budgets regarding human resources training.

Through the case study presented in this chapter one may conclude that such difficulties maybe overcome by the implementation of e-learning practices which seem to greatly support the social skills development of a company's human capital. The current research findings have shown that the appropriate exploitation of e-learning tools, along with a student centered approach, may assist substantially the field of adult education.

The most innovative element of the programme presented is considered to be the fact that participants were given the opportunity to meet colleagues from various posts within their banking organization and to develop precious relationships and rapport with them by exchanging personal thoughts, experiences and critically reflect upon their fears and barriers. What was mainly constructed is a supportive community.

For trainers, the benefits can also be great. For example as it is referred in Goodfellow's report it is itself an opportunity to radically alter conventional distance-teaching relationships (Goodfellow, 2006). It is obvious that such an effort can contribute positively to the organisation and its training results, to the people and the strengthening of relationships and finally to the educational practices adopted and developed.

Assuredly, the restricted scale of this case study allows ample room for future research. A larger scale investigation should be performed in order to gain sound proof of its actual efficiency, especially in regards to the trainer's work load. At the same time the trainees' working conditions should be further examined preparative to the discovery of

whether their participation is regular and effective. Even though the research showed that both front line and administrative personnel intensively participated, their in between average gap was considerable. Finally, the creation of standardized activities will greatly assist in the exploitation of the current research's findings.

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ENDNOTES

- ¹ Jarvis, P., 1999, Merriam S., Caffarella, R., 1999, Goleman, D., 2000, Brocket, R., Knox, A., 1994, European Committee, 2000
- ² According to Jarvis, P., (2004) "Experience" is defined as the subjective cognition of a present situation, cognition which is generated only through reflection of previous experiences.
- ³ Available at www.moodle.org
- ⁴ At the Appendix of the chapter a part of our design is described according to Salmon's e-tivity model
- ⁵ The questionnaire is available in the Appendix

APPENDIX

<i>Name of e-tivity</i>	<p>Stress- actuation or disease?</p> <p><i>Explore what stress really is, what hidden or not stresses you.</i></p>
Purpose	<p>Participating in this e-tivity you will have to opportunity to explore the different ways researchers have interpreted stress and how it works in your body, mind or behaviour. Identifying the stressors that affect you, you will increase your self-awareness. You will have the opportunity to exchange views, ideas and experiences concerning stress and self-test your personality.</p>
How many participants	<p>15-20 participants</p>
Structure	<p>The activities will run over tow weeks and will have the above time plan</p> <p>Week 1: introduction and understanding of stress 2 hours – self introduction and orientation towards stress 3 hours – three theories concerning stress</p> <p>Week 2: stressors 1 hour – the main stressors 3 hours – personality type 1 hours – stressors at work</p>
Associated media and other resources	<p>Moodle platform will be used as single a access point for discussion forums and resources to read. Also as a wiki application provider. Vox will be used as a blog provider, because of its flexibility on levels of privacy. Using it participants can choose which will view their posts. Thus, it is possible for a group to make blogs and write posts that can be seen only among them. This fact will serve the purposes of the course. Short readings concerning 3 different approaches to stress (300-600 words each), personality type A-B (300 words) and work-related stressors (300 words). Two embedded self-tests, created with Moodle tools, to give the opportunity to participants identify their personality type and try the Holmes & Rahe inventory concerning stress (Ross & Altmaier, 1994, p.138-139). Wikipedia, as a recourse of contradicting theories and views over a single thing (in this case personality type).</p>

continued on following page

Developing Social Skills through an On-Line Learning Environment

<p>Student actions</p>	<p>Week 1 Introduction: Students are expected to introduce themselves in a specific discussion forum, intended for it. They will be asked to introduce themselves by saying their position in the organization, anything they want to say about themselves that will help others know them better, and if stress was a person-hero, object or animal, what exactly would it be. Also they would be asked to comment at least two others introduction messages. (1 hour) Orientation to the course: Students are advised register to Vox blog provider and announce their url to the course team in order to make their blog available to them. A group of blogs which can be seen only among them is created. Then participants are asked to read the course learning intended outcomes and write a post on their Vox blogs a stress experience they had in the past and their thinking when they decided to register to the course. Finally they should write their own aims for the end of the course. In the end they will have the opportunity to read back and see whether they have succeeded their goals. (1 hour) Approaches to stress: Participants are asked to read short texts that present three different approaches to stress (Ross & Altmaier, 1994, p. 1-7). Then in separate discussion forums they are asked to find an example of their stress experiences and try to interpret it through these three different approaches. Also, concerning the second approach they are asked to fill in an inventory and discuss their results. (3 hours) Further reading: a set of resources are available to participants if they wish to find more about these approaches and they are asked to add any more information or articles they have found and are related to the discussion. Week 2 Basic stressors: Participants are encouraged to “brainstorm” on a wiki what stresses them. After several contributions a discussion concerning the categories of stressors begins in a discussion forum. (1 hour) Personality type: Participants are asked to fill in a self-test to find out which personality type they are. Then they read a short article concerning the basic characteristics of A-B personality types and discussion concerning their results begins. Because personality types are a subject under much controversy, after the discussion, they are asked to access wikipedia and the find related article. They are asked to read the discussion tab of the article and discuss their findings. (3 hours) Stressors at work: Participants are asked to re-read the wiki, where the e-moderator should have organized their contributions to different categories of stressors (physical, social and occupational) and have added some notes concerning occupational stressors. Participants are also asked to add any information they have found on their searches concerning stressors at work and discuss their findings (optional) (1 hour). During the 4 weeks of the course they are encouraged to keep posts in their blogs (either public or private), about their thoughts and behaviour concerning stress and evaluate their own progress.</p>
<p>E-moderator actions</p>	<p>The e-moderator during these two weeks should:</p> <ul style="list-style-type: none"> • Help participants with any technical problems they face. • Respond in queries concerning the subject of study whether they are expressed publicly or individually. • Give clear guidelines during the activities concerning the intended outcomes ad encourage participants’ involvement. • Participate in discussions, comment blogs and moderate the wiki activity, in order to show participants the affordances of communication tools and strengthen the sense of being important. • Give feedback to discussion forums and pose more questions in order to help participants broad their views on the subject they discuss. They should be challenged to reveal their assumptions concerning stress, their personalities, their position etc. <p>The above actions could occupy him-her 1-2 hours everyday of the course, according to students’ participation.</p>
<p>Evaluation</p>	<p>To evaluate the activities above three main directions are taken:</p> <ul style="list-style-type: none"> • Evaluation of participation, in terms of quantity and quality. • Assessment of broad conceptual understanding: qualitative content analysis on their contributions in discussion forums and blogs • Assessment of participants’ interest and view: Feedback from participants concerning the several parts of the activity, which of them were helpful, difficult, interesting, etc.

Evaluation Questionnaire

Questions concerning the content of the course:

1. Which part of the course content you found most interesting? Explain why.
2. Which part(s) of the course you found most tiresome? Explain why.
3. Were there any parts of the course that needed more clarification? If yes, describe them.
4. What have you learnt from this course?

Questions concerning the training method:

1. Which characteristics of the course were mostly effective in helping you learn the subject matter?
2. Which characteristics of the course you consider to be the most difficult?
3. In which ways this course was different compared with other conventional seminars you have attended?
4. Which of the above differences you consider difficult in regards to your personal learning experience?
5. What is your opinion of your tutor? Did she have a positive or negative role regarding your personal learning experience? Was she inconsistent in any way?
6. Did you find any limitations in relation to your participation and contribution to the course in general? If yes, please explain the reasons.

Questions concerning the implementation of the system:

1. Do you consider any future difficulties in regards to the participation of other colleagues or the implementation of the system? If yes, please describe them.
2. According to your personal experience from the participation of the program, do you have any suggestions regarding changes on future implementations?

Please add any comments you may have:

Chapter 15

Mixed Research and Online Learning: Strategies for Improvement

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ABSTRACT

As online education continues to grow, it is becoming increasingly important to understand the nuances of online learning. However, to date, research on online learning has largely been characterized as being low quality. To increase the quality and promote rigor in online education research, researchers are beginning to argue for the importance of using mixed research. Yet, to date, very little mixed research has been conducted in the area of online learning. Further, the little “mixed” research that has been conducted suffers from a host of problems. Researchers need to be aware of the complexities of conducting mixed research and some of the issues that can be overlooked. This chapter focuses on some important steps and key considerations that researchers of online learning must make when conducting mixed research, in hopes to increase the rigor and quality of online learning research studies.

INTRODUCTION

Research on online learning has largely been characterized as being low quality (Bernard et al., 2004). Part of the reason for this classification is the near obsession of past researchers with conducting comparison studies; that is, studies that compare online learning to traditional face-to-face learning. Despite researchers' calls to conduct research with other types of designs, use of comparison studies

have been increasing since the mid 1980s (Bernard et al.). In general, researchers have been preoccupied with demonstrating that online learning is as good as face-to-face learning (Wray, Lowenthal, Bates, & Stevens, 2008). However, in the past few years, comparison studies have come under increased scrutiny (Bernard et al.; Meyer 2004). This is because the majority, if not all, of comparison studies—like most research on online learning—have failed to employ robust research designs or control for extraneous variables (Bernard et al.; Meyer; Phipps & Merisotis, 1999).

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Even when researchers have had the foresight to avoid conducting comparison studies, they have often overly relied on survey data (Goldman, Crosby, Swan, & Shea, 2005), or other limited types of data collection and analysis. While survey data, which is self-report data and the most often utilized method to study online learning (Hara, Bonk, & Angeli, 2000), is useful and has its place in educational research, this type of data alone is retroactive and insensitive to changes over time (Kramer, Oh, & Fussell, 2006). Therefore, this type of data is not appropriate to investigate all research problems. Even when researchers have chosen not to rely on self-report data and instead to analyze what is said and conducted online, researchers have, for the most part, focused solely on the frequency of participation (Henri, 1992). Commonly, these frequency counts are then analyzed through the use of content analysis (De Wever, Schellens, Valcke, & Keer, 2006). Content analysis is arguably the second most popular type of analysis for studying online learning and the primary method used to analyze online discourse (De Wever, Schellens, Valcke, & Van Keer, 2006). While content analysis is a useful type of analysis, it too cannot, and should not, be used to answer all research questions (Berelson, 1952; Tesch, 1990).

Instead, researchers need to begin to employ different ways of studying online learning that will increase the rigor of the research results. Design based research is one increasingly popular approach that will likely strengthen some of the research conducted on online learning (see Akilli, 2008; Joseph, 2004; Kelly, 2004; Reeves, 2005; Reeves, Herrington, & Oliver, 2004, 2005). However, there are some important differences between design based research and mixed research (Akilli, 2008). Thus, in addition to conducting design based research, researchers should begin to employ mixed approaches to study online learning. While some researchers of online learning have argued for the importance of using multiple methods when studying online learning (Goldman, Crosby, Swan,

& Shea, 2005; Gunawardena, Lowe, & Anderson, 1997; Hiltz & Arbaugh, 2003), the majority of research conducted on online learning currently is mono-method.

During the past five years, mixed research has become increasingly popular (Leech & Onwuegbuzie, 2007). However, despite this growing popularity, very little online learning research is conducted with mixed designs. Further, the little so called “mixed” research that has been conducted suffers from a host of problems. Researchers of online learning need to be aware of the complexities of conducting mixed research and some of the issues that can be overlooked. Further, and even more importantly, online learning researchers need to be aware that intentionally and systematically applying mixed research has the possibility to improve online learning research and may increase the fields’ understanding of the nuances of online learning. Thus, the purpose of this chapter is to delineate the common steps of the mixed research process—such as, research questions, research designs, sampling, and data analysis. First, a brief background of mixed research will be delineated. Next, the definition of mixed research will be presented. Finally, the major steps in mixed research will be described in hopes that the rigor of mixed research in online learning will increase in the future.

UNDERSTANDING MIXED RESEARCH: A BRIEF BACKGROUND

For years, researchers in the social and behavioral sciences have engaged in what has been called the paradigm wars (Johnson & Onwuegbuzie, 2004; Newman, Ridenour, Newman, & DeMarco, 2003). The paradigm wars have been between those who adopt a positivist/empiricist worldview—historically “quantitative researchers”—and those who adopt a constructivist/phenomenological worldview—historically “qualitative researchers”

(Tashakkori & Teddlie, 1998). The positivists criticized the constructivists for being too subjective and too unreliable (Guba & Lincoln, 1988) while the constructivists criticized empiricist for being too reductionistic. The debates, though, were essentially between “purists” (Johnson & Onwuegbuzie) who focused more on the differences than on any similarities between the two positions (Onwuegbuzie & Leech, 2005a).

While these debates have typically been between quantitative and qualitative purists, most researchers have been led to believe that one way or the other is the “right way” to do research (Onwuegbuzie & Leech, 2005a). Purists on both sides believe that their paradigm is the correct one for social science research (Johnson & Onwuegbuzie, 2004). Additionally, they have been arguing for some time that paradigms and research methodologies cannot be separated or mixed (Howe, 1988).

Some researchers are now arguing that it is time to adopt a third paradigm, that of pragmatism (Morgan, 2007; Onwuegbuzie & Leech, 2005a). Pragmatists essentially hold that research methodologies are not necessarily positivist or constructivist (Onwuegbuzie & Leech); these researchers argue for the importance of integrating methods when it is appropriate. Thus, utilizing mixed research.

The concept of mixed research has been called a host of things over the years; researchers have referred to it as mixed methods, multiple methods, multiple or mixed approaches, integrated methods, mixed models, multiple models, qualitative plus quantitative approaches, and combined qualitative and quantitative methods (Smith, 2006). Mixed research is perhaps the most contemporary term (Johnson & Onwuegbuzie, 2004). Mixed research, according to Creswell and Plano Clark (2007), is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves the philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process.

As a method, it focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. (p. 5)

Mixed researchers believe that “the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone” (Creswell & Plano Clark, p. 5). One common purpose of using a mixed approach is to facilitate the richness of data and to expand the interpretation of the findings (Collins, Onwuegbuzie, & Sutton, 2006; Onwuegbuzie & Leech, 2004).

However, employing mixed research is more complicated than most researchers realize (Johnson & Onwuegbuzie, 2004). Mixed researchers must be proficient in not one but two different lines of research (Tashakkori & Teddlie, 2003). Further, because mixed research is relatively new, methodologists are still developing guidelines of sound practice (Leech & Onwuegbuzie, in press). Currently, Collins, Onwuegbuzie and Sutton (2006) have delineated 13 steps that a researcher should go through when conducting mixed research. These steps include the following: (a) determining the goal of the study, (b) formulating the research objective, (c) determining the research/mixing rationale, (d) determining the research/mixing purpose, (e) determining the research question(s), (f) selecting the sample design, (g) selecting the mixed research design, (h) collecting the data, (i) analyzing the data, (j) validating/legitimizing the data, (k) interpreting the data, (l) writing the mixed research report, and (m) reformulating the research question(s). These 13 steps were designed to assist researchers in conducting mixed research studies, from start to finish.

MIXED RESEARCH FOR RESEARCHERS OF ONLINE LEARNING: EXPLICATING THE MAJOR STEPS

To help online learning researchers increase the rigor of their studies, mixed research studies can

be conducted. The following sections outlines important components of mixed research and delineates specific factors that researchers of online learning must consider when conducting mixed research. Specifically, aspects of the mixed research question, research designs, sampling, and data analysis will be presented.

Research Questions

Research questions help narrow the focus of a study (Creswell & Plano Clark, 2007); they provide a framework, set boundaries, and give rise to the type of data that will be collected (Onwuegbuzie & Leech, 2006). Research questions hold a very important place for mixed research because they help determine whether a problem should be studied with a mixed framework. Moreover, Onwuegbuzie and Leech (2006) point out that research questions “dictate the type of research design used, the sample size and sampling scheme employed, and the type of instruments administered as well as the data analysis techniques” (p. 475).

Unfortunately, writing research questions for mixed studies is difficult. This difficulty stems from the fact that all mixed studies must entail at least one quantitative research question and one qualitative research question, or one research question that engulfs both qualitative and quantitative aspects. Therefore, mixed researchers must be proficient at creating both qualitative and quantitative research questions (Onwuegbuzie & Leech, 2006).

There are a few basic, yet important, concepts to keep in mind when developing research questions for a mixed study. First, most quantitative research questions are either descriptive, comparative, or relationship based (Onwuegbuzie & Leech, 2006). Further, and perhaps even more importantly, Onwuegbuzie and Leech (2006) point out that,

Good quantitative questions should identify the population and dependent variable(s), whether they represent descriptive, comparative, or relationship research questions. If they represent

comparative or relationship research questions, then the independent variable(s) also should be identifiable. Researchers should avoid starting a quantitative research question with the words, “Do,” “Does,” “Is,” or “Are” because they motivate “yes/no” responses.... (p. 482)

On the other hand, qualitative research questions are more open-ended (Creswell, 1998). In fact, according to Onwuegbuzie and Leech, “qualitative research questions typically describe, rather than relate variables or compare groups” (p. 482). Further, qualitative research questions tend to address ‘what’ and ‘how’ questions. Therefore, quantitative and qualitative research questions can lead to very different samples, data, and analyses. These aspects need to be taken into consideration when writing multiple research questions (i.e., a research question that is quantitative and one that is qualitative in nature) for a mixed study.

Finally, mixed studies can also include mixed research questions. These are questions that include a quantitative and a qualitative question within the same question (Onwuegbuzie & Leech, 2006, p. 483). These questions require that data is “collected and analyzed either concurrently, sequentially, or iteratively before the question is addressed” (p. 483). Given these considerations, researchers of online learning must spend ample time at the research question phase to determine whether their research questions require taking a mixed approach.

Research Design

Another important step that must not be overlooked when conducting mixed research is carefully identifying an appropriate research design to use and clearly communicating the chosen design to one’s readers. Methodologists have identified a number of different mixed research designs (Creswell, Plano Clark, Gutmann, & Hanson, 2003; Leech & Onwuegbuzie, 2006). In general, researchers can conceptualize research designs as lying on a continuum. On one end of the continuum are

monomethod designs (i.e., a design in which only one method is used). Partially mixed designs (i.e., mixing qualitative and quantitative methods in at least one of the 13 steps) are in the middle of the continuum, and fully mixed designs (i.e., mixing qualitative and quantitative methods at multiple steps) are on the other end of the continuum (Leech & Onwuegbuzie, 2007).

Most researchers are very familiar with monomethod designs. However, they are often not familiar with the differences between partially mixed and full mixed research designs.

Leech and Onwuegbuzie (2007) help explain the difference between these two:

whereas fully mixed methods involve the mixing of quantitative and qualitative techniques within one or more stages of the research process or across these stages, with partially mixed methods, the quantitative and qualitative phases are not mixed within or across stages. Instead, with partially mixed methods, both the quantitative and qualitative elements are conducted either concurrently or sequentially in their entirety before being mixed at the data interpretation stage. (Section 2, para 3)

To help make more sense of this, researchers have begun identifying different types of mixed research designs (Creswell, 2008; Leech & Onwuegbuzie). In fact, Tashakkori and Teddlie (2003) have identified practically 40 different mixed research designs (see Creswell & Plano Clark, 2007, for an in depth discussion of the different mixed research designs). Creswell and Plano Clark (2007) simplify matters by identifying four major types of mixed method research designs: the triangulation design, the embedded design, the explanatory design, and the exploratory design. But as useful as these four major types are, Leech and Onwuegbuzie offer a very self explanatory method of thinking about mixed research designs. They identified eight different types of mixed research designs in which they classify according to the extent to which the research designs include: (a) partially mixed vs. fully mixed (i.e., level of

mixing), (b) concurrent vs. sequential (i.e., time orientation), and, (c) equal status vs. dominant status (i.e., emphasis of approaches).

Regardless of the mixed research typology used, the goal of any research design should be to effectively address the research questions of the study. It is important for researchers to be as explicit as possible about the research design used, so that future researchers are able to more effectively replicate their studies and build on previous research. As mixed research increases in popularity, and online learning mixed researchers continue to raise the bar and increase the rigor of the mixed studies, researchers are going to be expected to clearly describe the steps of the research study in order to get their work published.

Sampling in Mixed Research Studies

Sampling is a key step in any study because it helps establish the quality of inferences a researcher makes from the findings of a study (Collins, Onwuegbuzie, & Jiao, 2006). Therefore, careful and thoughtful sampling is another key component in mixed research that cannot be overlooked. While qualitative researchers have historically not placed the same amount of emphasis on sampling as quantitative researchers (Onwuegbuzie & Leech, 2007a), sampling is important in all research (Onwuegbuzie & Collins, 2007; Onwuegbuzie & Leech, 2005a, 2007b). In mixed research, sampling is more complicated (Onwuegbuzie & Collins, 2007), and therefore, arguably needs even more attention.

First, online learning mixed researchers need to remember to differentiate between sample size (e.g., the number of participants to select) and sampling schemes (i.e., how the participants will be selected) (Onwuegbuzie & Collins, 2007). In order to provide methodological guidance about sampling schemes, mixed methodologists have identified 24 different types of sampling schemes—ranging from simple and cluster (two types of probabilistic sampling schemes) to snow-

ball and typical (two types of nonprobabilistic sampling schemes) [see Collins, Onwuegbuzie, and Jiao (2006) or Onwuegbuzie and Collins (2007) for a discussion of these 24 types of sampling schemes]. Further, Onwuegbuzie and Collins (2007) have developed a framework that can help researchers make sound sampling decisions for their online learning study. For now, researchers of online learning need to recognize that convenience sampling and/or some form of purposeful sampling are only one of many types of sampling schemes available for researchers.

In addition to carefully considering what sampling scheme to use, online learning researchers must also carefully think about their sample size. Historically quantitative researchers have placed more emphasis on sample size than qualitative researchers (Onwuegbuzie & Leech, 2005b). However, sample size is important in qualitative research as well (Onwuegbuzie & Leech, 2007). While the sample size in a given study should ultimately be informed by the research questions and the research design used, methodologists have identified some minimum sampling size recommendations that can serve as a basic guideline or suggestion when conducting mixed research. For instance, a correlational design study should have 64 participants for one-tailed hypotheses, rather than the previously thought 30; a phenomenological design should have between 6 and 10 interviews (Morse, 1994; Creswell, 1998); and finally a grounded theory study should have between 20 or 30 (Creswell). Readers should consult Onwuegbuzie and Collins (2007) for a complete list of sample size recommendations.

In order for online learning researchers to effectively conduct mixed research, they must become bilingual; being fully aware of how the sample scheme and the sample size will ultimately impact the inferences that can be made from their research.

Data Analysis Techniques for Online Learning Mixed Research Studies

An in-depth discussion of data analysis for mixed research studies is beyond the scope of this chapter. However, a discussion of mixed research would be incomplete without addressing, if only briefly, the important role data analysis plays in mixed research. Leech and Onwuegbuzie (2007) have argued that relying solely on one type of analysis can lead researchers to make interpretive errors about the underlying phenomenon they are studying. Thus, researchers of online learning need to use multiple, as well as mixed, methods of data analysis to understand better the complexities of online learning. While most researchers—specifically “quantitative researchers”—are very familiar with the different methods to analyze quantitative data (i.e., utilizing different statistics), they are often not as familiar with the different techniques for analyzing qualitative data. Therefore, mixed researchers need to keep in mind that qualitative data can be analyzed with constant comparison analysis, keywords-in-context, word count, content analysis, domain analysis, taxonomic analysis, and componential analysis (see Leech & Onwuegbuzie for examples of each of these types of analysis).

Employing both quantitative and qualitative methods of data analysis can help investigate problems in ways that monomethod or even multiple method (i.e., two or more quantitative or two or more qualitative) approaches cannot. For instance, the first author’s area of interest is instructional communication—specifically, social presence. Most researchers have studied social presence by collecting survey data of users’ perceptions of social presence. A handful of researchers have actually analyzed course discussions to understand better what social presence looks like in online discourse. However, for the most part, these researchers have solely used content analysis to study social presence in online discourse. By relying on only one type of analysis, these researchers are

possibly making interpretative errors. Therefore, it is important for researchers conducting mixed research to have a host of data analysis tools—both quantitative and qualitative—available at all times. However, successfully conducting multiple forms of data analysis is easier said than done. As a result, Onwuegbuzie and Teddlie (2003) have identified seven stages of the data analysis process that researchers conducting mixed research should go through: (a) data reduction, (b) data display, (c) data transformation, (d) data correlation, (e) data consolidation, (f) data comparison, and (g) data integration.

FUTURE TRENDS FOR ONLINE LEARNING MIXED RESEARCH

Mixed research is going to increase in popularity over the next few years. Furthermore, mixed methodologists are going to continue to develop guidelines to assist researchers conducting mixed research. Hopefully as these phenomena take place, researchers of online learning will begin to increasingly conduct mixed research, which in turn will increase both the overall quality of research on online learning as well as what we know about online learning.

CONCLUSION

Conducting mixed research is more complicated than most researchers realize. It is more complex than simply conducting quantitative and/or qualitative studies separately. Further, because it is a relatively new form of research, very few researchers have ever had any formal training on how to conduct mixed research. This chapter focused on some important steps and key considerations that researchers of online learning must make when conducting mixed research, in hopes

to increase the rigor and quality of online learning research studies.

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Chapter 16

Digital Games for Online Adult Education: Trends and Issues

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ABSTRACT

Digital games are a strong motivating and engaging factor in adult learning. When students are engaged in the learning process, they learn and retain more. Engagement can come through emotion, relaxation, and especially through fun. This chapter provides guidance to online adult educators searching for ways to use digital games more effectively in their practice and give an overview of pedagogical approaches to digital games in online training and learning. In addition, benefits and pitfalls associated with using digital games in online adult education and general attributes of digital games are provided. The purpose of this chapter is to highlight the potential of digital games in online Adult education. Therefore, it will be a useful reference for teachers with an interest in the use of digital game based learning for online Adult teaching and training. It is expected that this chapter helps educators make the most effective use of the electronic games available today, offering expert guidance on digital games to serve the needs of all Adult learners

INTRODUCTION

A series of dramatic innovations in information society has transformed twentieth-century society more than expected (Lubar, 1993). Rapid changes in computer-based technology have provided educators with the potential to transform adult learning. The ubiquitous use of information and communi-

cation technologies is leading to changing ways of learning. Recent studies show that electronic games are widely used as an educational tool in schools and becoming more a part of students' social lives. Many educators think that electronic games are suitable only for children. However, a current surprising statistic by ESA shows that 62% of video gamers are 18 years or older (Mature). 32% of parents play games with their children weekly (ESA, 2006). Electronic games are commonly used

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with adults in their daily life for both educational and entertainment purposes.

There is no certain age for learning. Learning doesn't end with school graduation. It is more than just education and training beyond formal schooling. Learning encompasses throughout the life cycle, from birth to death in different learning environments.

Teaching adults is considered a difficult, tiresome and stressful job not only because they are aware of what they are doing, but also they already use cognitive strategies more effectively. However, these can be also considered advantages. Making use of the characteristics of adults is necessary for effective teaching. In this respect this chapter is helpful as an introduction for the field by giving adequate information on the process of using computer games in teaching for adults.

Information and communication technologies offer learning experiences which can effectively engage and educate adult learners. Game supported online learning environments are used dynamically, in many different settings, giving access to a broad range of uses and situated learning activities. Nowadays, researchers and teachers are beginning to wonder whether this powerful new medium could be used to support student's learning. Rather than shutting the door for the new technologies, teachers are asking the question: "how can this powerful tool be adopted in the learning environment?"

Unlike other learning environments, the digital game-based online learning environments are expected to provide adults with increased engagement in their learning experiences, as well as greater convenience and flexibility. Now undoubtedly we can say that computer games have been recognized as an important alternative or supplement to traditional in-class, face-to-face teaching to help both adults in learning new concepts, acquiring expertise and practicing knowledge and to immerse in real-life simulations.

Current Perspectives on Adult Education

Computer games are today an important part of our leisure lives and increasingly a vital part of our culture and the way we interact the content as whole. In the past, digital games have been dismissed as a tool to teach and learn. However, game-based learning in online learning environments has gained great interests in recent years throughout the world and there is every indication that the trend will continue. Particularly in adult education the role of educational digital games is just beginning to evolve.

The past researches indicated that game-based learning attracts and motivates the learner. Furthermore, digital games allow the learner to take part in an immersive activity. Likewise, in this safe environment, activities such as role playing increase the ability to judge the effectiveness of actions taken. The main characteristics of digital games are having goals, rules and winning states that give users structure and motivation making it easier for students to stay with the game in order to learn the concepts. Furthermore, they also are very interactive, providing users positive and negative outcomes and feedback throughout play. Other features of digital game are the challenge for adrenaline, the problem solving for creativity and the representation and story for emotion.

Digital games are a strong motivating and engaging factor in adult learning. When students are engaged in the learning process, they learn and retain more. Engagement can come through emotion, relaxation, and especially through fun.

Adult Education

Adult learner is a term used to describe any person socially accepted as an adult who is in a learning process, whether it is formal education, informal learning, or corporate-sponsored learning. Adult learners are considered distinct from child learners due primarily to the work of Malcolm Knowles,

who developed the principle of Andragogy. Adult learners fall into the category of nontraditional students (Wikipedia, 2009).

Adult Education is the practice of teaching and educating adults to cover educational needs of adults whose skills range anywhere from novice-level to experts in their career.

According to Wikipedia (2008), adult education is the practice of teaching and educating adults. This often happens in the workplace, through ‘extension’ or ‘continuing education’ courses at secondary schools, at a college or university. Other learning places include high schools, community colleges, and lifelong learning centers. The practice is also often referred to as ‘Training and Development’. It has also been referred to as *andragogy* (to distinguish it from *pedagogy*).

The National Institute of Adult Education (England and Wales) defined adult education as “any kind of education for people who are old enough to work, vote, fight and marry and who have completed the cycle of continuous education, [if any] commenced in childhood.” (Britannica, 2009).

Adult education is characterized by diversity in its form, its content and in the context in which it takes place. There are two forms of adult education: Formal adult education and Informal (self-directed) adult education.

Educator Malcolm Knowles influenced by Piaget’s and Erikson’s work to study the adult learner believes that the adult learner brings life experiences to learning, incorporating and complementing the cognitive abilities of Piaget’s adolescent.

Malcolm Knowles (1980) brought popularity to the andragogical approach in the 1970s. He boiled the theory down to four key concepts:

- Adult learners are self-directed -- they want their education to be relevant to their jobs and lives.
- Adult learners draw on life experiences in their learning activities.

- The learning focuses on problem-solving.
- Adults in a classroom setting want to be involved in their educational planning.

This chapter concentrates mainly on both formal and non-formal adult education, with a particular focus on the computer games for online adult education.

Online Adult Education

The way an adult learns is different from the way a child learns -- this is the most basic principle behind the educational theory known as andragogy. The term means man-lead as opposed to child-lead, which is the literal meaning of the word pedagogy. These are two different educational principles, and applying the former in a online education setting can make for more enriching learning experience. There are many implications of Knowles assumptions on online learning environments (Blondy, 2007).

Adult learners are self-directed: There are many implications of this assumption for the online learning environment. A self-directed online learning environment requires learners to establish their own learning goals and activities within the course objectives (Hanna et al., 2000).

- **Adults bring experience with them to the learning environment:** The implication of this assumption for the online learning environment is that curriculum must be structured in a way that fosters sharing of experiences among learners such as through the use of group projects and interactive discussions.
- **Adults enter the learning environment ready to learn:** The implications of this assumption to the online learning environment are that facilitators must realize each learner enters the online learning environment for a specific reason, whether a personal desire to learn something or because

the course is required by an employer or institution (Palloff & Pratt, 1999).

- **Adult learners are problem oriented:** In the online learning environment this assumption implies that curriculum should be process based versus content based to allow learners to develop content in accordance with their specific needs.
- **Adults are motivated to learn by internal factors:** One implication for this assumption in the online learning environment is that facilitators must recognize the need of learners to be appreciated and respected in order to foster an environment conducive to learning.

One of the most salient attributes of online learning is that it allows adults to pursue their education, arranging it around their everyday lives (Vrasidas & McIsaac, 2000). Adult learners bring their particular needs to the online learning environment. (Miller, 2005)

Andragogy and Digital Game Based Learning

Technology is around us everyday. Many of our daily routines rely on technology. The area in which technology is not being utilized to its fullest extent is the education system. Today's students, tomorrow's adults, "have spent their entire lives surrounded by and using computers, digital games, digital music players, video cameras, cell phones, and all the other toys and tools of the digital age." (Prensky, 2001). Commercial and educational digital games are not being utilized to the fullest extent in the online classroom. Many educational games are not up to par with commercial computer and video games. In order for digital games to be effective in the online classroom they need to be accepted and used as an instructional tool by the teacher.

Most students have experience playing digital games at home which usually offer students

entertainment. Some studies have found that students are not just being entertained; they are learning (Kearney, 2007). Students learn through a constructivist method and problem solving, while playing digital games (Edward, 2006).

The use of digital games as training and learning tools can teach cognitive, affective, and psychomotor skills. Facilitating digital games in online adult training and education can increase motivation and enthusiasm and reinforce previously presented information in an innovative way.

Research on digital games has been widely documented. In the literature digital games offer more benefits for online adult training and learning settings than traditional didactic methods (Squire & Jenkins, 2003; Gee, 2004; Kafai, 1998, Prensky, 2001, Moleno, 1981, de Feritas, Savill-Smith & Attewell, 2006, Malone & Lepper, 1987, Youn and Uptis, 1999). These benefits can be listed as below:

- Digital games link theory to reality and provide a forum for immediate feedback
- Gaming can build enthusiasm among participants and encourage positive interactions among individuals with diverse learning and communication styles.
- Digital games can incorporate experiential learning to have an impact on knowledge and attitudes in a nonthreatening way.
- The nonthreatening nature of gaming as a training tool allows learning to occur in a safe environment without fear of real-world adverse outcomes.
- Gaming provides adult trainees with time-efficient, intrinsically motivating learning opportunities for promoting organizational development in a variety of ways, including teaching management skills, conveying information, providing an appreciation for the complexity of organizational decision making, allowing trainees to experience the consequences of organizational

decisions and realizing the importance of interpersonal processes.

Learning through gaming activities relaxes adult students, helps bonding between class members and with the adult teacher and makes the online classroom atmosphere much more supportive for learners.

Using enough variety in the type of digital games will bring various learning styles into play: auditory, visual, kinesthetic and tactile. This not only benefits the adult students who learn predominantly from one learning style, but it helps all adult students retain information better.

Digital games allow for the use of setting time limits on tasks and using competition or races to increase adult student focus and give an exciting buzz to an activity that could otherwise be quite mundane.

Prensky (2001) lists six structural factors that supplement the characteristics of digital games.

- Rules
- Goals and Objectives
- Outcomes and Feedback
- Conflict / Competition / Challenge / Opposition
- Interaction
- Representation or Story

Prensky (2001, p.119) states that: “There are thousands, perhaps millions of different games, but all contain most, if not all, of these powerful factors.”

Potential advantages of using digital games in online adult training

- Motivate trainees
- Reinforce developing certain skills
- Reinforce inclination to cooperate and enjoy the learning
- Make training more meaningful and fun
- Help adult trainees learn more effectively

than traditional teaching methods

- Perk adult trainees up when they are tired and finding the subject hard to concentrate
- Encourage even the shy adult trainees to join in and pipe up in online class with comments
- Improve the effectiveness of training by tapping into the different learning styles
- Digital games add a competitive element to learning environment
- Digital games provide highlights of essential material, uses multiple sensory modalities, divides content materials into smaller bits of information and provides immediate feedback.

There are several learning theories that support digital game based learning.

Constructivism

Researchers found that learning with well-designed digital games are compatible with constructivist principles (Dede, Nelson, Ketelhut, Clarke, & Bowman, 2004; Dickey, 2005, 2006; Gee, 2003; Schrier, 2006).

According to the constructionist approach, learning is the construction of knowledge through experience and the creation of personally relevant information. Students use technology to construct meaning. The construction of meaning is often employed in digital games.

Situated Learning and Cognition

Games create a concrete and authentic learning environment for learners (Lunce, 2006). Situated cognition provides a meaningful framework for the study of games, given that games have an ability to situate learning in an authentic context and engage players in a community of practice in learning environment (Halverson, Shaffer, Squire, and Steinkuehler, 2006).

Digital games are very important tools to use in the online environment to support adult learning. Digital games when implemented correctly can

have academic benefits is many different curriculums and with a wide range of adult students.

Challenges and Opportunities Using Digital Games in Online Adult Education

One of the big problems with teaching adults is that many students who have attended online training do not seem motivated and make slow progress.

What can adult educators do to make their lessons more fun and also more effective so that their adult students enjoy training and learning?

As adult trainers how do we ensure that our students;

- Are really motivated to pay attention in our trainings?
- Are motivated to do their assignments?

What do adult trainers do if their students don't seem motivated, or seem to be making slow progress?

To overcome challenges in adult training and learning, one useful theory for working with adult learners is Malcolm Knowles' (1980, 1984) Andragogy theory. In this theory he makes four basic assumptions that have definite relevance to how we use games in the classroom:

1. Adults need to know why they need to learn something. So don't assume adult learners will be interested just because the teacher is telling them to do something. Make sure to explain how the digital game will help their learning.
2. Adults need to learn experientially and digital games provide a far greater variety of experience than any textbook exercise, through the simple process of human interaction.
3. Adults approach learning as problem solving. Children learn instinctively through trial and error, but adults bring a lifetime of strategies

into the classroom. Many digital games are inherently problem-solving situations and allow students to apply new and different strategies for learning in a non-stressful environment.

4. Adults learn best when the topic is of immediate value. 'Immediate value' is a tricky term. We all have different things that we value. As you get to know your adult students, you will be able to select appropriate games that enforce not only the current teaching point, but also wider goals, such as making friends, socializing, and gaining knowledge of about the subject. Find out what your students want, and select activities that will directly help them on the path to attaining these goals.

Ultimately, if you respect your students and get to know their goals in learning a particular subject, then you will be able to use games to enrich their learning experience and improve their certain skills. It's fun and easy, and all it takes is a little planning.

Most adults leave the academic learning environment when they exit school. As a result they're not used to frequent learning experiences. Usually the learning is tied to some sort of strategic change initiative or something that is linked to the performance of the organization. There is a challenge of holding adults interest and making them engage. Adults tend to have fundamentally shorter attention spans, and there are lots of distractions that might pull at them over the course of a learning program. Engaging digital games is one way to combat these problems. Digital games that encourage high levels of competition employ humor and use real-world examples often are the most engaging.

Adults also might have very different learning styles. Some will be active learners and want to do things, and others will be passive and want to be told the answers. Digital games can be tailored to engage all types of learners.

Scenario-based digital games are often best to get the adult learner to focus on the optimal decisions they could make and the optimal answers. Adults usually want to be challenged. Learning needs to be intuitive, but at the same time don't just make it telling the answer. Have them go and figure it out. Make it so that the answers aren't always apparent, so they're forced to step out of their normal boundaries and try some new things. Adults generally have very established views of the world and opinions, and when it comes to working with the digital games, a lot of times the answers aren't black or white. There is usually a series of possibilities that could occur that may lead to positive outcomes.

Adults also enjoy discussing their experiences, so learning digital games should consider built-in team activities that leave space for best practice sharing which gives adults more skin in the game and makes them feel like they're contributing and learning from others.

Digital games provides with the level of customization. Customizing the content around the digital game supports aligning the content to adult learners' competency models or their norms and culture. The adult learners identify the learning and relate it back to their job.

Digital Games in Online Learning Environments

Online learning environments education combines many types of media and instructional methodologies, including digital games. Due to the interactive, engaging motivating features of digital games, they can play an important role in online adult education. To be successful, digital games require significant advance preparation on the part of the instructor. If used in online instruction, substantial time is necessary for the careful explanation of procedures, rules, and guidelines. Whether in class or online, adult students can easily get caught up in the exercise, and they might lose sight of its point. So, an online discussion of what

was learned as a result of the digital game can be valuable. The graphical capability of online learning environments makes it possible to construct a rich-textured setting for a game (Demirbilek, 2009). Programming tools make it possible to create digital games and interactive structures for delivery via online. Computer mediated communication tools, such as e-mail or listservs, discussion forums, and chat rooms, enable students to work cooperatively and conveniently outside of class as they make their way through a digital game. Krisper-Ullyett, Ortner, and Buchegger(2005) provide nine helpful hints and tips designing and implementing games based learning environments on the Internet platforms:

1. Creating game based learning is easy to develop
2. The learners should be aware of what they gain by playing.
3. The instructor should use of peer-to-peer evaluation in the group while assessing of the learning outcome of the electronic game. The assessment should not be the ultimate purpose of the game.
4. Genders have different choices and preferences on gaming. while girls prefer games involving social interaction and feedback loops, boys prefer straightforward, competitive games
5. Tasks and set of rules of the game should be precise, clear, simple and easy to understand. Players (students) need enough time for the more technical aspects of the game, such as searches, finding their way around the game, etc.
6. The focus of learner should be directed to completing the task and playing the game correctly. Games should be intelligent and challenging.
7. Game designers must struggle to put themselves in the role/situation/conditions facing the prospective potential learners.

8. Instructor should not force students to play the game. They should encourage students to use an alternative way of contributing to the course, if they are not eager to play.

The Federation of American Scientists (FAS) held a summit on harnessing the power of video games for learning in 2006. Among the group's recommendations was a list of 10 attributes of digital games for application to learning (FAS, 2006, p. 18–20):

- Clear learning goals
- Broad experiences and practice opportunities that continue to challenge the learner and reinforce expertise
- Continuous monitoring of progress, and use of this information to diagnose performance and adjust instruction to the learner's level of mastery
- Encouragement of inquiry and questions, and response with answers that are appropriate to the learner and context
- Contextual bridging: closing the gap between what is learned and its use
- Time on task
- Motivation and strong goal orientation
- Scaffolding: providing learners with cues, prompts, hints, and partial solutions to keep them progressing through learning, until they are capable of directing and controlling their own learning path
- Personalization: tailoring learning to the individual
- Infinite patience.

It was also highlighted the fact that games and simulations could teach knowledge and skills in the following areas: higher order thinking, practical skills, complex and multi-component decision making, practicing rarely used skills, team building, and developing expertise (FAS, 2006).

Today's generation (future adults) prefer:

- Receiving information quickly from multiple multimedia sources
- Parallel processing and multitasking
- Processing pictures, sounds, and video before text
- Random access to hyperlinked multimedia information
- Interacting / networking simultaneously with many others
- Learning “just-in-time”
- Instant gratification and instant rewards
- Learning that is relevant, instantly useful, and fun

The stimuli these learners seek when learning bear a striking similarity to those stimuli present in online digital games. Since online digital games, then, provide a stimulating environment that fosters development of critical skills and characteristics, it seems self-evident that serious games provide a natural environment in which to learn the necessary skills for today's work (Derbyberry, 2007).

DISCUSSION AND CONCLUSION

“Games are widely used as educational tools, not just for pilots, soldiers and surgeons, but also in schools and businesses... Games require players to construct hypotheses, solve problems, develop strategies, learn the rules of the in-game world through trial and error

Most adults leave the academic learning environment when they exit school. Adults also might have very different learning styles. Some will be active learners and want to do things, and others will be passive and want to be told the answers. Digital games can be tailored to engage all types of adult learners. Adult educators should be aware of the potential of the electronic games. In this dynamic environment, adult educators must ask how the electronic games can be used in teaching and learning.

Digital games are a medium that may impact on the daily lives of learner. Platforms (3G phones, PDA, GPS and Pocket PCs under GPRS, WIFI and UMTS networks) are expanding, providing opportunities for games to be common throughout time and space. Today's students who are the futures adults have grown up with these technologies. Good game design and supporting materials can utilize the benefits of this technology and make digital games a powerful medium for learning.

To facilitate the use of andragogy while teaching with digital games we must use digital games to its fullest futures to employ all learning gains. Arguments for the use of digital online games many times include statements about their flexibility and the ability of the adult learner to move through lessons anytime, anywhere, and at their own pace. These arguments also include logical explanations of how an adult learner may adapt the lessons or material to cover what they need to learn and eliminate the material that is not appropriate or that they have already learned. To adapt to the needs of adult students, these definitions of digital game-based learning must be utilized to make its design interactive, learner-centered and to facilitate self-direction in learners.

Educators who are using adult education concepts in the development of their online lessons must also become facilitators of learning. They must structure student input into their design and create digital game-based lessons which can easily be adapted to make the presentation of topics relevant to those they teach.

If these guidelines are followed, the instruction that is developed will be not only technologically workable but also effective from a learner's perspective.

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Section 3
Case Studies of Online Learning

Chapter 17

Applying Distance Learning and Structural/Pedagogical Methods to an Adult Learner Program: The Case of Global Business Management

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ABSTRACT

Adult learner students are becoming a key segment of the undergraduate college market; however, adults have a different set of needs, orientations, and approaches to learning. This paper examines the background and characteristics of adult learners, together with various approaches to meeting the needs of these non-traditional students (distance learning, intensive and block scheduling, modular learning, etc.). The application of these methods and techniques are illustrated in the structure and implementation of a real-life adult learner program for business undergraduates.

INTRODUCTION

To meet the needs of students in the 21st century, it is critical to examine the state of the educational market and to target the specific needs of those who will be enrolling in and graduating from degree-based programs. The dynamics and demographics of college students are changing, and educational institutions need to change and adapt to meet their needs and requirements.

Currently, most undergraduate university programs are targeted towards students in their late

teens or early twenties who have completed high school and are pursuing degrees in preparation for a future career. Thus, most academic programs are currently designed to meet the learning preferences and scheduling needs of the “traditional” college student.

At the same time, adults are forming an important segment of the educational market, and their increasing numbers are becoming an important force comprising a solid portion of the overall undergraduate population. It has been noted that almost half of undergraduate students can be categorized under the categories of “non-traditional”

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or “adult learners” (National Center for Education Statistics, 2002).

Adult students are generally older and frequently exhibit less-developed or alternate approaches to learning. While many possess a great deal of professional experience and knowledge, adult students frequently lack a firm grounding in a variety of business and other theoretical knowledge areas that an undergraduate college business degree provides. Work and home responsibilities often make it more difficult for them to attend classes scheduled during the daytime or on weekday evenings.

However, adult students also typically bring to the classroom positive attitudes and perspectives that are conducive and make them more eager to obtain both short- and long-term value from their college learning experience. Many have more focused career-oriented goals and orientations. Generally, adults are more engaged and involved in the learning process and seek to master a subject because they understand the benefits provided by enhanced knowledge to career performance and advancement. Adults tend to ask more questions, demand more class discussion, and seek connections between the material and practical applications from work. The result is a need for more dynamic and real-time learning focused toward specific goals or agendas related to improving careers and lives (Hamilton, 2002).

In contrast, traditional undergraduates are generally inexperienced and less mature, are more focused towards social aspects of college life, and place greater emphasis on grades to meet the expectations of parents. As a result, many traditional students exhibit a more passive approach to learning with emphasis on absorbing and memorizing what “experts” profess. One of the important tasks of a traditional undergraduate education, therefore, is to provide social and life experiences to help students develop a context upon which educational knowledge can be built.

Adult Learners, Degrees, and Learning

Adult learners comprise part of a category known as “non-traditional” undergraduate students. It was found that roughly half of all college students in the U.S. can be considered non-traditional students, a significant portion of which are adult learners. The number is growing, and it is conceivable that very soon the majority of students will fall into this category, according to the National Center for Education Statistics (Horn, 1996). Some of the core characteristics of non-traditional students are that they delayed enrollment (did not enter college after high school), are likely to attend part time, have full-time jobs, and are likely to be married with dependents (National Center for Education Statistics, 2002).

While traditional students enroll as the next logical step after high school, 73% of adult non-traditional students attend college for the purposes of career advancement, to improve their knowledge in a subject area, and/or to complete a degree to add to their credentials (U.S. Department of Education, 2002).

Adults seeking an undergraduate degree are driven by the fact that a college education is not only desirable, but necessary in today’s highly competitive global job market and business environment. In fact, many jobs which will be available in the future will require higher-level cognitive skills that only a portion of current workers possess (Occupational Outlook Handbook, 1999). Yet, the majority of programs serving adult learners are conducted by corporate sponsors, rather than by government or educational institutions. In fact, only a fraction of existing adult programs are run by traditional colleges and universities, although the number has been increasing. All things considered, there is a shortage of learning opportunities that provide adults with the higher order educational knowledge and skills desired by employers.

Positive characteristics of adult learners include self-directedness, a focus on immedi-

ate application of learned material, a decidedly practical emphasis, the ability to gain experience which can be related to new learning, and greater concern about the effective use of available time. It is also a fact that many adult learners may have had negative experiences in their previous educational work which may impact their new attempts at completing their education (Knowles, 1984; National Center for Research in Vocational Education, 1987).

Perry (1970) discussed the levels or stages from which students develop critical thinking skills. Espana (2004) found that adults tend to have higher levels of thinking emphasizing contextual relativism (need of supporting information to confirm validity), and the dialectic (handling a problem from different perspectives with answers varying by context). This is in contrast to lower levels such as dualism (choosing between right/wrong answers), and multiplicity (considering multiple answers), which may be associated with more traditional students. Consequently, professors and instructors of adults are often pressed by them to function more as a coach or facilitator rather than as a person who lectures or acts as a “sage on a stage” (Espana, 2004).

Many adult students are employed full-time or were previously employed. Because the current workplace puts a number of expectations on them that ultimately shape their thoughts, direction, and behavior, these expectations can be significantly different from those required of 18 to 21 year old students in a traditional classroom setting.

The goals and objectives which have been identified with regard to adult students are also related to classroom and course situations which employ distance learning and the use of technologies to supplement the classroom process (Brookfield, 1991; Knowles, Holton, & Swanson, 1998;). These include active learning, cooperation, and collaboration; real-world problems and work-related applications; problem solving; decision making; applied experience; and a strong emphasis on practice. In connection with this, the

roles of interactive activities, critical thinking, and discussion are also important.

Knowles (1984) introduced the concept of andragogy, which are principles and concepts behind teaching adults, together with theories of how adults learn. The implications which can be drawn from this work, together with their relationship to adult learner pedagogy provide insight to the unique learning needs of adults.

Briefly, adult learners actively seek out learning that is relevant to career goals and objectives. There is a strong emphasis on practicality. Providing assignments and exercises which allow students to bring their own life experiences into the work would therefore help to improve motivation and interest in the course, while enriching the learning process. Effective use of self-directed and active learning assignments would have the benefit of making projects more relevant to student work responsibilities and challenges, as well as provide emphasis on the development of critical thinking skills rather than the accumulation of information.

Adult Learner Class Environments

As mentioned earlier, adults desire an education that is more practical and career-oriented; one that should include aspects of both theory and practical application. Theory can frequently provide important support and background knowledge to enhance the perspectives used in implementing practical skills. As a result, a different kind of class environment should be developed for adult learner students.

In traditional classes, the instructor is an authority figure taking on the role of “sage on a stage.” Students are lectured to and presented information (“chalk and talk”), and are then expected to memorize facts for tests. There is frequently an emphasis on the one “right” answer, and most learning outside of class lectures comes from textbooks and other printed materials. There is less emphasis on group

work, and students typically listen and take notes during class.

This contrasts significantly to effective adult learner class environments, which should be designed to facilitate and support more active individuals who will participate, offer arguments, debate issues, and benefit from working with peers in groups to solve problems for which there may be multiple ways to solve a problem. To improve relevance and injection of “real-time” assignments, project ideas may be initiated by students rather than assigned by the instructor. Primary assessment should remain the responsibility of the instructor, but can be supplemented by assessments from other students, team members, or the like. Group work is typical, and there is a level of engagement and interest which is conducted at higher levels of critical thinking (Yamashiro, 2002).

As a result of these distinctions, teaching adult learners can be both interesting and challenging. Some of the pedagogical needs of the adult learner which come into play include replacing lecture with dialog, using structured assignments, replacing case studies with “present time” assignments, and emphasizing application of concepts over memorization. The use of project-based assignments rather than objective tests is also suggested to be more meaningful to adult students (Hamilton, 2002).

Distance Learning and Adult Learners

Much has been written and discussed about the benefits and considerations related to e-learning, distance learning (DL), and Internet-based instruction. The effectiveness of online courses and programs is currently a topic which has been debated and analyzed, and has elicited both positive and negative characteristics and outcomes (Ahn, Han, & Han, 2005; Beck et al., 2004).

Distance learning can play a significant and critical role for adult learner programs due to several main factors. First, adult students have more

experience, maturity, and career orientation, and therefore would be better able to take advantage of the flexibility and convenience which DL offers. At the same time, their maturity and desire to succeed and to successfully complete their college educations would facilitate the proper and focused use of online tools, which often require initiative, self-directed focus and concentration. The fact that class contact hours are limited makes the ability for anytime-anywhere communications to be conducive and suitable to the scheduling needs of adult students.

There is a fundamental difference between traditional classroom learning formats and Internet-based asynchronous learning. Lectures, discussions, and some in-class exercises are the basic elements of traditional classroom learning, and in general students receive direct face-to-face communication from their instructor. This is in direct contrast to asynchronous learning, where online technologies and the Internet are used, and the instructor and students are not necessarily interacting in the same place and time. Instead, both instructors and students can log in when needed to enter or retrieve information, respond to other posts, and otherwise participate in the course.

The application of distance learning to adult learner/non-traditional programs has been found to be useful and appropriate. Many courses are being offered through the Internet and other means, which result in the student-instructor-class interaction to be conducted in whole, or in part, without physical face-to-face interaction in a classroom on campus. According to Chaffee (1998), adult students tend to have expectations in terms of flexibility, convenience, and responsiveness, and have no qualms about seeking out these aspects in educational programs.

Distance learning can be implemented in a number of ways. Some courses and programs can be run completely online with no face-to-face sessions. The course content is presented in various formats online, and communication can be conducted through e-mail, real-time messag-

ing, and through threaded message boards. This option is best for students who are geographically dispersed and have difficulty attending on-campus sessions.

For courses where some classroom interaction is desired, hybrid distance learning provides an option that combines both face-to-face instruction with interaction outside of class through the Internet. Where there can be considerable variation in terms of format and implementation across courses and programs, hybrid distance learning could have some introductory class sessions in a traditional face-to-face format followed by interaction conducted online. As an option, both modes could alternate throughout the course. The use of an online portal such as WebCT or Blackboard is frequently used to support the online portion as they offer course workspaces from which instructors and students can run their course activities and present information. The specific tools used may include e-mail, synchronous chat, threaded discussions, message boards, and also online lectures, tutorials, and quizzes (Martyn & Bash, 2002).

The use of distance learning offers students the flexibility of interaction at more convenient times which can help to meet the needs of adult students with extensive work and family responsibilities. Working adults may adapt well to online work since they are likely to be accustomed to technology through their work. Online applications can also include m-learning (mobile learning), which supports learning using mobile handheld devices, and b-learning (business learning), which employs transactional data in the learning process. The use of learning management systems (LMS) also can be integrated into the process (Seng & Lin, 2004).

Intensive Course Scheduling

Unlike traditional undergraduates who are on campus full-time and can attend classes at any time, adults often face time limitations and con-

straints. There is both a shortage of time available for class meetings (and study), a limitation in terms of when adult students are available for class (usually evenings and weekends), and also a desire to complete a course in shorter, rather than longer time frames.

Research conducted on this suggests otherwise. Serdyukov et al. (2003) found that compressed formats starting with courses as short as one month produced learning outcomes comparable, or even superior to, longer courses lasting several months in length (such as full semester courses).

One important difference when using most compressed formats is that a sequential, rather than a parallel, format is deployed. Students would take one intensive course at a time followed by another one, rather than taking several longer-term courses simultaneously. A new course is not started until the first one is completed allowing for greater concentration and focus, rather than the dilution and multitasking required in managing several different courses simultaneously. Some of the argued benefits of this approach include better understanding and skill development, as well as higher levels of immersion and concentration (Csikszentmihalyi, 1982; Espana, 2004; Scott & Conrad, 1992).

Another difference is that compressed courses tend to employ certain types of pedagogical methods, procedures, and processes. To be effective, instructors of intensive courses must provide clearly identified expectations and requirements, prompt feedback, and detailed schedules for completion of assignments and course activities (Espana, 2004; Serdyukov et al., 2003). Group projects and collaboration are also found to be effective for intensive courses as they provide opportunities for additional discussion, reinforcement and multiple perspectives in mastering concepts (Singh & Martin, 2004).

To enable communication and learning outside of class, there is often extensive use of electronic communications technologies which can include e-mail, computer software, and Internet-based

course portals such as Blackboard or WebCT. Use of educational technologies can supplement the classroom experience by extending the learning process outside of the classroom (Wlodkowski, 2003).

Block Scheduling

Scheduling is frequently regarded as an administrative detail having no significant relevance to students and learning. A review of research examining various forms of class and course scheduling suggests otherwise. Both student success and improved learning outcomes can be impacted by appropriate scheduling. While the impact of traditional versus intensive courses has been discussed previously, another concept concerns the arrangement of classes and courses as they are related to time.

Block scheduling (Cawelti, 1994) is a class scheduling format which allocates larger blocks of time (usually 60 minutes or more) to class sessions so that there is more time and flexibility for various instructional activities to be conducted. The central concept is that longer, more focused amounts of time can provide opportunities for improved depth and variety of learning. In general, block scheduling has been found to result in higher grades, better relationships among students and with instructors, and a higher level of learning overall (Canady & Rettig, 1995; Gaubatz, 2003; Reid, 1995). Greater involvement of students in the learning process, and the opportunity to use a wider variety of instructional techniques are also benefits (Gaubatz, 2003; Hottenstein & Malatesta, 1993; O'Neil, 1995). Because longer blocks of time facilitate use of creative learning approaches, greater depth in learning can also result.

Modular and Project Based Learning

Because adult learners desire to have a work-related and practical emphasis in their programs, it is useful to offer projects and assignments which

are based on real-world projects and applications. In addition, it was also found that packaging lessons and presenting information and concepts in the form of modules facilitates learning. Modules typically present a specific theory, topic, or learning unit which is supplemented with a practical application-based exercise.

An important element of project-based assignments would be to encourage or require teams or groups to work collaboratively, which can help to improve learning. Previous research has indicated that collaborative project-based assignments can bring about active engagement in learning, develop higher-order learning skills, and enable students to better synthesize various parts into a cohesive whole. In terms of learning in general, collaborative group work helps improve information retention since there is higher level of engagement in the learning experience (Dillenbourg et al., 1996; Hafner & Ellis, 2004; Sloffer et al, 1999).

The FDU Global Business Management Program: A Case Study

Creating an effective program for adult non-traditional students is an endeavor which can employ a number of techniques, methods, and administrative structures which can help to maximize students' satisfaction, persistence, and successful completion.

The Global Business Management (GBM) program is one designed and developed to meet the needs of adult learners. It is a program intended for students desiring an undergraduate business degree; created with part-time adult learner students in mind.

Global Business Management (GBM)

The Global Business Management (GBM) program was designed to allow adult students to pursue and earn an undergraduate college degree from the Silberman College of Business within four years through a "hybrid" approach employing

both web-based distance learning and intensive, face-to-face classes.

Fairleigh Dickinson University (FDU) is a private institution located in Northern New Jersey with three main campuses – the Metropolitan Campus in Teaneck/Hackensack, New Jersey, the College at Florham in Madison, New Jersey, and a campus in Vancouver, BC, Canada.

FDU's Silberman College of Business (SCB) is known for its high quality programs of study on both the undergraduate and graduate levels. SCB alumni include many of the New York / New Jersey region's leading executives in business, communications, healthcare, government and community service. The College is accredited by AACSB International - (The Association to Advance Collegiate Schools of Business).

How Did GBM Start?

Changing enrollments and the need to better understand market conditions prompted the use of focus groups to assess needs relating to FDU's part time undergraduate business program, which was largely comprised of adult learners. Some of the key findings were that adults had some specific needs which were not being met. Weeknight class schedules often conflicted with business and family obligations, the combined learning environment of both traditional and adult learners did not work that well, it frequently took more than four and sometimes eight years for an adult to complete a degree, and financial aid was unavailable.

Program and scheduling innovations were prescribed to address the multiplicity of issues affecting retention and to better target recruitment of the adult population.

The foundation for this new innovative program employed design elements of the College's Executive MBA program where retention was consistently high (above 95%). The unique features that contributed to the success of the Executive MBA were analyzed and incorporated into an ac-

celerated undergraduate format; specifically, the presence of seminar type courses focusing on both the needs of adult learners, weekend scheduling, a pedagogical blend of theory and practice, and also the use of block and accelerated scheduling which not only enabled earlier completion, but qualified some students for financial aid.

The GBM program, launched in Spring 2001, attracted adult students working fulltime who transferred from community colleges, and also adults who had some work experience and sought to re-enter the workplace after an absence. Although the GBM program is intensive and requires a great deal of commitment from students, it has been very successful in allowing highly motivated adult students/learners to complete their undergraduate business degrees.

Employing both a hybrid instructional model (classroom and online) and a program format which is geared to the strengths and interests of adult learners, the goal was to combine the strengths of both technology and classroom interaction into the course experience. Reduced time spent in the classroom is counterbalanced by an increased emphasis on initiating and continuing interaction and discussion asynchronously among students and with the instructor throughout the duration of the course (Garnham & Kaleta, 2002; Young, 2002). Support for utilizing this approach was found in the concept that adult learners are appropriate candidates for distance learning because of their self-directed, independent nature, and can benefit from the flexibility of asynchronous learning (Thompson, 1988). Moreover, because adult students often tend to exhibit better motivation, discipline, and time management skills than traditional college students, it was thought that the hybrid instructional model would work best (Koohang & Durante, 1998).

Although the mean age of entering GBM students is 36, all students are required to have a minimum of 2 or 3 years full-time business work experience. Many bring business skill sets and considerable experience that is both wide and deep.

Graduates of the program include entrepreneurs, middle-managers, and vice presidents of major corporations. The richness of background and experience can be attributed to the fact that the program is based in Northern New Jersey, where many Fortune 1000 companies have offices.

Salient features of the FDU Global Business Management (GBM) program include the following:

130 credit program to earn the B.S. degree in Management, with a concentration in Global Business Administration. Course requirements are the same as those in the traditional business degree track and include liberal arts and other fields which comprise an undergraduate business degree, in addition to business.

Intensive courses are offered on Friday evenings and Saturdays, generally scheduled over 7 weeks instead of the usual 15 week semester. Scheduling flexibility provides options to fit personal preferences and time commitments. Students may also opt to reduce the credits taken in any given semester to meet family or work obligations. In fact, it has become a typical pattern for students enrolled in the program to vary the number of credits taken each semester.

Generally, 15 credit hours are scheduled each semester and 6 credits are scheduled over the summer. This allows students to complete 36 credits hours annually or the required 130 credit hours in four years.

Courses are structured in a block format designed so that GBM students will take no more than 3 courses at any given time within each semester. Courses in the same general subject area are scheduled sequentially, ideally under the guidance of the same professor. This allows GBM students to immerse themselves in a topic and for professors to review and reinforce key concepts from one course into the next.

The block scheduling consists of three different modules that utilize varying levels of face to face instruction together with hybrid distance learning (HDL) as outlined below:

- Module one (M1) uses FTF/ HDL techniques up to 80% of the learning experience.
- Modules two and four (M2 and M4) utilize FTF/ HDL up to 50% of the time.
- Modules three and five (M3 and M5) use FTF/ HDL 20% or less of the time.

This enhancement to block scheduling has been found to be a positive development by GBM students.

Within this framework, the focus now turns to the techniques used by GBM instructors to most effectively teach adult learner students.

Guided Independent Learning: The Concept Behind GBM

GBM program courses employ the concept of Guided Independent Learning (GIL). The GIL approach attempts to maximize the usefulness of each course to adult learners, with the goal of using GIL modules as often as possible to replace or supplement lectures used for traditional students. The benefits include fostering proactive student behavior and connecting educational knowledge to the practice of business.

GIL uses a modular approach to course content, with an orientation towards real-world applications, instructors that act as “mentors” and “coaches” rather than as “lecturers,” and evaluation (grading) based more on application and performance rather than memorization. One way to understand the differences in technique of traditional vs. GIL-based instruction is to examine the sequence of steps that are undertaken in delivering knowledge.

In a typical traditional classroom course, the instructor asks students to read from a text before coming to class, then attend class and listen to a lecture and perhaps answer questions on what was covered.

GIL instruction requires students to understand clearly the requirements of a given assignment

using the textbook, Internet, and other sources as resources to complete the assignment, and also use asynchronous conferencing (i.e. Blackboard) to review, reply, and further clarify and develop the assignment. Students may work in teams to share knowledge and improve the submission, as needed. Finished assignments are presented in class for further discussion and analysis. Then, students incorporate feedback received in class from the instructor (and other students). This may include a preparing a revision of the assignment, preparation of additional work, or doing a new, additional assignment that builds upon what was learned.

The instructor is expected to be actively engaged throughout this learning process. Using online tools, the instructor clarifies the requirements of an assignment, points to additional resources and supporting material, responds to questions, engages in discussion, offers encouragement, and poses challenge questions to help develop a deeper level of analysis and higher quality result.

The instructor actively participates during the next phase – student or group presentation - reacting to the content of the work and adding feedback and supplementing understanding with theoretical knowledge where appropriate.

To better understand how GIL (Guided Independent Learning) can be implemented, it would be useful to look at the composition of some specific GIL modules. Two courses are examined, one is an English writing course (lower-level), and the other is an upper-level marketing course.

General Education: College Writing

ENGL 1101 College Writing Workshop is a required first semester course which focuses on academic essay writing. Perhaps more importantly, the course is designed to help move students to the higher-order level of thinking required to successfully complete college-level work.

One of the initial obstacles to success in college-level study frequently confronting adult

UG students is the need for better developed analytical capability. Most tend not to be critical readers, and need to build this skill over time. At their workplace, most adult learners typically undertake limited to no analytical work as part of their daily job content. To build this capability, several skills must be mastered. One of the more important skills for adult undergraduate students to learn is the ability to separate opinion from fact.

To gain competency in this skill utilizing the framework of a GIL Module, the following approach is employed to meet the goal of improving student analytical writing abilities:

First, students are required to find and email to the instructor through the web-based conferencing tool, a “stretch” article; defined as one having unfamiliar subject matter, more challenging vocabulary, lengthier sentence structure and an advanced writing style.

The instructor then previews the articles received, selects one, and emails it to the entire class. Students read the assigned article in advance of class, and in the next meeting, engage in discussion, where students are challenged to explain/ evaluate/ question critically what was written. After the class, students individually write a reaction to the discussion, using factual examples to back their impressions/opinions.

Class time is devoted primarily to discussion and lecture that supports/ reinforces skill building. Prior to class, students use the asynchronous conferencing feature in Blackboard (distance learning) to ask for assignment clarification, vent frustration when confronted with obstacles (typically arising from vocabulary and reading deficiencies), and help peers in need of support. The instructor utilizes the asynchronous conferencing feature in Blackboard to check student progress, answer questions, engage critical thinking, provide encouragement, and keep students on track.

One class in this course looked at the theme of “Identity, Family and the Path to Self-Discovery.” The basis of the assignment is on cognitive thinking theory, that is, it explains the levels of expectations

and performance for academic writing. Students are shown how to move from factual to complex thinking using the following stages: knowledge, comprehension, application, analysis, synthesis and evaluation. One main assignment is to write an expository/reflective essay incorporating the readings, discussion in class, online discussion, and experiences shared with others in class.

An example of a GIL Module for an upper level business course is as follows:

Upper Level Business – Marketing

MGMT 3360 Direct, Database and Interactive Marketing is one of several elective courses offered in the program. Use of the Internet as a marketing medium and the means of communicating and interacting with buyers are explored. The course builds upon theories of how one might effectively frame a message, communicate it, target and reach a specific audience, while at the same time using and understanding the web in the process. The focal point of instruction is use of the Internet to accomplish the traditional advertising and public relations functions of creating an image, as well as building a website to achieve a specific function (i.e. sale of a product). Utilizing the framework of a GIL Module, a typical assignment for the course would progress as follows:

Students start with an assignment that they must complete individually. This focuses on an actual problem or obstacle experienced by a client, typically related to a lack of effective marketing and/or communications. Students must recommend a solution to the given problem or obstacle.

Later, students are grouped in teams (which are different each class) and instructed to discuss and share their solutions/ insights. Solutions are written up and displayed in the classroom.

Solutions are critiqued by the instructor by challenging the thinking of each group. The questions might be along the lines of, “Why do you think this will work?” or “What theory is this based on?”

“and so forth, accompanied by lectures as needed. Here, the instructor would receive feedback as to whether students are reading and absorbing the assigned materials (using educational knowledge) in building solutions, or are applying inappropriate or incomplete solutions to the problem.

The next step has students reviewing solutions recommended by a PR firm and given data on its results. This is followed by a class discussion where student solutions are compared and contrasted with the actual solution. Class interaction may include students defending their solutions and positions, debating relevant issues, seeking clarification, and probing for additional insights regarding the solutions.

One assignment given in this GIL module was to develop a web site concept and marketing plan for a local start-up firm. The requirements of the assignment included designing a flowchart diagram that fully described site navigation and functionality, together with creating an online research questionnaire. Other requirements included preparation of a marketing plan incorporating such elements as objectives, target audience, brand position/message, market trends and lifecycles (SWOT analysis), strategic partners (offline or online), campaign benchmarks, and program schedules.

CONCLUSION

The number of adult learners as a percentage of the undergraduate population is increasing, with the trend likely to continue as employers seek more knowledgeable workers in today’s competitive and global economy. A challenge is presented to educators, however, by the significant differences in the characteristics and learning preferences of adults compared to those of the younger and less experienced traditional undergraduate population. Educators will need to better understand adult learners in order to improve their academic experience and outcomes.

Many pedagogical considerations come into play when contrasting the learning needs of adults to traditional undergraduate students. Aspects discussed in this paper include defining the unique characteristics of the adult student, and providing some insight as to how adult learning may be enhanced by redesigning the class environment, incorporating distance/ online learning, and implementing accelerated and block scheduled courses.

The GBM program at Fairleigh Dickinson University provides one example of the benefits and improved outcomes that can be experienced by adult learners when techniques and methods are aligned with their specific learning needs. Specific aspects of the GBM program that have been found to be beneficial to adult learners include: the use of block and accelerated scheduling to provide additional time for discussion or project-based work to bridge new information to previous experiences and work toward building deeper knowledge; the use of hybrid distance learning technology as a tool for discussion and reinforcement outside of the classroom; and the use of Guided Independent Learning modules to incorporate work-related applications and life experience as the basis for connecting new knowledge and to practice problem-solving and decision-making skills in the quest for deeper understanding. The GBM program also actively seeks to shift the role of the instructor from “authority” in charge of the class to that of a “coach” or “facilitator.”

Surveys of students in the GBM program tended to indicate a high level of satisfaction in terms of the material learned, teaching styles employed, and relevance to their career and educational goals.

Additional research is needed to further examine and validate new techniques for effectively teaching and supporting adult learners. This paper offered a number of methods and techniques to consider with caution that additional work still needs to be done to fully understand the potential impact derived from making scheduling modifica-

tions, varying instructional methods, and exploring the use of distance learning (and related Web 2.0 and social networking) as support tools to foster proactive faculty and student involvement in the learning process.

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Chapter 18

A Costume Odyssey a.k.a. Teaching Costume History in a 21st Century Classroom

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ABSTRACT

This chapter will explain how we have integrated the Course Management System-WebCT into the teaching of Costume History at the University of Houston's School of Theatre and Dance. It will focus on two topics, (1) delivering the course in hybrid mode to enhance student learning experiences, and (2) conducting course evaluation to collect student feedback on the course design and delivery for future improvement.

INTRODUCTION

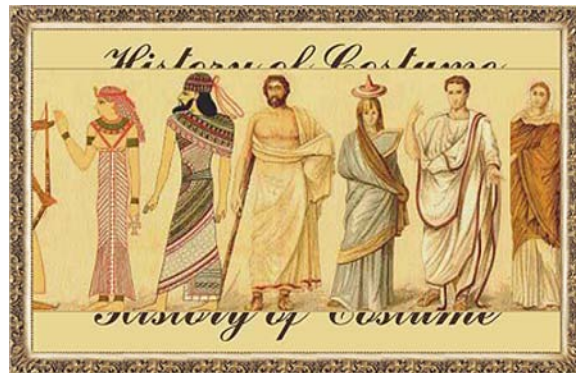
The University of Houston, as an urban University, with a large enrollment, limited classroom space and a predominantly commuter student population already utilizing sophisticated computer technologies and networking tools in their learning environment, Costume History seemed a likely candidate to be modified for delivery in hybrid mode. The course content of any Costume History class depends heavily on visual images, extant vintage garments, various museum collections and a variety of art works. The support graphics chosen to illuminate a particular era must be both appropriate and authentic. The

available textbooks are often inadequate in either their scope or their specificity, prohibitive in their cost or in some cases out of print. WebCT delivery facilitates solutions to all of these concerns.

Costume History is an investigation through visual resources into the Art of Dress. The emphasis of Theatre 3364 and 6634 courses is on how dress reflects the values of our western culture and our western civilization. The greater is the exposure to the art, the furniture, the technology and the fashion of an era, the greater is the appreciation of the attitudes that they reflect. In the History of Costume the goal is to visually verify the importance of clothing as an essential form of communication revealing status, identity, aspirations and attitudes. In the theatre, a discipline devoted to the

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Figure 1. Introduction to costume history



presentation of dramatic actions, it is beneficial for a student to understand and recognize their garments as more than clothing. It is important for them to appreciate their clothing or costume as a physical extension of their personae. It is critical for them to take personal responsibility for their learning of the material by taking the initiative in the weekly research assignments. The Course Management System - WebCT offers help in achieving these goals. With the assistance of an instructional designer, the instructor was able to pick and choose the tools that are most appropriate for the theatre majors.

DELIVERING COURSE IN HYBRID MODE

A principle objective of a course in Costume History in a School of Theater and Dance is to familiarize the students with the important vocabulary, concepts and theories related to the evolution of clothing in each of the eras that are studied. WebCT allows the students to actively manage their learning expectations in a virtual classroom. The course is delivered in a hybrid mode in which students and the instructor meets face to face weekly with a lecture utilizing the same web information that is then available to them 24/7. The ubiquitous availability of this

data introduced in the classroom setting is one of the greatest benefits of the web management option. The advantage of this hybrid mode allows the instructor to offer weekly navigational guidance on a face to face basis. This guidance steers them through the delivery and format of the course materials. By maintaining a consistent unit protocol, the student becomes familiar with the delivery system repeated in each chapter. This protocol becomes comfortable so that the focus pleasantly migrates the attention to the data to be digested.

The course *Introduction* literally raises the curtain on a parade of fashionable attired individuals representing the silhouette of each of the eras that will be covered during the semester. This runway is delightfully accompanied by the familiar theme music of *2001 A Space Odyssey I*. The recognition of this theme both introduces and reinforces the overall objective of this course as a personal odyssey into the history of clothing. Figure 1 is the screen capture of the course instruction.

The *Syllabus* is revised yearly to include changes in the organization of the class, the objectives, the books on reserve in the library and the expectation for the rubric governing their weekly costume plates. To enhance this narrative, a link is provided to demonstrate the format expected in each of their unit assignments. The grading

standard is announced and the guidelines followed for the grading are posted.

1. Using WebCT Tools

When the class was taught the first time, the instructor utilized the *Discussion Board* regularly. The discussion board is one of the many options available in the management tool. Unfortunately the instructor found it was not appropriate to the student population. It was not necessary to build a sense of community or encourage interchange with other theatre majors sharing their experiences with the course material. As a required junior level class in a highly collaborative field where each of the students is required to spend an extraordinary amount of time working with their fellow classmates in productions, in rehearsals or in performance, a sense of community is already well established. The instructor used the discussion board during two different sessions but found it cumbersome and unbeneficial. Many of the students assigned to a chat room were spending several hours that same week working on another project in the department. They sometimes were sharing the same computer to post discussions to each other. Every attempt to modify discussions ran into unusual complications unique to a theatre community. Similar obstacles presented themselves in the chat room options so the instructor did not utilize it for identical reasons.

Other communication tools were much more beneficial. The *Calendar* tool proved invaluable in posting expectations and keeping deadlines current and clear. All assignment deadlines are posted from the very beginning of the semester. The assignments are specific complete and clear. This overview of the entire semester's expectation is appreciated by the majority of those enrolled. Each student can anticipate deadlines and when necessary work ahead of the course syllabus and lecture. Weekly updates can be posted as needed and these updates will pop up as the student logs into the server. The pop ups avoid the potential of

a hurried oversight. In a discipline that is fought with deadlines, the calendar encourages personal responsibility and initiative.

The ability to directly contact the instructor through the WebCT mail tool allows the instructor to either post directly to the inquiring individual or, if deemed pertinent to the entire group, it can become a universal response. This response then gives the appearance of personalization and the perception of a faculty presence akin to a one-on-one office visit. Occasionally a question is broached that has yet to be encountered by others. By sharing the answer to each member of the class some concerns are preempted.

2. Incorporating Multimedia Components to Enhance Learning

The addition of *Film Clips* from movies that brag about their historical authenticity is another powerful tool available on in the course. This tool is exceptionally beneficial to a student body that has spent a great deal of their free time being entertained by the film industry. Now they can be informed by the film industry. These video clips enhance the visual content of the course. Although only carefully edited sections of an appropriate film are offered, many students have become so pecked by the edited clips that they have chosen to acquire these films and watch them in their entirety. Interestingly, these students are anxious to report to their classmates on the various historical discrepancies they notice while viewing. This kind of activity is entertaining and enlightening. This activity continues to strengthen their visual acuity. Their recognition of period garments is being fortified and reviewed. Their detective work is beneficial in the personalization of the material and often rewarding to others. These videos not only help to heighten their interest in the era but also to appreciate the costumes impact on a performance.

The *Media Collection* is perhaps one of the most friendly, versatile and useful of tools. It is a

collection of representational graphic work; paintings, portraits, architecture, furniture, sculptures and accessories in visual support of each era. This site has utilized a multitude of resources the instructor has gathered or selected to specifically reveal the identity or style of an era. These graphics have been scanned from books, museum collections, slides, posters, architecture, furniture, vintage garments and artifacts. A majority of the images are identified with the title, the artist, the location of the work and/or a significant feature worthy of notice. These images can be easily reorganized and revisited by the instructor as suitable to illuminate the weekly face-to-face lectures. The collection then continues to be available to the students for review in their own time and in their own manner. The graphics include not only the popular fashionable silhouettes but also enrichment images that can feature the style, the decorative arts or the fashionable trends. In addition to featuring the dominant silhouettes, it includes, middle class, lower class and esoteric to open the window on a broader view of the evolving technologies attitudes and thoughts evolving within a century.

3. Repurposing Content for Effective Learning

The *Bibliography* is an abbreviated list of several of the finer text books in which to investigate primary art sources necessary for their weekly researched costume plate. Each unit's list targets particularly appropriate texts or sites.

The *Glossary* is a list of terms or vocabulary that they are expected to recognize. This list is limited to items of clothing and or accessories that are either cliché or typical of a particular era. The glossary lists the words and then offers a brief definition. Each student is expected to familiarize themselves with these terms. These are the vocabulary words that might be expected in either a quiz, a Century Checkup or a final examination.

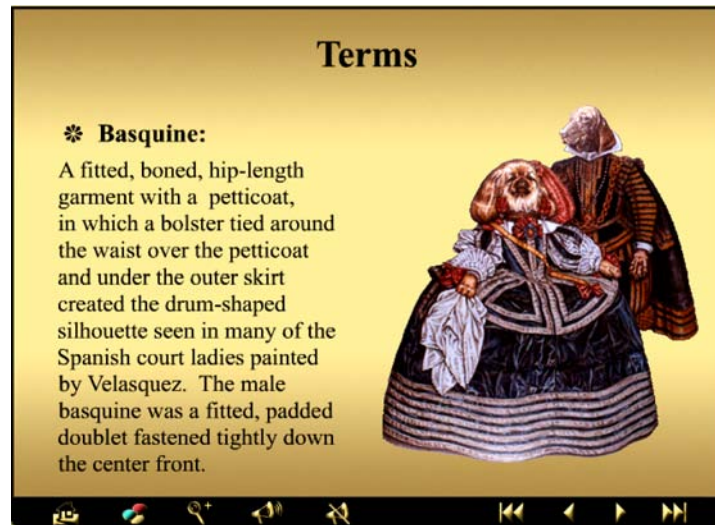
The *Vocabulary* file, on the other hand, attempts to deepen the learning experience by offering the same glossary terms in a more visual and audio mode. In this file, the student is presented with historical background from the era enhanced with music typical to the time. The instructor personally pronounces each glossary word twice so they can hear the word at the same time that they see the word. Then along with the definition and a visual example of the garment in a painting from the period the item is graphically enhanced through an animated motion. This graphic selection often includes subtle benefits. By choosing an individual from original art works, the decorative arts, the architecture, the furniture and the gestures are often evident. These added visualizations are a huge benefit to the students' experience with the glossary terms. The events are presented chronologically, and the glossary is in alphabetical order. Students have full control of the learning process. The following example (*Figure 2*) is a screenshot from the Early Baroque period for the term "Basquine:"

When students click on the magnifying icon, the costume part of "basquine" is morphed into a larger image. Students can correctly identify the part on the costume and have a detailed view of basquine while reading the definition and explanation of the term along with listening to the pronunciation of the term at the same time (*Figure 3*).

They can click the megaphone icon to repeat the pronunciation, and stop the background music by clicking on stop the megaphone icon. The forward and backward icons allow students to repeat the term or jump to the term they want to go to. The home icon will take them to the content list so that they can go to a different chapter. If students click on the color icon, basquine changes to a different color.

The color selected for the background is the fashion color during that historical period as identified by the instructor. Students can repeat the process as many times as necessary until they

Figure 2. Basquine I



know how to pronounce the term correctly and are able to recognize the part on the costume.

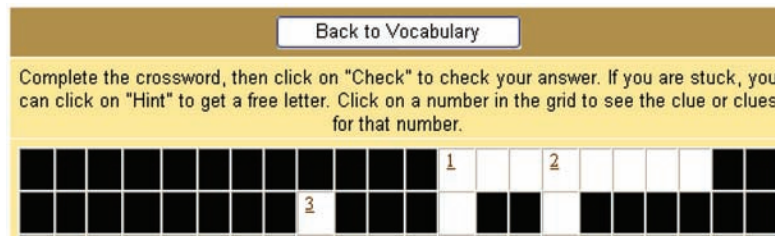
Directly connected to this vocabulary file is the **Crossword Puzzle**. Often thought of as a game, the crossword puzzle offers the student a at-no-risk opportunity to check on their recognition of this material by providing the definition and expecting them to spell the vocabulary in the crossword puzzle format provided. It is another benefit of

the delivery system that allows the student to check on their recognition skills and enjoy the game while they are learning. Students need to accomplish two learning objectives in the game: they need to match the terms with clues, and they need to correctly spell out the terms. The game has a built-in grading scheme with a full score of 100 points. Each word is worth $n/100$ points. When students go to the crossword puzzle game

Figure 3. Basquine II



Figure 4. An example of a cross-word puzzle game



page, they will see instructions above the puzzle grids, as shown in *Figure 4*.

Students start the game by clicking on a number. For example, if they click on number 1, two textboxes appear with clues above the puzzle, as shown in *Figure 5*. They need to type in the correct terms according to the clues and then click the Enter button to fill in the puzzle grids. If students have difficulty spelling the word, they can click on the Hint button and will be shown a letter, but each use of the Hint button will deduct points from the total score.

Right after they finish all the terms, students can click on the Check button at the bottom of the screen to verify their answers and to see the total score. Incorrect grids will be blanked out, and points will be deducted for those wrong answers. Students can redo incorrect grids. If they are not satisfied with their results, students can go back to the interactive glossary game to practice more. The test results are not recorded in WebCT grade book since the game is solely for learning reinforcement purpose.

4. Assessing Student Creativity

In the School of Theatre, the majority of the majors, perhaps as high as 90%, are focused on the performance track and are training to be actors when they graduate from the University. Because Costume History is a required course, majors only, encouraging these actors to explore the individual solutions to a performance focus has engaged their active research required in the weekly exercises. These weekly exercises, called costume plates, are linked to the garments worn in each historical era. Their research into primary sources is regularly linked to a specific performance issue. By expecting them to integrate their knowledge of a theatrical character, one semester their research link is to Shakespeare's *Romeo and Juliet*, their investigation into the modes and manners that they might someday utilize in their performance track is enhanced.

The *Assessment* tool in the WebCT is utilized in a variety of ways. Chapter quizzes are available 24/7 and have 20 multiple choice questions that are directly linked to the information delivered in the glossary and vocabulary folders. These quizzes are more of a teaching tool than an assessment

Figure 5. An example of cross-word grids

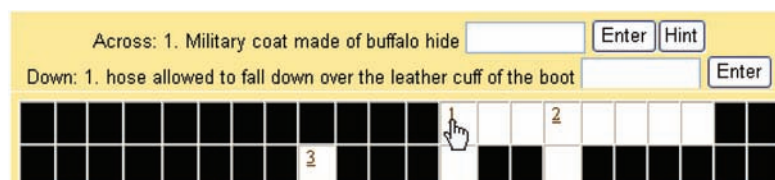
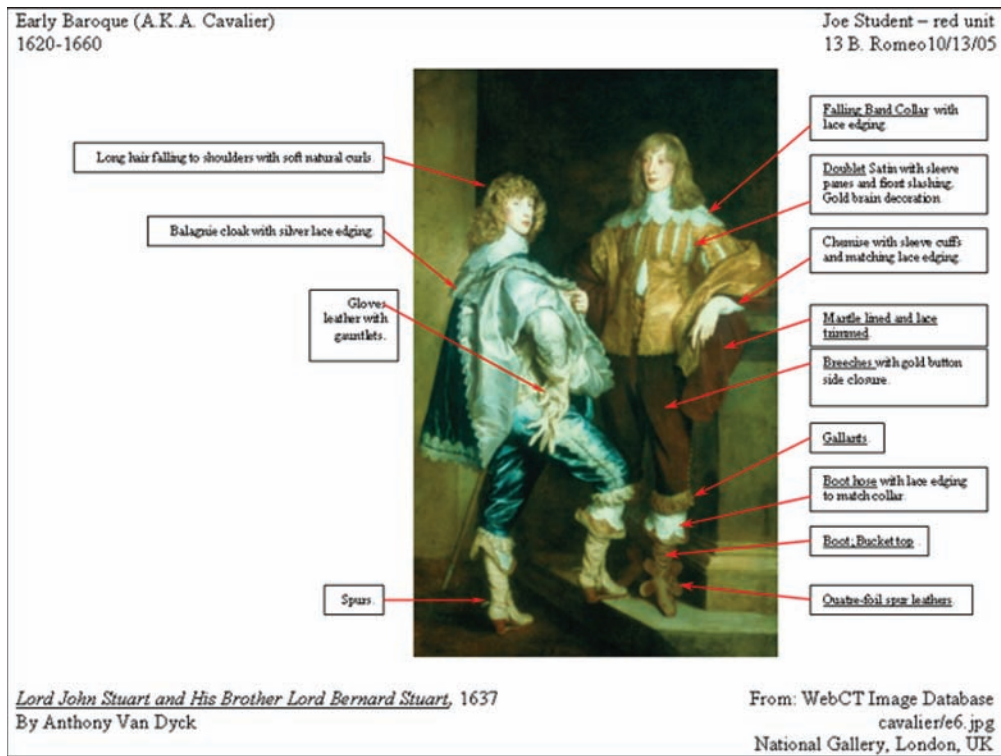


Figure 6. Plates sample



as they can be revisited as often as necessary to answer each of the questions correctly. No credit is given until they achieve a perfect score.

Costume Plates comprise approximately 60% of the total point required in the course. Plates are the student opportunity to present their personal investigation, a.k.a. research. It is their selection for the character of either Romeo or Juliet in each century or era. They must select one aristocratic male figure and one aristocratic female figure. They must analyze what the figure is wearing. They must label the garments on display correctly and they must accurately note both the primary and secondary source they used for their research. Two plates are required, one male and one female, for each chapter. The rules governing the plate submissions are carefully narrated and demonstrated in the syllabus. These plates require the research to extend to a variety of venues, museums, library collections and internet sources.

Students are provided with research references and plate example with detailed illustration for student modeling (see figure 6).

Costume Plates were initially delivered on the web. Currently, due to a number of logistical issues, these weekly assignments or plates are executed and evaluated manually. However, the grades are posted in WebCT grade book and are only visible to the individual student. Students are able to check the grade book at their convenience and report any discrepancies. The web keeps track of these assignments or plates, chapter quizzes, century check ups and final exams and will compute the grade at the end of the semester.

The **Final Exam** is a comprehensive test that expects recognition of period silhouettes and garments that are taken directly from the media file. Being able to link a question to the specific art work that was featured in the face-to-face lecture has a greater reliability of measuring the student

ability to recognize both the important vocabulary and the dominant silhouette.

CONDUCTING COURSE EVALUATION

It is absolutely important and necessary to get students feedback on the course delivery and design. The course was converted to hybrid mode and new instructional tools were used to enhance student learning. Student feedback will provide the instructor with valuable information on what worked and what did not work, and what needs to be improved in the course. At the end of fall 2007, a research study was conducted to solicit student feedback on the course delivery and design. The survey method was used to conduct the study. The total enrollment in this course was 50 students. The participation rate is 40%. Fifty-five percent of the participants were senior students. The survey was completely voluntary and anonymous. 90% of these students had more than 4 years' computer experiences, only one student did not have any experiences before. WebCT is the on-campus supported online course delivery system. There are more and more faculty members adopt WebCT for fully online teaching or hybrid teaching. 80% of participants already had WebCT experiences before they took this course. The University of Houston is a large urban school. Majority of students are commuters working either part-time or full-time. 70% of the participants reported that they accessed online materials mostly off campus. Since the multimedia components (video and audio) in this course have relatively large file size and they are delivered online. Students' Internet connection speed is very important. The data indicated that 70% of students had DSL/Cable Modem or higher speed connection. Only one student had 56k dial-up modern connection.

The study investigated different aspects of the course, such as course design, architecture,

accessibility, course presentation, and paid special attention to the interactive learning components, vocabulary, self-test, and audio. The flexibility facilitates student learning significantly and makes them feel more secure and confident as they learn. In particular, the interactive components greatly benefit at-risk students. The instructor noticed that the retention rate has improved since the interactive learning components were integrated into teaching. The enhanced components also provide the otherwise missing link between the instructor and students due to the lack of interaction in the hybrid learning environment.

1. WebCT

WebCT was evaluated based on the tools used in the course. Since majority of students already had WebCT experiences before they took the course, 80% of them felt comfortable using this system, and they also agreed that WebCT helped them learn the course content materials. The instructor used the Calendar Tool very efficiently. She entered all the course activities and schedules on the calendar to remind students of upcoming events and assignments. 85% of students reported that it was a very useful tool. Another effectively used tool is the Media Library Tool. In addition to the image page for each chapter, the instructor and TAs created an image database to upload collected images from different historical periods and organized them chronologically, which greatly facilitated students search and use of images for their research and assignments. 80% of students indicated that the image database was useful in their learning. Most of the communication and interaction between instructor and students were conducted in class, so the use of Discussion Tool and Email Tool were minimal. For the students who did use the tools, they had positive feedback on the use.

2. Course Design

WebCT provides tools for instructor to use, but those tools need to be structured in the way that best benefits student learning and at the same time addresses accessibility and ease of use. The instructional designer paid special attention to the navigation system in the course. 85% of students thought course design was relevant to course quality, and 60% of them liked the design in this course. 75% of students reported that the course structure was consistent and clear and they could easily access the content materials. 85% of them thought the course navigation system was easy to use and they could get to each page easily. 90% of indicated the text font size was easy for reading. It seemed that students did not care too much about the course color scheme. 50% of students did not provide any feedback on it. Another half of students liked the color in the course.

3. Multimedia Components

There are Flash movies, images, audio and video clips integrated in the content delivery. Flash movies were created to introduce the course and to help students with their historical events and vocabulary learning. And the same group of students reported that the vocabulary movies and audio clips in the movies were effective in their learning. The video clips were taken from historical movies with typical representation of the costume design at that period of time. The instructor used the clips to provide further visual aid to students for better viewing and understanding. 45% of students reported that those clips were helpful in understanding the history and costume. 40% of students did not provide any feedback and 15% of them did not have opposite opinion. Overall, 70% of students strongly agreed or agreed that those multimedia components were very helpful in learning course materials.

4. Course Delivery and Assessment

Hybrid delivery mode is relatively new to most faculty and students on campus. In order to make sure the successful implementation of this delivery format, the course delivery was evaluated in following aspects: course objectives, amount of content delivered, content materials organization and presentation, instructor's or TA's encouragement for research and class participation, student access to instructor and TAs for help, as well as timely feedback on student learning progress. 75% of students found that the objectives of the course were clearly spelled out in the syllabus. 55% of students thought that the instructor well presented the materials in a clear and organized manner. 85% of students were satisfied with the timely feedback from the instructor and TA. 80% of the students reported that they could access instructor's or TA's help whenever they needed and 75% of the participants indicated that the instructor and TA acknowledged their class participation. But 55% of students reported negatively on the amount of content delivered. There are two types of formal assessments in this course, chapter assignment and two exams. Additionally, there are self-test (using cross-word puzzle games) that are not recorded in grade book. 70% of students thought that the assignments were relevant to the content and 60% reported that the quizzes covered the content delivered in the course.

Generally speaking, based on student feedback, the course delivery and design receive positive responses from the majority of students. Since hybrid delivery mode is still in its early stage of testing, there are some issues that need attention. Only 45% of student thought the course lived up to their expectations. Students were positive with certain learning components in the course except the amount of materials covered. A further study will be conducted to collect more data on the reasons on what the course needs improvement and their suggestions on effective course delivery.

This survey is very valuable to the course delivery and course design.

CONCLUSION

The objective of a course in Costume History is to give the student an overview of the clothing that people have worn from antiquity to modern day. The odyssey through fashion and history exposes the values of each particular century to appreciate the attitudes and values informing their choices of dress. In a discipline that studies the theatrical styles and dramatic genres of Western Theatre, acknowledging that the clothing illuminates the spine of a character just as a text can illuminate the spine of a script. Costume History is a vigorous

investigation of figure emphasis and silhouettes that developed within the chronology of an era. WebCT provides multiple tools to enhance the efficacy of education through technology. The interactive enhancements and the games really are a constructive add-on, and they are effective learning tools for introducing, drilling and reviewing content. They are beneficial to course content delivery and student learning. This Costume History course is quite successful in terms of improving student retention rate, facilitating student learning as well as enhancing the quality of hybrid instructional delivery. If technologies are integrated in teaching intelligently, students will be encouraged and motivated, and they will rely on their own interests and aptitudes to manage their learning.

Chapter 19

Project Management for Project-Based Learning: A Case Study of Course Projects with Small Virtual Instructional Design Teams

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ABSTRACT

This chapter reports the results of a case study in which the final project outcomes of small virtual instructional design teams using Project Management in an online graduate-level course are compared with teams using a less-structured approach. Based on the findings, the author offers the following recommendations for structuring project-based learning in small virtual teams: (a) assess through pre- or in-course questioning individual motivators of success and performance in virtual teams, (b) provide teams with templates with which to document roles, responsibilities, milestones and key deliverables, and (c) offer time and schedule management tips to reinforce/extend entry skills in team project management and participation. This case study can serve as a resource to eLearning practitioners seeking research-based best practices for both managing and participating in project teams that may have limited human and material resources and that may be distributed over a number of geographic locations and time zones.

INTRODUCTION

In learning how to design for the online environment, students of Instructional Design seek not only skills and competencies, but also a virtual design team experience similar to what they will encounter as instructional design professionals. The ability to work in teams and apply social, communication

and collaboration skills is expected by employers (McLoughlin & Luca, 2002), but is also among the essential competencies outlined by the International Board of Standards for Training, Performance and Instruction (IBSTPI) (International Board of Standards for Training, Performance and Instruction, 2000). Acquiring and demonstrating those skills can be more challenging for teams whose members are dispersed across multiple locations and who meet – whether regularly or occasionally – in a virtual

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environment, than it would be for co-located teams. As an instructional strategy, project-based learning can provide adult learners with the opportunity to develop and apply their collaborative skills. When used in a virtual learning environment, project-based learning can also help students to acquire the special skills, including an understanding of human dynamics across functional and cultural boundaries, necessary to lead and work in virtual teams in many organizations (Duarte & Tennant Snyder, 2001). However, the instructor must provide some degree of structure or scaffolding to the project, assisting learners with tasks or concepts that they may not initially grasp, but then gradually “fading” (Lipscomb, Swanson, & West, n.d.), allowing learners to proceed independently and take ownership of both the project process and the project product. Given the need to balance learner control and instructor scaffolding, it is important to explore what tools and techniques are available to instructors and online course designers to achieve and maintain that balance, including tools from a variety of disciplines.

The purpose of this chapter is to illustrate how processes and procedures from the discipline of Project Management can provide a support structure to course projects with small virtual teams and still retain the learner-driven character that is a central feature of project-based learning. Specifically, this chapter takes as a case study a 15-week core course in the online eLearning Graduate Certificate program at George Mason University, with one section of the course using the principles and practices of Project Management as scaffolding for the final team project, and another section of the course using open-ended tips and instructor feedback to help structure the final project. Using content analysis of team discussion boards, as well as a statistical comparison of project scores and post-project surveys, this chapter examines the impact of Project Management vs. a more traditional scaffolding approach on the course project lifecycle in terms of intra-team communication, final project outcomes and overall virtual project

team experience. The chapter concludes with recommendations for e-learning practitioners and instructors/trainers for structuring project-based learning in small virtual teams.

BACKGROUND

To understand the results of the study and their implications, a few definitions are needed. Project-based learning focuses on the production of a final product by applying previously acquired knowledge (Prince & Felder, 2007; Helle, Tynjala, & Olkinuora, 2006). Thomas (2000) lists five criteria of project-based learning:

- Projects are central, not peripheral to the curriculum;
- Projects are focused on questions or problems that drive learners to encounter and struggle with the central concepts and principles of a discipline;
- Projects involve learners in a constructive investigation or goal-directed process that includes inquiry, knowledge building and resolution;
- Projects are conducive to student autonomy, choice, and allow unsupervised work time, and;
- Projects are realistic, not school-like, focusing on authentic challenges where the solutions have the potential to be implemented.

As an instructional strategy, project-based learning is grounded in Situated Learning theory (Lave & Wenger, 1991), which advocates the presentation of knowledge in an authentic context, the use of settings and applications that would normally involve that knowledge, and the inclusion of collaboration and social interaction to solve complex problems.

In addition to applications in a variety of educational settings – K-12, post-secondary/tertiary,

vocational – project-based learning has been applied to learning in the workplace, where the focus is on connecting formal learning settings off the job, such as education and training programs, with informal learning settings on the job (Poell, van der Krogt, & Warmerdam, 1998; Boyd & Jackson, 2004). In the field of Instructional Design, project-based learning as an instructional strategy has been adopted due to its ability to provide both learner self-direction and a design team experience similar to what would be encountered in the workplace (Gulbahar & Tinmaz, 2006; Gonzales & Nelson, 2005). However, little attention has been given to structures, processes and tools to support project-based learning with virtual project teams, particularly for courses at the graduate level where team sizes may be fairly small.

There is some evidence that the discipline of Project Management can offer structures and procedures that can facilitate the management of virtual project teams. Project Management is the application of a body of knowledge, skills, tools and techniques to project activities to meet project requirements, all of which is documented in the Project Management Body of Knowledge (PM-BOK®) (Project Management Institute, 2004). Crawford & Pollack (2007) advocate viewing processes and practices from Project Management as generic, with the project processes of initiating, planning, executing, monitoring and controlling, and closing the project applicable to a variety of other disciplines and industries. In a review of the Project Management literature, Leybourne (2007) points to a growing emphasis on the behavioral elements that impact the management of virtual project teams, such as conflict management and decision-making, affirming the relevance of Project Management to a variety of contexts.

In terms of instructional applications, Project Management has been used to assess team performance, task coordination and communication for co-located teams and for virtual teams. For example, Maynard, Maynard, & Rowe (2004) used Project Management to structure a course project

in a face-to-face undergraduate course designed to expose introductory Psychology students to the fields and occupations of Psychology. At the graduate level, Chiochio (2007) applied Project Management to a course project on assessment and compared high vs. low performing virtual teams over the lifecycle of the project. However, these studies offer little insight into the effectiveness of Project Management over other approaches to learner support because all students in the studies used the project management methodology. With little evidence about the effectiveness of Project Management in providing the conceptual and procedural scaffolds and support (Kao, Lehman, & Cennamo, 1996) that would enhance project-based learning processes and outcomes for adult students working in virtual teams, there is currently a gap in the literature concerning the extent to which Project Management processes and procedures can effectively scaffold online project-based learning by facilitating communication among team members, improving project results and generating a favorable project team experience.

PROJECT MANAGEMENT AND INSTRUCTIONAL DESIGN: A CASE STUDY

Context

To meet market demand, George Mason University offers the e-Learning Graduate Certificate program to prepare students for careers requiring specialized knowledge in instructional design and e-learning practices that utilize current and emerging technologies to meet education and training goals in schools, communities, government agencies, and corporate settings. The underlying definition of eLearning is broad and refers to the delivery of instruction by electronic means. Required courses are available online to meet the needs of students who find it difficult to attend face-to-face courses.

A core requirement of the Certificate program is a 15-week course that explores the latest innovations in technologies and environments for distance learning, as well as the theoretical issues central to the design, development and implementation of distance learning. The course is delivered totally online using an asynchronous format via a commercial learning management system (LMS) and uses a combination of readings, narrated presentations, hands-on experiences, research activities, threaded discussions, reflections and team projects to help students understand the strengths and weaknesses of current technologies, as well as trends and directions in distance learning. Teams of three to four students each are formed in the second week of the course, with membership assigned by the instructor based on career goals/interests and previous experience with virtual teams as described in the student bios posted during the first week of the course. Teams remain intact throughout the duration of the course. Each team is given a private area on the LMS discussion board and the discussion board serves as the main interaction vehicle for documenting plans and activities for team projects.

The most critical course deliverable is the final team project in which each team must create a “live” fully functioning e-learning module of instruction using one or more of the technologies explored during the course. All modules are grounded in the basic principles of Instructional Design that include Analysis, Design, Development, Implementation, and Evaluation (ADDIE) (Conrad & TrainingLinks, 2000; Dick, Carey, & Carey, 2005; Smith & Ragan, 2005; Morrison, Ross, & Kemp, 2007). Teams select their module topic in week seven and spend the remaining eight weeks of the course working on the module for final presentation and demonstration in week 15. To help teams structure their work, a tip sheet on working in virtual teams, a discussion of data collection and research approaches, and a free-form-text project status report template are provided at specific points in the project lifecycle

as support structures for each phase of the ADDIE model. Upon project completion, students complete an evaluation of the overall virtual project team experience using the Student Assessment of Learning Gains (S.A.L.G.), a Web-based survey developed and hosted by the University of Wisconsin-Madison (Seymour, 1997).

The Problem

Although final project products have generally been of high quality over the past few years, team discussion boards indicated a wide variation in both the number and detail of message postings about team communication, participation and time on tasks. This appears to be consistent with the findings in the literature, where researchers have found that virtual interaction increases the amount of time that teams require to accomplish tasks, reach decisions, and mitigate or reduce conflict and misunderstandings (Martins, Gilson, & Maynard, 2004; Hertel, Geister, & Konradt, 2005; Parchoma, 2005). Moreover, volunteered comments in the S.A.L.G. survey indicated that although there was satisfaction with final project outcomes, the amount of time and effort expended on staying on task was deemed to be greater than expected and required a great deal of “sweat equity” from each member. Drawn from the field of Economics to describe the time and resources that owners and employees allocate to their businesses in the common expectation of some favorable return (McGratten & Prescott, 2005), the term “sweat equity” as used in this chapter refers to the amount of time and effort that team members spend on managing virtual team processes as well as on producing the team product.

Could Project Management reduce the amount of sweat equity that virtual team members need to invest to successfully complete the final course project? To answer this question, the course would have to incorporate Project Management and the project outcomes compared with those of another section of the same course using the

existing scaffolding tools. To that end, one section of the course was selected to be the test group. Test group students were (a) introduced to the basics of the project management methodology as documented in the PMBOK® guide (Project Management Institute, 2004) during week seven of the course as project topics were being selected. Project Management processes, procedures and document templates that map to the ADDIE instructional design model were identified and adapted to the 8-week course project lifecycle. The specific scaffolding tools drawn from the PMBOK® guide were as follows:

- **Project charter:** Developed collaboratively by each of the virtual teams, this document describes (a) the learning need, (b) stakeholder needs, wants, expectations, (c) the project purpose and justification, and (d) incoming assumptions and constraints based on situational and/or organizational conditions. The scope of the project, including project deliverables, requirements and characteristics are also stated explicitly, as are the project boundaries in terms of what is included and excluded from project scope.
- **Work breakdown structure:** A top-down decomposition of project work into specific work “packages”, this is a graphical depiction of all deliverables – including intra-team deliverables – that convert the project scope statement into tangible items. This enables the teams to better manage project scope, member time, and ensures that work doesn’t slip through the cracks.
- **Activity list:** For each element in the Work Breakdown Structure, an activity is listed, the person responsible identified, the target due date noted and, upon activity completion, the actual completion date documented. This is an additional tool with which teams can manage scope and time.
- **Project status reports:** Unlike the open-ended text documents in which teams

comment on what is (not) going well in the project, this template calls for specific data items, such as the number and percentage of tasks completed, in progress or not started; changes to scope of work, milestone dates, project risks and their likelihood of occurring as measured on a 3-point scale (high, medium, low); overall project status, and; milestones planned and accomplished.

A second course section, the control group, continued to use the same scaffolding tools that had been used in the past. Figure 1 shows the relationship between the 8-week project lifecycle, the ADDIE model and the scaffolding tools used in the test and control groups.

Research Questions

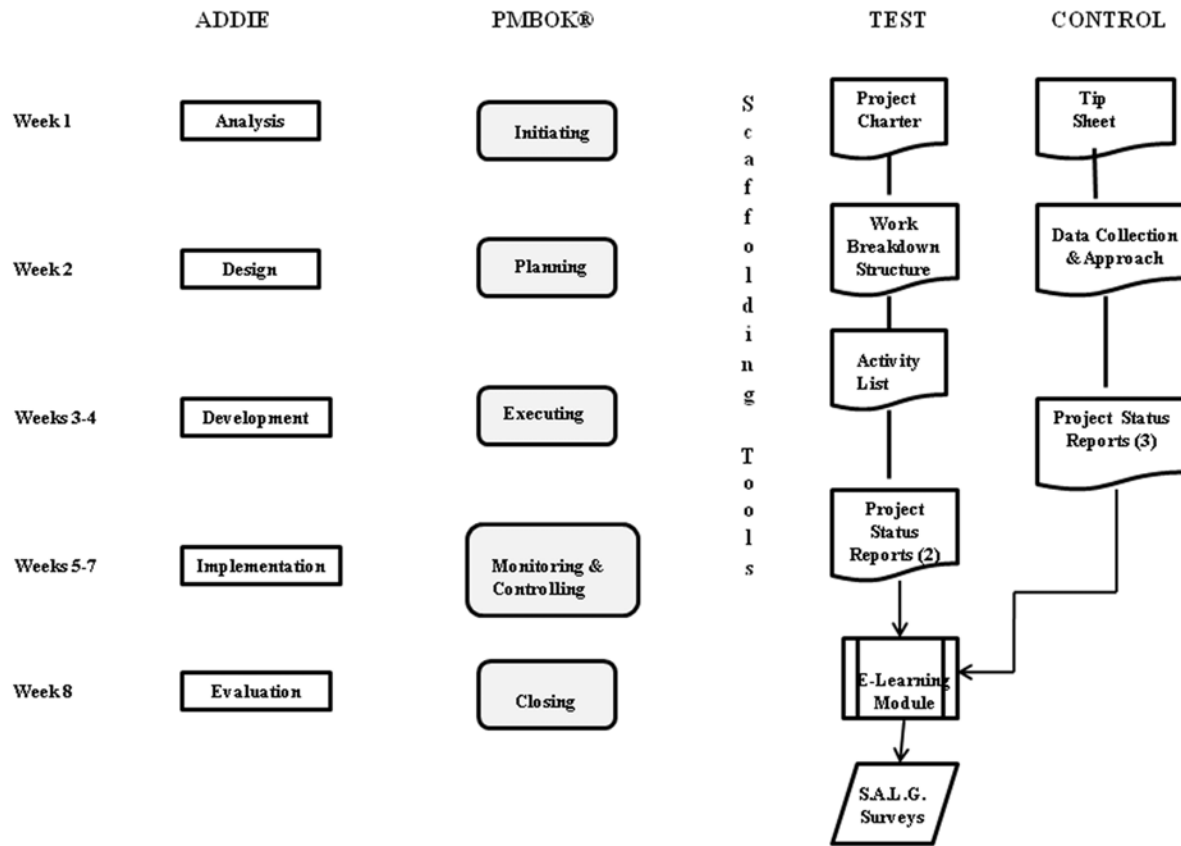
The following research questions were addressed:

1. Are there any differences in team interactions among the virtual teams using the project management methodology for their final projects vs. those not using that methodology over the 8-week project lifecycle?
2. Do the virtual teams using Project Management produce higher quality products than the virtual teams not using that methodology?
3. Do the virtual teams using Project Management have a more positive team experience than the virtual teams not using Project Management?

Participants

Four virtual teams – one team of three members and one team of four members served as the test group and one team of three and one team of four served as the control group – agreed to participate in the study, for a total of 14 students across two separate course sections. Students in the test and

Figure 1. Project processes and scaffolding tools: test vs. control groups



control groups were fairly similar in that they were (a) employed full-time in a variety of industries, (b) enrolled in the e-Learning Graduate Certificate program to either advance existing careers or acquire new skills and competencies to change careers, (c) were primarily male, and (d) had taken at least one online education or training course in the past two years.

Instruments and Analysis: Team Interactions

Content analysis – the application of meaning to information through the identification of patterns in the text that the research has collected (Wilkinson & Birmingham, 2003) – was used to examine the development of virtual team

interactions over the 8-week project lifecycle. However, a theoretical model for identifying text patterns was needed. A long-established model for the analysis of asynchronous online discussions is that of Henri (1992), in which group interaction is classified as participative, interactive, social, cognitive and metacognitive. Gunawardena, Anderson & Lowe (1997) focus on knowledge construction as an outcome of group interaction and outline a five-stage process of development that is necessary to the generation of new knowledge and understanding in groups in which there are areas of disagreement and/or inconsistency of beliefs. However, these models offer little assistance in identifying interactions around project processes, procedures or instructional design.

Thomas & MacGregor (2005) developed an interaction analysis model that draws upon several other models and categorizes group interaction as (a) problem-solving, focusing on course content, project modules, or knowledge and information for task completion, (b) socio-emotional, focusing on task-specific attributes that reflect affective support or personal feelings, and (c) other interactions, referring to non-task specific attributes. There is synergy between this model and the models of virtual team interaction in the Business literature, particularly with regards to socio-emotional factors such as building relationships, team cohesion, trust, and conflict management (Montoya-Weiss, Massey, & Song, 2001; Majchrzak, Rice, Malhotra, King, & Ba, 2000; Powell, Piccoli, & Ives, 2004; Griffith, Mannix, & Neale, 2003). Consequently, the researcher built upon Thomas & MacGregor's model and expanded the problem-solving category definition to analyze team discussions in the context of the instructional design and project management methodologies. The definitions of the socio-emotional and non-task related categories used in both the Thomas & MacGregor model and the virtual team literature were retained. The final coding schema is shown in Figure 2. Each posted message was read, coded at the paragraph level using the coding schema, and quantified using NVivo, a qualitative analysis software application.

Instruments and Analysis: Product Quality

A grading rubric that was posted to the LMS at the start of the course was used to evaluate the final project products. The total number of possible points for the project was 225, worth 30% of the total course grade. The rubric is grounded in the National Educational Technology Standards (NETS, n.d.) established by the International Society for Technology in Education and addresses the quality of team project products in the areas of module design, interaction and collaboration

mechanisms, appropriate technologies to support the module's instructional goals, assessments that align with stated objectives and outcomes, and technical support information. Products from the test and control groups were graded with the same rubric. The t-test for independent samples, appropriate for small sample sizes, was used to ascertain whether or not test and control group scores differ significantly.

Instruments and Analysis: Virtual Project Team Experience

Perceptions of the overall virtual project team experience were measured using the Student Assessment of Learning Gains (S.A.L.G.), a Web-based survey developed by researchers at the University of Wisconsin-Madison (Seymour, 1997). The S.A.L.G. questionnaire consists of a series of statements about the degree of gain that students perceive that they have achieved in specific areas and uses a 5-point scale, where "5" means "Very much help" and "1" means "No help." Faculty can tailor the statements to their individual contexts and student responses are anonymous. The survey was administered at the end of the course and measured the virtual team project experience in the areas of (a) project approach, (b) project activities, (c) project resources provided, (d) project communication tools, (e) individual learner support, and (f) overall project experience. A reliability test was run on the S.A.L.G. scores, yielding a Cronbach's alpha of .955, well above the Social Sciences benchmark of 80%. An Analysis of Variance (ANOVA) was used to assess the effect of Project Management vs. the traditional scaffolding tools on S.A.L.G. scores.

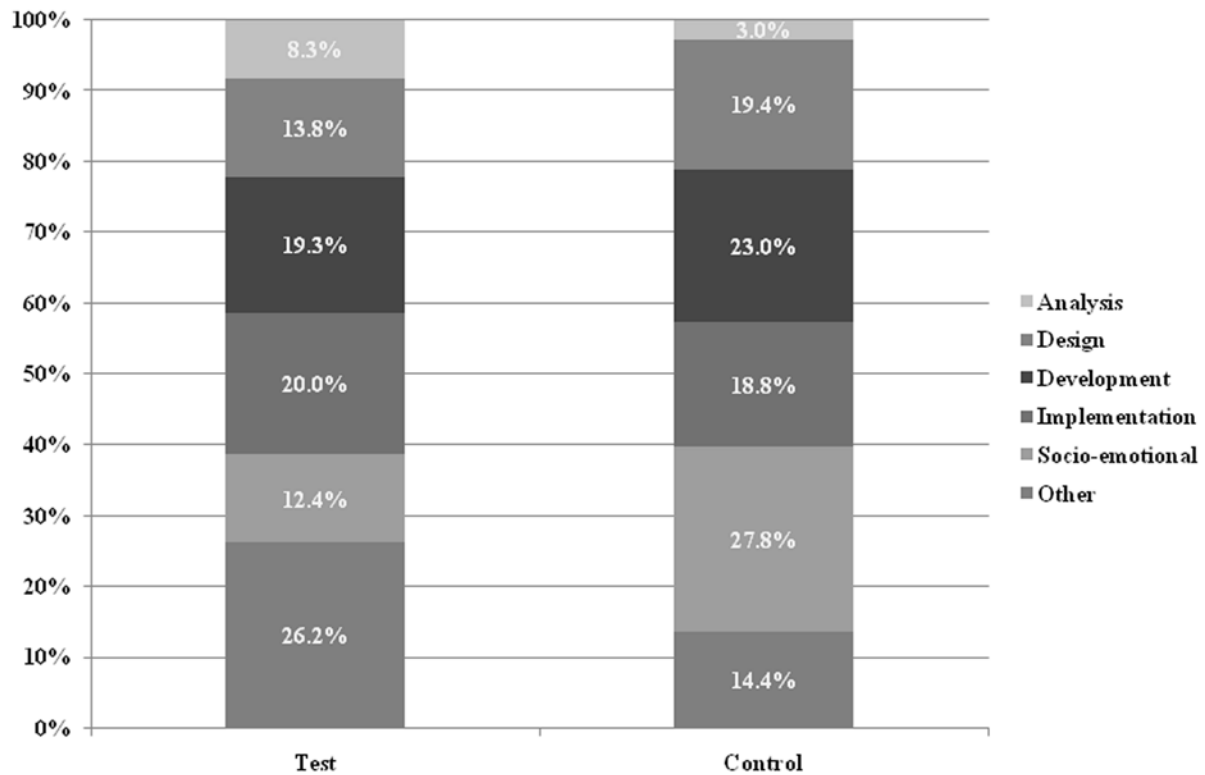
Results: Team Interactions

There are some clear differences between the virtual teams using Project Management (the test group) and those using the traditional scaffolding

Figure 2.

Categories	Types
<p>Analysis Comments that refer to the definition of the instructional problem, learner characteristics, learning context, and project limitations or constraints.</p>	<p>Topic Students discuss project topic, rationale, stakeholders</p> <p>Scope Students discuss the project's deliverables and the work that is (not) required to create those deliverables/ general requirements.</p>
<p>Design Comments that refer to learning objectives, assessment instruments, exercises, content, subject matter analysis, lesson planning and media selection</p>	<p>Approach Students select strategies for gathering background data and developing appropriate instructional strategies</p> <p>Tasks Students determine the tasks, activities, and timelines required to complete the project</p> <p>Roles/Responsibilities Students determine which team members will complete which project tasks</p>
<p>Development Comments that refer to creating and assembling the content created in the Design phase</p>	<p>Deliverables Students complete tasks defined during the Design phase</p> <p>Testing/Prototyping Students integrate content with the relevant technologies, conduct pre-testing and debugging procedures and revise based on instructor and classmate feedback</p>
<p>Implementation Comments that refer to presentation and demonstration of the "live" working module</p>	<p>Monitoring/Controlling Students verify that deliverables meet stated goals, scope, product and project requirements</p> <p>Presentation Students determine structure of and team member roles for the "live" product demonstration</p>
<p>Socio-emotional Comments that refer to task-specific attributes or issues that reflect personal feelings</p>	<p>Consensus/Reinforcement Requests and responses to proposed ideas expressed in positive and/or affirming language</p> <p>Tension Expressions of confusion, stress or negativity about tasks or timetables</p> <p>Member Participation Responses to member failure to meet commitments as agreed</p>
<p>Other Comments that refer to attributes or issues that are not task-specific</p>	<p>Logistics Discussion of processes/procedures for facilitating virtual teamwork</p> <p>Technical Problems or challenges associated with the electronic environment used for virtual teamwork</p> <p>Other Socio-Emotional Personal feelings not associated with specific tasks or project activities</p>

Figure 3. Interaction frequencies by type: test vs. control groups



tools (the control group). First, the total volume of postings by the control group exceeds that of the test group at a ratio of nearly three to one, with a total of 437 postings for the control group vs. 130 for the test group. Moreover, there are some key differences in terms of how the processes for completing the projects were followed. Figure 3 displays the frequencies of the various types of interactions over the 8-week project lifecycle. Although both test and control group postings addressed the Analysis, Design, Development and Implementation phases of the ADDIE instructional design model, the proportion of test group interactions concerning the Analysis phase are more than double that of the control group (8.3% vs. 3.0%), with the test group focusing more than the control group on the project topic, rationale, stakeholders, and project scope, all of which are elements of the Project Charter template provided

in week one of the project lifecycle. In addition, test group comments around analysis and design were concentrated relatively early in the project lifecycle, while comments concerning development and implementation clustered in the last few weeks of the project lifecycle, all consistent with the scaffolding tools provided to the test group.

In contrast, control group interactions were dispersed across the project lifecycle irrespective of ADDIE phase. For instance, comments about project approach – a component of the Design phase - were posted as late as week six, when teams should have been completing the Implementation phase. Similarly, comments about whether deliverables meet goals and requirements – a component of the Implementation phase – were posted as early as week four, when groups should have been completing the Development phase. Socio-emotional interactions accounted for more

Figure 4. Virtual team interactions by week: test group

	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8
ANALYSIS								
Topic	3							
Scope		7	2					
DESIGN								
Approach		8	3					
Tasks		2	2					
Roles/Responsibilities		2	2		1			
DEVELOPMENT								
Deliverables			2	7		1	2	
Testing/Prototyping				9	1	4	2	
IMPLEMENTATION								
Monitoring/Controlling				6	6	2	2	
Presentation				2	4	2	3	2
SOCIO-EMOTIONAL								
Consensus/Reinforcement		5		1			2	
Tension		3						
Member Participation	3	3		1				
OTHER								
Logistics	11	1	4	13	1			
Technical	3	2		1			2	
Other Socio-emotional								

than one in five (27.8%) of all control group comments posted. The majority of these comments focused on providing fellow team members with positive reinforcement for ideas or accomplished tasks, and was fairly evenly distributed throughout the project lifecycle. The number of consensus/reinforcement comments tended to follow the same directional trend as the comments expressing team member confusion, stress or negativity about tasks or timetables, and comments about member failure to meet commitments as agreed. Conversely, only 12.4% of all test group comments concerned socio-emotional interactions, with most posted during the first two weeks of the project. The test group did post a greater proportion of non-task specific comments than did the control group, however. Test and control group interaction types by week are shown in Figures 4 and 5, respectively.

Results: Product Quality

The mean score for the test group was 224 vs. 222 for the control group. A t-test of independent

samples yielded a t-value of 0.626 (df= 12, α = .50), which is below the 0.695 t-value required for significance. Consequently, it can be argued that the use of Project Management as scaffolding did not make a significantly greater contribution to final product quality than the traditional tools used in the course as project scaffolding.

One reason for these results could be the relatively small number of learners (N=14) in this case study. However, the strength of the t-test for independent samples is its ability to detect significant differences in samples as small as five to ten cases (Garson, 2008). Another reason may be related to the highly motivated nature of the learners in the case study, all intent on producing a quality product regardless of the amount of sweat equity required. The following extracts from the team discussion boards provide some indication of the depth of team commitment to producing a quality deliverable:

Hey, team. Here's where we are so far. (MEMBER 1) and (MEMBER 2) have done some ground work for the learning objectives and module. All will

Figure 5. Virtual team interactions by week: control group

	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8
ANALYSIS								
Topic	6							
Scope	8							
DESIGN								
Approach	12	6	8	9		3		
Tasks	4		6	9	4			
Roles/Responsibilities	10	3	5	7	6	1		
DEVELOPMENT								
Deliverables	1			7	10	13	2	
Testing/Prototyping					32	34	11	
IMPLEMENTATION								
Monitoring/Controlling				16	13	7	10	2
Presentation					14	1	15	12
SOCIO-EMOTIONAL								
Consensus/Reinforcement	22	3	19	23	20	8	7	1
Tension	7		5	1	4		3	
Member Participation	2	2	2		4			
OTHER								
Logistics	8	1	7				7	3
Technical	2		1		1	2		
Other Socio-emotional				7	2			

use the PowerPoint that has been emailed around to plug in content for their section. Immediate Deadline: Have a draft of the parts by Wednesday evening for Thursday morning to give everyone ample time to read through each other's section for Friday's feedback date. MEMBER 1- Introduction; MEMBER 2 - Learning objectives 1 and 2; MEMBER 3 - Learning objective 3. Other work in progress for next week: MEMBER 2 - Revise charter based on feedback; MEMBERS 1 & 3 - Revise WBS based on feedback then transfer that to activity sheet. Other future deadlines and work assignments: Status reports MEMBER 1, Nov 7.; MEMBER 2 - Nov 14. Let me know if anything in this summary is fuzzy or wrong.

MEMBER 3, Test Group, Week 3

Hi, guys. I selected a free template and modified to use it for our project... I uploaded to a tempo-

rary site today so you can see it. Because this is a module for instructor, I tried to design it with common parts for all three sections (instructor, student and ID). We would also need to create learning objectives, lesson plan, activities, etc. If we agree on using this site, I can send you the pages and you can fill them in. Let me know what you think...

About my content, I have gathered references but haven't able yet to create the instruction. I'll start doing that on Monday.

MEMBER 1, Control Group, Week 3

Despite these indications, this case study cannot explain definitively why project scores for the test and control groups were nearly at parity. To gain further insights would require diagnostic research of virtual project teams composed of

adult professionals who may already be strongly motivated to achieving project success.

Results: Virtual Project Team Experience

The mean S.A.L.G. scores for the test group are higher for the control group on 13 of the 20 S.A.L.G. attributes (see Figure 6), particularly in the areas of Project Approach and Project Resources. However, the results of the ANOVA indicate no significant main effect for scaffolding methodology on student perceptions of their learning gains. It appears, then, that using Project Management had no significantly greater impact on perceived learner benefits than did use of the standard scaffolding tools for project completion.

The voluntary comments provided by some test and control group members may provide some insights as to why Project Management had only a modest impact on perceived learning gains:

This project added to my existing knowledge of project management. My peers had great experiences that added new perspectives.

Test Group Member

While we did some things I normally do in my job, we were able to fully explore new things. I benefitted greatly by working with the group and having a sounding board.

Control Group Member

Although comments about the virtual team project experience were positive overall, the fact that some team members in the test and control groups already had some virtual team experience in the workplace may have limited the strength of the impact of Project Management on the virtual team project experience.

SOLUTIONS AND RECOMMENDATIONS

Although this case study represents a particular context and is not generalizable to other courses, disciplines, institutions, or other types of learners, it does offer alternative solutions to scaffolding small virtual team projects in the context of project-based learning.

Project Templates Facilitate Virtual Team Interaction

In gauging virtual team interaction, it is tempting to look at the number of postings per team as a measure of interaction. However, this case study suggests that postings volume does not necessarily measure interaction. Schrire (2006) differentiates between learner participation – the number or average length of messages posted – and learner interaction, the explicit or implicit responses to others, with the latter being the key to what is happening in a given context. This means examining message content in order to determine the scope and depth of interaction. In this case study, the test group had fewer postings than the control group, but utilized the Project Management tools and templates provided to solidify the analysis and design of their modules early in the project lifecycle. Consequently, virtual team interactions concerning development and implementation were more efficient and required fewer requests for clarification. This efficiency translated into less frustration and confusion among test team members - as reflected in the limited number of test group postings concerning socio-emotional interactions - and reduced the amount of sweat equity required for the test group to deliver a quality project product within the allotted time. By providing virtual project teams with templates with which to document roles, responsibilities, milestones and key deliverables, instructors and trainers who use project-based learning can provide structure to team projects while still af-

Figure 6. Student assessment of learning gains (S.A.L.G) mean scores

Atributes	Test	Control
<i>Project Approach</i>		
Way in which the material was approached	4.43	3.57
How project components fit together	4.29	4.00
Pace at which we worked	3.86	4.00
<i>Project Actitives</i>		
Team discussions	3.71	4.71
Deciding member roles, responsibilities	3.43	3.86
Defining the project ourselves	4.43	3.71
Feedback from other team members	3.86	4.00
Feedback from instructor	3.71	3.14
Mental stretch required of us	3.86	3.71
<i>Project Resources</i>		
Project requirements as defined in Syllabus	3.86	3.71
Tools/templates	4.14	4.14
Opportunity to find/evaluate resources on our own	4.14	4.00
Internet resources provided by instructor	4.00	3.14
Tips/guidelines provided by instructor	4.14	3.14
<i>Project Communication Tools</i>		
Private team discussion board	3.86	3.86
Chat	2.43	1.86
Web conferencing	4.14	2.43
<i>Individual Learner Support</i>		
Quality of contact with team members	4.00	4.43
Quality of contact with instructor	3.71	2.43
<i>Overall Virtual Project Team Experience</i>		
	4.14	4.00

fording team members the opportunity to design, develop and execute their own vision of what the project processes as well as the project product should be.

Use Pre- or In-Course Assessments to Gauge Success and Performance Motivators

One of the basic principles of Instructional Design is to identify the learner characteristics -including in-going attitudes - most likely to have an impact on instructional outcomes (Morrison, Ross, & Kemp, 2007; Dick, Carey, & Carey, 2005; Smith & Ragan, 2005). Posting student bios at the start of an online course serves not only as in ice-

breaker, but also provides instructor and student peers with insights into the background, interests and learning goals of individual course members. However, student bios may not be sufficient to determine success motivators in virtual teams. In this case study, the student bios provided demographic data such as gender, occupation and employment, as well as previous experience with distance learning, but no information about what motivates learners to succeed or about previous experience with and attitudes toward working in virtual teams. Consequently, it could not be determined whether or not the individual learner's drive for success effectively "neutralized" the impact of various scaffolding methods on project outcomes. As part of the ice-breaking exercises,

direct questions about virtual team experiences, likes and dislikes, and attitudes about success can establish a baseline against which to better assess the influence of personal motivation. Available instruments upon which to draw to achieve this include the Intrinsic Motivation Inventory based on Ryan and Deci's (2000) self-determination theory (Faculty at the University of Rochester, n.d.) and the Achievement Motivation Inventory (Schuler, Thornton, Frintrup, & Mueller-Hanson, 2004), often used as a predictor of both academic and job outcomes.

Tips on Time Management Extend Existing Skills to the Virtual Environment

Previous research has found that one of the keys to virtual team success is solid time management and adherence to scheduling norms established by the team (Janicik & Bartel, 2003; Martins, Gilson, & Maynard, 2004; Hertel, Geister, & Konradt, 2005; Chiochio, 2007). In this case study, the voluntary comments on the S.A.L.G. survey indicated that learners benefitted from instructor-provided tips and best practices on working on virtual teams, even though some learners already had virtual team experience. To reinforce what learners may already know about time management in virtual teams and to assist those new to the virtual environment, time management tips should be part of the suite of scaffolding tools available for structuring project-based learning in virtual teams. If an LMS serves as the learning environment, the Calendar tool can be used to reinforce key milestone and deliverable dates. If teams have access to Microsoft Project® or other scheduling software tools, tips on using these tools can be included with project template instructions.

FUTURE TRENDS

These are exciting times for adult learners and on-line education. With a competitive global economy comes the need for organizations to recruit and retain employees with skills and competencies that contribute to future growth. This means investing in employee training, education and professional development which, in turn, leads to improvements in employee job satisfaction, motivation and morale as well efficiencies, all of which contribute to an organization's capacity to thrive and grow (McNamara, 2007). At the same time, organizations seek to optimize their return on investment by reducing the impact of time-in-training on day-to-day productivity. Consequently, it should come as no surprise that adult learners increasingly choose entrepreneurial post-secondary institutions and programs that offer virtual learning opportunities (Pusser, et al., 2007).

For higher education and for other learning providers, then, the demand for learning in virtual contexts requires offering learning opportunities that resonate with adult learners in terms of relevance and authenticity (Parchoma, 2005). As such, situated learning will continue to be a critical strategy in online education for adults. This also suggests opportunities for further research in the domain of project-based learning in the virtual environment. One opportunity would be to assess the relationship between the depth and scope of virtual team experience in the workplace and actual project outcomes in the learning context. Research results could be used to guide decisions about scaffolding tools and the amount of support that the instructor-facilitator would need to provide. Another opportunity would be to explore the impact of individual, personal motivators of success and performance in virtual project teams, to serve as a guide to improved course project design and to the setting of learner expectations.

CONCLUSION

The case study presented in this chapter demonstrates the links between an instructional approach grounded in Situated Learning theory – project-based learning – and the real-world practice of project management in virtual teams. It provides eLearning practitioners with an example of what worked well and what requires further study in terms of contributing to strong positive outcomes. It will also provides instructors and trainers who use project-based learning with alternative approaches for structuring team projects while still affording team members the opportunity to design, develop and execute their own vision of what the project processes as well as project product should be. It is hoped that this chapter will contribute to the ongoing dialog about methodologies, processes and procedures for designing instruction for adults in the virtual environment.

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Chapter 20

Perspectives of Online Doctoral Students in Educational Leadership

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ABSTRACT

This study examines the perspectives of adult learners in an online Educational Leadership doctoral program. A qualitative survey research instrument was used to elucidate and explore phenomenological themes connected to student attitudes and perspectives regarding the experience of adult online education, the perceived challenges of an online doctoral program, the perceived benefits of an online doctoral program, student or teacher-connected strategies for success within online graduate education, the on-ground residencies in connection with the asynchronous aspects of the program, the perception of an online doctoral degree within their fields, and recommendations for online doctoral programs in the future. The findings suggest that strategies to increase student success in doctoral online programs should include a recognition of differentiated instruction toward multiple intelligences, increased communication of the dissertation or program timeline, an examination of how online students meet the contact hour requirements through teams, residencies, and individual time management, and an exploration of the social aspect of online learning.

INTRODUCTION

Leaders, scholars, and educational practitioners must investigate the role online learning can have on adult learners in graduate degree programs in order to create effective programs and successful graduates of these programs. One of the difficul-

ties with attempting to analyze the pedagogy and effects of online learning and adult learners is that the perspectives can be subjective: online faculty may be well-versed in the theories behind their content-delivery and explication strategies, but they may have difficulty understanding how the online environment affects or alters learning styles of students; online adult students, although immersed in the online learning experience, may not have the

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pedagogical or academic awareness to appropriately analyze the educational environment.

Exploring the perceptions of recent graduates and final-stage doctoral candidates of an online for-profit Educational Leadership program takes advantage of the opportunity to gain qualitative data from available participants still close enough chronologically to their personal online experiences as adult learners to give reflections unaltered by time, who also have the professional and scholarly awareness of pedagogy to objectively analyze advantages as well as internal and external barriers inherent in the online environment.

The objective of this chapter is to elucidate and explore themes that emerged from the use of a qualitative survey instrument from doctoral candidates and recent graduates of an online doctorate of education program in Educational Leadership through a for-profit university. A secondary objective is to analyze those emergent themes in relation to how educators in the online environment can better provide opportunities for adult student learning, officials in online education can limit barriers to online learning, and students within online educational environments can fulfill their potentials as learners.

BACKGROUND

In the last decade, the topic of online education has fueled the creation of various scholarly analyses and debate. Multiple studies exist about pedagogical strategies in the online environment (Bullen, 1998; Howell, Williams, & Lindsay, 2003; Young, 2006), primary benefits of online education (Dykman & Davis, 2008), possible pitfalls of asynchronous learning (Berge, 1998), and perspectives of stakeholders within distance education programs (Braun, 2008; Powell, 2007; Tello, 2007).

Transitioning to the online environment takes preparation from both the teacher and the student. Teaching and learning in the online classroom

requires different techniques than teaching and learning in the regular classroom (Maddux, 2004). Educators have to be engaged differently, use alternate cues to understand students and their concerns, and provide feedback through diverse avenues (Dykman & Davis, 2008). In addition, the educator's role is altered when in an asynchronous situation, and educators can face internal as well as external barriers to self-efficacy in the position as an online instructor (Berge, 1998). As Freeman et al (2004) note, "the new technology shifts the responsibility of the learning from the instructor to the student. The role of the instructor then changes from that of an information-provider to one of a facilitator, organizer, and monitor" (para. 4). Online educational environments have to be crafted to allow the student to fulfill the responsibilities necessary in self-directed asynchronous learning while educating instructors in differently utilizing educational strategies.

Mupinga (2005) notes that "given the challenges of technology, the need for student self-direction and motivation, and the inexperience of many faculty members with the demands of Web-based instruction, adequate student and faculty preparation is essential" (para. 17). An understanding of the technological requirements from students and teachers is necessary for effective instruction. Problems with technology create more student and teacher frustration in distance learning than lack of subject-area comprehension (Blackstock & Exton, 2005). Technological elements, situation-specific teaching strategies, and the importance of the student-centered classroom ensure that online learning requires more than subject-area expertise and dissemination.

Because students look for courses and programs that "meet their schedules and circumstances," an examination of the perspectives and experiences of late-stage students and degree recipients from online programs is necessary (Howell, Williams, & Lindsay, 2003). Exploring the perspectives of stakeholders within online learning environments

is integral to refining those programs for increased effectiveness and student success.

what are your recommendations for the future of online education?

THE STUDY

Purpose and Overview

A qualitative study was conducted that examined the perspectives of doctoral candidates and graduates of an online doctorate of education program in Educational Leadership through a for-profit university. This study utilized a qualitative survey instrument to elucidate phenomenological themes regarding the experience of adult online education, the perceived challenges of an online doctoral program, the perceived benefits of an online doctoral program, student or teacher-connected strategies for success within online graduate education, the on-ground residencies in connection with the asynchronous aspects of the program, the perception of an online doctoral degree within their fields, and recommendations for online doctoral programs in the future.

Specifically, this study asked:

1. What is/was your experience as an adult online learner in this EDD program?
2. What, in your experience, were the biggest challenges of the online environment?
3. What, in your experience, were the biggest benefits of the online environment?
4. What strategies, on your part or that of the teachers, worked to facilitate learning, and which ones did not help or hindered the process?
5. Did the yearly residencies support the online learning experience?
6. What has been your experience with the way online learning is perceived in your field or professional environment?
7. As a professional in education and an adult learner with experience in online education,

Participants

The population of the study includes adult learners of the online doctoral program in Educational Leadership at a for-profit university. The sample for this study included 15 members of an online learning cohort whose participants began their doctoral program in April 2004. As of July 2008, 7 members of the cohort had finished the program with their Doctorate in Education while the remaining 8 members were doctoral candidates with Academic Review Board approval of their first three chapters of the dissertation. The members of the cohort who responded to the survey included 5 people who had received their doctoral degrees through the program between June 2007 and July 2008 and 1 doctoral candidate still working on the final chapters of the dissertation. Because of the phenomenological nature of the questions, information about the perspectives of this experience may be gained from the points of view provided in this study.

Issues, Controversies, and Problems

Overall Experiences as Online Learners

67% of the respondents noted a primarily positive experience with their online doctoral program. Several mentioned the flexibility of asynchronous learning as an integral component of their experience. One respondent noted, "My experiences, for the most part, were very favorable. Without a doubt, however, I would say my Ed.D. process was the most challenging of all of my degree work, with both my bachelor's and master's degrees being delivered in a traditional ground environment."

33% of the respondents noted that many aspects of the program were unrealistic for adult learners with full-time employment. They elaborated on

issues with time management in the section about the challenges of the online doctoral program.

Challenges

100% of the participants noted that engagement through time management was a primary challenge to achieving success in the program. One participant emphasized:

the level of engagement was the greatest challenge. In the traditional classroom, my exposure to the classroom was prescribed: either 1, 2, or 3 times per week, or, like my master's degree, in an intensive weekend format over time. However, the online environment was 24/7/365, at least for me. Falling behind checking posts for even one day usually meant up to 100 or more posts that needed to be at least read, if not in some way responded to, not to mention weekly discussion posts and individual assignments that were due. Beyond normal course work, my Ed.D. program also required me to stay engaged in my dissertation work at the same time.

Another participant concurred:

If there was one challenge, I would say it was time management. The courses were very fast paced, and there was absolutely no room to fall behind. This was [particularly evident at the first course after the second residency. There were no reading weeks, and the course started immediately after the residency with assignments due. To have fallen behind in that one would have been easy, but fatal.

Other participants elaborated on the difficulty of making time for the required class work as well as dissertation preparation, full-time jobs, sleep, and family expectations.

Another challenge mentioned was the need for diverse teaching styles through online learning. One participant noted, "Because I am a special education student, it was difficult in that the university's policies for getting services are complicated and expensive.... I am competitive with my peers, yet the added services would have benefited my

journey even more." Another mentioned, "This was not the ideal program for my doctoral goals, but it was the only available one at the time that I could find." Others emphasized their desire for teaching strategies beyond reading and writing, particularly a need for attention to the learning style for audio learners.

Benefits

67% mentioned the flexibility of the asynchronous format was a benefit to the program. One participant noted that "With flexibility, of course, comes the need to be far more disciplined... than a traditional classroom environment." Another mentioned, "the online asynchronous format was compatible with my professional life. I am a frequent business traveler and I would not have been able to participate in a more traditional face-to-face program." The emphasis on flexibility as an important aspect of their doctoral program echoes the findings of Powell's (2007) study about online graduate students' perspectives.

Strategies for Success

67% of the respondents mentioned the community aspect of working in teams and as an online classroom cohort as a strategy for success in the online environment. One participant noted, "What made [the experience] particularly positive was the cohort group. An online asynchronous environment by its very nature is somewhat anonymous, and creating meaningful personal bonds is difficult. The cohesive cohort in this program allow those bonds to be created. The effect was a program that was flexible and personal."

However, some participants indicated the need for more checks and balances within the cooperative learning structure. A participant elaborated, "I liked having a peer mentor but did not like the 'group' work. I felt that a few students were 'carried' by rotating groups and letting the rest of the members do the bulk of the work." Another

participant mentioned, “The one strategy that probably worked the least (for me) was the team assignments. My approach to these was not one of discovery and testing new ideas, but instead ‘Get er Done’ [sic]. With many people doing their own sections in a short amount of time, there was never time to stop and understand the full meaning of what we were saying.”

67% of the participants indicated that engaged and involved instructors were necessary for the online classroom success of adult students.

One participant noted

with the exception of my dissertation mentor, none of the online instructors during my experience “shined” [sic] beyond the normal facilitation of an online class. There were no special strategies that were employed by any of them that stood out. However, as a self-admitted “type A anal retentive obsessive compulsive” personality, I appreciated the strategies of faculty/facilitators that were as close to being as engaged as I was. The ones that hindered the process were those that were disengaged, perhaps only checking in once or twice a week.

Another respondent mentioned, “I can remember one particular class where the professor didn’t even speak to me personally in class until week 7 of an 8 week course. This made it difficult to formulate answers appropriately on assignments and have a complete understanding of course materials.”

50% of the respondents reported anecdotes where lack of engagement on the part of an instructor or dissertation mentor contributed to a stall in the dissertation timeline or additional courses to be taken.

50% of the participants mentioned strategies they personally used to be successful in the program, such as skimming, highlighting, calling cohort members, limiting sleep, reducing work responsibilities, and using editing services in their area for online assignments.

Residencies

50% of the participants indicated that the residencies were integral to the online doctoral program experience. One mentioned that she felt “the residencies made the program. It made the online environment like a real classroom. Before we met, we were talking to air; after we met, we were in a classroom.”

33% of the participants noted an initial reluctance toward the residency element of an asynchronous program; their reluctance changed to appreciation after the residency experiences. Another respondent emphasized that the residencies’ “benefit to online learning is that it also provides some additional legitimacy to the ‘online doctoral’ learning process.”

67% of the participants noted that elements of the residencies were unnecessary, inconsistent with the online material, or inexpertly implemented. They analyzed various aspects of the possible four residencies, noting that much of the material from the later residencies would have been beneficial at an earlier point in the doctoral program.

Perceptions of Online Doctoral Degrees

50% of the respondents mentioned a negative, skeptical, or surprised perspective from peers in their fields. One noted, “People in my field tend to think that online programs are easier and are shocked when I tell them how much time I spent in online discussions with my classmates.” Another participant mentioned

My doctorate is viewed by some with great speculation. Several faculty members at my college have come right out and said that they don’t think my doctorate is real, while others are 100% supportive of the degree. The larger barrier, however, is not that my degree was earned online, but that it is an Ed.D. In higher education, the Ed.D. is visibly shunned by those with the Ph.D.

doctorate. While there are several administrators and a few faculty members with the Ed.D., it is certainly not pervasive.

Another respondent noted, “I once overheard a colleague mention my name connected to the words ‘diploma mill’ and ‘buying a degree.’ He almost came to a very bad end; after our discussion, he was slightly more appreciative of how hard I had to work for what I earned. However, I can’t explain the rigor of my institution and program to every single person I meet, and I don’t feel that I should have to.”

33% of the participants said that the peers in their fields did not have a negative or positive perspective about online degrees. One respondent warned, “My industry accepts online learning, but it expects the institutions delivering it to keep up with and even push the boundaries of the technology.”

Participant Recommendations

75% of the respondents recommended the implementation of various teaching strategies. One person suggested “streaming video and interactive courseware to help engage those who are not visual learners. Our primary learning method was reading.”

50% of the participants indicated that the success of graduates will increase the success of online graduate programs. One participant emphasized

Online education will only flourish as online learning alums flourish. Diploma mills will fail because their alums will fail as their shortcomings will eventually catch up. Online learning is also very different at the bachelor’s, master’s, and doctoral levels. I believe it will be another 10-15 years before each level is fully accepted in the academic community as a legitimate way to learn.

SOLUTIONS OR RECOMMENDATIONS

1. Differentiated Instruction Techniques and Strategies for Multiple Intelligences

Because of their asynchronous nature, online courses often rely on student-centered content dissemination methods, primarily those connected to reading and writing. For students whose strengths are in the kinesthetic, auditory, or visual areas rather than verbal/linguistic, the personal responsibility for understanding content presented outside of their most effective learning style can create challenges. Course designers must use various facets of pedagogy to create effective online environments. The increased sophistication of technological tools can directly affect the strategies used in asynchronous education (Howell, Williams, & Lindsay, 2003). Online classes must be student-centered, goal-oriented, and use various multimedia elements for instruction (Reisetter & Boris, 2004). Increased teacher education of online strategies is one way to encourage the use of differentiated instruction within the online environment.

2. Increased Communication and Consistency of the Timeline

In order to lessen the possible feeling of isolation that asynchronous learning environments can engender in adult online students, communication among cohort members, team members, instructors, and administrators is a necessity. Information about the stages of the dissertation process, the timeline toward possible degree completion, classroom requirements, and stylistic concerns must be timely and consistent. In addition, instructors must be aware of the impact their engagement and communication in the asynchronous environment can have on student success. Young’s (2006) study indicates that effective teachers are not only

content-area experts, but also emphasize trusting relationships and a balance between structure and flexibility.

3. An Examination of the Contact Hour Requirements: Time Management, Teams, and Residencies

Several participants noted the importance of time management to their success in the online doctoral program. They also emphasized not only how easy it would be to fall behind on posts or assignments in the fast-paced environment of online education, but also how difficult the situation would be if such a lapse did occur: One participant used the word “fatal.” Student situational and dispositional factors directly affect student interaction in online learning (Bullen, 1998). Purveyors of online education need to simultaneously provide excellent education that meets the needs of diverse learners in a way comparable to the quality of traditional on-ground education while also recognizing and addressing unique aspects of the asynchronous experience. Individual projects, team assignments, and yearly residencies contribute to the contact hours required to replace “face time” in on-ground education, but each has its own benefits and challenges.

Coe & Elliott (1999) note that “Educators in various disciplines have conducted a number of studies on quality issues in distance education, such as effectiveness, learner outcomes, socialization and growth of students, access to advisement, faculty and library resources, retention rates and cost effectiveness” (para. 4). A thorough examination of quality issues is necessary to provide scholarly excellence. Online program administrators must use various checks and balances to ensure that the individual responsibilities are realistic for working adults, that team projects are beneficial and require complete participation from all members, and that residencies adequately support the information provided within the online courses.

4. An Exploration of the Social Elements of Online Learning

A recognition, exploration, and creation of a body of scholarship about the social aspects of online learning is required for the increased perception of scholarly legitimacy of asynchronous academic communities. One respondent mentioned, “I’m sick of going to educational conferences around the country and hearing the same assertion from otherwise educated individuals: online classrooms cannot generate the same sense of community as a face-to-face discussion. I feel online scholastic communities can be *more* valid because one’s academic assertions, not one’s appearance, are the basis of initial judgment.” Another participant noted, “Learning is both a cognitive and social activity. We can learn facts from a book, but it is our social network that gives those facts meaning. I feel that the future of online adult learning will depend on how well we do at realizing that an online community is just that—a community.” Braun (2008) indicated the importance of interaction among students to reduce isolation and encourage quality online instruction. In addition, Tello (2007) examined the connection between interaction in online programs and persistence in the program. By fostering the social aspects of learning, stakeholders in asynchronous learning environments can create more effective opportunities for student success.

FUTURE TRENDS

Most of the participants noted the impact online education has had, is having, and will continue to have on the future of education. Several mentioned a desire for immediate global academic legitimacy of online doctoral education degrees while other expressed the necessity of quality graduate-level academic programs to contribute to the perspective of legitimacy. Because of the availability of online education, most participants predicted an

increase of professionals with online doctoral degrees. Therefore, it is the responsibility of scholars, administrators, and educators to ensure that online degrees, programs, and individual courses are appropriate for adult learners, demonstrative of the highest quality educational standards, and provide opportunities for adult learners to attain excellence in their fields. Successful graduates, particularly at the doctoral level, will continue the cycle of excellence breeding excellence and eradicate the pervasive concept of “diploma mills” from the collective consciousness.

CONCLUSION

Increased exploration into the perceptions of recent graduates and doctoral candidates in online graduate programs is necessary to discover strategies needed to create the most effective asynchronous learning programs. Successful graduates of online programs will help create successful online programs. In addition, discovering the qualities of “successful” online graduate students is beneficial because of the role student situation and disposition plays on self-efficacy and program completion. In the words of one participant, “At the end of the day, the university cannot make you complete the dissertation and get the degree. You have to want to do this. If you want it bad enough, you will. If not—there is really not much the university can do to ensure success.” These sentiments may be accurate, but responsible stakeholders in online academia must do everything they can to provide the opportunity for success.

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Chapter 21

Impact of E-Learning on Adult Education: A Changing Postmodern Approach

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ABSTRACT

In the present consumer educational market, educational institutions are rapidly incorporating more online opportunities. The various issues that learners and instructors cope with are addressed from the literature and our adult students. The key issue is creating a quality learning experience for adult students. Not only does the instructor need to incorporate what we already know about adult learning, but they must also approach the course development with a constructivist mindset. The major force in creating a quality learning experience is the discussion generated. Instructors must assist students in creating their own knowledge and develop the ability to discuss in a virtual environment.

INTRODUCTION

Colleges and universities have entered a new, postmodern global arena where they now must compete in an environment that negates most historical advantages associated with place and location. A university in Pennsylvania can and does offer its institutional prestige and degree

to anyone anywhere, and a rural university in Kansas now has access to students in Denver or Chicago. The Internet has become the portal to the global market, and with the rapid improvement of technology, online classes can be as sophisticated and eloquent as a face-to-face class, with the potential promise of increased profits for the host institution. Traditional public and private

universities now compete openly with proprietary for-profit universities for cyber students who in many cases will never visit their campus unless they wish to participate in graduation ceremonies. In today's educational arena, it is a buyer's market. Through e-learning and the Internet, globalization and turbo capitalism (Finger & Asun, 2001) are shaping and dictating the rules for engagement in higher and post-secondary education.

This chapter's focus is on the changing dynamics of adult education graduate programs and the trend toward online education. Yet what is occurring in adult education graduate education is also occurring in nursing, the arts and sciences, engineering and most every college and university discipline. In the United States, adult education has historically operated under Enlightenment ideals and modernistic views of human development as they contributed to the common welfare, economic opportunity, and social stability. This educational project framed within fundamental democratic ideals was viewed as a inalienable right for everyone, reserved for nor controlled by the elite or privileged (Bryson, 1936). Do on-line programs create more egalitarian opportunities for students who have previously been denied these opportunities? Or do on-line programs primarily serve only those students who have the financial means, thereby preserving the status quo between the haves and have-nots? Verner and Booth (1964) recognized that technology was the driving catalyst energizing the expansion of knowledge for both individuals and communities. Advancing the vision that knowledge and technological innovations "exert an ever-widening influence on social relationships, on patterns of behavior, and the overall structure and organization of society... Since such changes occur continuously, the learning necessary to adapt to them must also be continuous" (pp. 6-7). Their statement is as true today as it was forty years ago. Technological innovation is changing our perceptions of what constitutes a university

experience or a student's relationship with their professor and vice versa. Yet the question remains: are these technological innovations enhancing these fundamental democratic ideas viewed as a common right for everyone?

These historical trends set the stage for adapting e-learning within today's adult education graduate programs, yet there continues to be resistance to full adoption of these new and evolving technologies. This chapter examines access and barriers both learners and faculty face from historical, technological and cultural analytical frames. We juxtapose the strengths and weaknesses of face-to-face instruction with online instruction, and conclude the barriers to replacing face-to-face instruction with online instruction are far more complex than having access to a computer and the Internet. We illustrate these complexities with a small dataset collected at a traditional research university from student surveys, interviews, and personal experience. Specifically we rely upon this limited survey sample to better understand how students perceive the level of faculty attention, class participation, student interaction, and student satisfaction with online classes.

Finally this chapter will analyze the trend toward online education from a financial and institutional perspective. In our postmodern society we now are members of the global marketplace in an all-consuming culture (Alan & Turner, 2000), recasting students as commodities needed to sustain our business. Deterritorialization (Deleuze & Guatarri, 1987) of a university's domain and student allegiance is changing the historical construct of adult education graduate programs, and new technologies in online learning is one driving force in that change. This chapter concludes that the same forces that are changing our definition of *community of place* to connected *community of interest* are also shaping the postmodern structure of adult education programs where students may never meet their instructor or fellow students face-to-face.

TECHNOLOGY REDEFINING EDUCATION

University degrees in adult education have been awarded since 1930 when Columbia University offered the first graduate degree. By 1990, there were 43 doctoral programs and 104 master's degree programs in adult education (Peterson's Guide, 2000). Today it is difficult to know the exact number of adult education programs offered. The notion of regional boundaries and face-to-face classes is being challenged with the vast selection of online adult education programs offered by many accredited institutions of higher learning. Today the Internet is almost universally available in even the most remote rural locations. Hence almost everyone—no matter where they live—are realizing they have educational choices. In today's educational arena, it is a buyer's market.

Technology is redefining education to an any-time, anywhere format. E-learning courses and programs at higher education institutions have been on the rise over the past several years. With the broad technology universally available in the 1990s and expanding its reach exponentially in the twenty-first century, the Internet is emerging as the prominent instrument of growth among postsecondary institutions (Ausburn, 2004). The Sloan Consortium sponsored a study over the past five years concerning the rise of online learning in the United States (Allen & Seaman, 2007), which concludes that online enrollments have been growing at a higher rate than overall higher education institutional enrollments. "More than two-thirds of all higher education institutions now have some form of online offerings, with the majority of these providing programs that are fully online" (Allen & Seaman, 2007, p. 5). Allen and Seaman (2007) reported that community colleges have over half of the online enrollments. Four year bachelor level institutions are the least number of online students. Public institutions have led the way in online enrollments over private. However, private for-profit institutions were making great

gains by quadrupling their online enrollments in four years. Online enrollment made up 19.8% of all postsecondary institutional enrollments for the fall of 2006. The most cited reason for offering online courses by institutional administrators was student access and for some institutions a very essential goal was to increase the student degree completion rates. According to Allen and Seaman (2007), academic administrators perceive that the current student population demands online options.

Institutions have a variety of options available to them for creating learning environments. Four of these options are traditional, web-facilitated, blended or hybrid, and online (Allen & Seaman, 2007). The traditional format is where all the information is delivered in a face-to-face setting using no online technology. A web-facilitated course supplements a face-to-face course with online material such as a website, or a course management system where the syllabus, PowerPoint presentations, taped lectures and handouts are made available. A blended or hybrid offering uses both the face-to-face and online environments. A substantial amount of the content is delivered online using discussion boards and other online features; however, there are also face-to-face meetings where students discuss and make presentations. Finally, the completely online course format is where all the content is delivered online and there are no face-to-face meetings. This final format is rapidly evolving where asynchronous learning can now be easily supplemented by synchronous discussions and presentations with new web-based technologies.

In order to better understand student perspectives, we surveyed a small group of students in a few hybrid classes where students met two to three times face-to-face, with the majority of class time spent online in message boards and web-based assignments. Almost all of these students had experienced the four types of formats previously described. Students were asked their preference for a particular learning environment and their

perception of their ability to learn in each format. From their responses, conversations followed in and out of class sessions with the students. This survey is less scientific and more heuristic as the sample size is small and not randomly selected.

The students surveyed were enrolled in a graduate adult education program at a research university. Of the 26 students enrolled in courses, all had participated in at least two online academic courses. One of these courses supplemented the online experience with three face-to-face meetings throughout the ten-week period. The highest number of online courses that a student had taken was six. They consistently commented on having at least one bad experience with an online course. When questioned if the good experience was able to override their feelings and thoughts about online learning as a result of the bad experience, most stated “absolutely not.” Once again it is confirmed that previous educational experiences greatly influence attitude and engagement in subsequent courses, regardless of the format (Merriam, Caffarella, & Baumgartner, 2007).

According to Pallof and Pratt (2003), students and faculty should be allowed to choose if they want to partake of an online course. In questioning adult students in a hybrid course concerning the issue of choice of format, these students seemed to feel strongly about their choice of learning format. Almost all of the participants stated that the learning format (online or face-to-face) mattered to them. An overwhelming majority of the students responded that they would choose a face-to-face course over an online course.

At this time in their lives, the majority of the adult students in our survey preferred the face-to-face format. When questioned further about their experience with a blended or hybrid course, students mentioned that the face-to-face meetings really helped the course be a positive experience. They truly liked meeting their classmates face-to-face and putting a name with a person and seeing their facial expressions and gestures. In a hybrid class the opportunity to meet face-to-face at least

once or twice made an online experience more palatable, but they still preferred a complete face-to-face course or one that was web-facilitated.

According to Amrein-Beardlsy, Foulger, and Toth (2007), the students in their study were “ambivalent towards whether online learning was better than learning in a face-to-face environment” (p. 341). In describing the difference between their discussion in an online format and face-to-face learning environment, some students stated a preference for the face-to-face classroom. “I learn better from discussion and written discussions are too stilted for me.” Another student remarked, “I felt reserved on the message board. I did not express myself well enough for others to really understand where I was coming from. In a face-to-face class, I can discuss the topic until I am comfortable with it.”

It should be noted that these students were in a unique situation; they had the opportunity to choose whether they participated in an online or face-to-face environment. Choice may not always be an option for adults who live in remote areas. However, it does raise an issue for instructors and administrators of adult programs to keep in mind. Are the online programs being offered for the sake of the institution or for the sake of the student? In a student-centered learning environment, the experience and desire of the learner must be taken into consideration in the planning process (Caffarella, 2002).

From their survey of 2,500 postsecondary institutions, Allen and Seaman (2007) found several barriers to online education as seen by administrators. The most cited barrier was the need for students to be more disciplined in the online environment. Our discussion with students concerning their online learning experience supported this finding. Students consistently commented on the need to self-regulate their time and material in an online course. One student wrote, “You must be disciplined in reading and posting responses.” Another commented that an online course “requires more self-discipline on

my part to do the work and participate.” This self-discipline was not easy for all students. Some students found it difficult to separate themselves from the distractions of family and work responsibilities. One student noted that in order to be successful “the key is to separate yourself as much as possible from the distractions of life outside the classroom.”

According to Allen and Seaman (2007), other barriers included lack of support from faculty for the online learning instruction and the high costs of development of online courses/programs. Interestingly, most institutional administrators did not see online delivery as a means to lower costs, simply an evolving trend in delivering education aimed at being able to attract larger numbers of potential students.

There were also concerns that teaching online takes more of the faculty’s time than face-to-face instruction. For many instructors, the prevailing feeling is that teaching online takes more time than teaching face-to-face (Conceição, 2006; Pallof & Pratt, 2003). One student remarked that his expectation of the instructor in an online course was to correspond (either through email or the discussion board) individually with each student each week. While instructors may see group announcements and group emails as corresponding with students on a weekly basis, students do not perceive these as demonstrating an instructor’s involvement in the course (Pallof & Pratt, 2003). Online teaching is overwhelming to many instructors because of the unending nature. Instructors do not just teach at a specified time perhaps twice or three times a week, but must be engaged with learners on a daily basis. Many instructors feel the pressure to be available 24x7 for their online students.

Instructors and students have expressed that the online format takes more time than a face-to-face class. “The course never stopped.” Some students mentioned “spending a large amount of time on drafting and posting.” Some thought the classroom format provided more structure for their time. They had dedicated time to spend in class

and did not have to “create” time away from the family. “It is very difficult to shut off the family, so you can adequately participate. The online course demands far more time and energy than the classroom.” “I found myself having to log on 2-3 times a day to prevent becoming overwhelmed with comments and post at the end of the week. I personally could not take more than one online course at a time.”

Another potential barrier is the quality of the learning experience. In Allen and Seaman’s (2007) study, approximately 20% of the administrators believed that the online courses or degrees are seen as equal to face-to-face format by employers. In order to address this perception, we asked our students to compare the depth of their learning experience between their face-to-face and online experiences. One student commented, “More thought had to go into my written response.” Levine (2007) stated that the threaded discussion aspect of online learning had the capacity to promote higher-order thinking that may not be present in a face-to-face format. In our small cadre of adult students, some of their comments about an online course supported this idea as well. “[I] took the time to synthesize comments from peers before posting.” Students expressed that they had to be more prepared for the online course. “There is a difference with online. You have to work harder to understand the material [in order] to make effective comments....Online comments tend to be more thought out and structured requiring more thought up front.”

Since e-learning will be a part of adult students’ and instructors’ future, how do we develop a quality learning experience using what we know about teaching adults? Merriam, Caffarella, and Baumgartner (2007) present an overview of adult learners and their unique needs. Many approaches center on Knowles’ (1984) andragogical assumptions, which indicate adults are self-directed in the learning, motivated internally, need to know why the information is important, need to use their own experiences as a source of

knowledge, and need immediate application of material. Classrooms experiences are facilitated by the instructor. Adult educators have repeatedly researched and documented the resource of prior experience for the adult student, which can aid in learning new concepts (Brookfield, 1986; Knowles, 1984; Kolb, 1984; Lindeman, 1989; Merriam, Caffarella, & Baumgartner, 2007). Teaching strategies have also been discussed for the online environment with adult students (Conceição, 2007; Palloff, R. & Pratt, 2003). Instructors should be student-centered in their approach, establish clear guidelines for the course, develop collaborative assignments for students, organize and structure the material, give prompt feedback to assignments and questions, and participate fully in the course. With today's online course technologies, a student-centered curriculum that allows collaborative assignments with prompt feedback is easily achieved including real time, face-to-face interaction between student and instructor as well as between students.

Discussion is not new to adult learning; however, it is an important strategy for adult learners, especially in the online format. In a face-to-face environment, class discussions provide opportunities for dialog between the students and the instructor as well as among the students. Brookfield and Preskill (2005) state that "discussion is a valuable and inspiring means for revealing the diversity of opinion that lies just below the surface of almost any complex issue" (p. 3). To bring a topic alive through the means of incorporating multiple diverse ideas is a very powerful experience for students and instructors (Daloz, 1986; Vella, 1994).

Classroom discussion does not necessarily serve as an accurate barometer of learning. Some students may think that it is frequency that demonstrates their knowledge. The frequency of talking in class may be perpetuated by the expectations created in the school systems that assumes those who are the most intelligent and have the academic knowledge are the ones speaking the

most. This norm could be further reinforced by peer pressure or society. If part of a student's grade is placed on discussion contributions, the instructor is perpetuating this norm's power. How is this reconciled in an online course where discussion is required? The dynamics, as we will discuss later, of classroom discussion are markedly different between online and face-to-face classes, even when participation is calculated into the final grade formula. We argue that a teacher's skill in facilitating authentic class discussion that filters the background noise from intellectual exploration may be more important than merely comparing student evaluations between online and face-to-face classes.

DISCUSSION: THE KEY TO E-LEARNING WITH ADULT STUDENTS

Many instructors struggle to apply adult learning principles to the online environment. Some question whether it is possible to create a connection between students and the instructor in an online course? Does the inability to see facial expressions and body language inhibit the potential for learning communities to be created? "The assumption is made that the online discussion board can serve as a substitute for the interactive dimensions in the face-to-face classroom" (Levine, 2007, p. 67). Just as a classroom instructor must facilitate a quality discussion with students, an online instructor must not focus on the delivery of information, but rather on how to structure the dialogue to enhance student's thinking.

A key feature of online learning is participation in the message board and the virtual discussion students and the instructor maintain throughout the course. Motivation to learn in an online environment may be difficult for some students to manage. When participation is mandatory, students may not feel the need to contribute to the conversation in an indepth manner (Biesenbach-Lucas, 2003).

Some of our students mentioned that they saw the discussion board as simply a requirement to be fulfilled: “Required to participate for a grade. [It] forced answers from me and to respond to one other posting.” “Online participation is required for a grade.” Does that just promote the power of the instructor? Is participation required in a face-to-face discussion? Why are students silent? Instead of sending a message that online discussion is mandatory, instructors should spend more time creating a safe environment for students to share their thoughts and opinions. Trust must be established in any discussion before the participants will be comfortable sharing their own ideas.

Discussion is stressed as important in any learning setting (Brookfield & Preskill, 2005; Fosnot, 2005). Instructors in an online environment need to monitor the discussion in a different way than perhaps they are used to in a face-to-face classroom. It would also assist online instructors in developing the dialogue if they integrated the constructivist theory approach into their repertoire. Using a constructivist approach, knowledge is created by the students and not bestowed upon them by the instructor. A student summed this up: “The onus is more on the student to learn, as there is not much transmission knowledge [in the online environment].” The discussions in an online environment are created by the questions the instructor constructs to spark the thinking of the learners and the subsequent questions produced by the students and instructor within the community of interest. The ability to ask questions, clarify views, share opinions and disagree with a reading assignment or another’s comments are vital to the learning environment. Dialogue is simply the use of reflection, conversation, dissonance of ideas, generation of alternatives, contradictions, and exploration of these contradictions to promote more thought regardless of whether it is conducted face-to-face or in a virtual environment.

Brookfield and Preskill (2005) state discussion “helps students explore a diversity of perspectives” (p. 22). If trust is established, the online

environment more than the classroom environment provides the opportunity for the perspectives of all the students to be incorporated. “Within an online course, I am able to take the time to formulate answers that are thoughtful and I feel I get my voice heard.” It allows students to post many thoughts and read the thoughts of others. It allows students time to formulate their ideas. One student commented, “Online is superior in forms of flexibility (schedule) and ability to digest other comments and take time to think out responses.” Another wrote, “[I] took the time to synthesize comments from peers before posting, more thought, better discussion.”

Another benefit of discussion is “it increases students’ awareness of and tolerance for ambiguity” (Brookfield & Preskill, 2005, p. 23). With careful guidelines, each environment can set the tone for a respectful discussion. As one student remarked, it is the student’s responsibility to “respect others. This should not change just because one cannot see the individual.”

Discussion can increase intellectual agility (Brookfield & Preskill, 2005, p. 27). Students in an online format have more time to think creatively, demonstrate imagination, and show originality, because the response does not have to be made immediately as in a face-to-face discussion. One student’s advice to others to help them create a successful online learning experience was: “Put thought into your responses. Try and provide original responses.” Another stated, “I must do the reading and provide well thought, researched interaction, because the online sessions are better if I am informed.” In a classroom setting, students and the instructor can ask for clarification. In an online course, both students and instructors need to keep pace with the online discussion and quickly request further clarification to a statement if needed. Whereas timeliness may not be an issue in a face-to-face conversation, it is critical in an online course. Asking for further clarification a week after a comment is posted on the message board may be too late.

Discussion “shows respect for students’ voices and experiences” (Brookfield & Preskill, 2005, p. 29). One student commented that a responsibility of a student in an online environment is to “bring life experiences, be true to your thoughts and voice.” As in traditional classrooms, virtual classrooms should allow a student to both express their technical knowledge as well as their perspectives and experiences. It is the instructor’s responsibility to establish the climate and expectations for student participation. Concerning online discussion guidelines a student stated, “The online environment must be open to free discussion. The student must not feel intimidated.”

Discussion “affirms students as cocreators of knowledge” (Brookfield & Preskill, 2005, p. 31). The student and the instructor have responsibility for the evolution of the discussion and thus the knowledge that is created from the group experience. Concerning the online discussion, a student commented, “As the discussion matures, the topic can be expanded, depending on the direction the students take.” Another student stated that instructors should “ask questions of posters and provide feedback.” Instructors should “develop and draw out second and third order responses” from students. If instructors present the material in an engaging, understandable and thought-provoking manner, then students can develop the skills in thinking more critically.

Discussion “develops the capacity for the clear communication of ideas and meaning” (Brookfield & Preskill, 2005, p. 32). Through discussion, students and instructors can clarify meanings, learn how and when to give examples or use metaphors to express ideas so others can clearly understand the message. In the online environment, as one student stated, “You must read and understand the material, then communicate it to your peers in a way they can understand and benefit from your work.” One student responded “Some participants post ridiculous comments. They may or may not be in the right context, but I can’t tell because I don’t have facial expressions or hand

gestures or the ability for them to elaborate... consequently, I tune them out.” While it is true in a traditional classroom students may make a ridiculous statement, we are conditioned to read body language and facial expressions to judge a student’s intent. In the global society, developing the ability to clearly articulate meaning with words only rather than through nonverbal behavior is a valuable skill.

Discussion “helps students develop skills of synthesis and integration” (Brookfield & Preskill, 2005, p. 35). In both the classroom and online discussion, a common goal is to link ideas and insights to perhaps create some new synthesis of knowledge. From our survey, one student saw this as the instructor’s responsibility: “The instructor must be proactive and spend a lot of time on the message board. Sometimes fish for answers and comments. Be available and responsive to students’ questions.” Some noted that it was important to post an original thought or idea on the message board rather than repeat what was in the reading or what other students had already stated. This deeper level of analysis required more time and added pressure to the students to fully participate in the class.

In our survey, several students thought that they had more responsibility in an online course. They needed to read the material, post, and respond to other’s posts. While most instructors believe that students should be prepared for each class session, some students voiced the fact that in an online course it was critical that they be prepared for the discussions. “I actually had to read the material in order to post as opposed to being able to sit quietly in class.” Another student stated that, “Online courses insist you read the material.” It is often easier to assess a student’s grasp of the material in an online course when their comments are written and available to the instructor for thorough review. In contrast, a face-to-face classroom discussion may not fully explore certain topics or the rapidity of the discussion may not allow a response to individual

comments from the instructor. In the face-to-face setting, it is often easier for students to hide that they did not come to class prepared.

Students perceive an online learning experience more favorably if the instructor is engaged in the discussion (Hobbs, 2002). Remarkably our students thought the key to an online course was the instructor. One student commented in a paper: "I have always thought online classes were a convenient way for students to gain credit for classes, but on the downside they lacked real teacher involvement. I experienced this when I received almost no feedback from my teacher from the online course that I took." Students were adamant that the instructor had to be extremely involved in the discussions, give prompt feedback, stimulate the conversation with thoughtful relevant questions, and give clear guidelines. The instructor must be available to the students on a daily basis, especially adult students who have numerous responsibilities and may struggle to get online each day. The advice of one student summarizes the importance of the instructor: "Only certain courses can be taught online. You would have to be careful who teaches the courses because the instructor is critical to facilitating quality discussion through his or her interaction."

FUTURE TRENDS

E-learning is here to stay. Instructors need to learn to effectively use the course delivery technology, but not try to replicate the approach of a face-to-face class. Faculty must develop a new approach to the online format. Instructors must begin the online course development with questions such as: How can I create an environment where adult learners feel safe to share their ideas, learn how to support those ideas, and learn how to critique others ideas? How do I chunk material in small pieces to allow the learner to create meaning? How do I structure my time, so I'm engaged with the students on a daily basis?

Amrein-Beardsley, et al. (2007) remind those who are proponents of online learning that we cannot assume that all students have high-speed Internet access. There are still some students who will have dial-up access to the Internet which will be a technological disadvantage for them. In a recent online course, some students commented that they had dial-up Internet access, so downloading a full message board took a great deal of time. This technology also restricts the use of the newest software such as streaming video. Yet, there are some programs that not only require high-speed Internet connections, but also camera ready computers so students can participate in synchronous discussions, thereby eliminating some potential students and adding cost to student expenses.

Convenience is the word for the future. Technology can make learning convenient. There are numerous e-learning tools available which can be useful to the learning environment. For instance, podcasting is already being used by several instructors as means to disseminate their lectures. Webpages and blogs are being used to facilitate reflective thinking and journaling. Wiki pages facilitate sharing of information, such as a list of frequently asked questions. Instant messenger is a great communication tool; however, iVideo allows participants to see, hear and discuss with people all over the world. The possibilities are only limited by the classroom instructor's vision of learning.

CONCLUSION

Instructors are key to any learning environment. In an online environment, instructors are vital to the quality of interaction among the learners. For those who are developing or working with online courses, we encourage an investigation of the techniques in the online environment. Are we trying to reproduce the face-to-face classroom approach or are we coming to the online environment

with a new mindset? We suggest a constructivist mindset that asks: How can I assist the learners in developing their own thoughts, questioning their own and others' ideas, articulating clearly their ideas, and dealing with contradictions and diverse opinions in a productive manner?

We are in a global market where adult students and instructors must take on new responsibilities. Instructors need to change their paradigm and approach to the online learning environment. The face-to-face classroom approach of being responsive to students, giving immediate feedback, and tying the learning to the learner's experience is accentuated in the online environment. The online format creates a new picture of the university's community of interest. In today's consumer market, the pressure is on the instructor to offer a quality learning experience and on the student to be discerning customers. The rules of engagement have changed.

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KEY TERMS

Adult Education: Any activity or program deliberately designed to satisfy the learning needs or interests of persons who are by their maturity considered adults.

Community of Interest: A group of people who exchange ideas and information about a mutual topic.

Constructivism: A theory about learning which centers on the learner's development of knowledge and mental structures as he/she questions, generates new ideas, tests and defends concepts, and discusses them in a community of learners which further engenders more thinking.

Discussion: An interactive exchange in which persons ask questions, clarify views, share opinions, and disagree with presented ideas.

Hybrid/Blended: A course delivery format where a substantial amount of the content is delivered via an online environment using discussion boards and other online features; however, there are also a few face-to-face meetings.

Online: A course delivery format in which all the material is delivered using an online course management system.

Student-Centered: An approach to the learning environment that incorporates the student's experiences and allows them more power, more responsibility for their learning, and more decisions concerning the content.

Web-Facilitated: A course delivery format which supplements face-to-face classroom time with online material such as a website, or a course management system where the syllabus, Power-Point presentations, taped lectures and handouts are made available.

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Chapter 22

Nontraditional Students and Information Technology: The Siren Call of the Virtual Classroom and its Impact on Progressive Educational Ideals

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ABSTRACT

The adult college student, caught between the competing demands of work and home, has recently become a valuable commodity in today's fast-changing American universities. The authors argue that the response of the university to the personal circumstances and credentialing needs of adult learners, accentuated by the forces of globalization and the availability of new information technologies, particularly the Internet, has been to focus upon the efficient delivery of information deemed important in our post-industrial society. This response, particularly well exemplified by the virtual classroom, is not conducive to the fluid and open-ended inquiry associated with progressive education. In the end, the authors speculate, adult students may taste the true progressive and constructivist approaches to learning better outside the confines of formal higher education.

INTRODUCTION

For many years we have taught at a college established to meet the educational needs of adults. This institution^a sought to adopt for adult learners a teaching philosophy that incorporated Dewey's innovative ideas about individualization, democratic ideals, and experiential learning. When the college first opened its doors, these students were essentially outcasts in the world of higher education. Today, more than 35 years later, they have moved into the spotlight. Over this same period of time, the role of universities has become central in a society increasingly dependent upon ever-expanding technologies to support the delivery of an always growing pool of information. It is our judgment that questions about the impact of information technologies upon progressive educational practices cannot be fully addressed without considering the changing role of the university and the growing importance of the adult student.^b Thus, in this chapter, we will discuss the ways these students, technology, issues of access, the commercialization of education, and the information delivery teaching model, have together contributed to a new climate of institutionalized learning. In this context, we will argue, the realization of progressive ideals in higher education is gradually drifting out of reach.

WHO IS THE ADULT STUDENT?

Much of the literature about American higher education today focuses on the characteristics and needs of what Arnett (2000) has referred to as the "emergent adult." He proposes that this developmental stage, occurring roughly between the ages of 18 and 25, is a unique period in life that should be considered separately from "true" adulthood. It is a time when, ideally, young people can prepare themselves to take on adult responsibilities, such as marriage, serious employment, and community involvement, often through formal

educational experiences that include guidance from adult teachers and mentors. Isolated as much as possible from everyday pressures, they are encouraged to explore and shape their place in the world,^c particularly in universities and colleges, which see themselves as providing the premiere environment in which such preparation for adulthood should take place (e.g., Bok, 2006; Hersh & Merrow, 2005; or see Magolda, 2004).

Adults who have passed beyond this developmental stage are typically referred to in higher education as "nontraditional" students.^d While some universities have sought to accommodate them with add-ons such as special "night" or "weekend" classes, most conventional institutions, particularly those that primarily serve full-time resident students, have been far less welcoming. Their focus on "campus life" and personal development is not particularly appropriate for these adults who have homes of their own and have already been shaped by their families, communities, and, often, regular employment. While they deserve and will benefit from advisement that helps them navigate the complex university bureaucracy and the complicated language of college curricula, they do not need an environment, or a curriculum, designed to prepare them for adult life.

Why adults seek additional education varies considerably (e.g., Cross, 1992; Merriam, Caffarella, & Baumgartner, 2006; Pusser et al, 2007). Some see the return to college as an opportunity to make intentional changes in the direction of their lives. A small minority put their adult lives on hold in order to be full-time students, playing the role, so to speak, of emergent adults. However, most come to college because they have been forced to change directions due to job loss, escalating credential expectations, economic fragility, disruption in their family situation (particularly for women), and other life-shaking events. What they all have in common is that they are mature adults, with complicated lives and numerous responsibilities. In fairly sharp contrast to emergent adult students for whom college is expected to be their

primary commitment, nontraditional students regard college study as only one more activity they must add to their already busy lives.

Within such a lifeworld, it is easy to understand why adult learners are not willing or able to linger with us too long and why they seem sometimes excessively focused upon how efficiently they can obtain their degree. Even taking one or two courses at a time requires them to stretch their lives to create new spaces for a commitment they can justify only if it is a temporary one. Women cannot expect their husbands to substitute for them as cooks or babysitters forever; men cannot spend every evening away from their families reading textbooks; a single parent cannot ask her children to always fend for themselves while she sits in front of a computer. And everyone wants the increased paycheck (or perhaps just a regular paycheck) that comes with a completed degree, as soon as possible. Thus, it's not unreasonable that a significant number of adult students worry, not so much about what they're going to learn, but that whatever learning they must complete takes as little time as possible.

DOES PROGRESSIVE EDUCATION APPLY TO THE EXPERIENCE OF ADULTS?

The progressive educational ideal was originally conceptualized to meet the particular needs of immature, or not yet fully formed, individuals.^e The language of "discovery" often associated with constructivism makes good sense when educating children or, for that matter, emergent adults. In both cases, the possibilities are unlimited, and with a progressive orientation attuned to the ideals of a democratic society, students are encouraged to explore a wide range of educational options. At the same time, students' individual experiences become the essential building blocks from which they can develop, on their own and in their own way, a path toward adulthood that integrates the

knowledge that society, and educators, expect them to master. Learning arranged in this spirit is unhurried, lightly but thoughtfully guided, and open to student-initiated inquiries.

Already a long way down the path of discovery before they come, or return, to college, adult learners, in contrast, often already have a particular educational goal in mind and are keenly aware of what the world expects of them. Unlike emergent adults, they are not in an obvious state of "role confusion" looking to experiences in college to help them establish their identities (i.e., Erikson, 1959). Instead they tend to suffer from a sense of "feeling stupid" (Bloom, 1996, p.44), embarrassment that they earlier failed to earn a college degree, worry about the amount of knowledge they lack, and the realization that without a higher learning credential, they are truly stuck. Note how these concerns focus strongly upon the need for new knowledge. Is it therefore surprising that these adult learners see college not as an institution devoted to progressive growth, but as a repository, or as Freire put it, a "bank" (1972, chap. 2), filled with the information they understand they must have?^f

Importantly, it is not that adult learners are uninterested in expanding their perspectives or that a progressive educational approach cannot be successfully adapted to their needs. Many welcome the opportunity to reflect upon their current situations or past experiences (e.g., Brookfield, 1986, 1987a; Daloz, 1991). They also are stimulated by exposure to new ideas that excite their imaginations and encourage new ways of thinking (e.g., Brookfield, 1991; Herman & Mandell, 2004). But it requires special teaching skills (e.g., Fiddler & Knoll, 1995, as cited in Hung, Bailey, & Jonassen, 2003, p.18), extra assurances, and much effort (e.g., Hung et al, 2003) to convince busy students to participate in ill-defined, open-ended, educational inquiry. Overwhelmingly when asked, they report that lack of time is a major impediment to their ability to succeed in college (e.g., Lore & Tait, 2004; Valentine & Darkenwald, 1990).^g The idea

of taking college courses in order to make meaning of their lives or to strive for transformative experiences are judged by many over-extended adults, already “in over their heads” (i.e., Kegan, 1994), to be unrealistic, unsustainable, and not really necessary.^h No matter that it can be an intellectually rich process, even just figuring out on their own what they want to learn (a first step in any progressive educational system) is often judged as too inefficient and time-consuming than simply doing whatever they are told.

Adult students are also sufficiently experienced with contemporary mores to appreciate the importance of an expert when entering new territory. If you’re sick, you go to a doctor to fix the ailment; if you’re under-educated, you go to a teacher to find out what you need to know. Thus, most adult students come to college wanting answers (not new questions), clear directions (not more options), and access to an expert’s knowledge for which they are investing cherished time and hard-earned money. Since teachers too are not immune to social pressure or a wish for recognition, it is not easy for them to completely eschew the role of expert. Indeed, the more a teacher is a content specialist, the more difficult the transition from professor to guide turns out to be (Herman & Mandell, 2004, Chapter 9; Kaufman & Holmes, 1999, as cited in Hung et al, 2003. p.19). Moreover, even college teachers with constructivist inclinations hold assumptions about the educational direction students *ought* to pursue and in subtle ways move them in that direction, unaware that they are responding to questions they would ordinarily agree should be more deeply investigated by the students themselves.

Note too that the educational expectations of adult students are not out of line with contemporary understandings. The developed world has graduated from the Age of Industrialization into a new Age of Information. Within this new “world of transformations” (Giddens, 2000, p. 24), it is easy to see why the university is now regarded, not as an ivory tower in which to contemplate,

but as the major source and distributor of the incessant accumulation of new information that continually reshapes our world. In this regard, it is interesting to observe how the meaning of “life-long learning,” a concept that seemed to peak in popularity a number of years ago, has also changed (Finger & Asun, 2001). The original idea promoted by educators such as Cyril Houle (e.g., 1961), Alan Tough (1968), or Malcolm Knowles (e.g., 1976), saw adults seeking further education as a form of self-enrichment. The current view is that adults must undergo frequent reskilling in order keep up with job changes and the constant flow of new information (e.g., Pusser et al, 2007; Sennett, 2006). Today, in a society absorbed in discussions about information technology, information systems, information delivery, and knowledge management, the message is clear: College is where you learn what information is important, where to obtain it, and how it can be used. Thus, the somewhat “unprogressive” educational expectations of most adults are wholly consonant with what the contemporary world tells us is important.

HOW DOES THE ADULT STUDENT FIT IN THE UNIVERSITY TODAY?

The university has not remained immune to these changes (e.g., Newfield, 2008). Only a few years ago a degree was not considered necessary for the majority of working adults, but today it is an essential prerequisite for achieving a full time professional job let alone a successful life. Thus, the completed degree has come to represent considerable economic value, and the university has not hesitated to market it as such. No longer ivory towers that claim to stand outside the workaday world, universities, as “knowledge factories” (Aronowitz, 2000), openly identify themselves as major corporate players (Giroux, 2007). Important economic assets in the communities in which they reside, universities now espouse many

of the same goals as any commercial enterprise (e.g., Stein, 2004). With the degree as its ultimate high-demand product, a university's success is now measured by its enrollments, graduation rates, robust development offices, physical growth, and proprietary research (Burgan, 2006). That students come to a university to learn is certainly not forgotten, but this goal is regarded as a "service" the university "delivers," and, increasingly, this service is treated as much a marketing tool as a social good.

Within this framework, the adult – the previously nontraditional student – has undergone a major change in status (e.g., Blumenstyk, 2008). According to demographics studies, the emergent adult population is declining (e.g., Ashburn, 2008); in contrast, the number of mature adults who still do not possess a degree is tantalizingly large.ⁱ Often at least partially subsidized by their employers, readily available for recruitment, with little need for the extra-curricular activities and facilities important to full-time traditional-aged students, and often desperate for credentials, the older student in this light is clearly a plum recruit^l. Although well recognized colleges that attract more traditional-aged students than they can accept continue to market themselves to young people, the considerably larger number of public and community colleges, and second and third tier universities, have changed their tactics. Suddenly, no longer a second-class citizen, the adult student has become an important "market segment" within the newly commercialized version of higher education.

To attract these students, colleges and universities offer not only professional programs of particular interest to working adults, but various conveniences that address their practical needs and goals. Ease of access, relevance, and speed are attributes that dominate recruitment materials, billboards, and e-ads. Even "individualized" and flexible degree program are marketed less as an opportunity for creatively constructing a customized curriculum than as a way of avoiding required

courses for traditional-aged students that adult learners often consider a waste of their time. Some colleges also offer "fast tracks" – accelerated, but concentrated, learning programs (Wlodkowski & Kasworm, 2003). Another form of acceleration increasingly directed toward adults is the assessment of knowledge gained from experience (Michelson & Mandell, 2004). While the process of reflecting upon what one has learned outside the academy contains rich opportunities for deep reflection and new learning (e.g., Andersson & Harris, 2006), a significant number of returning students see the possibility of "life credits" merely as another shortcut to earning a degree.

We should note that the discovery of new or critical perspectives, the possibility of transformative experiences, the opportunity to address open-ended problems, or the excitement of co-constructing new knowledge, are not typically advertised in recruitment materials. That a truly meaningful education demands more than merely following a set of simple and transparent steps is not part of the message. We cannot but wonder whether these various marketing responses to the perceived pragmatic needs of adults may soon spill over to affect the expectations of traditional students.^k Reinforced by often trumpeted statistics showing the positive effect of a college degree upon income and status, these messages might well be contributing to a significant shift in society's understanding of what *any* college education is supposed to achieve.

HOW DOES TECHNOLOGY AFFECT HIGHER EDUCATION? THE INTERNET

By all accounts (e.g., Burbules, 2000; Mihyoshi, 1998; Welton, 2005), the changes occurring in higher education reflect the forces of globalization, and globalization itself has clearly depended upon, if indeed it is not the expression of, the rapid development of the information technologies (e.g.,

Friedman, 2000; Negroponte, 1996). Although computers were originally designed to perform operations on data, the importance of being able to transfer the data from one computer or location to another was immediately recognized. Over a relatively brief period of time, the amount of data, the speed at which it could be transformed and transmitted, and the miniaturization of the machinery involved were greatly enhanced. Today, for almost anyone in any country, the Internet and the world-wide web can be accessed^l in their homes, at work, in libraries, in public offices, in schools, and, with the advent of wireless connections, in many commercial locations and even in properly wired outside parks.

One important outcome of this revolution in technology, aside from a vastly improved system of communication, has been broad and immediate access to an immense store of knowledge. Increasingly, the Internet allows us to enjoy, almost instantly, the visual arts, music, literature, scholarly articles, maps, sports events, newspapers from across the world, scientific tools of study, government documents, medical advice, library holdings, movies, educational videos, and information from literally across the globe. Indeed, most writers on technology see the quantity of information available from the Internet, and the speed with which it can be accessed, as representing a qualitative step forward in the cultural history of humankind, much as the printing press was seen as a similar advance 400 years ago (e.g., Postman, 1985, p. 29).

And it is the Internet, and what it represents, that has most significantly impacted education today (e.g., Bauerlein, 2008; Bowers, 2000).^m On the face of it, the Internet would appear to be the perfect tool for any educational philosophy that emphasizes active student involvement in the process of discovery. To the extent that such pedagogies as inquiry-based (Manning, Manning & Long, 1994) or problem-based learning (Knowlton & Sharp, 2003) can be seen as outgrowths of Dewey's ideas, easy access

to unlimited information clearly enhances the utility of these pedagogies. The Internet is also useful as a place where students can share their developing thoughts (e.g., post their papers or research) and, through wikis or blogs, receive instant comment or correction. In turn, these tools make it possible for whole communities of scholars (or students) to construct new knowledge together (Susstein, 2006; Tapscott & Williams, 2008). Given Dewey's (1916) emphasis upon the communal nature of knowledge and core features of social constructivist theory, a subsequent addition to the progressive agenda (Vygotsky 1934, 1978), the Internet has singlehandedly broadened the meaning of community in ways that would have been unimaginable during the time of either Dewey or Vygotsky. If the Internet makes it easier for students working together to locate the raw materials necessary for reconstruction and meaning-making, it would then seem to be an ideal tool for progressive education.

However, there is a serious downside. Increasingly easy access to ubiquitous information makes it increasingly difficult for students to understand that information alone is only a small part of a much more ambitious endeavor (e.g., Roszak, 1986). The scope of the Internet – the sheer enormity of information it provides us – may simply reinforce the view that education consists primarily of searching for, sifting through, and organizing what is already known. Further, even though we know that learning (in the sense of working with, internalizing and making information meaningful for us) requires “practice,” when this practice can be controlled by the computer (for example, for learning musical notation, doing math problems, or analyzing verbal content), we become that much more convinced that learning comes from *without* rather than from *within*.ⁿ Moreover, learning-as-information-accumulation, the antithesis of what progressive education represents, appears much more efficient than having to learn how to think critically, to solve problems, or, most importantly, to make meaning on one's own. Such complex

processes can't be as easily structured, do not occur quickly, and, despite considerable rhetoric, remain very difficult to teach (e.g., Bereiter, 2001; Coulter, Oaks, Gadbow, & Gerardi, 2000).

HOW DOES TECHNOLOGY ADDRESS THE NEEDS OF ADULT STUDENTS? THE VIRTUAL CLASSROOM

In the midst of so many changes in the university, what seems not to have changed is the college classroom. It continues to offer in microcosm what most teachers believe are the key ingredients of education: knowledge structured to facilitate comprehension, scholarship in action through faculty lectures, directions and feedback from an expert, and practice in thinking through guided discussion. No matter what the pedagogical innovation, no matter how much emphasis upon self-direction, discovery, and "active" learning, activities associated with classrooms continue to serve as an essential expression of what is meant by legitimate formal education.

Not surprisingly, then, new technologies supported by the vast resources of the Internet have been redirected to create commercially successful and readily available "virtual" classrooms. For high schools, universities, and the business world, a variety of vendors have created classroom "platforms," accessible entirely from the Internet, that contain the basic components that have been common to classrooms for hundreds of years. Courses are organized by lessons, chapters, or modules, and in each lesson, sections are devoted to: (a) lectures, study guides, or teacher comments, (b) opportunities for class questions or discussion, and (c) assignments. The software too makes easily available provision for group projects and links to relevant information from the Internet, as well as tools for testing students and automatically calculating and tracking their grades. Numerous books and materials have been

published to help human resource professionals (e.g., Horton, 2006), teachers (e.g., Palloff & Pratt, 2003, 2007), and "consumers" of multimedia (e.g., Clark & Mayer, 2008) adjust and work effectively in these cyberspace-based classrooms. A whole new industry of instructional technology has burst upon the scene.

In terms of progressive education, considerable academic attention has been devoted to the "discussion" component of the virtual classroom, the only appropriate arena available for student contributions, and most particularly, the "social construction" of knowledge (e.g., Campos, 2004; Jarvela & Hakkinen, 2002; Woo & Reeves, 2007). The concepts, methods, and expectations of such discussions are not new (e.g., Brookfield & Preskill, 1999), except that virtual classrooms make available written records of every student utterance so that instructors and researchers can analyze the quality of discussions and measure each student's progress in developing his or her contributions. To date, most of this research, often based upon a close study of small classes, has raised many interesting questions (e.g., Gulati, 2008; Kirscher, Sweller & Clark, 2006; Lai, 2008; Ho & Swan, 2007). Much remains to be learned about the role of the instructor in these discussions, the degree of control needed to assure that the discussions produce meaningful learning, the relationship of discussion to the acquisition of prescribed content, effective methods of teaching naive undergraduates the requisite skills of inquiry, and the impact upon learning when a discussion is controlled, required, and known to be monitored by the instructor.

A particularly intractable issue relates to the amount of time and effort demanded of an instructor to follow, respond to, and analyze the postings of *every* student in a class of, for example, 20 students. And for many adult learners, although the asynchronous nature of these discussions makes it possible to participate at convenient times, many adults have competing obligations that allow only for periodic "attendance." Moreover, there is an

important attitudinal dimension: A number of these students are not interested in “listening” to their classmates and do not see these conversations as relevant to the acquisition of new information offered by an expert. Thus, whether the discussion component of virtual classrooms can effectively realize progressive or constructivist ideals is still very much open to question.

Without a doubt, technology in education could be applied in entirely different ways. Indeed, as has been creatively imagined by many a science fiction writer (e.g., Stross, 2005; Vinge, 2006), technology is a critical stimulant for revolutionizing the ways we learn and teach in the future. Even today, some claim that hypertext, for example, encourages new forms of cognition (i.e., Burbules & Callister, Jr., 2000; Jones & Spiro, 1995; McClintock, 1992) or that the application of virtual reality techniques represent qualitatively new pedagogies (e.g., Vander Valk, 2008; Stone, 1995). Yet, for most students, hypertext is seen as either a quick way to access a required resource or the rough equivalent of an optional footnote. As for virtual worlds, their instructional value is still very far from being fully understood, let alone seriously applied.^o They remain, at this point, for many adult learners, interesting diversions.

In comparison, at least to date, it is the virtual classroom that remains the major new structure that technology has made available to higher education. And, despite the problematic nature of the discussion component, it is extremely popular with adult students, the major market for this educational experience (see Mangu-Ward, 2008). In the face of this popularity,^p we have asked ourselves what the virtual classroom offers the adult student that was not previously available in, for example, correspondence courses. We speculate that part of the answer is related to the isolation adult students have traditionally experienced. As has been argued elsewhere (Coulter & Herman, 1994), an important reason why adult students have been marginalized is their enforced “distance” from the main point of action – the college campus.

Educators, and society in general, tacitly regard any education that occurs outside the walls of the campus to be, by definition, second-rate. One of the novel features of the virtual classroom is an immediate perception by students who join such a “class” that they are now “going to school,” exactly as if they might be “going to campus.” And while the adult learner may not see much value in constructing knowledge with fellow learners, they do value the companionship such virtual classes afford. Instead of having to work alone with a teacher by mail (as in the traditional correspondence course) or in individual tutorials (as in independent study) or in often segregated courses (as at night or on weekends), they now have a chance to be in a “classroom,” where the world agrees “real” education takes place.

Aside from offering adult students the opportunity to actually “go to college” like emergent adult students, we cannot overemphasize how much virtual classrooms are also seen as convenient and efficient. Clearly specified in the appropriate locations in the classroom template, students learn what they must read – and when, what information they must look for – and where, what topics they should discuss – and how, and the nature and timing of the required assignments. The course structure also allows faculty to know exactly when, where, and for how long a student logs on, and also to record the number of times a student participates in any given discussion with either original postings or responses. With such data available, teachers can then easily specify what level and what kind of participation in the course they expect. And with expectations laid out in advance, students can plan their schedules accordingly. The clearer the expectations, the easier it is for any given student to fully comply.^q

Contrast this model with the kind of free-flowing face-to-face conversation between a professor and student that ideally characterizes progressive education. Working together in an open-ended study, student and teacher collaborate in specifying and clarifying what is expected (e.g.,

Daloz, 1999). The questions students must address grow, organically, out of the initial conversations about the course direction, and, equally important, as students begin to share what meaning they have made of what they discovered on their own (e.g., Mandell & Herman, 2007). This form of pedagogy makes sense in a Houlian world of inquiring adult learners. But, when education for adults focuses on the needs of a globalized economy and workplace rather than individual development, a predetermined curriculum with carefully structured and prescribed classroom activities clearly appears to be the most efficient way to provide the knowledge students expect to acquire.

CAN FACULTY ALTER THE DIRECTION OF THE VIRTUAL CLASSROOM?

Walters (2000) makes a similar distinction when discussing adult education in the globalized world. Globalized education, she argues, focuses in a competitive world on “human capital” whereas in a cooperative world, it could emphasize “human development.” Dewey (1938) too identifies a similar conflict between the goals of “traditional” education that address societal needs and the goals of progressive education that focus on the individual learner. One might similarly interpret the distinction between “pedagogy” (the imposition of a prescribed curriculum in teaching children) and “andragogy” (free inquiry in education designed primarily for adults), noted by Lindeman (1927), subsequently Knowles (1976), as simply another variation on a similar theme. These writers, and certainly others, believe that dual perspectives on education have legitimacy. Indeed, these scholars, particularly Dewey, were explicitly concerned with finding ways of balancing, integrating, or even transcending these tensions, rather than claiming an inherent superiority of one view over the other.

The problem, as we see it, is that the forces influencing higher education today have coalesced to such a degree that together they are tipping the balance away from any serious attention to progressive ideals. In the end, only one view of education may prevail – the one that fits best with the assumptions of a market-driven, technology-supported world. We have already discussed many of the current circumstances that are changing the landscape of higher education: a new market of adult learners, the commercialization of the university, the focus on information as a goal in itself, and the delivery of this information in structured online classrooms. But we have so far not yet considered how these forces have impacted the individual teacher. Is it possible that college faculty can effectively resist the impact of these developments? Can they, given a renewed commitment to active, constructivist, and open-ended inquiry, restore the balance between free and controlled methods of learning?

Our personal experiences do not make us optimistic. After all, teachers are themselves adults and subject to the same overt and tacit social messages as our adult students. We too are dazzled, if not swept away, by new technologies and the increased information and communication resources that now pervade our institutions. But in the rush to wire our workplaces, efforts by faculty to deliberate on the likely educational consequences of these changes have been essentially co-opted. At the same time, we, again like our students, live very busy lives with many competing priorities. For example, in all major universities, despite considerable hand-wringing (e.g., Bok, 2006, Hersh & Merrow, 2005), faculty continue to be held accountable far more for their research activities than for their teaching prowess. Thus, time available for faculty to investigate the effectiveness of their teaching, much less resist the pressure to incorporate these new technologies, is very limited. Moreover, with research grants ever more important economically (Stein, 2004), those who teach are increasingly regarded as merely

human capital (Burgan, 2006) -- interchangeable parts hired to keep the student pipelines moving smoothly from admission through graduation. Clearly this environment does not invite faculty to pay careful attention to individual learners or to thoughtfully develop courses customized around each student's personal experiences, questions, interests, and needs. The creative responsiveness associated with "the best college teachers" described so cogently by Bain (2004) requires truly Herculean efforts to practice.

A second issue for college teachers, noted earlier, is the problem of disciplinary expertise. In a progressive educational environment, such expert knowledge must be set aside in order to allow students an active role in their own learning^f. But it's not easy for university-trained professionals to accord students, even adults, equal learning status, let alone to genuinely relinquish control. In fact, one reason the new educational technologies appear to be so positively received is that they actually *strengthen* the level of faculty control over the materials students should learn (Coulter, 2006).^g For example, we can post our complete lectures online and thus bypass the need for student notes, often viewed by faculty as inadequate and inaccurate. At some universities, college policy now *requires* such postings. Technology now offers faculty an alluring opportunity: an easily accessible, fixed location where their thoughts can be optimally expressed and consistently available any time for everyone.

Even though it seems only a small step removed from responding personally to student inquiries, the posting of lectures, syllabi, and other course materials in the templates of virtual classrooms is, in fact, a *major* step toward reinforcing the traditional view of the teacher as a subject matter expert. Nor does this step take place in a vacuum, since our professionally-trained administrators encourage this teaching strategy. For them, particularly given the increased enrollments they have actively sought, it is much more efficient to capture online the expertise of their existing

faculty and then reuse it, than to hire additional teachers who, arguably, will simply be offering multiple versions of the same material.^h Thus, rather than a benign reproduction of the physical classroom, the virtual classroom is turning into a "learning repository" for the expert knowledge of faculty that can potentially be delivered by almost anyone. Already the stated goal of many instructional technologists is to protect students from the idiosyncrasies of individual teachers by creating what Kohn (2002, p. 94) describes as "teacher-proof" curricula. Even today the work of part-time disembodied instructors who had no part in the creation or updating of the virtual courses they teachⁱ consists almost exclusively of giving feedback and assigning grades. It is probably not that far off in the future when even this work will, with sophisticated software, become fully automated. At that point, live instruction will be almost entirely obsolete.

The impact of the virtual classroom and the changing role of the teacher in higher education are mirrored by changes in the primary and secondary schools. The K-12 educational world has been radically altered by the standardization movement and the de-skilling of teachers obliged to follow the dictates of No Child Left Behind and other such legislation. Already this movement has begun to directly influence higher education. Many state legislatures, boards of regents, and regional accrediting bodies are intimately involved not only in stipulating the contents of what must be taught, but also in prescribing how the learning must be assessed.^j The standardization of learning outcomes, the evaluation of general education requirements through examination, and other measures that undercut the academic flexibility of the individual professor, and even (in the case of larger university systems) the individual college, are every day more in evidence (e.g., U.S. Department of Education, 2006).^w

It seems fair, then, to conclude that teachers appear poorly positioned to revolt against the direction education seems to be taking. Even if

they are disposed to resist, the ability of faculty to make a difference is certainly weakened by their increasing irrelevance in the instructional process and by the development of overwhelmingly powerful management systems that dwarf any individual teacher's voice. What remains for them to do, however, is not an insignificant role, requiring as it does that they stay abreast of new developments in their fields, find ways of skillfully creating stand-alone courses that reflect this new information, and make clever use of whatever new tools the Internet increasingly offers. And, as we have pointed out above, it's not as if faculty are not prepared for, or don't enjoy the role of content expert. Certainly, once technological developments advance to the point that virtual classrooms can manage themselves with little live assistance, it's not even a question as to what teachers would do if the choice were between being a content expert or having no job at all.

WHAT IS THE FUTURE OF PROGRESSIVE EDUCATION FOR ADULT LEARNERS?

Because of their pragmatic needs, adult learners seem willing, more so even than children or emergent adults, to submit to the iron hand of standardization and expert knowledge.^x For them, the siren call of the virtual classroom, a mode of education not only easily accessible, but universally acceptable, is irresistible. With an ever-increasing number of such students, vulnerable and often co-opted faculty, and a worldview that enshrines information above all else, what then is the future of progressive ideals within the wired realm of higher education?

One compromise has received considerable attention: blended or hybrid classes, a format popular with campus-based students that combines online information delivery with potentially progressive off-line discussions (e.g., Picciano & Dziuban, 2007; Rossett, Douglass, & Frazee, 2003). Here

students participate in a virtual classroom that structures the required information and directs them to explore other, often online, resources. Then, on a regular basis, with the guidance of an instructor in a face-to-face classroom, they share what they have learned, collectively reevaluate this knowledge, and together construct new meanings. Unfortunately for the majority of adult students seeking easy, convenient and, above all, distant access, this model is not really viable. Thus, blended classrooms, attractive as they may seem, will probably remain primarily on-campus options for high school or emergent adult students who share a common physical location and have time for regularly scheduled face-to-face meetings. Most importantly, even though this model purports to meld the directive and progressive methods in one setting, the blended model still remains, in essence, a teacher-centered experience.

Why, we wonder, is this teacher-centered approach so attractive? Why have learner-centered approaches, the essence of the progressive education agenda, not taken greater hold (e.g., Chicoine, 2004) despite philosophical and empirical support, even occasional revivals of wide-spread interest (e.g., Barr & Tagg, 1995)?

Some argue that we cannot let go of the information delivery model because we do not yet fully understand the nature of human learning and therefore operate according to models of learning that are fundamentally incorrect (e.g., Bereiter, 2001; Rumelhart, 1989; Lave & Wenger, 1984; Salomon, 1993). Bereiter, for example, argues that we hold an intuitive and tacit assumption that the mind is a container, which leads us to wrongly believe that education consists of making sure the "filing cabinet" of the mind is properly filled. As he puts it:

The idea of knowledge as the contents of a mental filing cabinet is, I believe, the most stultifying conception in educational thought [even though]... it has been shared by all the major combatants in the educational debates of this century. There

are traditionalists who want to make sure the filing cabinet is filled with the right things, there are child-centered and “constructivists” educators who insist the contents of the filing cabinet should be the results of the child’s own inquiries, and there are the thinking skills enthusiasts who want to ignore the mental filing cabinet (whose contents they believe to be rapidly obsolescent) and to focus on developing skills in accessing various external filing cabinets and applying their contents. There is merit in all these positions but they appear unreconcilable. Moreover they all undervalue knowledge as it figures in a knowledge-based economy and the careers of experts (p. 24).

If Bereiter is correct that our current ways of teaching are informed by an inadequate “folk” theory about how the mind works, it is very unlikely that institutions of education, much less individual educators, will abandon any time soon the classroom model so perfectly in tune with our current emphasis upon information our minds need to acquire. Considerable research has already shown how difficult it is for non-physicists to discard intuitive notions of the physical world for the laws discovered by Newton, even when they know the old notions are wrong (e.g., Bain, 2004, pp 22-24, Wandersee, Mintzes, & Novak, 1994, as cited by Bereiter, 2001; p 95). Most educators are not cognitive psychologists informed about theories of mind; indeed, in higher education, faculty training about how minds learn is virtually nonexistent.^y To challenge, much less change, our assumptions about the nature of learning, when a powerful bureaucratic apparatus exists to support our current beliefs, may require something akin to a Kuhnian revolution (1970).

Until this revolution occurs, we feel compelled to conclude that within the realm of formal education, fueled by the demands of information-hungry and degree-seeking adults (Finke, 2000), the virtual classroom will continue to reign. No doubt some dedicated faculty and

educational researchers will continue to promote constructivist and progressive methods in their classrooms (e.g., Ball & Lai, 2004; Hodgkinson-Williams, Slay, & Sieborger, 2008). However, in many instances, these pockets of resistance will probably not represent a repudiation of the information delivery model so much as an attempt to improve the quality of the information transfer process. In other words, the ultimate goal of current undergraduate educators, no matter how enlightened, will still remain that of helping students ingest already preselected and vetted facts, figures, terms, concepts, theories, methods, and whatever other information we believe constitute the disciplines we teach.

The irony is that, left to themselves, adults already *do* learn in progressive and constructivist ways. Away from formal schooling, at home or at work, we watch what others do and interact with them, customize what we learn to suit our own needs and purposes, and often create new, even unique, applications—sometimes out of curiosity, sometimes with a particular purpose in mind. It was Dewey’s hope that the introduction of these “natural” methods into the classroom would help children see the relevance of school learning to their everyday lives and thus find it easier to learn. But adult students already know that school learning is important or needed. Perhaps we should simply trust these students to find their own ways of absorbing what they genuinely need to know from the lessons we teach. In other words, perhaps we shouldn’t worry so much about our inability to relinquish the information delivery model of learning that seems so embedded in the virtual classroom.^z

We must add here that the Internet, the very technological innovation critical to the development of the virtual classroom, also offers unlimited possibilities for the kinds of unregulated education, outside the academy, that adults have always sought (Kett, 1994) such as in libraries, museums, archives, and grass roots organizations of all kinds.^{aa} Why not look at the Internet

as a kind of “de-schooled” world of education, a technologically inspired network like the “learning webs” proposed by Illich (1971) more than 40 years ago? Why not view the Internet as a world of “digital disorder” (Weinberg, 2008) where learners are free to choose topics and areas of immediate concern to them – whether the focus is on practical problems or on queries animated by a simple desire to know – and which they can then discuss with people from much more diverse cultural, national, or class backgrounds than can be found in any one campus classroom? Does not such an open-source environment meet many of the prerequisites for both progressive and social constructivist models? Are not surfing and blogging and downloading and text-messaging extensions of what people already do spontaneously on the job, in their communities, with their family and friends, in their myriad “learning projects” (perhaps even more vibrantly today than when Tough [1968] recognized their significance)? And unlike what undergraduate institutions expect from the majority of their students, does not the Internet have the added advantage of encouraging people, through wikis, for example (see Susstein, 2006; Tapscott & Williams, 2008), to actually contribute in a serious way to the creation and dissemination of new knowledge?

Currently most educators do not take very seriously the many social communication networks that are blossoming on the Internet; and those who do are mostly interested in finding ways of confining them within the boundaries of their formal course offerings (e.g., Rogers & Swan, 2004). And perhaps that’s as it should be. The spontaneous embrace of the Internet by many thousands, some say millions, of people who happily engage in a kind of chaotic, unsupervised exploration of ideas, may turn out to be a better realization of progressive and constructivist ideals than what some dedicated teachers try to create in their classrooms. If so, we should not worry about the future of progressive education. Our speculations suggest that a rebalancing of the ten-

sions described by Dewey and others – a corrective to our over-dependence upon the information delivery model that seems so appropriate for adult students in a globalized, market-driven society – will not come from our educational institutions, but from the freedom of inquiry offered by the very technologies educators at this moment are so eagerly trying to corral.

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ENDNOTES

- ^a We work at SUNY Empire State College, which offers an array of study modes including individual tutorials and individualized curricula that include strong emphasis upon the assessment of learning through lived experience.
- ^b Currently older students represent more than 40% of all undergraduates (University Continuing Education Association, 2006).
- ^c Arnett (2000) also importantly acknowledges that this stage is not universal and occurs only in societies that can afford to offer young people time off from social obligations and (although he does not make this second point explicit) in which life expectancies are long enough that they will have sufficient time afterward to make the contributions to society for which this long period of education prepares them.
- ^d Using the description developed by The National Center for Education Statistics (NCES), the Council for Adult and Experiential Learning (CAEL, 2005) identifies seven characteristics of nontraditional students: "Have delayed enrollment into postsecond-

ary education; attend part-time; are financially independent of their parents; work full-time while enrolled; have dependents other than a spouse; are a single parent; lack a standard high school diploma (p.1).”

^e John Dewey, the principal theorist of progressive education, upon whose ideas we so strongly depend, developed its tenets almost entirely with only children in mind.

^f Since about 85% of adult students (at least at our institution) are actually “returning” students, their view of school as a repository of knowledge is the reality they have already experienced not only in high school, but in their earlier aborted attempts in college.

^g A frequent response to this concern is, ironically to offer students courses in “time management,” which in its instrumental focus seems somewhat incompatible with a progressive or constructivist view of education.

^h Few adults return to college without having already engaged in serious thought about the direction of their lives. Nor have their personal experiences been exactly devoid of perspective changes or transformational moments.

ⁱ More than 70% of adult Americans still do not have college degrees (U.S. Census Bureau, 2008).

^j It is thus not by chance that the “National Commission on Adult Literacy” describes “those individuals who started, but did not complete a college education” as “low-hanging fruit” (Jones and Kelly, 2007).

^k These younger students too are increasingly pragmatic (e.g., Torres, 2008). Escalating tuition rates alone discourage them from taking extra time, even if time were available. Moreover, they too look for efficiencies, and for two quite different reasons. First, they, like adults, have competing priorities -- typically their college work versus many of the extracurricular activities offered by the

college itself. The less time spent on studies, the more that is available for sports, student government, and part-time jobs (all activities intended to pad their young resumes) to say nothing of socializing, and just hanging out. But secondly, it may be simply part of human nature to seek the shortest route (for a classic example, see Scribner, 1984).

^l We refer here, of course, to the *potential* for universal access, reminding ourselves that a “digital divide” continues to serve as a barrier for large numbers of underserved populations (e.g., Mossburger, Tolbert, & Stansbury, 2003). In considering the provision of college study for adult learners, the underprivileged in our world still remain largely outside serious consideration, raising, as they do, abiding questions not only of access, but of class and status.

^m By focusing upon the Internet, we clearly include the personal computer, upon which the ability to access the Internet depends, and through which many educational innovations were originally developed. We can point, for example, to computer software developed to simulate various scientific experiments that, once available, swiftly migrated to the Internet.

ⁿ Postman (1993) makes a similar point as he imagines the impact of the then new technology of writing several thousand years ago when people then came “to rely upon external signs instead of their own internal resources [p. 12].”

^o Some commentators point out that technological developments in education are still only at an early, primitive stage, that is, at a period roughly equivalent to that of the “model-T” when automobiles still strongly resembled a horse carriage. However, we note that long-standing models, like the classroom, are not always easy to transcend. The functional components of the modern car are still, 100 years later, recognizably the same as in the model-T.

- ^p That the virtual classroom has been eagerly accepted by the adult student can be easily illustrated by enrollment figures from our institution. Since its inception, Empire State College consisted of a variety of geographically dispersed learning centers that offered individualized instruction, plus a small program of distance education that provided pre-designed courses for self-study delivered by mail and expanded by telephone contact with a tutor. The distance program at that time, and for many years thereafter, accounted for about 10% of the college enrollments (including students from the other locations in the college who supplemented individual tutorials with an occasional distance course). However, with the advent of the virtual classroom, the once ancillary distance program began to grow exponentially, and now accounts for almost a third of the college undergraduate enrollments (79,610 out of a total 228,440 credits). More startling, during the past 5 or 6 years as the virtual classroom became fully institutionalized, the distance program itself, which typically grew – as did the rest of the college – a few percentage points a year suddenly doubled in size (Empire State College Office of Institutional Research, 2007).
- ^q It is interesting to follow an instructor's learning curve in operationalizing the requirements for a meaningful "discussion." It begins when the instructor specifies that each student is expected to participate at least three times in a given discussion. When she then observes that some students meet this requirement by making three different comments on, say, the last day of the discussion, she then changes the instructions to specify "one main posting" and "three comments to your classmates" *per week*, and then later to prevent all this activity from still occurring on one day, "one main posting, several responses to other classmates, and *several follow-up comments*" in a given discussion. Finally, a teacher may learn to be prepared to write private notes to students in order to ask them to participate at least three or four or five *different days* during the discussion period. Students demand this level of specificity even though the instructor may also emphasize that an important goal of class discussions is the co-construction of knowledge and explain various ways by which this can be accomplished.
- ^r Indeed, "expertise" in a constructivist educational world has to be redefined. No longer based upon the disciplinary knowledge represented by the Ph.D., or conventional scholarly pursuits, it must refer to a whole new variety of complex skills related to teaching -- skills of mentoring and facilitation that are totally ignored in most graduate programs, acquired almost entirely by experience, and practiced only when this special kind of teaching is seen by the faculty as worth the extra effort involved.
- ^s At the first State University of New York Conference on Instructional Technologies (SUNY CIT) in Oneonta in 1992 (see <http://www.cit.suny.edu/>) – in a presentation designed to demonstrate the usefulness of technology in education -- several science teachers could not contain their excitement over the ways in which instructional software would now allow them to totally control the results and consequences of various procedures in classical experiments from their disciplines.
- ^t Currently, administrators seek to streamline education through the use of a "reserve army" of adjuncts, a huge body of floating, highly skilled academics upon which so many institutions now depend (e.g., Finder, 2007). We suggest below, however, that even this army may soon become obsolete.

- ^u Our institution is still quite flexible in that, at least to date, it allows instructors leeway to change up to 20% of a virtual course they are hired to teach.
- ^v Sennett (2008) provides a sensitive and detailed discussion of the training, tools, skills, consciousness, and even the “hand” of the craftsman, and above all, “the drive to do good work (p. 267).” One could argue that it is exactly such “quality-driven work” (quality-driven work Chapter IX) that is being tested if not completely undercut by the recent changes in higher education just described.
- ^w Think too about the practical and ideologically-tinged implications of the term, “accountability,” and the development of nationwide databases that describe and compare the achievements of our higher education institutions.
- ^x Although it might seem ironic that these same students are also perceived as quite capable of charting their own course and of being open to the uncertainties and challenges of complex inquiry, we should also remember that they are fully aware of the importance of following the rules of society. And why should they question the offerings and available methodologies of higher education when they purportedly offer exactly the information that they need?
- ^y This lack of training reflects in yet another way how strongly we assume that our minds are containers waiting to be filled with expert knowledge. We may need help in making those containers more receptive to what we want students to learn, but we don’t even imagine that the container metaphor itself may need to be challenged.
- ^z Clearly, the vast majority of us did not experience a constructivist or progressive education either as children, teenagers, undergraduates, or, in many cases, even as graduate students.
- ^{aa} We refer here to the social or political movements exemplified in the writings and practices of such important critical educators as Friere (1972), Lindeman (Brookfield, 1987b) and Horton (1990). Also relevant today are new experiments in alternative forms of unregulated education as, for example, the WTO History Project connected to the 1999 Seattle protests against the World Trade Organization (University of Washington WTO History Project, n.d.) and other such Internet-based digital initiatives.

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