

# STRIDE HANDBOOK

# 08

## E-LEARNING



STAFF TRAINING AND RESEARCH  
INSTITUTE OF DISTANCE EDUCATION  
INDIRA GANDHI NATIONAL OPEN UNIVERSITY

NEW DELHI - 110068

# STRIDE

*In 1990, The Commonwealth of Learning (COL), Vancouver, Canada, The Asian Development Bank (ADB) and the Ministry of Human Resource Development (MHRD), Government of India, proposed to set up a training institute for Distance Education in the South Asian region. Accordingly, the erstwhile Division of Distance Education of the Indira Gandhi National Open University (IGNOU) was upgraded into the Staff Training and Research Institute of Distance Education (STRIDE) in 1993. Over the years, STRIDE has responded to the Distance Education needs of many countries in Asia, Africa and the Caribbean region.*

## OBJECTIVES

***The objectives of STRIDE are:***

- to identify training needs of different target groups already involved in and those expected to get involved in open and distance education;
- to build up a resource base of up-to-date information, training materials, courses and expertise, and make such resources available whenever needed;
- to develop training strategies and training materials to meet the various needs of different types of individuals and distance teaching/training institutions;
- to organise and conduct training and staff development activities for the identified target groups and institutions through various strategies leading to completion of certificates, diplomas and degrees, and;
- to promote research in open and distance education at the fundamental, experimental and application levels in order to constantly enrich the training programmes and management processes and meet the challenges of the expanding educational environment.

### **Director**

Dr. P.R. Ramanujam, Professor

### **Faculty of STRIDE**

Dr. Santosh Panda, Professor

Dr. C.R.K. Murthy, Professor

Dr. Madhu Parhar, Professor

Dr. Basanti Pradhan, Professor

Dr. Prabir K. Biswas, Professor

Dr. Rampelli Satyanarayana, Reader

Dr. Sanjaya Mishra, Reader

Ms. G. Mythili, Analyst (Sr. Scale)

Mr. Tata Ramakrishna, Lecturer

Dr. Rose Nembiakkim, Lecturer

Mr. Satya Sundar Sethy, Lecturer

For further information please contact: Director, STRIDE, Indira Gandhi National Open University, Maidan Garhi, New Delhi-110 068.  
Fax 91-11-29533073 Tel. 29535399

# STRIDE HANDBOOK

# 08

# E-LEARNING

EDITED BY SANJAYA MISHRA



STAFF TRAINING AND RESEARCH  
INSTITUTE OF DISTANCE EDUCATION

INDIRA GANDHI NATIONAL OPEN UNIVERSITY  
NEW DELHI-110068

# STRIDE Handbook 8

## E-LEARNING

Concept and Editing:  
Dr. Sanjaya Mishra  
Reader in Distance Education  
STRIDE, IGNOU  
New Delhi 110068

Design & Graphics  
IANS Publishing | [www.ianspublishing.com](http://www.ianspublishing.com)

Print Production:  
Ms. Promila Soni

ISBN: 978-81-266-4451-3  
© Individual authors, 2009  
© Indira Gandhi National  
Open University, 2009  
for the compilation.

All rights reserved. No part of this book may be reprinted or reproduced in any form or by any electronic, mechanical or other means, now known or here after invented, including photocopying or recording, or any information storage or retrieval system, without written permission from the copyright holders.

Citation to this Handbook can be made as follows:  
Mishra, S., Ed. (2009).  
*E-Learning*, New Delhi: IGNOU  
(STRIDE Handbook 8).

Printed and published on behalf of the Indira Gandhi National Open University (IGNOU), New Delhi by Prof. P.R. Ramanujam, Director, Staff Training and Research Institute of Distance Education (STRIDE), IGNOU.

Printed at:  
Karan Press, New Delhi

### ACKNOWLEDGEMENTS AND DISCLAIMER

We sincerely acknowledge the contributions of all the chapter authors to bring out this publication. Trademarks, Designs, etc. used in the Handbook are copyright of their respective owners. Usage, if any, in this Handbook are only for illustration and academic purpose. This is in no way a recommendation or endorsement of the products and services. Views expressed in this Handbook are that of the respective authors and STRIDE and/or IGNOU is/are not responsible for any loss due to any of the ideas contained in this Handbook. Readers are urged to use their discretion to adopt/adapt any of the advise given in this Handbook. All links in the document were live at the time of going to press.

Information about Indira Gandhi National Open University (IGNOU) and Staff Training and Research Institute of Distance Education (STRIDE), and courses and programmes offered can be had from the Headquarters at Maidan Garhi, New Delhi 110068, and website: [www.ignou.ac.in](http://www.ignou.ac.in)

The Handbook can also be downloaded from  
STRIDE web page: [http://www.ignou.ac.in/institute/training\\_materials.htm](http://www.ignou.ac.in/institute/training_materials.htm)

# contents

Foreword .....	1
About the Handbook.....	2

## PART A

### E-Learning: Conceptual Overviews

Chapter 1: Pedagogical Affordances of Technology <i>by Som Naidu</i> .....	4
Chapter 2: Managerial Perspectives on e-Learning <i>by Tony Bates</i> .....	14
Chapter 3: Designing Online Learning <i>by Sanjaya Mishra</i> .....	28
Chapter 4: Level of Media Interactivity <i>by Jon Baggaley</i> .....	36
Chapter 5: The Global e-Learning Framework <i>by Badrul H. Khan</i> .....	42

## PART B

### E-Learning: Technologies and their Applications

Chapter 6: Electronic Mail <i>by Sanjaya Mishra</i> .....	52
Chapter 7: Mailing Lists <i>by Steve McCarty</i> .....	56
Chapter 8: Asynchronous Conferences, Discussion Forums <i>by Neil Harris and Maria Sandor</i> .....	60
Chapter 9: Podcasting: a learning technology <i>by Palitha Edirisingha and Anguelina Papova</i> .....	66
Chapter 10: Online Video <i>by Kevin Burden</i> .....	70
Chapter 11: Using Collaborative Video for e-Learning <i>by Leigh Blackall</i> .....	76
Chapter 12: Synchronous Conferencing <i>by Jon Baggaley</i> .....	80
Chapter 13: Webcasting <i>by Punya Mishra and M. Laeeq Khan</i> .....	84
Chapter 14: Blogs in Learning <i>by Stephen Downes</i> .....	88
Chapter 15: Wikis <i>by Ke Zhang and Stacey DeLoose</i> .....	92
Chapter 16: Social Networking <i>by Terry Anderson</i> .....	96
Chapter 17: Social Bookmarking (Delicious) in Education <i>by Gabriela Grosseck</i> .....	102
Chapter 18: Slideshows <i>by Brian Kelly</i> .....	106
Chapter 19: Virtual Worlds <i>by Sanjaya Mishra</i> .....	110
Chapter 20: Really Simple Syndication <i>by Sanjaya Mishra</i> .....	114
Chapter 21: Using Micro-blogging (Twitter) in Teaching and Learning <i>by Andy Ramsden</i> .....	118
Chapter 22: Concept Mapping in e-Learning <i>by Alberto J. Canas, Priit Reiska and Joseph D. Novak</i> .	122
Chapter 23: Interactive Whiteboards <i>by Rozhan M. Idrus and Raja Maznah Binti Raja Hussain</i> .....	128
Chapter 24: Web Surveys and Quizzes <i>by Sanjaya Mishra</i> .....	132
Chapter 25: Learning Management Systems <i>by Sanjaya Mishra</i> .....	134
List of Contributors .....	140

# Tables, Figures and Abbreviations

## TABLES

Table 1.1: A framework for optimising technology affordances .....	10
Table 3.1: Learning events based on interaction .....	32
Table 4.1: Twelve levels of educational media interactivity .....	37
Table 5.1: Eight Dimensions of E-Learning Framework .....	46
Table 5.2: Sub-dimensions of the E-Learning Framework.....	47
Table 9.1: A framework relating types of podcasts and possible learning outcomes .....	68
Table 19.1: Considering the attributes of virtual worlds for usage.....	112
Table 21.1: Design Brief: Using Twitter to promote informal academic discourse during face to face teaching .....	120
Table 25.1: LMS vs. LCMS.....	135

## FIGURES

Figure 1.1: Modes of engagement and interaction.....	8
Figure 4.1: A hand-held keypad used to collect real-time data from farmers in tribal Kenya .....	39
Figure 4.2: A web-based key-pad used to collect real-time responses to a TV political debate .....	40
Figure 4.3: A 3G cell-phone version of Fig. 4.2 .....	40
Figure 5.1: Open and Distributed Learning .....	43
Figure 5.2: The E-Learning Framework.....	46
Figure 8.1: Online discussion forum as a student centered peer e-learning environment.....	62
Figure 12.1: A live online video presentation .....	80
Figure 18.1: Slideshare Example .....	107
Figure 18.2: The Author's Most Popular Presentations on Slideshare .....	108
Figure 20.1: Example of RSS Reader.....	116
Figure 22.1: A concept map showing the key features of concept maps .....	123
Figure 22.2: Concept map about Birds, with attached resources and links to other Cmaps, creating a knowledge portfolio. ....	124

## ABBREVIATIONS

<b>ADL:</b> Advanced Distributed Learning	<b>GUI:</b> Graphic User Interface	<b>ROI:</b> Return-on-investment
<b>ATTLs:</b> Attitudes to Thinking and Learning Survey	<b>HTML:</b> HyperText Markup Language	<b>RSS:</b> Really Simple Syndication or Rich Site Summary
<b>CCL:</b> Canadian Council on Learning	<b>HTTP:</b> HyperText Transfer Protocol	<b>SL:</b> Second Life
<b>CMC:</b> Computer-mediated communication	<b>IBT:</b> Internet-Based Training	<b>SMS:</b> Short Message Service
<b>CMS:</b> Course Management System	<b>ICTs:</b> Information and communications technologies	<b>TCP/IP:</b> Transmission Control Protocol - Internet Protocol
<b>COLLES:</b> Constructivist On-Line Learning Environment Survey	<b>IMPALA:</b> Informal Mobile Podcasting and Learning Adaptation	<b>TPACK:</b> Technological Pedagogical Content Knowledge
<b>DE:</b> Distance Education	<b>IP:</b> Internet Protocol	<b>UBC:</b> University of British Columbia
<b>DEOS-L:</b> Distance Education Online Symposium List	<b>IRC:</b> Internet Relay Chat	<b>UGC:</b> User Generated Content
<b>DEOS:</b> Distance Education Online Symposium	<b>ISDN:</b> Integrated Services Digital Network	<b>UNISA:</b> University of South Africa
<b>DiAL-e:</b> Digital Artefacts for Learner Engagement	<b>ISP:</b> Internet Service Provider	<b>URL:</b> Universal Resource Locator
<b>DIY:</b> DO IT Yourself	<b>IT:</b> Information technology	<b>VLE:</b> Virtual Learning Environment
<b>DL:</b> Distributed Learning	<b>JISC:</b> Joint Information Systems Committee	<b>VoIP:</b> Voice Over Internet Protocol
<b>DSL:</b> Digital Subscriber Line	<b>LCMS:</b> Learning Content Management System	<b>WAOE:</b> World Association for Online Education
<b>E-mail:</b> Electronic Mail	<b>LMS:</b> Learning management System	<b>WBI:</b> Web-Based Instruction
<b>EDEN:</b> European Distance Education Network	<b>OECD:</b> Organisation for Economic Cooperation and Development	<b>WBL:</b> Web-Based Learning
<b>EU:</b> European Union	<b>OER:</b> Open Educational Resources	<b>WBT:</b> Web-Based Training
	<b>OL:</b> Online Learning	<b>WWW:</b> World Wide Web
		<b>XML:</b> Extensible Markup Language

# foreword



**E**-Learning has emerged as a powerful mode to deliver education and training, both in face-to-face and in distance education systems. It has brought in a higher degree of student-student and student-teacher interaction to distance education programmes on the one hand. On the other, it has facilitated institutions teaching face-to-face to adopt technology in their classroom-based courses to manage learning efficiently and effectively. The 2008 report of the Sloan Consortium on status of online education in the United States revealed that over twenty per cent of all U.S. higher education students were taking at least one online course in the fall of 2007. Hazel Associates estimated that e-learning is the fastest-growing sub-sector of a \$2.3 trillion global education market, and the market for online higher education is estimated to exceed \$69 billion by 2015.

Despite being a leader in Information Technology, India has a long way to go in terms of online programme offerings. Indira Gandhi National Open University (IGNOU) is a leader in innovations in technology-enabled education, and it now has over a dozen online programmes. The Staff Training and Research Institute of Distance Education (STRIDE) has also initiated an innovative programme on e-Learning for capacity building of teachers to adopt this new technology. The Ministry of Human Resource Development (MHRD), Government of India, has also recently initiated the National Mission on Education through Information and Communication Technology (NMEICT). Besides others, two major objectives of the mission related to efforts on e-learning are:

- Use e-learning as an effort multiplier for providing access, quality and equality in the sphere of providing education to every learner in the country; and
- Spreading Digital Literacy for teacher empowerment and encouraging teachers to be available on the Net to guide the learners.

It is in both these contexts, the present Handbook developed by STRIDE is highly significant. It will inform the teachers about the potential of e-learning and encourage them to use the Web 2.0 technologies available almost at zero cost. While the broadband Internet access is poised for an accelerated growth due to the up-coming National Knowledge Network, it is important that teachers are prepared to take up new challenges to develop quality teaching and learning opportunities for the students in both face-to-face and distance mode. The Handbook, prepared as a collaborative project with contributions of 26 experts from around the world, would serve as a source of rich experience and diversity of practice in the field.

I congratulate STRIDE for bringing out such a publication, and hope that it would help each and every teacher in the country to use some form of e-learning in his/her teaching.

New Delhi  
8th October 2009

*Prof. V.N. Rajasekharan Pillai,  
Vice Chancellor, IGNOU*

# about the handbook

In *The e-Learning Handbook*, Patti Shank (2008), President of Learning Peaks LLC wrote: “Many people don't understand basic definition or key concepts of e-learning” (p.17). While she emphasised that e-learning is all about 'learning' and not technology *per se*, the lack of understanding by administrators and executives in training organisations as well as universities have resulted in falling prey to false or insignificant marketing and one-size-fits-all approach of the e-learning vendors. Zemsky and Massy (2004) in the *Thwarted Innovation* reported that many institutions invested solely on hardware and software instead of investing in improving educational quality in e-learning. Many high profile e-learning initiatives such as the UkeU have also failed because of their emphasis on technology (Garrett, 2004). But, there are also positives related to e-learning. E-learning has become popular among educationists because of the inherent strengths and advantages it provides to the instructional process (Mishra, 2009). Some of the benefits include:

- Access to educational resources from outside the institution on a global and instant basis;
- Quick and easy ways to create, update, and revise course materials through low-cost off-the-shelf software;
- Increased and flexible interaction with students through e-mail and discussion forums;
- Location and time independent delivery of course materials such as course notes, diagrams, and reading lists;
- The ability to combine text, graphics, and a limited amount of multimedia, thereby enabling instructional designers to prepare quality learning materials;
- Interactive and dynamic learning experiences through online assessment tools, simulations, and animated learning objects;
- Platform-independent delivery, accessible through any computer with a simple browser interface;
- Increased learner control through hypertext-based presentation of information;
- Opportunities for international, cross-cultural, and collaborative learning; and
- The ability to serve a large number of students at a potentially reduced cost (Bates, 2001; Goldberg, Salari, & Swoboda, 1996; McCormack & Jones, 1998; Starr, 1997; Weller, 2000).

In the Indian context, through e-learning initiatives dates back to 1999 (Mishra, 2009), it is in its infancy as not many institutions have jumped onto the bandwagon. Many also cite the Internet penetration in the country as the cause of the current situation. And, as indicated by Bates (2001), we always have an option to “do nothing” after careful analysis of advantages and disadvantages of e-learning in our own context! Certainly, for us at Staff Training and Research Institute of Distance Education (STRIDE), Indira Gandhi National Open University (IGNOU), this is not the case. We believe and understand that technological infrastructure alone is not sufficient for success of e-learning, though it may be a necessary pre-condition. Therefore, we have been engaged in dialogue, discussion and debate about the potential capabilities, strengths and limitations of online

technologies in educational programmes. We have also been conducting training programmes on e-learning since July 2001. The Handbook is our humble effort to put 'learning' before 'technology' in e-learning endeavours. We expect this Handbook to be a starting point and reference guide to new as well as seasoned teachers to use e-learning in their teaching and learning, both at face-to-face and at a distance.

The Handbook has two parts: Conceptual overviews and technology applications. Many textbooks, research papers and reference materials have already been written about e-learning, and this one could easily get lost in that wealth of information, but for the conscious approach taken by the Editor to involve international scholars to share their ideas and experiences that could provide diversity and richness of the philosophy, technology and practices surrounding e-learning. So, you have 25 Chapters written by 26 experienced and emerging experts in the field of e-learning, sharing with you tips for successful use of e-learning technologies. You can use this Handbook in a linear manner from Chapter one to the end or read a specific chapter depending on your interest and immediate need and relevance. Most chapters provide you practical tips, resources and references to further reading, and we encourage you to go beyond this Handbook. Apart from the references and links provided in each of the chapters, we would direct you to another publication, released by the University of Colorado, Denver (Lawenthal, et al, 2009).

We shall be obliged, if you can share your experience of reading and using this Handbook and also your personal anecdotes of using e-learning technologies for possible use in the next edition of this Handbook. As the Editor of this international collaborative Handbook, I am thankful to all the contributors for your timely support, despite your busy professional engagements. My sincere gratitude to all of you.

*Sanjaya Mishra*

## References

- Bates, T. (2001). *National strategies for e-learning in post-secondary education and training*. Paris: UNESCO, IIEP
- Garrett, R. (2004). *The Real Story Behind the Failure of UK eUniversity*, *Educause*, 27 (4), 4-6. Retrieved from the WWW at <http://net.educause.edu/ir/library/pdf/EQM0440.pdf> (accessed on 25/09/2009).
- Goldberg, M. W., Salari, S., & Swoboda, P. (1996). World Wide Web course tool: An environment for building WWW-based courses. *Computer Network and ISDN System*, 28. Retrieved on May 17, 1999 from <http://www.webct.com/papers/p29/>
- Lawenthal, P.R., Thomas, D., Thai, A, & Yuhnke, B., Eds (2009). *The CU Online Handbook —Teach differently: Create and collaborate*, Denver: University of Colorado. Retrieved from the WWW at [http://www.cudenver.edu/Academics/CUOnline/FacultyResources/Handbook/Documents/2009/CU\\_Online\\_Handbook\\_2009.pdf](http://www.cudenver.edu/Academics/CUOnline/FacultyResources/Handbook/Documents/2009/CU_Online_Handbook_2009.pdf) (accessed on 25/09/2009)
- McCormack, C., & Jones, D. (1998). *Building a Web-based education system*. New York: Wiley Computer Publishing.
- Mishra, S. (2009). E-Learning in India, in Bonk, C.J., Lee, M.M., & Reynolds, T. H. (Eds), *A Special Passage through Asia E-Learning*, Chesapeake, VA: Association for the Advancement of Computing in Education.
- Shank, P. (2008). Thinking critically to move e-learning forward, in Carliner, S., & Shank, P. (Eds), *The E-Learning Handbook: Past Promises, Present Challenges*, (pp.15-26), San Francisco, CA: Pfeiffer.
- Starr, R. M. (1997). Delivery instruction on the World Wide Web: Overview and basic design principles. *Educational Technology*, 37(3), 7-15.
- Weller, M. J. (2000). Creating a large-scale, third generation distance education course, *Open Learning*, 15(3), 243-251.
- Zemsky, R., & Massy, W.F (2004). *Thwarted Innovation: What happened to e-learning and why*, The Learning Alliance at the University of Pennsylvania, Retrieved from the WWW at <http://www.irhe.upenn.edu/Docs/Jun2004/ThwartedInnovation.pdf> (accessed 25/09/2009).

## CHAPTER 1

# Pedagogical Affordances of Technology



BY SOM NAIDU

### Introduction

Can technology influence learning and teaching? To be able to address this question meaningfully let us consider the extent to which different aircraft and their conditions influence the comfort level of their passengers. Those who have had the opportunity to travel as a first-class or business-class passenger and in a range of aircraft will know that the ambience of an aircraft's cabin most certainly influences one's comfort level and satisfaction with the journey. In much the same way, technology has the potential to influence learning, and different technologies offer different possibilities for rendering the learning experience in ways that can influence learning significantly differently. Arguably, it is not the attributes of technologies alone that can possibly influence learning, but how these unique attributes and the possibilities and opportunities they afford are used to render different types of learning content and learning experiences. Effective, efficient and engaging learning is a product of the synergy achieved from a combination of factors, and which include the possibilities offered by technologies, the optimal use of these attributes and the readiness of the learner.

### Effective, efficient and engaging learning

Theories on how human beings learn abound, and so does controversy around how we learn best. The truth is that learning depends on numerous factors and these have to do with the learner, teacher, the subject matter content and the learning context. The more meaningful question to ask in relation to learning is not how we learn, but how we can learn a lot more effectively and efficiently (see Spector & Merrill, 2008).

Contemporary thinking around learning suggests that learning is most effective and efficient when it is situated within a meaningful learning context (see Brown, Collins, & Duguid, 1989). This learning context can be real or contrived. The most meaningful and effective ones are those that closely reflect real life, and those that do reflect real life are considered most authentic. This is called situated learning (see Lave & Wenger, 1991).

The notion of situated learning is grounded in the belief that learning is most effective and efficient when learners are engaged in problem-solving, reflecting upon their actions and learning by doing within authentic learning contexts. The

problems, scenarios and cases used in these learning contexts serve to situate and anchor all learning activities and also help in the understanding and retention of facts, principles and procedures (see Barrows & Tamblyn, 1980; Naidu & Oliver, 1996, 1999; Schank, 1990; Schank, Fano, Jona, & Bell, 1994). Within these learning contexts, learners are put into authentic and meaningful situations where they are required to think for themselves, take actions and draw conclusions, defend their actions and decisions, and reflect upon them (see Cognition and Technology Group at Vanderbilt, 1993a; Wilson, 1996). When this is the case, it helps learners recognise and appreciate the relevance and purposes of their learning (see Naidu & Oliver, 1999).

When learning activities such as problem-solving and critical reflection are carefully designed and orchestrated, and where the assessment of learning outcomes is closely aligned with the learning context and the learning activities, they serve as powerful mechanisms for cognitive apprenticeships (see Cognition and Technology Group at Vanderbilt, 1990). Cognitive apprenticeship comprises the development of cognitive (mental) skills with the guidance of an expert, much like hands-on experience under the close tutelage of an experienced practitioner.

In such educational settings learners are active partners in the learning and teaching process with their mentors and teachers, rather than passive recipients of information. In this process, knowledge and understanding is gained through the active engagement of learners with the learning content,

**Effective, efficient and engaging learning is a product of the synergy achieved from a combination of factors, which include the possibilities offered by technologies, the optimal use of these attributes and the readiness of the learner**

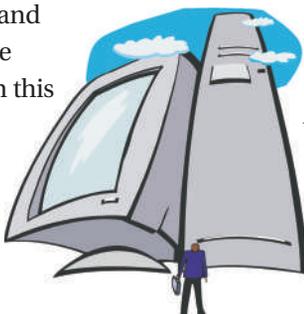
context, teachers, the learning group and relevant resources. This is the constructivist view of learning and it sees learning as a process of developing understanding through problem-solving, critical reflection and negotiation of meaning with one's own prior learning experiences, and those of others including expert practitioners (Glaserfeld, 1983; Schank, 1990, 1997; Cognition and Technology Group at Vanderbilt, 1990, 1993b).

Proponents of this line of thinking, especially social constructivists, see learning as also dependent on the learning group (see Vygotsky, 1978). This view argues that learning and the development of understanding is also a social process which comes about as a result of learners acting upon authentic problem situations collaboratively through dialogue, discussion and debate (see also Koschmann, 1996).

### **E-learning, m-learning and distance learning**

In order to learn more effectively and efficiently, learners need a variety of learning resources. The selection and use of these resources depend upon the learning context. In most distance education settings, for instance, there is a much greater reliance on the printed text and increasingly now on information and communications technologies (ICTs). This is necessary and appropriate as distance education seeks to serve the educational and training needs of those who are, for various reasons, unable to access conventional face-to-face educational provision (see Larreamendy-Joerns & Leinhardt, 2006).

Distance education needs to



## STRIDE HANDBOOK 8

adopt methods that are flexible in terms of their accessibility and which have the capability to give learners choices about their place and pace of study (see Holmberg, 1986; Lewis, 1986; Paine, 1989; Rumble, 1989). However, the availability of choices and flexibility in relation to one's place and pace of study is not unique to distance education provision.

Contemporary campus-based education is also increasingly adopting flexible learning approaches as suitable technologies become more widely and cheaply available, and as the nature of contemporary student population changes along with changing perspectives on educational provision.

These trends have led to the rise of labels such as e-learning and m-learning. Like distance learning these terms refer to the predominant attributes of that learning mode. Just as distance learning is characterised by the physical separation of the learner from the teacher and the learning organisation for much of the learning process, e-learning refers to the use of electronic technologies and m-learning refers to the use of mobile technologies for much of the learning and teaching transaction.

### What is new about the learning prefixes?

But does the use of electronic technologies (in e-learning), mobile technologies (in the case of m-learning), or distance learning technologies (in the case of distance education) change and/or influence the essential nature of effective, efficient and engaging learning and teaching? Answers to this question are not entirely clear one way or the other.

For some time Richard Clark has proclaimed that delivery media have no impact on learning (see Clark, 1983, 1994), while Robert Kozma (see Kozma, 1991) has

argued that the influence of the medium and the instructional method on learning cannot be that easily disentangled. Clark has argued that effective and efficient learning is the result of carefully designed instructional method. As such the influence of the delivery technology on learning is no more than the influence a grocery truck might have on the nutrition and health of the consumers of the groceries it delivered.

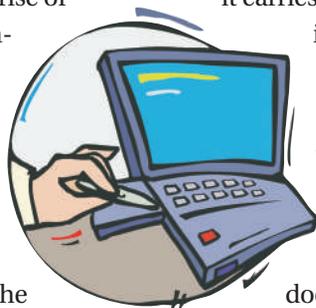
While Clark's argument seems like a reasonable proposition, it is arguable that the analogy between a delivery truck and an instructional medium such as a computer is perhaps not quite appropriate. While a delivery truck may have no impact on what

it carries and therefore have no

influence on the nutrition of the consumers of its product, an instructional technology such as a computer will and does influence how it renders the learning content to the learner, and in that regard it

does and can influence the learning process. That said, it is arguable that a delivery truck can have no influence on the nutrition of the consumers of its products. Surely the nature of the truck has some impact on the condition of the groceries it might be carrying. For example, if the vehicle is not secure enough or not well refrigerated, the products can lose value and quality. If that happens then it is possible that the nutrition of the consumers of these products will be impacted, and that seems to be at the heart of Kozma's counterargument.

Kozma (1991) has continued to argue that in the case of learning, the influence of the delivery medium and the way the learning experience is rendered to the learner is not easily distinguishable. Therefore, it is not possible to suggest with any level of certainty that the delivery technology cannot impact learning. To do so would be to suggest that it is possible to



separate the unique effects on learning of the delivery technology and how the learning experience is rendered to the learner. This is not possible to determine, and while this is the case, the reasonable position to assume is that the delivery technology is likely to have an impact on learning, just as a temperature-controlled transport vehicle may impact one's nutrition, eventually and indirectly.

If we were to push Kozma's line of thought a little bit further along, we would be getting close to suggesting that not only is it impossible to provide indisputable evidence on the unique contributions to learning of the delivery medium from those of the instructional strategy employed, but that there might be instances when the medium is so powerful that it is the message (see McLuhan, 1964). In proposing this McLuhan seemed to have been suggesting that there are situations where the medium is manifested so powerfully that it becomes more influential than the message itself. Instances of this occurring are prevalent in the case of popular television and, more recently, the Internet.

The television and the Internet are very powerful media. Not only do they have the power and the potential to significantly influence our perceptions and our behaviours, they have the capability to influence the quality of the content that they carry. Take for instance our views on politics, global warming or the economy. For most of us, our knowledge in relation to these subjects is based on what we hear in the news bulletins on the public channels, and we form our views and opinions and act upon them based on this often rather biased and incomplete picture of the state of affairs. The influence of the Internet is

even more pervasive and precarious. Unlike television, what goes on the Internet is quite often uncensored. The Internet has the potential to place a great deal of resources within easy reach of us and as such they can be very empowering and disturbing as well.

### The affordances of technology

What are the critical affordances of the learning prefixes, such as the "e" in e-learning, the "m" in m-learning and the "d" in distance learning? What do electronic, mobile and distance learning technologies afford which makes the nature of learning different, and perhaps more powerful than it would be without them? Does the delivery medium add any particular value to learning? These are perennial questions and which continue to attract much controversy. A pathway for meaningfully exploring these questions is to examine the affordances of various delivery technologies and explore the possibilities they might offer in the way in which information is captured and rendered, and how learners are able to interact with that information and the attributes of a medium (see also Naidu, 2008).

The concept of affordance is widely attributed to James Gibson who coined the term to refer to the possibilities, objects and tools the environment afford or offer (see Gibson, 1977). Take for instance, a pathway in a dense forest or a bench by the roadside or under a tree. The pathway in the forest affords/offers one the opportunity to walk along it, just as the roadside bench affords/offers the possibility of sitting or lying down on it. It follows also that the condition of the pathway in the forest will affect the quality of one's journey on it, just as the condition of the roadside bench will influence one's comfort level on the bench.

**It is not possible to suggest with any level of certainty that the delivery technology cannot impact learning. To do so would be to suggest that it is possible to separate the unique effects on learning of the delivery technology and how the learning experience is rendered**

## STRIDE HANDBOOK 8

It is therefore possible to argue from these analogies that a physical artifact or object, depending upon its attributes, can and does influence how it gets used and the impacts it might have on its user.

As such it would be reasonable to suggest that various electronic, mobile and distance learning technologies, depending on their attributes, have the potential to influence how they get used and the impacts they might have on their users. Attributes of interest here are the possibilities for information storage, retrieval, communication, collaboration, engagement and interaction (see also Naidu, 2008).

### Information storage and retrieval

ICTs, unlike the conventional printed material, have the potential to capture, store and deliver information to learners and teachers in a variety of formats. These include the integration of text with audio, video and animation. Information and data delivered via ICTs in a variety of formats, such as text with sound, animation, and video offer

**As such it would be reasonable to suggest that various electronic, mobile and distance learning technologies, depending on their attributes, have the potential to influence how they get used and the impacts they might have on their users**

opportunities for a range of user preferences and approaches to study. Various types of media enhancements also have the potential to influence the appeal and consumption of different types of content. For instance, physical processes such as those in the natural sciences benefit from enhanced presentation with the moving image and with sound.

Not only do ICTs offer greater capabilities and a wider range of possibilities for the presentation of content they have greater storage capacity as well. Much larger amounts of information and various types of content can be stored using contemporary ICTs, such as is possible with Web 1.0 technology than was possible using conventional media (see Greenhow, Robelia, & Hughes, 2009). This information can be easily accessed and more readily updated, which is useful in maintaining its currency.

### Communication and collaboration

Another unique feature of contemporary ICTs is their ability to support both synchronous and asynchronous

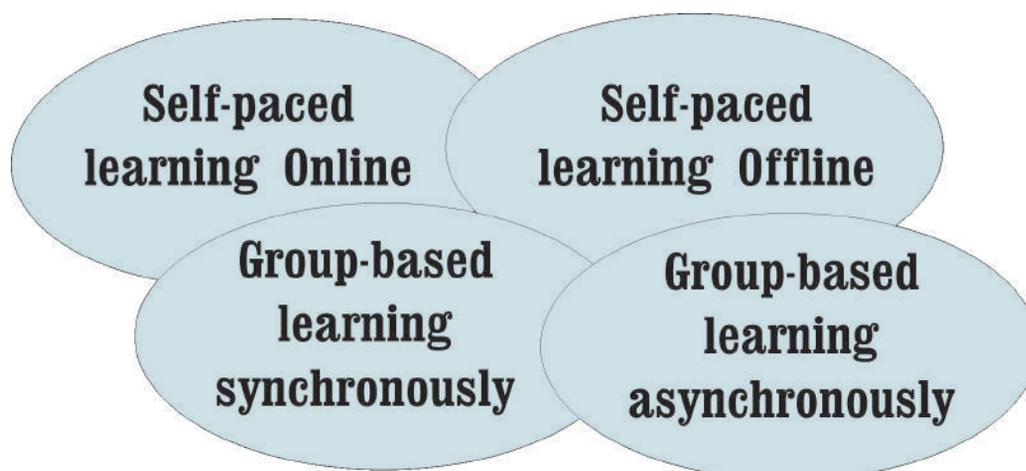


Figure 1.1. Modes of engagement and interaction

communication. This is especially critical for distance learners who are separated in time and place from their teachers, tutors and educational organisations. But opportunities for communication and collaboration are not uniquely important for distance learners alone. Full-time students in campus-based educational settings also appreciate the possibilities that these attributes of ICTs afford.

Teachers also find these and the read-and-write attributes of Web 2.0 technologies increasingly valuable in supporting their teaching strategies such as collaborative group work activities among their students (see Greenhow, Robelia, & Hughes, 2009). There is also now a substantial body of experience and literature which points to the role of online synchronous and asynchronous communication tools for building and promoting learning communities and communities of practice (see Wenger, 1998, 2007; Wenger, McDermott, & Snyder, 2002).

### Engagement and interaction

These attributes of ICTs can be organised and harnessed in a variety of ways and combinations to support learning and teaching formats. They include self-paced learning online and offline, and group-based learning synchronously and asynchronously (see Naidu, 2008). These various modes of engagement and interaction oftentimes will also overlap and co-exist (see Figure 1.1). Many of these learning and teaching opportunities are simply not possible in conventional campus-based learning arrangements, with large numbers and in distributed or distance education settings.

Self-paced learning off line is possible

with the help of CDs and DVDs, PDAs, and laptop computers which enable learners to readily access and use large amounts of information and rich data at their own time, place and pace, a lot more than what is possible via a printed resource.

Self-paced learning online is possible with the help of a range of computer-mediated communication technologies and networked resources such as online databases and of course the Internet and Web 1.0 technology. These technologies allow users to engage and interact with subject matter content in a variety of ways and also at a pace that is convenient for individuals.

The dynamics of learning are altered considerably when learners are able to work in groups collaboratively. A wide range of technologies is becoming increasingly available to support group-based collaborative learning synchronously as well as asynchronously. Group-based learning in real time is possible with a range of audio, videoconferencing, and audio-graphic technologies, and i-labs which facilitate remote control of laboratories over the Internet. Asynchronous group-based learning is possible through a plethora of online learning environments, discussion forums and Web 2.0 technologies which enable learners to work together from a place and time, and at a pace that is convenient for them (see Greenhow, Robelia, & Hughes, 2009).

### Strategies for optimising technology affordances

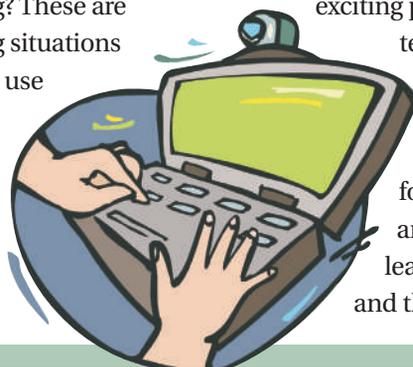
Effective, efficient and engaging technology-enhanced learning environments make optimal use of the affordances of ICTs in the learning and

**The dynamics of learning are altered considerably when learners are able to work in groups collaboratively. A wide range of technologies is becoming increasingly available to support group-based collaborative learning synchronously as well as asynchronously**

## STRIDE HANDBOOK 8

teaching process. Learning designs and experiences do not have to adopt the use of ICTs to be effective, efficient and engaging. However, learning designs that carefully integrate ICTs can significantly improve their impacts on learners and their learning. Prominent among these learning designs are scenario-based learning (see Naidu, Menon, Gunawardena, Lekamge, & Karunanayaka, 2007); problem-based learning (see Barrows, 1994; Naidu & Oliver, 1996); adventure learning (see Doering, 2006; Miller, 2008); and computer supported collaborative learning (see Koschmann, 1996; McConnell, 2000; Stahl, 2002).

What is careful integration of ICTs in learning and teaching? These are learning and teaching situations where the choice and use of a technology is closely aligned with the intent of the learning and teaching transaction. The



place to start this process is with clearly identifying the learning outcome, and articulating the learning and teaching transaction. It is only when this is absolutely clear that the act of building the learning environment begins and this includes the identification of the appropriate tools and technologies and how they will be implemented and managed. This process is similar to the construction of a purpose-designed building. Nothing is begun without the identification of a need. No excavation is started; no brick is set; nor any concrete poured till the exact design of the structure is clearly developed by an architect first.

The affordances of ICTs offer many exciting possibilities for learning and teaching but they pose many challenges as well. A classic faulty example is found in the use of online discussion forums to foster collaboration and communication among the learners as well as the learners and the teachers. Educators, often

**TABLE 1.1. A framework for optimising technology affordances**

What are the key learning and teaching questions to ask?	What are the most powerful and suitable learning designs?	What are some of the appropriate technologies?
How to promote student engagement with learning?	With situated learning designs such as scenario-based learning and problem-based learning	CD/DVD, Blogs, Wikis, Mashups, Learning management systems (Sakai, Moodle, Blackboard, etc.).
How to support communication among learners?	By necessitating communication as a critical part of the learning and teaching process	Email, chat, discussion fora, and Web 2.0 tools (e.g. blogs, Wikis, podcasts).
How to promote cooperation and collaboration among learners?	By building collaborative learning tasks in the learning designs	Wikis, communal book marking, photo and video sharing, and Web 2.0 social networking tools etc.
How to design and support assessment of learning?	By building structure and guidance in the assessment task	Learning management systems (Sakai, Moodle, Blackboard, etc.), Web 2.0 technologies.
How to provide feedback to learners?	By building opportunities for feedback throughout the learning and teaching process	Learning management systems (Sakai, Moodle, Blackboard, etc.), Web 2.0 technologies.
How to support opportunities for remediation?	By building opportunities for remedial work in the learning design	Learning management systems (Sakai, Moodle, Blackboard, etc.), Web 2.0 technologies.

erroneously, believe that by making the communication channel accessible to the learners, discussion and debate among them would be raging and hot. More often than not, they are surprised to find that there is silence while they continue to call for learners to engage among themselves.

Despite all their exhortations, there is still plenty of silence. The truth is that learners are not going to talk for any reasonable length of time about anything. Their time is precious and most of them will only do what is necessary and required of them. There has to be a purpose for the discussion to ensue in any setting, let alone online, and unless that is carefully designed and orchestrated no one will be inclined to stick around there for too long (see Salmon, 2000, 2003).

But silence in text-based online discussion fora is not necessarily an indication that someone has nothing to say on a matter. In fact occasional silence in online discussion fora could be an indication that a participant may be thinking and may indeed have a lot to say on the matter soon (see Zembylas & Vrasidas, 2007). Many learners also find articulating their thoughts online a rather traumatic experience. Speakers of the native language can skim-read online posts to be able to distinguish the grain from the chaff and also scribble on for hours without much effort. But, non-native speakers of the language could agonise for hours over what is essentially noise online while straining to compose their own responses (see Chen, Bennett, & Maton, 2008).

Therefore, the key challenges we face in relation to e-learning, m-learning and distance learning is not the technology itself, but our failure to focus our energies on the critical learning and teaching questions, lack of attention

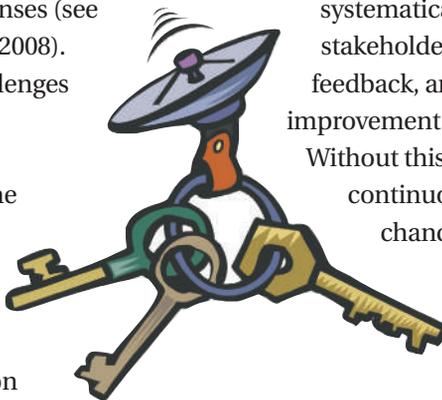
to careful design of suitable learning experiences, inappropriate selection of tools and technology, and our lack of attention to their use and implementation.

A framework for optimising these technology affordances is proposed in Table 1.1. The attraction of this framework is its approach to addressing complex learning and teaching issues and how they ought to be approached. It begins foremost by asking, what are the key learning and teaching questions we need to be asking? What are the most powerful learning designs for these questions? What are the technologies currently available to us that we can use to support these learning designs (see Dede, 2009), and finally how do we know that we are achieving our goals and answering the learning questions we set out to answer in the first place?

### Measures of effectiveness

How do we know that the ways in which we have designed the student learning experiences and the technologies that we have selected and used, are enabling us to achieve the goals we set ourselves and the learning and teaching questions that we set about to answer? Our best attempts at optimising effective, efficient and engaging use of technology affordances will be those that will have adopted a culture of continuous quality improvement. This means demonstrating a disposition towards valuing all forms of feedback, collecting meaningful feedback systemically and systematically, impressing upon stakeholders that they value feedback, and using feedback in the improvement of their practices.

Without this level of commitment to continuous quality improvement, chances are that technology affordances will remain underutilised and learning outcomes unrealised.



## STRIDE HANDBOOK 8

### Concluding remarks

This chapter set out to refocus our lenses on the possibilities and opportunities that various attributes of ICTs afford us in relation to teaching and learning. It begins with the premise that the more meaningful question to ask in relation to sound educational practice is not how we learn and with what, but how we can learn more effectively and efficiently. In order to do this, it has been important to articulate what is effective, efficient and engaging learning. Only then, is it meaningful to ask how e-learning, m-learning and distance learning and what specifically about them can be used to leverage desirable educational processes. This chapter identifies these desirable technology affordances and offers a framework for optimising these technology affordances in the achievement of effective, efficient and engaging learning.

### Acknowledgements

Some of the thoughts in this chapter draw from work by this author that has been previously explored in the following:

- Naidu, S. (2003). *E-Learning: A guidebook of principles, procedures and practices*. New Delhi, India: Commonwealth Educational Media Center for Asia (CEMCA), and the Commonwealth of Learning.
- Naidu, S. (2006a). *If we build it, they will come! Exploring the role of ICTs in curriculum design and development: The myths, miracles and affordances*. Keynote address at the 10th anniversary conference of the National Association for Distance Education and Open Learning in South Africa (NADEOSA) in Pretoria, South Africa.
- Naidu, S. (2006b). *Meaningful learning in education and development*. Paper presented at the Fourth Pan-Commonwealth Forum on Open Learning (PCF4), Ocho Rios, Jamaica. Retrieved August 16, 2009, from <http://pcf4.dec.uwi.edu/learning.php>
- Naidu, S. (2007). Instructional designs for distance education. In M.G. Moore (Ed.), *Handbook of distance education* (2nd ed.), (pp. 247–258). Mahwah, NJ: Erlbaum.
- Naidu, S. (2008a). Enabling time, pace and place independence. In J.M. Spector, M.D. Merrill, J.J.G. van Merriënboer, & M.P. Driscoll (Eds.), *Handbook of research on educational communications and technology* (3rd ed.), (pp. 259–268). New York: Erlbaum.
- Naidu, S. (2008b). *Unpacking the "e" in eLearning*. Keynote address at LearnX Asia Pacific, 2008: elearning and training solutions international conference and expo, Melbourne Exhibition and Convention Centre.
- Naidu, S., Menon, M., Gunawardena, C., Lekamge, D., & Karunanayaka, S. (2007). How can scenario-based learning engender and promote reflective practice in online and distance education. In M. Spector (Ed.), *Finding your online voice: Stories told by experienced online educators* (pp. 53–72). Mahwah, NJ: Erlbaum.

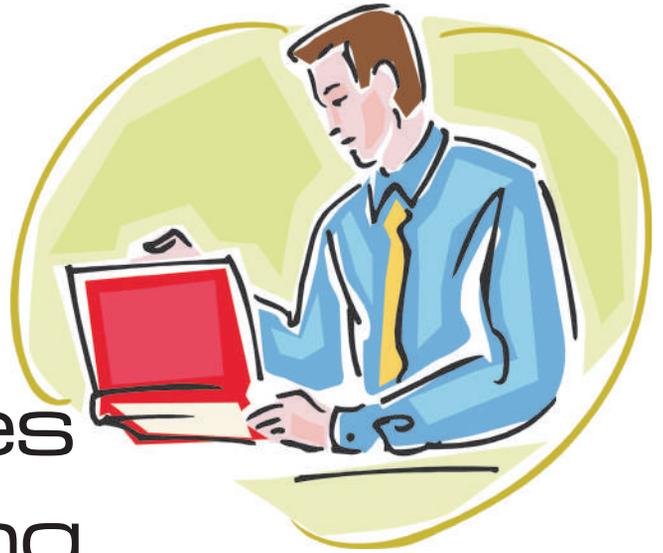
### References

- Barrows, H.S. (1994). *Problem-based learning applied to medical education*. Springfield, IL: Southern Illinois University, School of Medicine.
- Barrows, H.S., & Tamblyn, R. (1980). *Problem-based learning: An approach to medical education*. New York: Springer.
- Brown, J.S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32–42.
- Chen, R.T., Bennett, S., & Maton, K. (2008). The adaptation of Chinese international students to online flexible learning: Two case studies. *Distance Education*, 29(3), 307–323.
- Clark, R.E. (1983). Reconsidering research on learning from media. *Review of Educational Research*, 53(4), 445–460.
- Clark, R.E. (1994). Media will never influence learning. *Educational Technology Research and Development*, 53(2), 21–30.
- Cognition and Technology Group at Vanderbilt (1990). Anchored instruction and its relationship to situated cognition. *Educational Researcher*, 19(6), 2–10.
- Cognition and Technology Group at Vanderbilt (1993a). The Jasper Experiment: Using video to provide real-world problem-solving contexts. *Arithmetic Teacher*, 40, 474–478.
- Cognition and Technology Group at Vanderbilt (1993b). Designing learning environments that support thinking. In T.M. Duffy, J. Lowyck, & D.H. Jonassen (Eds.), *Designing environments for constructivist learning* (pp. 9–36). New York: Springer-Verlag.
- Dede, C. (2009). Technologies that facilitate generating knowledge and possibly wisdom. *Educational Researcher*, 38(4), 260–263.

- Doering, A. (2006). Adventure learning: Transformative hybrid online education. *Distance Education*, 27(2), 197–215.
- Gibson, J.J. (1977). The theory of affordances. In R. Shaw & J. Bransford (Eds.), *Perceiving, acting, and knowing: Toward an ecological psychology* (pp. 67–82). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Glaserfeld, E. von (1983). Learning as a constructive activity. In J.C. Bergeron & N. Herscovics (Eds.), *Proceedings of the 5th Annual Meeting of the North American Group of Psychology in Mathematics Education* (Vol. 1, pp. 41–101). Montreal: PME-NA.
- Greenhow, C., Robelia, B., & Hughes, J.E. (2009). Web 2.0 and classroom research: What path should we take now? *Educational Researcher*, 38(4), 246–259.
- Holmberg, B. (1986). *Growth and structure of distance education*. Beckenham, UK: Croom Helm.
- Koschmann, T.D. (Ed.). (1996). *CSCL: Theory and practice of an emerging paradigm*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Kozma, R.B. (1991). Learning with media. *Review of Educational Research*, 61(2), 179–211.
- Larreamendy-Joerns, J., & Leinhardt, G. (2006). Going the distance with online education. *Review of Educational Research*, 76(4), 567–605.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.
- Lewis, R. (1986). What is open learning?, *Open Learning*, 1(2), 5–10.
- McConnell, D. (2000). *Implementing computer supported cooperative learning*. London: Kogan Page.
- McLuhan, M. (1964). *Understanding media: The extensions of man*. New York: McGraw-Hill.
- Miller, C. (2008). Curriculum at forty below: A phenomenological inquiry of an educator/explorer's experience with adventure learning in the Arctic. *Distance Education*, 29(3), 253–267.
- Naidu, S. (2008). Enabling time, pace and place independence. In J.M. Spector, M.D. Merrill, J.J.G. van Merriënboer, & M.P. Driscoll (Eds.), *Handbook of research on educational communications and technology* (3rd ed.), (pp. 259–268). New York: Erlbaum.
- Naidu, S., Menon, M., Gunawardena, C., Lekamge, D., & Karunanayaka, S. (2007). How scenario-based learning can engender reflective practice in online and distance education. In M. Spector (Ed.), *Finding your online voice: Stories told by experienced online educators* (pp. 53–72). Mahwah, NJ: Lawrence Erlbaum.
- Naidu, S., & Oliver, M. (1996). Computer supported collaborative problem-based learning (CSC-PBL): An instructional design architecture for virtual learning in nursing education. *Journal of Distance Education*, XI(2), 1–22.
- Naidu, S., & Oliver, M. (1999). Critical incident-based computer supported collaborative learning. *Instructional Science: An International Journal of Learning and Cognition*, 27(5), 329–354.
- Paine, N. (Ed.). (1989). *Open learning in transition: An agenda for action*. London: Kogan Page.
- Rumble, G. (1989). 'Open learning', 'distance learning', and the misuse of language. *Open Learning*, 4(2), 28–36.
- Salmon, G. (2000). *E-moderating: The key to teaching and learning on-line*. London: Kogan Page.
- Salmon, G. (2003). *E-tivities: The key to active online learning*. London: RoutledgeFalmer, Taylor and Francis Group.
- Schank, R. (1997). *Virtual learning: A revolutionary approach to building a highly skilled workforce*. New York: McGraw-Hill.
- Schank, R., Fano, A., Jona, M., & Bell, B. (1994). The design of goal-based scenarios. *The Journal of the Learning Sciences*, 3(4), 305–345.
- Schank, R.C. (1990). *Tell me a story*. Evanston, IL: Northwestern University Press.
- Spector, M., & Merrill, D.M. (2008). Editorial. *Distance Education*, 29(2), 123–126.
- Stahl, G. (2002). Contributions to a theoretical framework for CSCL. In Proceedings of CSCL 2002. *Computer Support for Collaborative Learning: Foundations for a CSCL Community* (pp. 62–71). Retrieved August 28, 2009, from <http://GerryStahl.net/cscl/papers/ch15.pdf>
- Vygotsky, L. (1978). *Mind in society*. London: Harvard University Press.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge, MA: Cambridge University Press.
- Wenger, E. (2007). Communities of practice. A brief introduction. In *Communities of practice*. Retrieved January 14, 2009, from <http://www.ewenger.com/theory/>
- Wenger, E., McDermott, R., & Snyder, W. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Boston: Harvard Business School Press.
- Wilson, B.G. (Ed.). (1996). *Constructivist learning environments: Case studies in instructional design*. Englewood Cliffs, NJ: Educational Technology Publications.
- Zembylas, M., & Vrasidas, C. (2007). Listening for silence in text-based, online encounters. *Distance Education*, 28(1), 5–24.

## CHAPTER 2

# Managerial Perspectives on e-Learning



BY TONY BATES

## Introduction

In this chapter, I will argue that e-learning has failed to meet expectations in post-secondary education, and the reason for this lies squarely with the senior management of post-secondary educational institutions, and to some extent with our political leaders. There are understandable reasons for this failure. However, this failure has led to slower than necessary economic development, a loss of cost-effectiveness in post-secondary education, and considerable frustration for students, faculty and academic management itself.

I will first of all analyse the reasons for the disappointment with e-learning, then look at how e-learning could and should be better managed, and finally I will examine some of the ways in which the education system might change as a result.

## Definitions of e-learning

Different organisations have different definitions of e-learning. It is a broad term, encompassing a wide variety of electronic technologies used for educational purposes, and a wide variety of educational formats and designs (see Bates and Poole, 2005; OECD, 2005; and Allen and Seaman,

2008, for different categories of e-learning). I need to clearly define different forms of e-learning, as the differences are critical to my argument.

**Fully online learning:** This is a form of distance learning delivered to individuals with access to the Internet, either at home, work or through an access centre. Although courses may have a set start time and set due dates for assignments, students can otherwise access and participate in courses at times and places of their own choosing.

**Blended learning:** Blended learning comes in two main categories:

- **Enhancing the traditional classroom model:** Many instructors use the term 'blended learning' to refer to any use of technology that adds to the classroom experience. The Sloan Foundation (Allen and Seaman, 2008) and the OECD (2005) both make the distinction between web-supplemented and web-dependent use of technology, both of which do not fundamentally change the classroom model.
- **Hybrid learning:** This is where face-to-face teaching time is reduced, but not eliminated, to allow students more time for online study. This model comes in a

number of formats. Examples are:

- reduced weekly class time, e.g. three class sessions a week are reduced to one, with the rest of the studying being done online.
- another model, used by Royal Roads University (Canada), 'sandwiches' face-to-face time at summer school between two periods of online study before and after summer school.
- a third model requires students to spend ten weeks studying online, with the last three weeks spent at college receiving hands-on training. Instructors at Vancouver Community College have successfully used this model for delivering trades training to unqualified tradesmen already working.

### Is e-learning failing in post-secondary education?

More and more people are expressing disappointment in e-learning, for several reasons:

- *Lack of return on investment:* David White, Director, EU Commission DG Education and Culture, Lifelong Learning, in his keynote presentation Innovative Learning for Europe at the 2008 EDEN conference in Lisbon, expressed his concern about the lack of return on investment. He pointed out that national governments and the European Commission have invested over a billion dollars in ICTs for education, but have seen little change or improvement as a result.
- *Lack of innovation:* The other, related, issue is the lack of innovation. The World Economic Forum's Global Advisory Committee on Technology and Education at its meeting in Dubai (November, 2008) commented:

**'Education is in a state of transition from a traditional model to one where technology plays an integral role. However, technology has not yet transformed education'**

'Education is in a state of transition from a traditional model to one where technology plays an integral role. However, technology has not yet transformed education'.

- *Lack of systemic change:* In particular, although there are many innovative 'projects', often dependent on the work of inspired and hard-working individual instructors, and although many institutions have put in place learning technology and faculty development initiatives, there appears to be little systemic change (see Sangra, 2008). As the Canadian Council on Learning (CCL)

puts it: 'The growth of e-learning has not significantly altered the way in which Canada's institutions organise or deliver learning.' Nor is this peculiar to Canada. Thus, while plenty of evidence (e.g. Allen and Seaman, 2008; Instructional Technology Council, 2008) can be provided to show that computers and the Internet are now widely used by a majority of faculty and students in post-secondary

education, there is also at the same time widespread dissatisfaction with the results.

- *But still better?* It should be noted though that statements of dissatisfaction are often made without any conclusive evidence. In fact, what evidence there is suggests that e-learning in fact is more effective than face-to-face teaching. A major recent study by the U.S. Department of Education (Means et al., 2009) has found that students generally do better studying online than in face-to-face classes. The main reason given is that students in online learning spend more time on task than students in face-to-face learning, i.e. they have to work harder.

## STRIDE HANDBOOK 8

However, perception is as important as reality in education, especially when investment in technology is dependent on public funding and support.

### Expectations for e-learning

So the first thing to examine is whether expectations about e-learning – defined here as the application of information and communications technologies (ICTs), and in particular computers and the Internet, for teaching and learning – are realistic.

This raises further questions:

- why are we using ICTs for teaching and learning?
- what are we trying to achieve, and
- how will we know that we have achieved what we set out to achieve?

### Setting goals for e-learning

First, it should be appreciated that there are many different stakeholders in post-secondary education: learners, instructors, educational support staff such as instructional and web designers, IT support staff, senior managers, government and employers. You can probably think of others, as well, e.g. parents of students.

Each set of stakeholders brings different expectations about the role and use of technology in teaching and learning, and these different stakeholders will have different values that will influence their evaluation of e-learning's effectiveness. Nevertheless, it should be possible to collect together the different rationales for e-learning, and examine the extent to which expectations have or have not been met.

And here is the first significant failure of management. Too often institutional managements have launched into e-learning without a clear understanding of

what they are hoping to achieve. Therefore a first step for any senior decision-maker considering investment in e-learning should be to define their expectations and goals, even accepting that these may legitimately change as more experience and knowledge is gained about the potential and limitations of using technology for teaching and learning.

So below I have collected together some of the more common rationales or expectations for e-

learning that I have encountered, both in the literature and in discussion with different stakeholder groups. I will then examine each of these separately,

trying in particular to show how success or failure in achieving these goals could be measured.

### Possible goals for e-learning

1. To increase access to learning opportunities/ increase flexibility for students
2. To enhance the general quality of teaching/ learning.
3. To develop the skills and competencies needed in the 21st century, and in particular to ensure that learners have the digital literacy skills required in their discipline, profession or career
4. To meet the learning styles/needs of millennial students
5. To improve the cost-effectiveness of the post-secondary education system

**Perception is as important as reality in education, especially when investment in technology is dependent on public funding and support**



It can be seen that these goals can be expressed in different ways and will appeal differently to different stakeholder groups. Some may be seen as sub-goals of others. To some extent, in the long run, what really matters is that whoever is using e-learning is clear as to their reasons why and what they are hoping to achieve as a result.

I will examine each of these goals in more detail.

### Has e-learning increased access to learning opportunities?

Of all the goals for e-learning, this appears initially to be the most successful, in terms of increased enrolments, but closer examination of the data suggests that this due more to conventional students opting for online learning (increased flexibility), rather than online learning reaching new markets and thus increasing access.

#### Distance education

There are several aspects to this goal of increasing access and flexibility. The first is simply through online distance education. This is one area where we do have some reasonably good data (at least from the USA). Systematic, large-scale surveys conducted by the Sloan Foundation (e.g. Allen and Seaman, 2008) and also by the Instructional Technology Council indicate that growth in enrolments in fully online learning in post-secondary institutions in North America has been averaging approximately 12-14% per annum over the last 10 years, compared with 2-5% for enrolments in solely campus-based teaching. These figures were almost identical to the growth in online distance learning at the University of British Columbia between 1995 and 2003, when I

was Director of Distance Education and Technology.

This growth in public post-secondary online education has come from a number of sources. It should be noted that since 1995, there have been almost no dedicated online distance teaching universities created in the public sector (the last major one was the Open University of Catalonia). The Open University of Portugal moved all its courses from being print and broadcast-based to online in two years (2006-2007), but this did not lead to a major increase in enrolments (and its enrolments from

Angola and Mozambique have probably decreased). Other publicly funded fully distance universities, such as Athabasca University in Canada, the Open University in the UK, and the Open University in the Netherlands, have been moving online at different speeds, but none has completely converted to online delivery.

The growth in online learning instead has come from conventional, campus-based institutions moving a proportion of their courses and programs to fully online delivery, often as an option to the regular campus-based courses. Many two-year colleges in the USA for instance now require campus-based students to take at least one fully online course. Cerro Coso Community College, a traditionally campus-based two-year college in California, now has more than 50% of its enrolments in distance courses (Jaschik, 2009). Thus fully online courses have demonstrated that even conventional, campus-based students appreciate the flexibility and access that fully online teaching provides. It should be noted though that these students still take a large proportion of their program through conventional campus-based teaching.

**Fully online learning in post-secondary institutions in North America has been averaging approximately 12-14% per annum over the last 10 years, compared with 2-5% for enrolments in solely campus-based teaching**

## STRIDE HANDBOOK 8

Ironically, it is concern about access that has often inhibited open universities from moving more quickly into online learning, fearing that students will not have access to computers and the Internet. There are certainly important differences between relatively rich countries with advanced telecommunications infrastructures and those where few homes have a computer and Internet access. However, the strategic mistake here is 'either/or' thinking, seeing ICTs as a full replacement for print-based distance education. More innovative approaches, as seen in some institutions such as UNISA in South Africa, are beginning to combine access to technology through local learning centres and mobile technologies, with independent print study.

to a print-based distance course. However, because of concerns about student access to the Internet, this is often an optional component, and not necessary for successful completion of the course.

Analysis of data from applications of Learning Management Systems such as Blackboard suggests a rapid expansion in the use of the web to supplement classroom teaching. Almost all North American universities are now using an LMS, and LMSs are now being used in over 50 per cent of classes on average in US post-secondary educational institutions (Agee et al., 2009). The evidence (or rather lack of it) suggests though that hybrid models that lead to reduced classroom time are still comparatively rare.

### Blended learning

It is much harder to find data on the effect of blended learning on enrolments, access or flexibility, since system-wide data is not usually available and the format of blended learning can vary considerably.

One example is Vancouver Community College's Motor Vehicle Repair apprenticeship program, where students do two-thirds of a course online, and the last third – involving hands-on skills – on campus, focusing on the specific skills that the student is lacking. Some students arrive already with the skills acquired on the job, and therefore they are just tested and accredited. Other students may need the whole three weeks to reach mastery. This is a good example of the increased flexibility that e-learning can provide. Australia is another country that is extensively offering flexible delivery of trades training through a mix of hands-on and online learning.

Open universities increasingly claim to offer blended learning also, by adding an online component (such as a discussion forum or a course web site) as a supplement



### Open educational resources

There is also another way to look at increased access, flexibility and

learning opportunities. The growth of open educational resources provides opportunities for potential learners to access knowledge that would otherwise be difficult or impossible to access any other way. Increasingly, institutions and organisations are making available over the Internet high quality educational materials at no cost.

For example, Google Book Search is attempting to collect all the world's published books and make them available digitally, for free, over the Internet. Massachusetts Institute of Technology, the U.K. Open University and Rice University's *Connexions* are offering digital recordings of lectures, online teaching modules, and collections of video lectures, animations and simulations for free downloading online. Intellectual property management, and recognition of instructors' contribution to content creation, has been managed through co-operative copyright

management sites such as the Creative Commons <<http://creativecommons.org/>>, which allow instructors to make available content with some protection against improper or commercial use.

There is considerable interest in Africa in particular in open educational resources. OER Africa has been established in the belief that Open Educational Resources (OER) have a tremendously powerful positive role to play in developing and capacitating higher education systems and institutions across Africa. The project has been set up to ensure that the power of OER is harnessed by Africans for Africans, through the building of collaborative networks across the continent (Ngugi and Butcher, 2009).

It should be noted that open educational resources are not free courses or programs, but materials that can be used individually by instructors or students, or incorporated into other educational programs. Faculty are still needed to guide students to appropriate content, help define learning outcomes, assess student performance, and provide help and support to students.

The move to more open content has several implications. Teachers and learners now have an increasing range of quality-assured learning materials that they can access, free of charge, for educational purposes. Teachers no longer need to create all their own material online; learners are no longer restricted to the content and curriculum provided by a college. Thus one can imagine an "open content" approach to a subject, where the instructor is a guide, providing goals and criteria for assessment, but where the students track down, assess and organise appropriate learning

materials. The value of free access to high quality learning materials for countries that have a severe shortage of top quality subject experts is obvious. However, considerable teaching skill is still needed to provide an appropriate learning context for such material.

However, although there is great promise in this area, we have yet to see compelling evidence of success, especially in terms of providing the necessary learning support, technology infrastructure, and program design models that ensure quality, sustainability, and growth.

### Informal learning

Lastly, there is also the promise of informal learning over the Internet, through networking, interest groups, and social media, although again, hard data about numbers, satisfaction and learning gains are very difficult to find. In the meantime, Stephen Downes' blog is the best source of information on this topic.

Despite the lack of systematic, system-wide information on e-learning, there is reasonably good

evidence to suggest that e-learning is facilitating increased access to learning opportunities, both formal and informal, but mainly through fully online activities, rather than through hybrid learning.

Although there is still room for expansion in e-learning offerings to meet unmet demand for flexible delivery and lifelong learning, e-learning has enabled educational opportunities to be delivered to learners in more flexible ways. This does not necessarily mean though that e-learning has attracted new learners from disadvantaged or marginalised groups, such as aboriginals, the unemployed, or those too poor to be able to afford access to

**There is also the promise of informal learning over the Internet, through networking, interest groups, and social media, although again, hard data about numbers, satisfaction and learning gains are very difficult to find**

## STRIDE HANDBOOK 8

the Internet.

E-learning presents a particular challenge to dedicated open universities, whose market is open to erosion by these developments, since the new offerings are coming mainly from conventional, campus-based institutions. (This is not a new argument – see Rumble, 1994.)

### **Enhancing the quality of teaching and learning**

This is still by far the most prevalent use of information and communications technology in post-secondary education.

#### **The choice of wording**

The choice of the word ‘enhance’ here is deliberate. I was working at one institution on a committee trying to set down the key goals or rationale for their use of e-learning. One colleague suggested: ‘to improve the quality of teaching.’ This was rejected by other members of the committee, who argued that the quality of the teaching was already excellent – technology would enhance it, but not improve it.

For me, this is the core strategic issue around e-learning. Underlying this issue is a much more fundamental question. Does the traditional system of teaching in higher education give value for money and produce the kind of learning that students will need in the 21st century? Many working in higher education have great confidence in the current system of teaching, despite complaints about large classes, unmotivated students, and the amount of research time ‘lost’ to teaching activities. For those with this view of teaching in higher education, technology is a useful ‘add-on’, but does not change the basic system of

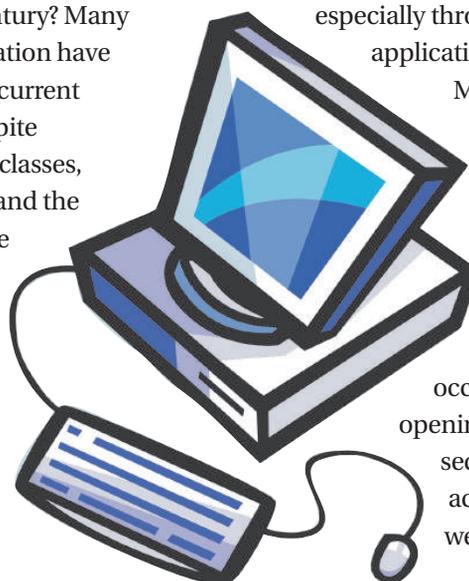
classroom teaching, based on full-time attendance, regular semesters of standard length, and cohorts of students learning in the same place at the same time. The answer to the issue of quality, by those who claim the system is not working as well as it should, is to provide more teachers and smaller classes, thus adding even more cost. However, the cost per student in the USA in particular increases each year, while at the same time politicians, students, and increasingly employers complain about the quality and lack of competitiveness in the American work force.

But can the high investment in technology really be justified if it is merely added on as an enhancement to what we already do? For instance, can the investment of US\$6,000 a classroom to record and distribute digital recordings of lectures be justified in terms of better learning? All we are doing is adding cost without any measurable benefits.

### **The quality of teaching and learning**

This is the big question. Is the quality of teaching in our post-secondary institutions already of high quality and thus merely needs to be enhanced with technology (the icing on the cake), or is there major room for improvement in how we teach, especially through the intelligent application of new technologies?

My position on this is clear. Universities and colleges follow a form of teaching that is largely historical in origin, and which has not accommodated well to the major shift that has occurred as a result of opening up access to post-secondary education. It has accommodated even less well to the opportunities



(or affordances) that new technology offers.

In support of the first point, universities in particular had an excellent teaching model for an elite system of higher education, when only a few students attended, and when the resources were more than adequate for teaching in the old way - small classes, and extensive individual and small group contact between students and research professors. This has all gone now, except at graduate level in a few elite institutions. Many professors pine for the old days, but these have gone. I believe it was the right thing to do to expand access, but we have not changed the teaching model to accommodate to a different environment. We have just added technology to the old model.

Nor should open universities be complacent about this. It is true, they have changed the traditional teaching model, in some cases very successfully. They have developed a model though based on a large-scale application of industrial methods of teaching, using the broadcast (one to many) technologies of print, and to a lesser extent television and radio, to obtain large economies of scale (see Daniel, 1998). This model worked well in countries with very low enrolments in higher education, with mainly industrial and agricultural industries. This model though is not well adapted to meeting the needs of the emerging knowledge-based economy, which is becoming equally important in many developing countries (especially India), for reasons that will be addressed in the next section.

So what is needed now are new models that build on the strengths and opportunities that the newer, more interactive and learner controlled technologies provide, and, incidentally,

teaching models that build on the tremendous research advances made over the last 50 years in understanding how students learn, and how best to teach. This is the strategic challenge for senior management: a radical reform of teaching and learning, to meet the needs of today and tomorrow. In this radical reform, technology will need to be a critical component.

Using information and communications technology to enhance learning (either in face-to-face or distance courses) merely increases costs without any measurable benefits. It does not address the need to change a teaching model that poorly serves mass higher education or students in a knowledge-based economy.

**Many commentators have discussed the difference between learning outcomes suitable for industrially-based economies and those suitable for knowledge-based economies**

### **e-Learning and 21st century skills and competences**

Many commentators have discussed the difference between learning outcomes suitable for industrially-based economies and those suitable for knowledge-based economies (see for instance, Gilbert, 2005; Conference Board of Canada, 1991). The Conference Board of Canada's 1991 list has stood the test of time. Their competences include:

- good communications skills (reading, writing, speaking, listening)
- ability to learn independently
- social skills (ethics, positive attitude, responsibility)
- teamwork skills, collaborative learning, networking
- ability to adapt to changing circumstances
- thinking skills (problem-solving; critical, logical, numerical skills)
- knowledge navigation
- entrepreneurship (taking initiative, seeing opportunities)

## STRIDE HANDBOOK 8

- digital literacy.

These skills can be classified as being 'process-oriented' rather than 'subject-oriented'. However it would be a mistake to see these skills as being independent of the subject or topic domains in which they need to be used. For instance, problem-solving in engineering requires knowledge of physics, maths and structural qualities of materials, for instance, whereas problem-solving in medicine requires knowledge of other content areas, such as anatomy, physiology, etc. (There is substantial research that shows that skills do not automatically transfer from one content domain to another).

The important issue here for education is that skills need to be embedded within a subject or knowledge domain. Thus there are implications for setting curricula (what is to be taught), teaching methodology (how it is taught or learned), and assessment (what is examined). If any one of these areas is not adequately addressed in terms of skills and competences, then teaching is likely to fail in terms of meeting 21st century learning goals.

### e-learning and digital literacy competences

Where does e-learning fit into this? One of the core competences now required in nearly all subject domains, and more specifically in different occupations and professions, is 'embedded' digital literacy, by which I mean the ability to use information and communications technologies in ways that are specific to a particular knowledge or occupational domain.

In other words, information technology

is no longer just a useful tool that supports university and college administration and to a lesser extent teaching and learning; rather it is now an integral and essential component of almost all core higher education activities, and as such needs to be used, managed and organised accordingly.

Because digital technology is now so pervasive, and affects the creation, storage, access, analysis and dissemination of knowledge, all areas of human activity are increasingly being touched by it. Academic knowledge is no different. To be a scholar now means knowing how to find, analyse, organise and apply digital information.

Studying without the use of technology is increasingly like learning to dive without water. This is not an argument for teaching generic computer literacy skills, such as how to keyboard or use a word-processor, but for using computers for digital imaging in medicine, for graphical information systems in geology, for using wikis to teach writing skills, for knowing what databases hold information relevant to solving a particular problem.

Thus e-learning is essential for developing these skills.

Without using ICTs in teaching

and learning, it will not be possible to develop core digital literacy within a particular subject domain.

### The implications for assessment

To facilitate and improve the core skills and competences needed in the 21st century we need to shift focus, especially at the undergraduate level, from memorisation to thinking skills. If we are setting exams (or other forms of assessment) that do not explicitly assess problem-solving, critical thinking, digital literacy and

**Information technology is no longer just a useful tool that supports university and college administration and to a lesser extent teaching and learning; rather it is now an integral and essential component of almost all core higher education activities**

communications skills, then students will not focus on developing these skills.

And as well as assessing such skills, we also need to design our teaching to give students the opportunity to develop and practice such skills. This means embedding the use of technology within project work, problem-solving, and other activities that require analytical and critical thinking. It means getting students to seek, analyse, evaluate, and apply information and knowledge within their specific subject domains. It means encouraging students to choose topics, seek alternative routes to learning, and to create digital multimedia versions of their work that demonstrate the required knowledge and skills.

On the instructor's side, it means being clear about what knowledge and skills are essential within the subject domain, what activities can best facilitate the development of the desired knowledge and skills, and providing opportunities and guidance on how to find the information required and develop and practice the skills needed. Activities are not so much focused around technology, but technology will often be the means by which students access and apply knowledge.

Using technology for teaching is a necessary but not sufficient requirement for developing the knowledge and skills needed in the 21st century. It has to be accompanied by curriculum reform (the content), by changes in teaching methods that facilitate the development of skills in a particular subject domain, and by changes in assessment. Obviously many instructors are successfully working in this way, but there is still a great deal of resistance to such radical change.

The successful integration of information

and communications technologies within a skills-based curriculum will not come about quickly or easily in academia, especially if it is left to faculty alone. Leadership, vision, resource re-allocation, and the deliberate management of change are also necessary, providing a formidable challenge to senior managers.

### **Meeting the learning styles/needs of millennial students**

Millennials is a term used for those born between the mid 1970s to early 1990s inclusive. Other terms used for people born in these years are Generation Y or digital natives. The term is used to describe learners who have grown up with technology such as computers and the Internet all through their life. They are assumed to be technology-savvy, are able to multi-task, have developed specific skills such as video games playing, and are sometimes described as having a sense of entitlement ('it's all about me'), resulting from being the children of 'boomers'.

The argument made by writers such as Prensky (2001) and Oblinger and Oblinger (2006) is that education needs to be adapted to meet the needs of these learners. Millennials need to be actively engaged, need to be motivated and interested to learn, and above all need to be immersed in a technological environment for learning.

### **All students are important**

Although the argument that students entering post-secondary education now are qualitatively different from previous generations of students – some commentators go so far as to argue that their brains are 'wired' differently – has some merit, one needs to be careful in

**Using technology for teaching is a necessary but not sufficient requirement for developing the knowledge and skills needed in the 21st century**

## STRIDE HANDBOOK 8

interpreting this argument in education. Research has shown that skills developed in one context (e.g. playing games) do not necessarily transfer to other contexts (e.g. problem-solving in business). In particular, students' use of the Internet for social and personal purposes does not necessarily prepare them adequately for academic applications of the Internet, such as searching for reliable sources of information (CIBER, 2008).

Also, there is a danger in stereotyping. Not all 'millennials' behave the same way or have a total immersion in technology. Nor are all students these days millennials. An increasing number of students are 'pre-millennial', being older and returning to study or entering post-secondary education later in life. Lastly, there are some inherent requirements in education – such as a disciplined approach to study, critical thinking, evidence-based argumentation, for example – that cannot or should not be abandoned because they do not fit a particular student's preferred learning style.

### Accommodating to differences in learners

Nevertheless, it is important for instructors to take into account the needs of all learners they are dealing with. Young people see technology much the same way they see air and water – part of everyday life. It is natural then that they will see technology as essential tools for teaching and learning. In particular, learners need to be guided in how to use technology for developing the skills and competencies they need in a knowledge-based society.

The important issue here is that instructors need to understand how technology can be appropriately used for studying, and ensuring that teaching makes

the best use of technology possible. Some students will need more help than others in their use of technology for learning, but all students need to learn how to integrate technology successfully within their subject discipline.

### Using technology to improve the cost-effectiveness of the post-secondary education system

My vision of a good manager is someone who has vision and can bring about improvements and change within an organisation. Thus every manager should ask themselves: 'How can technology be used to improve the cost-effectiveness of my institution?'

### New visions for teaching and learning

For this to happen, new visions for teaching and learning are needed for higher education in the 21st century. There are many different ways in which to improve cost-effectiveness through the use of technology, so no single vision should dominate. However, most visions should include the following elements for a 21st century post-secondary educational institution:

- clear educational goals and measures of success
- skills development embedded within content domains/subject disciplines
- increased flexibility and access for learners
- learner empowerment and differentiation
- innovation in teaching methods
- integration of digital technologies within teaching, learning and institutional administration
- technology collaboration and sharing within, between and across institutions
- understanding of the costs of different

**Instructors need to understand how technology can be appropriately used for studying, and ensuring that teaching makes the best use of technology possible**

teaching approaches and different technologies.

Such a vision would then depend on innovation in teaching and learning with technology.

### **Innovation in teaching**

By its nature, innovation must come from within the institutions themselves if it is to 'stick' and become sustainable. But here are some of my thoughts on what innovation built on the intelligent applications of technology might look like:

### **Abolition of the semester system and the requirement for full-time attendance on campus**

Since learners can now access learning at any time and from any place, there is no need for students to study in cohorts based on a fixed time and place. Students could start and finish a course at their own pace and time. When they feel they are ready, they could apply for an examination or submission of work for assessment. This would also have the advantage for faculty to spread their research activities over the whole year, for flexibility in vacation time, and for more efficient use of physical space.

There are advantages in groups of students working to a fixed schedule, for group work, discussion forums, and possibly social interactions, but these should be guidelines or opportunities offered to students, rather than requirements.

### **Courses designed for heterogeneous groups of students**

The aim here would be to design a course that could be taken by students wishing to study full-time, and by those that would like

some campus-based learning activities, but not full-time attendance, and by those that want to access the same course fully at a distance. The learning outcomes and method of assessment would be the same for all students in the course, but their route and method of learning would differ according to their needs. (For an example, see: <http://media.elearning.ubc.ca/det/accult-T1.html>).

### **Collaborative programs**

These would be programs offered by two or more institutions working collaboratively, to share faculty and resources. For instance, a group of universities may decide to design a common first year introductory course in physics, using as much available open educational resources as appropriate. Each partner institution would 'deliver' the joint course and award its own accreditation, working to the same agreed learning outcomes and level of performance. Thus the qualification would be transferable between the institutions. This would be of particular value for

**The learning outcomes and method of assessment would be the same for all students in the course, but their route and method of learning would differ according to their needs**

partnerships between institutions in developed and developing countries.

One example of a collaborative degree program is the fully online Masters in Educational Technology offered by the University of British Columbia in Canada, and Tech de Monterrey in Mexico (<http://met.ubc.ca>).

### **New forms of assessment**

New technologies provide the opportunity for student assessment that are more authentic than paper and pen examinations, such as essays and tests. Multimedia archives such as YouTube,

## STRIDE HANDBOOK 8

Flickr or Google Video, and the increasing access to cheap digital video cameras or integrated video and audio recording in mobile phones, now enable learners to create their own digital e-portfolios of work, incorporating text, graphics, audio and video.

This means that learners can now go out and do local field work, and create digital multi-media web-based e-portfolios of their work, either individually or collaboratively (see Lorenzo and Ittelson, 2005). Learners can demonstrate what they can do and what they have learned, record their experiences, and allow others – such as potential employers – to access their work through e-portfolios.

### **New cost-recovery models for lifelong learning**

In many countries, the state provides substantial financial support, in the form of funding to universities, and grants and loans to students, etc. I am a strong supporter of publicly funded higher education, and believe that everyone who could benefit from a higher education should have the opportunity to do so.

However, especially but not exclusively in richer nations, much of the demand for higher education is coming from those who have already benefited from a state-funded higher education program, and who are now working full time, but need to keep up to date or re-qualify as their work experience changes. They have the resources and the motivation to cover their full costs of upgrading their education. In particular, they need programs that are delivered mainly online, because they have to combine work, family and study.

For reasons already discussed, faculty in most post-secondary educational

institutions are already stretched to the limit in terms of teaching time. If the new and growing lifelong learning market is to be met, new resources are needed. In other words, the tuition fees for these programs should be sufficient for the hiring of additional faculty to teach these programs. Thus these courses need a different financial model from those for undergraduates or even academically oriented graduate programs. In particular, they require a model that links the return of funds directly to the academic department providing the program (with the necessary deductions for general overheads, which should in practice be kept to a minimum). Again, UBC's Masters in Educational Technology is an example of such a model.

These are just five examples of innovative ways to use technology to increase access and flexibility, to meet the learning needs of the 21st century, and of ways to improve cost-effectiveness.

Each of these examples though illustrates the importance of leadership, strategic thinking, and an understanding of the potential of technology.

### **General educational implications of new technology developments**

Learners now have powerful tools for creating their own learning materials or for demonstrating their knowledge. Courses can be structured around individual students' interests, allowing them to seek appropriate content and resources to support the development of negotiated competencies or learning outcomes. Content is now open; learners can seek, use and apply information beyond the bounds of what a professor or teacher may dictate. Increasingly, quality educational content will become free, open and abundant. Students can create their own online personal learning environments. This

**Learners can now go out and do local field work, and create digital multi-media web-based e-portfolios of their work, either individually or collaboratively**

represents a major power shift from teachers to learners.

As information and communications technologies become increasingly essential for economic development, the challenge for open universities, especially in countries where learners have no or high cost access to the Internet, is to develop models that enable students to use technology within their studies without restricting access. This will require delivery models that combine independent study with access to mobile learning and technology-rich learning centres.

The point here is that the choice of technology and the design of the learning experience is an academic decision that will vary depending on the type of students being taught and the nature of the subject. However, perhaps the most important factor determining the successful use of technology is having a clear vision for teaching and learning, and having strategies for implementing that vision. This is the responsibility of all stakeholders, but above all, institutional leadership and support from senior management is absolutely essential if the necessary changes are to be made to enable technology to be fully exploited in serving the needs of 21st century learners.

## References

- Agee, A. S., Yang, C., & EduCause Current Issue Committee (2009). Top-Ten IT Issues, 2009, *Educause Review*, 44 (3), 45-58.
- Allen, I. E., & Seaman, J. (2008). *Staying the Course: Online Education in the United States*, 2008. Needham MA: Sloan Consortium
- Bates, A., & Poole, G. (2005). *Effective teaching with technology in higher education*. San Francisco: Jossey-Bass
- Canadian Council on Learning (2009). *The State of e-Learning in Canada*, Ottawa: Canadian Council on Learning
- CIBER (2008). *Information behaviour of the researcher of the future*. London: British Library, UCL
- Conference Board of Canada (1991). *Employability Skill Profile: The Critical Skills Required of the Canadian Workforce*, Ottawa, Ont.: Conference Board of Canada
- Daniel, J. (1996). *Mega-universities and Knowledge Media*. London/New York: Routledge
- Downes, S. (2006). Understanding Learning Networks keynote: 4th EDEN Research workshop, Castelldefels Spain (downloaded from: <http://www.downes.ca/presentation/52>)
- Gilbert, J. (2005). *Catching the Knowledge Wave: the Knowledge Society and the Future of Education* Wellington. NZ: New Zealand Council for Educational Research
- Instructional Technology Council (2008). *Tracking the Impact of e-Learning at Community Colleges*. Washington, DC: Instructional Technology Council
- Jaschik, S. (2009). The Distance Ed. Tipping Point. *Inside Higher Education*, May 26 (Accessed from the WWW at <http://www.insidehighered.com/news/2009/05/26/distance>)
- Lorenzo, G., & Ittelson, J. (2005). An Overview of Portfolios Boulder CO: EDUCAUSE (downloaded from: <http://connect.educause.edu/Library/ELI/AnOverviewofEPortfolios/39335>)
- Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2009). *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*. Washington, DC: US Department of Education
- Ngugi, C., & Butcher, N. (2009). *A Theory of Change for Open Education Resources (OER)*. OER Africa/SAIDE
- Oblinger, D., & Oblinger, J. (2005). *Educating the Net Generation*. Bolder CO: EDUCAUSE
- OECD (2005). *E-Learning in Tertiary Education: Where Do We Stand?* Paris: OECD
- Prensky, M. (2001). 'Digital natives, Digital Immigrants'. *On the Horizon*, 9 (5), 1-6. (downloaded from: <http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf>)
- Rumble, G. (1994). The competitive vulnerability of distance teaching universities: a reply, *Open Learning*, 9 (3), 47 – 49.
- Sangra, A. (2008). The Integration of Information and Communication Technologies in the University: Models, Problems and Challenges (La Integració de les TICs a la Universitat: Models, Problemes i Reptes) Unpublished Ph.D., Universitat Rovira i Virgili, Tarragona, Spain
- White, D. (2008). Innovative Learning for Europe, EDEN Annual Conference, Lisbon
- World Economic Forum (2008). *Report of the Global Advisory Committee on Technology and Education*. Dubai: World Economic Forum

## CHAPTER 3

# Designing Online Learning

BY SANJAYA MISHRA



### Introduction

The Internet has simultaneously captured the imagination and interest of the world's educators.

What drives this interest? Increasing demands for education, training and skills upgrading, a shift from a labour-intensive to a knowledge-intensive global economy, and the need for workers to earn while they learn. Online learning is the new generation in the evolutionary growth of open, flexible and distance learning.

This chapter defines online learning as an Internet or Intranet-based teaching and learning system designed for web-based delivery, without face-to-face contact between teacher and learner. This definition covers other descriptions, such as e-learning, virtual learning or web-based learning.

### Online learning technologies

The Internet, the backbone of online learning, is an interlinked network of networks that allows computers worldwide to connect to it, and to communicate or exchange data with each other. The Internet is based on Transmission Control Protocol - Internet Protocol (TCP/IP); information is routed in "packets" according to TCP/IP

specifications. The WWW works on the Internet through its own HyperText Transfer Protocol (HTTP), an interactive platform that uses the following media:

- Text, plain or formatted
- Hybrid text/graphics documents, such as Adobe Acrobat
- Colour images, still and animated or videos
- Sound
- 3-D models
- Interaction or simulation using JavaScript, VB Script, ActiveX (Ryan et al, 2000).

The WWW also supports real time, text-based chat and audio/video communication. The basic unit of the WWW is a web page, consisting of one or more of the media types above. A set of connected pages constitutes a website. Clicking on links in each page accesses other pages on a site.

Websites are hosted in a computer called a server. Individual client computers interface with the server computer through a web browser (such as Microsoft Internet Explorer or Netscape Communicator); when a specific address is typed into the address bar of the browser, the server supplies the requested web page.

### Online media creation tools

**Text:** Preparing text-based learning material is relatively easy and can be done with only computer keyboarding skills. Text-based materials are also easily accessed and understood by learners. A typical web page is prepared using HyperText Markup Language (HTML) instructions; HTML files can be created using common word processing software, such as Microsoft Word. The WWW also supports other text formats, such as Rich Text Format (.RTF) or Adobe Acrobat's Portable Document Format (.PDF), which can be embedded within HTML-coded pages.

**Graphics and images:** Graphics and images are useful to clarify or illustrate concepts in an online learning programme. Graphics and images can be created, or digitised using a scanner and imported into a computer using specific image manipulation software, such as Adobe Photoshop or Adobe Illustrator. Images are then imported into an HTML web page.

Common image formats include the Graphic Interchange Format (.GIF) and Joint Experts Photography Group (.JPEG), which use compression technology to make image file sizes smaller for quicker web display or download. Though graphics and images are useful learning tools, their preparation requires some skill and experience in using graphic design software. Graphics or images generally have a bigger file size than plain text, and take longer to download or to display on screen.

**Audio and video:** Audio and video are useful to show practical and real life activities. Hazardous and costly experiments can be captured using video for presentation on the WWW, for repeated

use. With new digital audio and video progressive download and streaming capabilities, audio and video can be transmitted directly over the Internet although transmission quality still depends on the learner's network connection and available bandwidth.

Popular audio and video file formats and software include Apple Quick Time, Windows Media Technologies and RealNetwork's Real Systems. Another emerging format is the Motion Pictures Experts Group (.MPEG), although the disadvantage of MPEG is that the whole file must be downloaded before it starts to play. If high bandwidth is available, all these technologies can deliver high quality video and sound.

**Animation and 3D-models:** Animations and 3-D models can be very powerful in teaching and learning spatial applications, but need high bandwidth to display well. The WWW animation standard is animated GIF files, although Java, Shockwave and Macromedia Flash are also used. The standard for 3-D modelling is Virtual Reality Modelling Language (VRML). A web browser needs a VRML plug-in to display 3-D models properly. Designing quality animation and 3-D models also require a high degree of skill and experience in the appropriate software.

**Though graphics and images are useful learning tools, their preparation requires some skill and experience in using graphic design software**

### Communication tools

Internet communication is either asynchronous (email, mailing lists, bulletin boards) or synchronous (text-based chat, audio chat, videoconferencing). Web-based communication for teaching and learning has been popularised by the constructivist-learning paradigm (Oliver, 2000; Hung & Nichani, 2001), which is based on collaborative learning principles.

## STRIDE HANDBOOK 8

**Electronic mail:** Users send and receive email text messages asynchronously through a programme (like Microsoft Outlook or Qualcomm's Eudora Pro) installed on the user's computer, which sends and receives information through an email server provided by the user's Internet Service Provider (ISP) or office network. However, web-based email (like Hotmail or Yahoo Mail) allows users to access their account from any computer with an Internet connection. A user can send emails to multiple recipients simultaneously, and can attach files (word-processed documents, spreadsheets, images) to each message. This facilitates collaborative group learning at a distance, but puts the onus on the learner to initiate or maintain contact.

**Mailing lists:** Mailing lists are many-to-many communication channels on the Internet, managed using specialised software such as *Listserv*, *Majordomo*, and *Listproc*. People email instructions to join or leave a list to the computer running the service. Lists can be moderated or unmoderated, and can be used to collaboratively discuss and debate education or training issues within learning communities. However, too large a group can hinder rather than help the learning process.

**Discussion boards:** Internet discussion board systems such as WebBoard, Yahoogroups or Smartgroups are similar to mailing lists, with the additional feature of everyone's messages being available on the WWW as a series of discussions. Messages are displayed online as they are received or as appended replies to the original message, allowing simultaneous coverage of many topics.

**Chat:** Internet Relay Chat (IRC) is the standard for synchronous, multi-person, text-based chat. Most IRC applications (such as MSN Messenger, ICQ or Yahoo Messenger) are

independent of the WWW, but can also be launched from a web page. The software keeps track from a central server of when you, and a list of people you specify, are online. You can text-chat or voice chat one-to-one, or in a conference. Some systems have an electronic whiteboard on which a teacher may "write" information viewable by all online chat participants, simulating a classroom situation. However, synchronous text or voice chat can create organisational problems - especially in globally offered web courses, where there are time zone issues.

### Building online learning environments

Designing online learning requires grounding in pedagogy, an understanding of the subject to be taught and of how the WWW works. Collis and Moonen (2001) identify institution, implementation, pedagogy and technology as the key components; Jolliffe, Ritter and Stevens (2001) describe an 18-step process for developing online learning. However, they emphasise "there is no magic in the actual number of steps." The following is a possible plan of approach.



### Needs analysis

Market research on the demand and need for an online course should be the starting point. The resulting report should contextualise the project, outlining its benefits or disadvantages and potential obstacles.

**Demand for online courses:** Does real demand exist? Will online delivery be cost-effective? Is it the best option currently available?

**Course credit and equivalence:** How will course credits be transferred for certification? What about the equivalence of the course with face-to-face programmes? Is it necessary to get certification from an accreditation body?

### Learner profile

This will help you understand who your potential learners are, and how you can best fulfil their learning needs.

**Hardware/software:** Do learners need to purchase special hardware or software to access the course? Most computers now ship with a web browser. If learners have to download a special plug-in from the Internet to view a particular course component, it is better to provide them with a CD-ROM of that component to save costly Internet access time.

**Internet access/bandwidth:** How accessible is the Internet for the learners, and what bandwidth or connectivity (e.g. dial-up modem, DSL, cable) is available? Low bandwidth availability has significant design and pedagogic implications. You can't prepare learning materials based on graphics, animation, sound or video because of the time and costs involved for learners to adequately view or download the materials.

**Costs:** Who will bear the cost of needed computers and Internet access? Although normally this falls to the student, the costs may be prohibitive. Is it possible for your organisation to arrange for subsidised learning, in partnership with industry or government? Can you facilitate educational loans? Is it possible for you to create learning resource centres, with computers and Internet facilities, for group learning and access?

### Organisational profile

Your organisation must be prepared to undertake an online learning project.

#### Expertise and infrastructure:

Do you have the in-house expertise to design, develop and deliver an online programme?

Do you have the infrastructure to support online courses, or will upgrading be needed? Can you affordably outsource expertise (content and technology) and infrastructure from elsewhere?

**Faculty development:** How prepared is your faculty to handle additional online courses? Will faculty be

compensated for any extra effort, and in what way? What training facilities are available for teachers to upgrade their teaching skills for the online learning environment?

### Blueprint

In addition to the needs analysis, learner and organisational profiles, the blueprint for the course should contain:

**Pedagogical features:** Online teaching and learning must meet the requirements of the subject and the needs of the target learner group. Online learning can be a supplement to face-to-face instruction, equally mixed with face-to-face instruction, or the main delivery method, instead of

**Market research on the demand and need for an online course should be the starting point. The resulting report should contextualise the project, outlining its benefits or disadvantages and potential obstacles**

## STRIDE HANDBOOK 8

TABLE 3.1. Learning events based on interaction

Learner-Content	Learner-Teacher Interaction	Learner-Learner Interaction	Interaction
One-alone Method	Web pages with graphics, animation, audio, video, quizzes, interactive check your progress, etc.		
One-to-one Method		Email, Chat, Online Diary, Tutor marked assignments	Email, Chat (both social as well as academic)
One-to-many Method		Email, Mailing list, Group Chat, Discussion board	Email, Mailing list, Group Chat, Discussion board
Many-to-many Method		Group Chat, Discussion board	Group Chat, Discussion board, Group projects, peer based evaluation, etc.

face-to-face instruction. The last category is the most challenging for educators and instructional designers. When designing online learning, it is best to consider the best practices of all learning theories (behaviourism, cognitivism, constructivism). The WWW provides opportunities to use all these.

**Media mix:** An appropriate media mix for the course, taking into account the suitability of a given media to a particular subject (such as using 3-D models for an architectural drawing), will increase the effectiveness of student learning and contribute to the successful achievement of course objectives. Media delivery options must be decided during course content planning, so that the appropriate media creation tools can be used for content development.

**Interaction:** Interaction is a major contributing factor to successful learning experiences. Table 3.1 lists different possible learning technology combinations, based

on three basic interaction modes (Moore, 1989) and on four methods of computer-mediated communication (Paulsen, 1997).

**Assessment:** Assessment and evaluation of learner performance is crucial. Although online examination brings forth a number of authenticity, security and certification issues, evaluation models should take the WWW's constructivist (student-centred) approach into account. The WWW can facilitate many evaluation systems - from computer-based (web-based) objective testing to tutor-evaluated, long answer tests or assignments - but is capable of supporting much more than the traditional, three-hour paper and pencil test. Online course developers now use alternative assessment tools such as evidence-based tests (where learners submit projects online), learning diary submission, participation in discussion forums or peer-based evaluation.

**Learner responsibilities:** The nature of online learning requires learners to be very

self-motivated. The role of the instructor is to challenge learner curiosity and help learners achieve personal learning goals. Online learning should therefore be designed according to adult learning principles, in which learners have as much responsibility as their teachers, if not more. Learners need to be informed of their role and responsibility prior to starting the course. A period of orientation may be needed, as most online learners are initially novices in the medium.

**Development strategy:** At this point in the design and development of online learning, most institutions and instructors have to decide if the course will be developed using a suite of individually available web tools, or an integrated course delivery software package.

In general, web-based applications such as email, discussion groups and chat software are not designed for educational purposes. Using them in isolation or developing an integrated educational system around them may not be effective in terms of cost, time or learning outcomes. *Integrated systems for online learning* are needed because the generic web environment does not provide:

- a standard way to organise course materials
- prior evidence of the environment's instructional effectiveness
- tools to support basic instructional activities such as course design, organisation of groups spaces and personal spaces, grading, and easy integration of multiple media files
- models to support learning strategies that involve collaborative learning, knowledge building and multiple representations of ideas

**Online learning should therefore be designed according to adult learning principles, in which learners have as much responsibility as their teachers, if not more**

and knowledge structures (Harasim, 1999).

Commercially available, integrated application software packages include facilities for every aspect of designing an online learning programme. **Learner tools** are available to learners when they log on to the system:

- Course tools:* For content presentation, displaying industry-standard, interactive web pages to learners. The pages have links for navigation, and contain all course texts, graphics and multimedia learning materials
- Collaboration tools:* For synchronous and asynchronous activities like email for one-to-one communication, discussion boards for conferencing, chat for real time clarification of doubts, whiteboards for lecture presentation and group work, or a virtual "drop box" for sharing programmes and applications
- Support tools:* Include personal learner profiles, a facility to upload files to the system (e.g. for submitting assignments), personal library, search facilities, study skills guidance, bookmark facilities (to remember where you stopped in the last session) and calendars.

**Developer tools** for the website administrator and the instructor. These seem initially more complex, but are easy to use after a short training or demonstration period:

- Administrator tools:* Allow course software to be installed on a server, provides resource monitoring and website management facilities. Assigns user identification, passwords and usage rights to

## STRIDE HANDBOOK 8

- learners. Some systems also handle online registration and fee payment
- b) *Designer tools*: Online teaching tools for the instructor. Includes facilities to prepare course plans, upload files (course content) and announcements, design assessment tools (such as quizzes) and a calendar of activities. The instructor can also design the appearance of individual web pages through choice of background colour, text font and type of images or graphics.
- c) *Learning management tools* are features to track student progress and log-ins to the website. Instructors can monitor the progress of individual learners and provide personalised feedback. Complete statistics on website use can be generated for reviewing or evaluating policies and practices. Interactive user guides and "Help" facilities for troubleshooting and systems operation are also common in almost all software packages, for both learner and developer of tools.

### Institutional preparation

Any project-related hardware or software should be installed and tested. All involved faculty and staff should be trained in the systems and equipment, and should be familiarised with the pedagogical techniques.

### Learning materials development

Implementing course development and design standards maintain consistency, especially if many people or partner organisations are involved. Since course development is time consuming, it is worth

securing permission to use or adapt existing material, where appropriate, to launch the course more quickly.

### Evaluation

Once course materials are uploaded to the online learning environment, there should be a field trial of the learning materials and usability testing of the website, possibly through an initial pilot project. No online course should be launched without thorough evaluation.

Consider:

**Learning effectiveness:** How does the online course compare with face-to-face or other distance delivery methods?

**Cost-effectiveness:** Take into account the high initial set-up cost, and any ongoing costs such as upgrading of equipment or software.

**Learning environment:** How do learners negotiate the online environment?

**Accreditation:** The issues/problems in accreditation of online learning.

**Evaluation:** how do you improve the evaluation process?

### Promotion

The course must be promoted both online and offline to its target learners, with plenty of lead-time for course registration. Ongoing promotion will encourage the level of enrolment needed to make the programme financially viable.

### Maintenance and updating

Online programmes require constant updating and maintenance to be effective. Learners need prompt feedback to address concerns and technical problems. Course instructors or specialised personnel should be trained to constantly monitor and maintain the website.

**All involved faculty and staff should be trained in the systems and equipment, and should be familiarised with the pedagogical techniques**

## Conclusion

Designing effective online learning requires an understanding of the features of the WWW and a carefully planned blueprint for implementation. The emergence of integrated systems for online learning has somewhat simplified the design process, but the instructor or manager of an online learning programme still has to have clear objectives to work from. In the initial planning stage, identifying the design requirements that are compatible with your needs and objectives will help you choose the right integrated system. Evaluation is also essential to improve on existing instructional design.



## References and web resources

- Murphy, D. (2000). Instructional Design for Self-Learning in Distance Education, Vancouver: The Commonwealth of Learning. [www.col.org/Knowledge](http://www.col.org/Knowledge)
- Landon, B. (2001). Online Educational Delivery Applications: A Web tool for comparative analysis. [www.c2t2.ca/landonline](http://www.c2t2.ca/landonline) (C2T2 closed down on March 31, 2004)
- Haughey, M. (2000). Managing for Electronic Networking, Vancouver: The Commonwealth of Learning. [www.col.org/Knowledge](http://www.col.org/Knowledge)
- Tooth, T. (2000). The Use of Multi Media in Distance Education, Vancouver: The Commonwealth of Learning. [www.col.org/Knowledge](http://www.col.org/Knowledge)
- Web-based Training (WBT) Information Center: Tools [www.filename.com/wbt/pages/wbttools.ht](http://www.filename.com/wbt/pages/wbttools.ht)
- E-Learning systems, support, management and services
- BlackBoard [www.blackboard.com](http://www.blackboard.com)
- ECollege [www.ecollege.com](http://www.ecollege.com)
- Centrinity - FirstClass Unified Communications [www.softarc.com](http://www.softarc.com)
- IntraLearn [www.intralearn.com](http://www.intralearn.com)
- IBM Lotus Virtual Classroom [www.lotus.com/virtualclassroom](http://www.lotus.com/virtualclassroom)
- The Learning Manager [www.thelearningmanager.com](http://www.thelearningmanager.com)
- WBT Systems - TopClass [www.wbtsystems.com](http://www.wbtsystems.com)
- Virtual-U research project [virtual-u.cs.sfu.ca/vuweb.new/what.html](http://virtual-u.cs.sfu.ca/vuweb.new/what.html)

## CHAPTER 4

# Levels of Media Interactivity



BY JON BAGGALEY

## Introduction

In the last decade, widely available educational media such as radio and television have been supplanted in many regions by the Internet, owing to the greater levels of direct contact and feedback it can provide between the teacher and students. The lack of real-time interactivity in traditional educational media has been perceived as a particular disadvantage in distance education. It is now possible, however, to combine the increasingly available cellphone with any other medium, to enable students to respond immediately and in various ways to the teacher's presentations, points and questions. The new techniques made possible by this hybridisation are likely to extend far beyond the educational field, into mass media broadcasting, political and advertising research, and training and development contexts.

The current account will focus on the potential educational value of combining the cellphone with live/ recorded television; for, second to the Internet, TV still provides a greater range of multimedia stimuli than any other single medium. The techniques made possible by Internet interactivity will be classified in a series of twelve

interactivity levels. These are characterised by the extent of interactivity between the student and recorded material, the student and the teacher, and the teacher and many students simultaneously.

## Levels of media interactivity

Table 4.1 indicates twelve levels of interactivity currently available when online techniques (browsing, e-mail, etc.) are used by one or many students in interacting with packaged materials or a teacher. The original 'interactive video' concept of the 1980s, developed with the advent of the videodisc, as its many online versions today, only fulfill *Level 1* in this classification scheme. This basic level refers to students 'interactions' with pre-recorded/ programmed material, as in web-browsing, though not directly with a teacher. Human interaction, regarded as the missing ingredient in many earlier educational media situations, occurs in basic forms in *Levels 2 to 5*, via the techniques of e-mail, online polling, and text-conferencing. At *Level 6*, a higher form of real-time interaction between teacher and students occurs in live text-chat methods; and *Levels 7-9* indicate the successively higher levels of interactivity

achieved by adding audio, video, polling and combined techniques to conferencing, polling, and 'social networking' software. *Levels 10-12* relate to new opportunities created by combining the cellphone with other media (e.g. TV) to enable real-time polling and instant feedback of results to many students at once.

The twelve levels of media interactivity are defined as follows:

1) The most basic level of interactivity occurs when a student *browses through computer-based materials*, making commands that generate presentations of specific material. 'Interactive video' materials have used this level of interactivity since the 1980s, although

no human interaction takes place. Web-based materials can be used, via either PC or 3G cellphone.

2) More interactivity is possible when the student communicates asynchronously with a teacher, as via *e-mail*. In addition to the usual technology (computer with Internet), a 1G cellphone with Internet connection can be used with text-based e-mail software. With the development of graphic-based e-mail software, however, text-based options are not commonly available.

3) *Online question-and-answer polling* software has been available since the 1990s. Many students answer multiple-choice, interval, or ranking questions. In the basic asynchronous Q&A polling

**TABLE 4.1. Twelve levels of educational media interactivity**

Capability of interactive software Levels		Students		Hand units	PC + Internet	Cell-phone		Cell + other media
		Students	Teacher			1G	3G	
1	Browsing (asynch)	One	No	n.a.	Yes	No	Yes	n.a.
2	E-mail (asynch)	One	Yes	n.a.	Yes	Yes	Yes	n.a.
3	Q&A: no feedback (asynch)	Many	No	Yes	Yes	SMS	Yes	Viable
4	Real-time polling (asynch)	Many	Maybe	Yes	Yes	Yes	Yes	Viable
5	Text forums (asynch)	Many	Yes	n.a.	Yes	No	Yes	Viable
6	Text chats (synch)	Many	Yes	n.a.	Yes	Yes	Yes	Viable
7	A/V-conferencing (synch)	Many	Yes	n.a.	Yes	Audio	Yes	Viable
8	Q&A: feedback (synch)	Many	Maybe	Yes	Yes	Yes	Yes	Viable
9	Collaborative activities	Many	Yes	Yes	Yes	No	Yes	Viable
10	Real-time CRM (asynch, no feedback)	Many	No	Yes	Yes	Viable	Viable	Viable
11	Real-time CRM (synch, no feedback)	Many	No	Yes	Yes	Viable	Viable	Viable
12	Real-time CRM (synch, feedback)	Many	Yes	Yes	Viable	Viable	Viable	Viable

**KEY:**

Asynch	Asynchronous (not real-time, delayed interaction)
Synch	Synchronous (real-time interaction)
1G	1st general cellphones (text only)
3G	3rd-generation cellphones (text and graphics)
SMS	Short message service (cellphone texting)
A/V	Audio and/or video
No	Useful software not conceivable for this technology
Yes	Useful software available for this technology
Viable	Useful software could be created for this technology
n.a.	Not appropriate or relevant to this technology

## STRIDE HANDBOOK 8

situation, no teacher is in evidence for the students receive no feedback about the polling results. The same results can be yielded by SMS methods on the 1G cellphone.

- 4) *Real-time polling of audience responses* to a recorded presentation were commonly used in 'programmed instruction' research from the 1950s to '70s, in order to find ways to improve the instruction. Responses could be collected from many respondents in classrooms or focus groups, and analysed subsequently with or without feedback to the respondents.
- 5) A higher level of interactivity occurs when the teacher is able to communicate via text-based messages with many students asynchronously as in *online text-conferences and blogs*. If all respondents are not simultaneously present, responses are delayed. The displays are not usually possible on a 1G cellphone, though are possible in text/graphics on a 3G cellphone.
- 6) Synchronous text-based software allows a teacher and many students to interact in real-time via *live text-chat boxes*. Basic text-chat software has been available for computers with Internet connection since the 1990s. As long as graphic displays are not involved, 1G and 3G cellphones can be used. Text with graphics displays require 3G phones.
- 7) The combination of *real-time audio and/or video with text-conferencing* allows two-way interaction between the teacher and one student at a time, and one-way presentations by a teacher or student to many participants at once. Real-time text-chat boxes are commonly added to A/V conferencing software, and can be useful in conference coordination.

**A higher level of interactivity occurs when the teacher is able to communicate via text-based messages with many students asynchronously as in online text-conferences and blogs**

- 8) The *software for synchronous question-and-answer polling* is usually the same as at Level 3), with extra routines for instant analysis and feedback of results to the respondent(s). Students answer multiple-choice, interval, or ranking questions, and feedback is given either by automated routines or by a teacher instantly interpreting the results.
- 9) Combinations of these interactive methods (e.g. web browsing, e-mail, live text chatting, Q&A polling, A/V and text-conferencing, blogs, and other collaborative activities) are used in *social networking packages*, providing options for asynchronous or synchronous interaction as appropriate. These packages are commonly labelled 'Web 2.0'.
- 10) *Systems for moment-by-moment real-time polling* (continuous response measurement,) have been used in media and advertising research since the 1940s. PC software has been available since the 1980s. Hand-units, web-based, and/or cellphone keypads can be used to collect audience responses, as in formative evaluation studies where feedback is not essential.
- 11) When *continuous responses to a live presentation* are collected (e.g. a TV broadcast or a lecture), the teacher can react tacitly to an instant analysis of the responses in varying the presentation in real time. For example, if students give continuous responses showing failure to understand the lecture at specific moments, the teacher can repeat or clarify related points.
- 12) The highest level of interactivity occurs when *continuous responses are instantly analysed* and the results fed back to the students as well as the teacher. The students can compare their responses

with those of other students, and the teacher can improvise with follow-up questions, comparing new responses with prior data in order to gain insights into subgroups' responses.

### Viability of new interactive software

The shaded cells in Table 4.1, labelled 'Viable', indicate the viability of numerous interactive applications of the traditional and modern educational media not yet developed. The real-time polling applications of political and advertising research have used customised hand-unit technologies only (Millard, 1992). The same techniques can now be developed for the Internet and cellphone (Figures 4.1 to 4.3). Many of these data collection methods are already readily available on the 3G cellphone, owing to its ability to connect to the Internet via wireless connections rather than through Internet providers. In

developing countries, however, the 1G cellphone will remain the most accessible medium for the foreseeable future<sup>1</sup>. This is a major reason for real-time software development for the 1G, text-only cellphone, and for software permitting 1G and 3G cellphones to function in hybrid contexts with other media (e.g. TV). The potential of these techniques in social science research is immense, though requires carefully designed psychometric data collection techniques and cautious statistical analysis overcoming reliability and validity problems in the data (Baggaley, 1987, 1997).

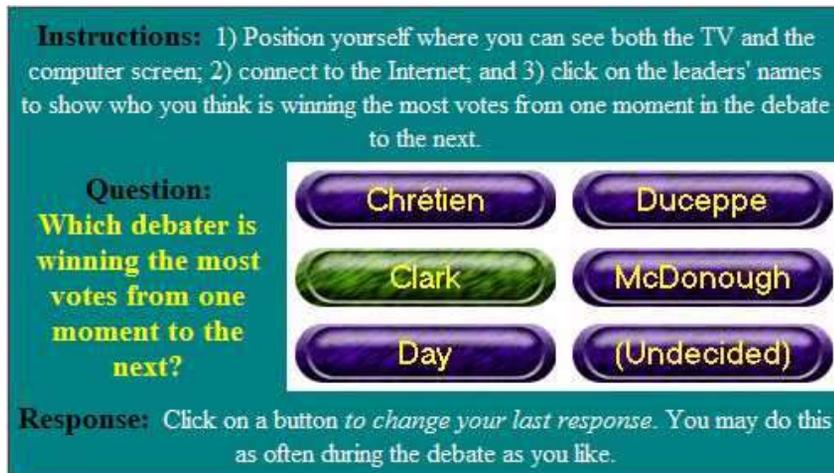
### Conclusions

The techniques are available to render any educational medium totally interactive. Using the cellphone to collect real-time responses to live and recorded presentations, the teacher can collect and analyse students' responses on a moment-



*Fig. 4.1. A hand-held keypad used to collect real-time data from farmers in tribal Kenya (Baggaley, 1997).*

## STRIDE HANDBOOK 8



**Fig. 4.2.** A web-based key-pad used to collect real-time responses to a TV political debate (Baggaley, 2000).



**Fig. 4.3.** A 3G cellphone version of Fig. 4.2.

by-moment basis, provide them with instant feedback of results, vary the presentation according to student feedback, and generate follow-up questions and materials. The result is a continuous, two-way feedback loop between the teacher and many students simultaneously, not possible in aural communication. Such systems can overcome the common criticism that media-dependent (e.g. distance) education lacks teacher-student interactivity.

### Note

<sup>1</sup> An Ernst & Young report (November 2008) predicts 30 million 3G users in India by 2012, with the remaining 99.98 % of the population lacking a phone (40%) or having a landline or 1G cellphone.

## References

- Baggaley, J. (1987). Continuous response measurement in TV research. *Canadian J. Educational Communication*, 16, 217-38.
- Baggaley, J. (1997). Cross-cultural Uses of Media Research Technology. *Social Marketing: theoretical and practical perspectives*, M. Goldberg, M. Fishbein & S. Middlestadt (Eds.). Hillsdale, NJ: Erlbaum.
- Baggaley, J. (2000). Viewer's continual responses to a Canadian TV election debate. Unpublished study.
- Ernst & Young (2008). India Telecom 2012 Report. Retrieved from: [www.siliconindia.com/shownews/3G\\_users\\_in\\_India\\_to\\_reach\\_30\\_Million\\_by\\_2012-nid-49358.html](http://www.siliconindia.com/shownews/3G_users_in_India_to_reach_30_Million_by_2012-nid-49358.html)
- Millard, W.J. (1992). A history of handsets for direct measurement of audience response. *International Journal of Public Opinion Research*, 4 (1), 1-17.



## CHAPTER 5

# The Global E-Learning Framework



BY BADRUL H KHAN

With the rapid growth of the Internet and digital technologies, the Web has become a powerful, global, interactive, dynamic, economic and democratic medium of learning and teaching at a distance (Khan, 1997a). The Internet provides an opportunity to develop learning-on-demand and learner-centered instruction and training. There are numerous names for online learning activities, including E-Learning, Web-Based Learning (WBL), Web-Based Instruction (WBI), Web-Based Training (WBT), Internet-Based Training (IBT), Distributed Learning (DL), Advanced Distributed Learning (ADL), Distance Learning, Online Learning (OL), Mobile Learning (or m-Learning) or Nomadic Learning, Remote Learning, Off-site Learning, aLearning (anytime, anyplace, anywhere learning), etc. I use the term e-Learning to represent open, flexible and distributed learning.

Designing and delivering instruction and training on the Internet requires thoughtful analysis and investigation, combined with an understanding of both the Internet's capabilities and resources and the ways in which instructional design principles can be applied to tap the Internet potential

(Ritchie & Hoffman, 1997, cited in Khan, 1997b). Designing elearning for open, flexible and distributed learning environments is new to many of us. After reflecting on the factors that must be weighed in creating effective open, distributed and flexible learning environments for learners worldwide, the following definition of elearning is formulated:

E-Learning can be viewed as an innovative approach for delivering well-designed, learner-centered, interactive, and facilitated learning environment to anyone, anyplace, anytime, by utilising the attributes and resources of various digital technologies along with other forms of learning materials suited for open and distributed learning environment.

The above definition of elearning raises the question of how various attributes of elearning methods and technologies can be utilised to create learning features appropriate for diverse learners in an open, flexible and distributed environment.

### **Open and distributed learning environment**

What is an open and distributed learning environment? According to Calder &

McCollum (1998), "The common definition of open learning is learning in your own time, pace and place" (p. 13). Ellington (1997) notes that open and flexible learning allows learners to have some say in how, where, and when learning takes place. Saltzberg and Polyson (1995) noted that distributed learning is not synonymous with distance learning, but, they stress its close relationship with the idea of distributed resources:

Distributed learning is an instructional model that allows instructor, students, and content to be located in different, non-centralised locations so that instruction and learning occur independent of time and place. . . . The distributed learning model can be used in combination with traditional classroom-based courses, with traditional distance learning courses, or it can be used to create wholly virtual classrooms. (p. 10)

Janis Taylor of Clarke College in Iowa who teaches students coming from different places in the Midwest commented on open, distributed and flexible learning:

Consider a student user who described her online education as open because she can sit out on her back deck supervising her children in the swimming pool while doing her homework. Now that's open-air and *open* learning. One of my preservice teachers works in a chemical lab in Cleveland, another is a court reporter three hours drive from me and another is a nurse in rural western Iowa. I, their teacher, am sitting in a small liberal arts college in eastern Iowa, a state badly needing to tap new people to come into the teaching profession. How could I get them all here to my campus if e-learning were not *distributed*? This open and distributed learning environment made learning flexible for a young traveling business woman who says "I take my college course, my instructor, and all of my fellow students with me on every business trip. With my laptop in

my hotel room, I can view my teacher's demonstration, discuss it with my classmates in the Chat Room, and turn in my assignment by email." Now that's a *flexible* college program (J. Taylor, personal communication, June 22, 2004).

Flexibility in learning is, therefore, dependent on the openness of the system and the availability of learning resources distributed in various locations. A clear understanding of the open and distributed nature of learning environments will help us create meaningful learning environments with increased flexibility. Figure 5.1 graphically shows how an open and distributed educational system contributes to flexibility.

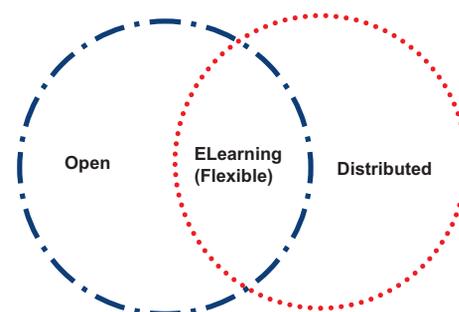


Figure 5.1. Open and Distributed learning

### Traditional instruction and e-Learning

The design and format of open, flexible and distributed elearning can be different from traditional classroom instruction. Traditional classrooms are space bound. Traditional instruction treats learning pretty much as a *closed system*, taking place within the confines of a given classroom, school, textbook, field trip, etc. (Greg Kearsley, personal communication, January 27, 2000). Classroom-taught courses are not necessarily closed systems; many teachers assign students to do library based research papers, interview members of a professional community, engage in service-learning activities, and extend their learning

## STRIDE HANDBOOK 8

initiatives far beyond the classroom itself. Unfortunately many classes are bound by their four walls involving only the thoughts of the instructor, the textbook writer and occasional student comments. Classroom courses are also closed in the sense that they are limited to only those students who can physically come to the location (Taylor, personal communication, May 24, 2004)

On the other hand, elearning extends the boundaries of learning, so that learning can occur in the classrooms, from home and in the work place (Relan & Gillani, 1997). It is a flexible form of education because it creates options for learners in terms of where and when they can learn (Krauth, 1998). A

well designed elearning course allows learners to become actively involved in their learning processes. However, a poorly designed elearning course can be just as rigid and dogmatic and non-interactive as a poorly taught face to face course. The scope of openness and flexibility in elearning is dependent on how it is designed. "While having an open system has its appeal, it can make designing for it extremely difficult, because in an open system, the designer agrees to give up a certain amount of control to the user" (Jones & Farquhar, 1997, p. 240). The more open the learning environment, the more complex the planning, management, and evaluation of it (Land & Hannafin, 1996). For example, the instructor cannot monitor who helps the student on tests unless proctored.

### **Learner-focused e-learning system**

A leading theorist of educational systems, B.H. Banathy (1991), makes a

strong case for learning-focused educational and training systems where "the learner is the key entity and occupies the nucleus of the systems complex of education" (p. 96). For Banathy, "*when learning is in focus*, arrangements are made in the environment of the learner that communicate the learning task, and learning resources are made available to learners so that they can explore and master learning tasks" (p. 101). A distributed learning environment that can effectively support learning-on-demand must be designed by placing the learners at the centre. In support of learnercentered approach, Moore (1998) states:

Our aim as faculty should be to focus our attention on making courses and other learning experiences that will best empower our students to learn, to learn fully, effectively, efficiently, and with rewarding satisfaction. It is the responsibility of our profession to study ways of maximising the potential of our environments to support their learning and to minimise those elements in their environments that may impede it. (p. 4).

*Success in an e-learning system* involves a systematic process of planning, designing, evaluating, and implementing online learning environments where learning is actively fostered and supported. An e-learning system should not only be meaningful to learners, but it should also be meaningful to all stakeholder groups including instructors, support services staff, and the institution. For example, an e-learning system is more likely to be meaningful to learners when it is easily accessible, clearly organised, well written, authoritatively presented, learnercentered, affordable, efficient, flexible, and has a facilitated

**Success in an e-learning system involves a systematic process of planning, designing, evaluating, and implementing online learning environments where learning is actively fostered and supported**

learning environment. When learners display a high level of participation and success in meeting a course's goals and objectives, this can make e-learning meaningful to *instructors*. In turn, when learners enjoy all available support services provided in the course without any interruptions, it makes *support services staff* happy as they strive to provide easy-to-use, reliable services. Finally, an e-learning system is meaningful to *institutions* when it has a sound return-on-investment (ROI), a moderate to high level of learners' satisfaction with both the quality of instruction and all support services, and a low drop-out rate (Morrison & Khan, 2003).

### **A Framework for e-learning**

The seeds for the ELearning Framework began germinating with the question, "What does it take to provide flexible learning environments for learners worldwide?" With this question in mind, since 1997 I have been communicating with learners, instructors, trainers, administrators, and technical and other support services staff involved in e-learning in both academic (K12 and higher education) and corporate settings from all over the world. I researched critical e-learning issues discussed in professional discussion forums, and designed and taught online courses. I reviewed literature on e-learning. As the editor of *Web-Based Instruction* (1997), *Web-Based Training* (2001), and *Flexible Learning* (2007), I had the opportunity to work closely on elearning issues with about two hundred authors from all over the world who contributed chapters in these books.

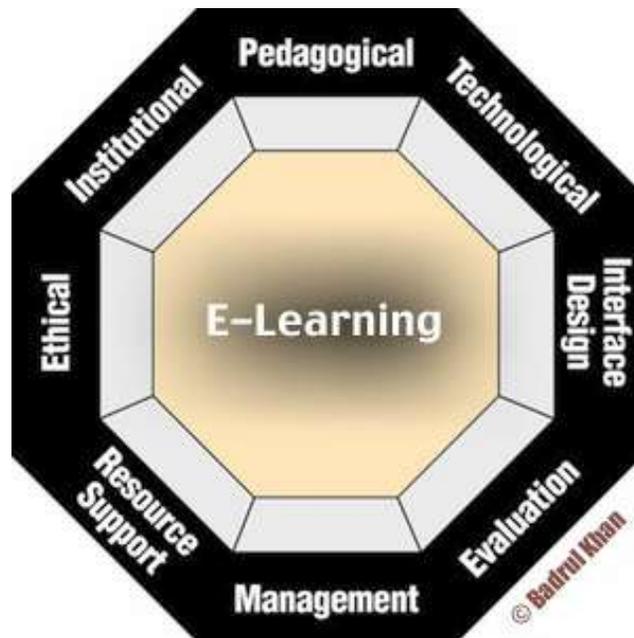
Through these activities, I have come to understand that e-learning represents a paradigm shift not only for learners, but also for instructors, trainers, administrators, technical and other support services staff, and the institution. We (i.e., students, instructors, and staff) are accustomed to

the structure of a traditional educational system where instructor-led, face-to-face classes are the learning environment. E-learning, on the other hand, is an innovative way of providing instruction to diverse learners in an environment where students, instructors, and support staff do not see each other. The format of such a learning environment is different from traditional classroom instruction. As indicated earlier, traditional classroom-based instruction takes place in a closed system (i.e., within the confines of a given classroom, school, textbook, or field trip) whereas elearning takes place in an open system (i.e., it extends the boundaries of learning to an open and flexible space where learners decide where and when they want to learn). Learners in an open, flexible and distributed learning environment need immediate attention and feedback on their work in order to continue their learning processes. We have to provide the best support systems for them so that they do not feel isolated and join the list of dropouts.

As we are accustomed to teaching or learning in a closed system, the openness of e-learning is new to us. In order to create effective environments for diverse learners, however, we need to jump out of our closed system learning design mentality. We need to change our mindset—that's the paradigm shift. In order to facilitate such a shift, and in response to the range of issues I saw in my research, I created the E-Learning Framework (Figure 5.2).

I found that numerous factors help to create a meaningful learning environment, and many of these factors are systemically interrelated and interdependent. A systemic understanding of these factors can help designers create meaningful learning environments. I clustered these factors into eight dimensions: institutional, management, technological, pedagogical, ethical, interface design, resource support, and

**STRIDE HANDBOOK 8**



**Figure 5.2. The E-Learning framework**

The purpose of this framework is to help you think through every aspect of what you are doing during the steps of the elearning design process.

evaluation (Table 5.1). Various issues within the eight dimensions of the framework were found to be useful in several studies that were conducted to review elearning programs, resources and tools (Khan, 2007; Khan & Smith, 2007;

Romiszowski, 2004; Singh, 2003; Chin & Kon, 2003; Kuchi, Gardner, & Tipton, 2003; Mello, 2002; Barry, 2002; Goodear, 2001; Khan, Waddill, & McDonald, 2001; Dabbagh, Bannan-Ritland, & Silc, 2001; Khan & Ealy, 2001; El-Tigi & Khan, 2001;

**TABLE 5.1: EIGHT DIMENSIONS OF E-LEARNING FRAMEWORK**

<b>Dimensions of E-Learning</b>	<b>Descriptions</b>
<i>Institutional</i>	The institutional dimension is concerned with issues of administrative affairs, academic affairs and student services related to e-learning.
<i>Management</i>	The management of e-learning refers to the maintenance of learning environment and distribution of information.
<i>Technological</i>	The technological dimension of e-learning examines issues of technology infrastructure in e-learning environments. This includes infrastructure planning, hardware and software.
<i>Pedagogical</i>	The pedagogical dimension of e-learning refers to teaching and learning. This dimension addresses issues concerning content analysis, audience analysis, goal analysis, medium analysis, design approach, organization, and learning strategies.
<i>Ethical</i>	The ethical considerations of e-learning relate to social and political influence, cultural diversity, bias, geographical diversity, learner diversity, digital divide, etiquette, and the legal issues.
<i>Interface design</i>	The interface design refers to the overall look and feel of e-learning programs. Interface design dimension encompasses page and site design, content design, navigation, accessibility and usability testing.
<i>Resource support</i>	The resource support dimension of the e-learning examines the online support and resources required to foster meaningful learning.
<i>Evaluation</i>	The evaluation for e-learning includes both assessment of learners and evaluation of the instruction and learning environment.

**TABLE 5.2: SUB-DIMENSIONS OF THE E-LEARNING FRAMEWORK**

<b>INSTITUTIONAL</b> Administrative Affairs Academic Affairs Student Services	<b>PEDAGOGICAL</b> Content Analysis Audience Analysis Goal Analysis Design Approach Instructional Strategies Organization Blending Strategies	<b>INTERFACE DESIGN</b> Page and Site Design Content Design Navigation Accessibility Usability Testing
<b>MANAGEMENT</b> People, Process and Product (P3) Continuum Management Team Managing E-Learning Content Development Managing E-Learning Environment	<b>ETHICAL</b> Social and Cultural Diversity Bias and Political Issues Geographical Diversity Learner Diversity Digital Divide Etiquette Legal Issues	<b>RESOURCE SUPPORT</b> Online Support Resources
<b>TECHNOLOGICAL</b> Infrastructure Planning Hardware Software		<b>EVALUATION</b> Evaluation of Content Development Process Evaluation of E-Learning Environment Evaluation of E-Learning at the Program and Institutional Levels Assessment of Learners

Zhang, Khan, Gibbons, & Ni, 2001; Gilbert, 2000; and Kao, Tousignant, & Wiebe, 2000).

Each dimension has several sub-dimensions (Table 5.2). Each sub-dimension consists of items or issues focused on a specific aspect of an elearning environment. As you know each elearning project is unique. I encourage you to identify as many issues (in the form of questions) as possible for your own elearning project by using the framework. One way to identify critical issues is by putting each stakeholder group (such as learner, instructor, support staff, etc.) at the centre of the framework and raising issues along the eight dimensions of the elearning environment. This way you can identify many critical issues and answer questions that can help create a meaningful elearning environment for your particular group. By repeating the same process for other stakeholder groups, you can generate a comprehensive list of issues for your elearning project.

For example, *is the course sensitive to students from different time-zones (e.g., are synchronous communications such as chat discussions are scheduled at reasonable times for all time zones represented)?* This is an example of a question that elearning designers can ask in the *geographical diversity* section of the *ethical* dimension.

As we know, scheduled chat discussions may not work for learners coming from different time zones. In the U.S., there are the six time zones. Therefore, e-learning course designers should be sensitive to diversity in geographical time zones (i.e., all courses where students can reasonably be expected to live in different time zones).

The purpose of raising many questions within each dimension (see Table 5.2) is to help designers think through their projects thoroughly. Note that there might be other issues not included or not yet encountered. As more and more institutions offer elearning worldwide, designers will become more knowledgeable about new issues within the eight dimensions of elearning.

The E-Learning Framework can be applied to elearning of any scope. This "scope" refers to a continuum defined by the extent to which instruction is delivered on the Internet and hence must be systematically planned for. The weight placed on any elearning dimension or sub-dimension, or on any set of elearning items, will vary with the scope of the instruction. This continuum is described below, with examples, to show the type and scope of elearning activities and how their design relates to various dimensions of the framework.

At the "micro" end of the continuum,

## STRIDE HANDBOOK 8

elearning activities and information resources can be designed for face-to-face instruction in educational and training settings (e.g., blended learning activities). In the high-school physics classroom, for example, a teacher can use Shockwave simulations to support the cognitive work of analysing data, visualising concepts, and manipulating models. See, for example, the simulations available at Explore Science (<http://www.explorescience.com>.) The teacher would have to design activities that provide context for and elaboration of this highly-visual, Web-mediated simulation. In a traditional course, the ELearning Framework's *institutional* and *management* dimensions will matter much less than the *learning strategies* section of the *pedagogical* dimension which provides guidelines for integrating the simulation into the curriculum.

Further along the continuum, more

comprehensive design is required for the complete academic or training course, where content, activities, interaction, tutorials, project work, and assessment must all be delivered on the Internet. Petersons.com provides links to a large number of such courses that are exclusively or primarily distance-based. (The Petersons database can be searched at <http://www.lifelearning.com>). Additional dimensions of the E-Learning Framework will be useful in designing such courses.

Finally, at the "macro" end of the continuum, the E-Learning Framework can serve the design of complete distance-learning programmes and virtual universities (Khan, 2001a), without a face-to-face component, such as continuing education programmes for accountants or network engineers. Petersons.com, again, provides links to dozens of such programs as well as to institutions based on such



programs. For example, designers of Web-based continuing education for accountants dispersed all around world would have to plan for every dimension of the E-Learning Framework in considerable detail. They would have to work with computer programmers, testing specialists, security professionals, subject-matter experts, and accountants' professional organisations. These designers would have to do everything from planning a secure registration system to considering cultural and language differences among accountants seeking continuing education credit.

As the scope of elearning design expands, design projects change from one-person operations to complex team efforts. *The E-Learning Framework can be used to ensure that no important factor is omitted from the design of elearning, whatever its scope or complexity.*

You might wonder: *Are all sub-dimensions within the eight dimensions necessary for e-learning?* You might also wonder: *There's a lot of questions here! Which ones do I need to address?* Again, it depends on the scope of your elearning initiative. To initiate an e-learning degree programme, for example, it is critical to start with the institutional dimension of the E-Learning Framework and also investigate all issues relevant to your project in other dimensions. In this case, a comprehensive readiness assessment should be conducted. However, to create a single elearning lesson, some institutional sub-dimensions (such as *admissions, financial aid*, and others) may not be relevant.

Designing open, flexible, and distributed e-learning systems for globally diverse learners is challenging; however, as more and more institutions offer e-learning to students worldwide, we will become more knowledgeable about what works and what does not work. We should try to accommodate the needs of diverse learners by asking critical questions along the eight dimensions of the framework. The questions may vary based on each elearning system. The more issues within the eight dimension of the framework we explore, the more meaningful and supportive a learning environment we can create. Given our specific contexts, we may not be able to address all issues within the eight dimensions of the framework, but we should address as many as we can.

## References

- Banathy, B. H. (1991). *Systems designs of education: A journey to create the future*. Englewood Cliffs, NJ: Educational Technology Publications.
- Barry, B. (2002). ISD and the e-learning framework. Retrieved January 24, 2003, from <http://www.wit.ie/library/webct/isd.html>
- Bonk, C. J. & Reynolds, T. H. (1997). Lerner-centered Web instruction for higher-order thinking, teamwork and apprenticeship. In B. H. Khan (Ed.), *Web-based instruction*. (pp. 167-178). Englewood Cliffs, NJ: Educational Technology Publications.
- Calder, J. & McCollum, A. (1998). *Open and flexible learning in vocational education and training*. London: Kogan Page.
- Chin, K. L. & Kon, P. N. (2003). Key factors for a fully online e-learning mode: a delphi study. In G. Crisp, D. Thiele, I. Scholten, S. Barker and J. Baron (Eds), *Interact, Integrate, Impact: Proceedings of the 20th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education*. Adelaide, 7-10 December 2003.
- Dabbagh, N. H., Bannan-Ritland, B. & Silc, K. (2000). Pedagogy and Web-based course authoring tools: Issues and implications. In B. H. Khan (Ed.), *Web-based training*. (pp. 343-354). Englewood Cliffs, NJ: Educational Technology Publications.
- Duchastel (1996). *Design for web-based learning*. Proceedings of the WebNet-96 World Conference of the Web Society. San Francisco.
- Ellington, H. (1995). Flexible learning, your flexible friend. In C. Bell, M. Bowden & A. Trott (Eds.), *Implementing flexible learning* (pp. 3-13). London: Kogan Page.
- El-Tigi, M. A., & Khan, B. H. (2001). Web-based learning resources. In B. H. Khan (Ed.), *Web-based training*. (pp. 59-72). Englewood Cliffs, NJ: Educational Technology Publications.

## STRIDE HANDBOOK 8

- Gilbert, P. K. (2002). The virtual university an analysis of three advanced distributed leaning systems. Retrieved February 24, 2004, from <http://gseacademic.harvard.edu/~gilberpa/homepage/portfolio/research/pdf/edit611.pdf>
- Goodear, L. (2001). Cultural diversity and flexible learning. Presentation of Findings 2001 Flexible Learning Leaders Professional Development Activity. South West Institute of TAFE. Australia. Retrieved February 24, 2004, from <http://www.flexiblelearning.net.au/leaders/events/pastevents/2001/statepres/papers/lyn-handout.pdf>
- Hall, B. (2001). ELearning: Building competitive advantage through people and technology. A special section on elearning by Forbes Magazine. Retrieved January 24, 2003, from <http://www.forbes.com/specialsections/elearning/>
- Jones, M. G. & Farquhar, J. D. (1997). User interface design for Web-based instruction. In B. H. Khan (Ed.), *Web-based instruction*. (pp. 239-244). Englewood Cliffs, NJ: Educational Technology Publications.
- Kao, D., Tousignant, W., & Wiebe, N. (2000). A paradigm for selecting an institutional software. In D. Colton, J. Caouette, and B. Raggad (Eds.), *Proceedings ISECON 2000, v.17* (Philadelphia): 207. AITP Foundation for Information Technology Education.
- Khan, B. H. (1997a). Web-based instruction: What is it and why is it? In B. H. Khan (Ed.), *Web-based instruction*. (pp. 5-18). Englewood Cliffs, NJ: Educational Technology Publications.
- Khan, B. H. (2001c). Webbased training: An introduction. In B. H. Khan (Ed.), *Webbased training*. (pp. 5-12). Englewood Cliffs, NJ: Educational Technology Publications.
- Khan, B. H., & Ealy, D. (2001). A framework for web-based authoring systems. In B. H. Khan (Ed.), *Web-based training*. (pp. 355-364). Englewood Cliffs, NJ: Educational Technology Publications.
- Khan, B. H., Waddill, D. & McDonald, J. (2001). Review of Web-based training sites. In B. H. Khan (Ed.), *Web-based training*. (pp. 367-374). Englewood Cliffs, NJ: Educational Technology Publications.
- Khan, B. H. (2001a). Virtual U: A hub for excellence in education, training and learning resources. In B. H. Khan (Ed.), *Web-based training*. (pp. 491-506). Englewood Cliffs, NJ: Educational Technology Publications.
- Khan, B. H. (2007). Introduction to open, flexible and distributed learning. In B. H. Khan (Ed.), *Flexible learning*. Englewood Cliffs, NJ: Educational Technology Publications.
- Khan, B. H. (2007). Obstacles encountered during stages elearning process. In B. H. Khan (Ed.), *Flexible learning*. Englewood Cliffs, NJ: Educational Technology Publications.
- Khan, B. H., Smith, H. L. (2007). Student evaluation instrument for online programs. In B. H. Khan (Ed.), *Flexible learning*. Englewood Cliffs, NJ: Educational Technology Publications.
- Kearsley, G. (1996). The World Wide Web: Global access to education. *Educational Technology Review*, Winter (5), 26-30.
- Kearsley, G. & Shneiderman, B. (1999). Engagement theory: A framework for technology-based teaching and learning. (<http://home.sprynet.com/~gkearsley/engage.htm>).
- Krauth, B. (1998). Distance learning: The instructional strategy of the decade. In G. P. Connick (Ed.). *The distance learner's guide*. Upper Saddle River, NJ: Prentice Hall.
- Kuchi, R., Gardner, R. & Tipton, R. (2003). A learning framework for information literacy and library instruction programs at Rutgers University Libraries. Recommendations of the Learning Framework Study Group. Rutgers University Libraries.
- Land, S. M. & Hannafin, M. J. (1997). Patterns of understanding with open-ended learning environments: A qualitative study. *Educational Technology Research and Development*, 45(2), 47-73.
- Mello, R. (2002, June). 100 pounds of potatoes in a 25-pound sack: stress, frustration, and learning in the virtual classroom. *Teaching With Technology Today*. 8(9). Retrieved February, 2004, from <http://www.elearningmag.com/elearning/article/articleDetail.jsp?id=2031>
- Moore, M. G. (1998). Introduction. In C. C. Gibson (Ed.), *Distance learners in higher education*. Madison, Wisconsin: Atwood Publishing.
- Morrison, J. L. & Khan, B. H. (2003). The global e-learning framework: An interview with Badrul Khan. The Technology Source. A Publication of the Michigan Virtual University. Retrieved May 18, 2003, from <http://ts.mivu.org/default.asp?show=article&id=1019#options>
- Nunan, T. (1996). Flexible delivery - what is it and why is it a part of current educational debate?. Different Approaches: Theory and Practice in Higher Education. Proceedings HERDSA Conference 1996. Perth, Western Australia, 8-12 July. <http://www.herdsa.org.au/confs/1996/nunan.html>
- Reigeluth, C. M., & Khan, B. H. (1994, February). Do instructional systems design (ISD) and educational systems design (ESD) really need each other? Paper presented at the Annual Meeting of the Association for Educational Communications and Technology (AECT), Nashville, TN.
- Relan, A. & Gillani, B. B. (1997). Web-based instruction and traditional classroom: Similarities and differences. In B. H. Khan (Ed.), *Web-based instruction*. (pp. 41-46). Englewood Cliffs, NJ: Educational Technology Publications
- Ritchie, D. C. & Hoffman, B. (1997). Incorporating instructional design principles with the World Wide Web.

- In B. H. Khan (Ed.), *Web-based instruction*. (pp. 135-138). Englewood Cliffs, NJ: Educational Technology Publications.
- Romiszowski, A. J. (2004). How's the elearning baby? Factors leading to success or failure of an educational technology innovation. *Educational Technology*, 44 (1), 5-27.
- Rosenberg, M. J. (2001). *E-Learning: Strategies for delivering knowledge in the digital age*. New York: McGraw-Hill.
- Saltzbert, S., & S. Polyson. (1995, September). Distributed learning on the World Wide Web. *Syllabus*, 9(1), 10-12.
- Singh, H. (2003). Building effective blended learning programs. *Educational Technology*, 44 (1), 5-27.
- Zhang, J., Khan, B. H., Gibbons, A. S., & Ni Y. (2001). Review of web-based assessment tools. In B. H. Khan (Ed.), *Web-based training*. (pp. 137-146). Englewood Cliffs, NJ: Educational Technology Publications.



## CHAPTER 6

# Electronic Mail



BY SANJAYA MISHRA

### Introduction

**E**lectronic mail or in short “email” is one of the most popular and useful features of the Internet. By definition, it is mail delivered through electronic means. However, while tracing the development of email communication Tao and Reinking (1996) identified at least three definitions of email:

- 1) It is mail being transmitted electronically. This definition embraces fax and telex.
- 2) It is only communication through computers but would include graphics as well as texts as appropriate email communication.
- 3) It is only text being transmitted through computers between senders and receivers.

Today, email is primarily known as communication from one person to another or many others through the use of computer and networks.

Email addresses have a standard three part format: `userid@host.domain`. The `userid` is the name identifying the user; `@` [at] sign follow account name; and the host of the email account (such as Hotmail, Yahoo or any other webserver), and the domain (such as `.in`, `.org`, `.com`, `.net`, etc.). Some important characteristics of email are

as follows:

- It is text-based, and requires literacy skills. Language is the major means by which the email communication is done.
- A mail once typed can be sent to multiple persons/locations without duplicating efforts.
- It is asynchronous in nature, and can overcome problems posed by geographical time zones.
- Messages sent and received as email can be stored and organised in a way that can facilitate easy retrieval.
- It is a cost and time saving technology. It also reduces the use of paper (environmental friendly).

### Educational use of e-mail

It is the use of email that makes e-Learning possible. In most e-Learning programmes the basic need is to have an email account. Sometimes, a whole course is offered through email as well. So, the use of email is enormous in education. Primarily, email has two main applications in education: in research and in teaching. Email is used as a research tool, and also as a carrier of research tools (such as questionnaire and interview schedule). However, in the instructional settings email

is used for communication and interaction between student and students, and student and teachers. Email provides the advantage of speed, and information and announcements about a schedule/reschedule of classes can reach the learners before they travel to the classroom/study centre. Learners with special needs (hearing impaired) can interact with the teachers using email, while visually impaired students can use email with other text-to-speech readers. In a conventional classroom, a student may feel intimidated to talk and raise questions/doubts, but can choose to interact through email. Email can be used for delivering of lessons, and teachers can develop email groups to discuss topics related to the curriculum (Dorman, 1998). Kramaski (2002) reported that email conversation was useful in construction and interpretation of graphs using EXCEL, and it enriched mathematical discourse. Kim (2008) through a review of literature identified the following advantages of email use along with contribution to academic achievement:

- Enabling immediate, frequent support for individual needs; learner-centred context; individualised instruction; exchange of resources and information.
- Fostering psychological comfort; intimacy; expression of personal ideas; opinions, and emotions; informal conversations; social content exchanges; interpersonal contexts.
- Building interpersonal skills, collegiality; awareness of others' attitude; insights into others' perspectives; close relationships.
- Developing thoughtfulness; cognitive task structuring; careful analysis; critical thinking; reflection; planning.

- Encouraging interest; enthusiasm; motivation; self-esteem; self-confidence; change in personal values; active participation.
- Permitting authentic but convenient context; gap reduction between knowledge and practice; real-world anxiety decrease.

### How to use it?

While it is almost redundant here to talk of the technology of email, as it is almost pervasive in higher education institutions. Nevertheless, you need to have an email account to teach and your students should

have email accounts to take advantage of this technology. Either you can use the free web-based email services (that provide abundant space these days) or you can have a client-based email system in your institution that may use a mail delivery software like the Eudora, Outlook, and others. However, it is most important to consider the pedagogic issues related to use of email in teaching-learning. In this context, we proffer the

following guidelines:

1. Analyse the individual and group needs, specially in the context of cognitive and no-cognitive support.
2. Consider the skill level of your target group, and their familiarity with the use of email. Provide a short hands-on training and/or distribute a short printed guide for ready reference.
3. Indicate email response time from the perspective of both the student and the teacher in the beginning of the course.
4. Plan and develop templates for routine kinds of queries for use during the teaching process.
5. Consider a theoretical foundation for your teaching approach by using

**Learners with special needs (hearing impaired) can interact with the teachers using email, while visually impaired students can use email with other text-to-speech readers**

## STRIDE HANDBOOK 8



various models available. One such model that could be effectively used is Keller' ARCS model. Attention enhancing mail can be sent in the beginning of the course, and when required to stimulate a sense of inquiry and curiosity in the student. Message that relate the content of the study to the learners present/future needs can be categorised as relevance enhancing message. Confidence-enhanced messages are utilised to convince the learners that after carefully reading and undertaking the tasks, they would be able to achieve their goals. Satisfaction related mails provide information on what the students would get after accepting and using the strategies given to them. So, while, using mail to provide instructions, you need to consider the purpose and use appropriate language to that effect.

**Consider a theoretical foundation for your teaching approach by using various models available. One such model that could be effectively used is Keller' ARCS model**

6. It is also important to be precise, without being too lengthy. You may avoid non-relevant message to the learners. But, should check regularly about learner's progress through mail/phone.
7. Reply to students mail as quick as possible, but should not be delayed more than the promised time in the beginning of the course.
8. Provide working weblinks in your mail.
9. While using email as a discussion forum amongst the students on a specific topic, summarise the discussion every day/week/month. You may assign this task to specific student volunteers during the course. Consider giving weight to their involvement in such discussion in the final grade/ credits.
10. Ask students to submit assignments on due date, give sufficient alerts before the due date. Let them know the consequence of non-submission of assignments on time.

11. Consider personal emails received from students as private, and do not share these with the group unless otherwise stated by the writer.
12. Reply to emails carefully, and not in haste. Do a spell check before pushing the send button.
13. Never promote spam/junk mail or chain mail forwarding amongst students/teachers.
14. Ask students to use appropriate etiquette associated with the email. Such as use of capital letter in mail is considered to be rude.

### References, Weblinks, Sources

- Advantages and disadvantages in using email for teaching and learning, *Issues of Teaching and Learning*, 5 (3), Available at <http://www.catl.uwa.edu.au/publications/ITL/1999/3/advantages> (08/08/2009)
- Dorman, S.M. (1998). Using email to enhance instruction, *Journal of School Health*, 68 (6), 260-261.
- How email works? <http://www.learnthenet.com/english/animate/email.html> (07/08/2009).
- Kramarski, B. (2002). Enhancing mathematical discourse: The effects of e-mail conversation in learning graphing, *Education Media International*, 39 (1), 101-106.
- Kim, C. (2008). Using email to enable e3 (effective, efficient, and engaging) learning, *Distance Education*, 29 (2), 187-198.
- Sherwood, K.D. (n.d.). A Beginner's guide to effective email. <http://www.webfoot.com/advice/email.top.php> (07/08/2009).
- Smith, C.D., Whiteley, H.E., & Smith, S. (1999). Using email for teaching, *Computers and Education*, 33 (1), 15-25.
- Tao, L. & Reinking, D. (1996). What research reveals about email in education, Paper presented at the Annual meeting of the College Reading Association, October 31- November 3, 1996. (ERIC Document No. ED 408 772).
- Why use email in your teaching? *Issues of Teaching and Learning*, 5 (3), Available at <http://www.catl.uwa.edu.au/publications/ITL/1999/3/email> (08/08/2009)



## CHAPTER 7

# Mailing Lists

BY STEVE MCCARTY



## Introduction

So long as e-mail remains a major form of communication, mailing lists will provide a convenient means of message distribution. Mailing lists go by various names such as discussion lists or e-mail forums, which give a clearer idea of their nature or purpose. The providers of free mailing lists such as Google and Yahoo call them groups, which emphasises their role in maintaining topic-based communities.

One of the earliest forms of ICT or communication through the Internet, mailing lists have also proven abidingly useful for educational purposes, including for information sharing and professional development among educators. Easy interfaces between e-mail and the Web have meant that the typical mailing list message links to a new entry on the vast WWW that is relevant to the list topic and expected to be of interest to list subscribers.

Mailing lists offer many flexible options depending on the needs of the user. Messages can be exchanged through e-mail client programs, through a Web interface, or most recently from hand-held devices such as mobile phones that have an Internet connection. The convenience of e-mail in most ways applies to lists as well, such as automatically forwarding messages. The ultimate convenience of e-mail or mailing lists lies in the fact that messages are

*pushed* to the user automatically and effortlessly. Blogs and social networking sites purportedly superseding mailing lists have suffered from the drawback that the user must go to the Websites and *pull* the information from them. One may visit a Website only to find to find nothing new, which discourages one from returning to check again. RSS feeds have come along partly to fill this need of a preview of contents available.

On the other hand, the very convenience and immediacy of e-mail tends to present the mailing list subscriber with information overload, although the unending problem of spam has seemed to affect mailing lists relatively little. The subscribers who can post to a list are under the control of a list owner with nearly absolute gatekeeping powers. Web archives can be set to be available to subscribers only or on the open Web and searchable. Subscribers for their part can set their subscription to a daily or other periodic digest of posts compiled in one message. They can set their subscription to no mail during busy periods, or just check the Web archives occasionally if they are available. Subscribers are free to either move from list to list according to their evolving interests or to stay in communities sustained by mailing lists.

## How mailing lists work?

A listserv or list-serving program in a

server computer automatically maintains a subscriber list and distribution options set by the list owner and each subscriber. An e-mail sent to the e-mail address of the list is generally distributed to each subscriber who opted for individual messages or is placed in a queue for digest subscribers. Web archives of all messages can be generated if desired, often with options of viewing posted messages chronologically, topically, or alphabetically by author.

Besides the owner there can be other list administrators deputised to screen memberships or messages. A moderated list means first that the owner selects certain controls over how to subscribe, who can subscribe, and whether attached files are transmitted or not. For example, subscribers may have to fill out a Web form first to show legitimate intentions in terms of the purpose of the list. Moderation most often means controlling what content is allowed to be distributed, by blocking messages considered irrelevant or offensive.

Moderation criteria should be clarified in the welcome message to new subscribers along with the mission of the list.

Moderation is particularly important where all messages are archived on the Web and accessible to search engines. Messages with inappropriate content are best prevented before distribution, because in most cases the list owner cannot eliminate individual messages from the Web archives at the server computer level.

To moderate a list also means to mediate among subscribers and active posters to control the number, length or other aspects of messages, to mitigate unproductive quarrels by persuasion, or to maintain standards of conduct. In the case of academic mailing lists, the moderation could extend to maintaining scholarly rigor

and collegiality. E-moderation has become a topic of importance in books and Websites because of the need for quality of communication in mailing lists serving a vast number of interests and disciplines. While the list owner has arbitrary powers and is generally safe from legal challenges, in order to satisfy list members that the process is fair, sometimes list owners have negotiated their policies democratically with subscriber input. However, a list is generally most successful when moderation is least needed or remains invisible in the background.

### Distribution lists

However, not all mailing lists are set to an each-to-all mode for the purpose of discussion. A one-way distribution list with a few-to-all setting can still serve a community with a common interest, but with the focus on propagating information. Rarely distributed more than once a day, they tend to be edited and concise to maximise the information that an individual may wish to receive.

Major newspapers such as the *New York Times* and *Financial Times* offer free distribution lists with headlines and links to stories at their main Websites. Such distribution lists are called mail magazines in Japan, and indeed the capabilities of e-mail messages through HTML markup, links, photos and other embedded media approach the appearance of Web pages. If there is a market for certain specialised information, such as investment advice that is perceived as economically valuable, people are sometimes willing to pay for distribution lists.

At the same time, to serve the various needs of a community for both discussion and straight information, an organisation can maintain any number of discussion lists as well as distribution lists. There are

**Moderation most often means controlling what content is allowed to be distributed, by blocking messages considered irrelevant or offensive**

## STRIDE HANDBOOK 8

few technical restraints except that a virtual organisation can become scattered as members belong to different communication channels that do not intersect. That is why the topics of mailing lists need to strike a balance between being too general and too specific. Lists may need to serve specialised needs of individual members while remaining general enough to maintain an active community. Moreover, people's interests change along with current events and technological progress.

### Mailing lists for educational purposes

Educational mailing lists can and do run from the class level to the global level. A teacher, for example, may set up a mailing list with the campus e-mail addresses of all the students in order to reach students quickly about assignments, announcements, class changes or cancellations. Students may offer a mobile phone address instead, or have e-mail to their campus account automatically forwarded to their mobile phone. In a one-way transmission mode from the teacher, the mailing list format is merely for convenience, whereas mailing lists lend themselves readily to each-to-all discussions. With sharing among peers and group self-regulation, the teacher can observe without intervening. Provided the mailing list is set to accept attachments, the list members can share multimedia files such as voice messages or videos.

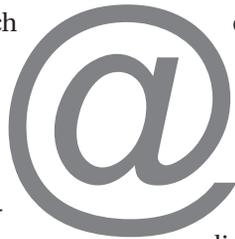
A university or other educational institution often finds it useful to set up many mailing lists on the institutional listserv. They can serve as routine communication channels for departments or other divisions of the institution such as staff or administrators. Then finally there are the geographically or topically based mailing lists that extend beyond institutions, sometimes global in scope or relevance. Academic mailing lists may

evolve from generalised topics to more specialised topics over time. However, there are fields such as distance education where a wide geographical distribution continues to provide mutual benefits to subscribers.

### Examples of mailing lists for online education

Online education is one of those fields that, while gradually becoming more specialised in world regions and academic disciplines, can still bring together a global membership in mailing lists or virtual organisations. There is a widespread notion that mailing lists go through a life cycle of initial excitement, intense participation, then irritation at the overload of messages, leading to bickering, breakup or apathy. But while the psychology of novelty and other aspects of human nature are involved, the life cycle could easily become a stereotype like believing that all travelers experience culture shock because certain stages are relatively common. Some mailing lists related to online education have been active since the 1990s, while subscribers cannot generally cope with dozens of messages a day, so the restraint of more considered messages is a welcome development.

The Distance Education Online Symposium DEOS-L is one example of a long-standing and active mailing list (the dash L in many mailing list addresses refers to Listserv) with subscription options and archives available for browsing at <http://lists.psu.edu/cgi-bin/wa?A0=deos-l&O=D>. DEOS-L is moderated and academically oriented, with a combination of general discussions on distance education and announcements for conferences and publications. Based in the U.S., it tends to be weighted toward North American perspectives because of the composition of subscribers, but it has also welcomed international threads in keeping with its topic and the reach of online



technologies.

In the genre of free distribution lists, the OLDaily by Stephen Downes offers unconditional information about developments in online learning. Subscribers can receive a weekly digest or make comments at the Website <<http://www.downes.ca/>>. With no commitment necessary and little direct interaction, the community is entirely implicit but nonetheless sustained through the technologies and sources recommended as they resonate with subscribers' needs and interests.

Virtual organisations have relied upon mailing lists to keep members informed and interacting, so they may employ both discussion lists and distribution lists. Belonging to at least one of the lists is a minimum condition of membership in some virtual organisations to distinguish them from mere lists or Websites. The World Association for Online Education (WAOE) has been held together since 1998 mostly by mailing lists, moving between server bases in universities and free Web-based services such as Google Groups. However, belonging only to the WAOE general member discussion list has led some observers to believe that the list was the full extent of the organisation. It was out of consideration for general members that organisational lists were separated from content lists focused on online education issues. Nevertheless, the discussion lists provide essential communication channels leading to deeper involvement in the organisation along with opportunities for professional collaboration among the global membership.

### **Recommendations to set up a mailing list**

Having reviewed some of the uses of

mailing lists, for education and e-learning in particular, readers should not hesitate to set up new lists where the purposes of discussion, information dissemination, or community-building may be served. Two widely-used, free, and easily managed Web-based mailing list services are Google Groups <<http://groups.google.com/>> and Yahoo Groups <<http://groups.yahoo.com/>>. Many users already have an account such as Web-based e-mail with one or both of the providers and may choose whichever seems more convenient. One generally signs up to be a list owner at one of the above Websites, or at the corresponding site in one's own country or preferred language.

Then it is a matter of choosing among the available settings, such as how open the list is in terms of membership and Web archives, whether to moderate messages before release, then populating the list by generating direct invitation messages to e-mail addresses from within the group administration interface, or by publicly inviting people to visit the home page of the list.

Alternatively, mailing list software with Web archiving capability, some of which is free and open source software, can be set up on one's own institutional server. For more details see the Wikipedia entry on electronic mailing lists or e-lists: <[http://en.wikipedia.org/wiki/Electronic\\_mailing\\_list](http://en.wikipedia.org/wiki/Electronic_mailing_list)>.

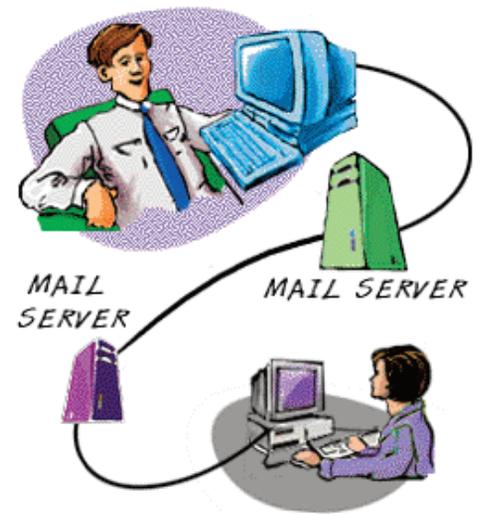
Even as successive technologies such as social networking or virtual worlds increasingly attract users to Web-based venues, mailing lists remain useful to reach people directly and unforgettably through their e-mail in-box. Mailing lists can complement other technologies where many choices are available, or serve as an essential communication channel in regions where online technology is most limited.

**Discussion lists provide essential communication channels leading to deeper involvement in the organisation along with opportunities for professional collaboration among the global membership**



## CHAPTER 8

# Asynchronous Conferences, Discussion Forums



BY NEIL HARRIS AND MARIA SANDOR

### Introduction

Computer-mediated communication (CMC) is becoming more commonly utilised in the delivery of university curricula. There are different ways of incorporating CMC; one application that is being increasingly utilised is online discussion forum. As an application, the discussion forum provides a limited and structured online environment for the provision, exchange and/or discussion of information between instructor and students and/or between students. A defining feature of the asynchronous discussion forum as an application is that it allows for comments to be posted and viewed at a time of convenience to the student or instructor, in other words, there is no need to be connected at a specific same time.

In order for e-educators and those utilising a blended learning approach to achieve improved learning outcomes it is imperative that teaching and learning strategies incorporating online discussion forums are pedagogically sound. As such, the increase in usage of online discussion forums in higher education has led to the associated need to increase our understanding of how to best incorporate

such applications into teaching (Stodel, Thompson, & MacDonald, 2006; Tallent-Runnels, Thomas & Lan et al., 2006).

### Educational uses of forums

Within the e-learning environment, it is the discussion forum that commonly provides the means for considered dialogue between student and instructor as well as collaborative activities between students, without the requirement of a face-to-face encounter (Garrison, 1997; Kear & Heap, 2007). Rudimentary use of discussion forums within the delivery of a subject is as a means to provide information or direction to students on course content or administrative matters. Used in this way the forum offers the student right of reply often for confirmation of understanding and, perhaps more significantly, presents a lasting record of the information and ensuing dialogue for other students and instructors involved in the subject. This can contribute to a sense of a shared learning space and process involving instructors and students which can, in turn, lead to more open and productive communication around subject content and procedures.

A more advanced and increasingly used application of the discussion forum within

education is as an online environment for subject content discussion, akin to a tutorial. A relatively straightforward approach to this is for the instructor to set a question or topic with students encouraged or required to respond to the content related topic and have on-going discussions with their peers on this topic (Johnson, 2006). This conception of the online discussion forum manifests in a question and answer format with the instructor posing the question, students required or invited to provide an answer and the instructor positioned to confirm, refute or provide the “right” or model response. Used in this way, the nature of asynchronous online discussion forums (messages and postings can be viewed when convenient for participants) offers students the time to reflect on the topic or discussion and thereby encourages a more in-depth, academic and constructive dialogue (Sandor & Harris, 2008, Garrison, 1997; Johnson 2006). This is the real advantage of asynchronous discussion forums over more

fancied synchronous applications such as real-time or synchronous audio, visual or even text only on-line classrooms or more informal and rapid dialogue applications such as blogs, wikis and chat rooms.

### How to use it?

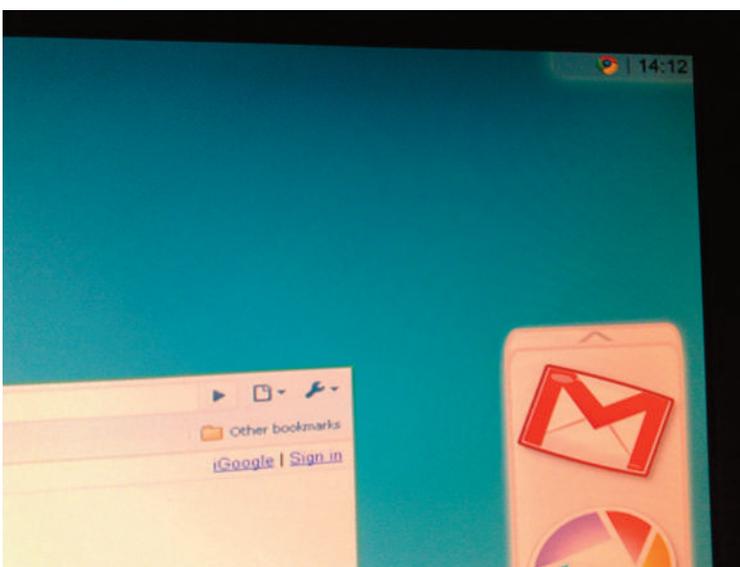
Teaching a course or even components of a course online is distinctly different from a face-to-face mode of delivery (Kelly, Ponton, & Rovai, 2007). Applications such as asynchronous online discussion forums permit greater flexibility for participants who can be studying almost anywhere at anytime (Dixson et al., 2006; Leh, 2002).

From the instructor’s perspective, this convenience for the student generates an onus upon the instructor to be regularly, if not near continuously, online to field questions, reply to postings and generally be an active leader of the dialogue within the discussion forums.

Furthermore, to be absent or off-line for any significant length of time carries the risk of being viewed by course participants as unresponsive and uninterested which, in turn, leads to participants’ reduced usage or withdrawal from online aspects of a course. Not surprisingly, many instructors perceive online discussion forums to be highly time demanding with limited reward or recognition for effort (O’Quinn & Corry, 2002; Rourke & Anderson, 2002; Spector, 2005).

Much of the usage of online discussion forums in higher education is didactic in nature positioning the instructor in a traditional educational role as the provider of knowledge (Light & Cox, 2001; Margolis, 2000). While this usage can have merit, there is a need to implement more innovative approaches to the medium of discussion forum that are pedagogically

**The nature of asynchronous online discussion forums offers students the time to reflect on the topic or discussion and thereby encourages a more in-depth, academic and constructive dialogue**



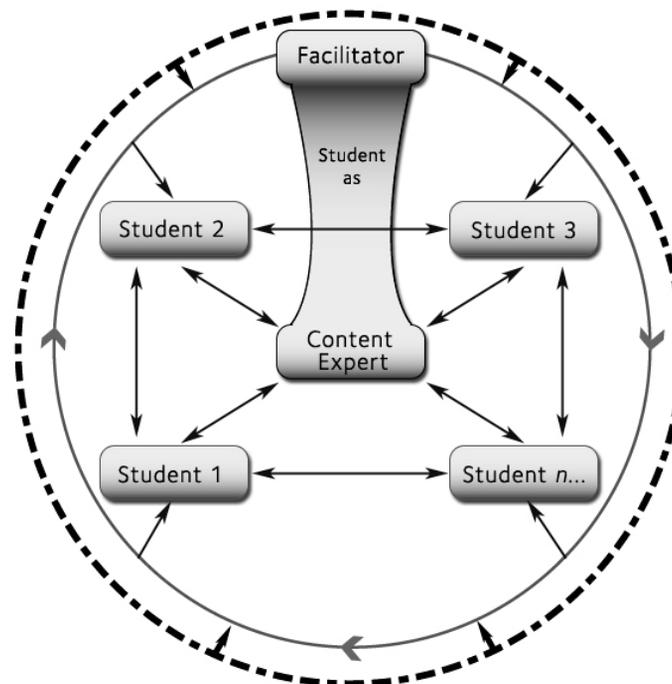
## STRIDE HANDBOOK 8

sound, engaging for participants and more time effective for instructors. In this regard, the distinctive asynchronous platform of the online discussion forum can be used to promote peer learning (Harris & Sandor, 2007; Kear & Heap, 2007). Given the widely acknowledged value of student to student interaction in promoting engagement with content and deepening learning, initiatives that draw students into online learning processes and encourage them to take a more central role in their learning are of interest (Boud & Lee, 2005; Kear, 2004).

Figure 8.1 presents a model of asynchronous discussion forums as a student-centred peer e-learning environment. This framework promotes greater student involvement and ownership by positioning the student as central in the learning process. The student is situated as the content expert and facilitator on a specific topic at the centre of the learning event, shifting the focus from the instructor to the student. The instructor has been

repositioned as the overseer of dialogue, remaining abreast of the discussion should support and guidance be needed. The student becomes content expert by preparing and posting a primer or short essay (approximately 1 000 words) on a specific topic (e.g. Choose a health behaviour change model and discuss it's strengths and weaknesses in understanding and addressing a health issue of your choice) giving the student greater knowledge on the topic compared to his or her peers. All other members of the forum group provide academic comment on or build upon the primer that has been posted. As content expert, the student who posted the primer is also required to facilitate the discussion (three aspects of facilitation: content, leadership and processes) surrounding their particular topic thereby relieving the instructor of this role.

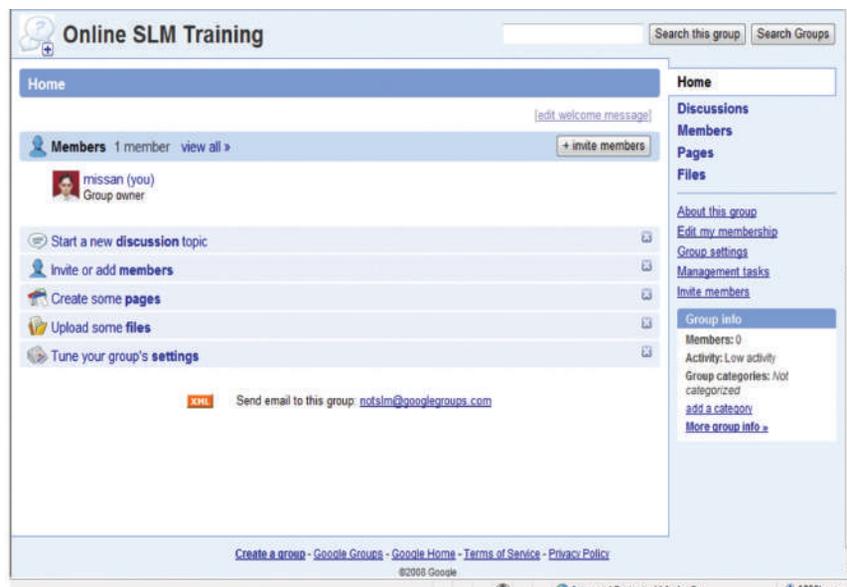
This framework has been developed and evaluated by the authors over the last six



— Student-student interaction

- - - Instructor-student interaction (overseer of dialogue)

Figure 8.1. Online discussion forum as a student centred peer e-learning environment



years across a number of postgraduate and undergraduate courses delivered in both blended and online modes to combined cohorts of between 25-80 students who generally have limited experience of online discussion forums. In these courses the framework has been a central component and provided the basis for the majority of the assessment. Discussion forums run weekly with students being assigned to write a primer on a set topic corresponding to course content. Students are then assessed on their primer, the facilitation and their postings in all discussion forums (70% of total assessment: 30% primer, 30% postings, 10% facilitation). To compress the discussion and keep the momentum within the dialogue, forums are only accessible for two weeks. Student feedback on the approach has been very supportive and highlighted the value of the approach for engagement with subject content and personal learning.

With respect to applying the model of asynchronous discussion forums as a student centred peer e-learning environment there are a few key learnings to be considered:

- *Assess forum participation:* A significant portion of the subject marks accorded to forum participation increases the student interest in participation. All three components - primer, postings and facilitation - should be separately assessed;
- *Participation as a requirement not an option:* Students are required to participate in each weekly forum with marks deducted for any forum missed by the student;
- *Limit the length of time the forum is open (one to two weeks):* This compresses the dialogue and promotes greater and more coherent interaction between students. If you are running a series of forums across the semester, this strategy will require students to engage with subject material on a weekly basis;
- *Limit participant numbers in a discussion group:* Too few and too many participants in a forum becomes counterproductive. Ideally between 10 and 25 participants in a group. Many less than 10 participants and there is not sufficient numbers to sustain a discussion, more than 25 and the forum

## STRIDE HANDBOOK 8

becomes too busy with those who are less confident of their standing in the group fading out of the discussion; and

- *Set topics and assign students:* The forums must have an established set topic that is directly linked with the subject being studied - ideally supported with resources such as a lecture, topic notes, references, and web links. Students must be assigned to topics (primer and facilitation role) early in semester.

### Resources, examples, links

Many tertiary education providers have a dedicated flexible or online learning department or unit. These units offer practical advice on the use of discussion forums as a teaching tool. They may also be able to assist in the setting up of the web based infrastructure required to host an online discussion forum.

A number of teaching and learning journals offer papers on online teaching and learning. For example (and in no specific order):

- *Journal of Asynchronous Learning Networks*
  - *Open Learning: The Journal of Open and Distance Learning*
  - *Journal of Computer Assisted Learning*
  - *Internet and Higher Education*
  - *Issues in web-based pedagogy*
  - *The International Review of Research in Open and Distance Learning*
  - *Distance Education*
  - *Learning and teaching in higher education*
  - *Review of Educational Research*
- Educause*, a non-profit association linking education and information technology, may provide useful recommendations and resources.  
<http://www.educause.edu/>



*The Australasian society for computers in learning in tertiary education*, Ascilite, is a useful resource with conference proceedings and regular updates in the area.

<http://www.ascilite.org>

*The European association of distance teaching universities* may provide useful links and updates on their website. <http://www.eadtu.nl/>

## References

- Boud, D. & Lee, A. (2005). 'Peer learning' as pedagogic discourse for research education. *Studies in Higher Education*, 30(5), 501-516.
- Dixson, M., Kuhlhorst, M., & Reiff, A. (2006). Creating effective online discussions: optimal instructor and student roles. *Journal of Asynchronous Learning Networks*, 10(1), 3-5.
- Garrison, D. R. (1997). Computer conferencing: the post-industrial age of distance education. *Open Learning*, 12(2), 3-11.
- Harris, N. & Sandor, M. (2007). Developing online discussion forums as student centred peer e-learning environments. In ICT: Providing choices for learners and learning. Proceedings ascilite Singapore 2007. <http://www.ascilite.org.au/conferences/singapore07/procs/harris.pdf>
- Johnson, G. M. (2006). Synchronous and asynchronous text-based CMC in educational contexts: a review of recent research. *TechTrends*, 50(4), 46-53.
- Kear, K. (2004). Peer learning using asynchronous discussion systems in distance education. *Open Learning*, 19(2), 151-164.
- Kear, K. L. & Heap, N. W. (2007). Sorting the wheat from the chaff: investigating overload in educational discussion systems. *Journal of Computer Assisted Learning*, 23(3), 235-247.
- Kelly, H. F., Ponton, M. K., & Rovai, A. P. (2007). A comparison of student evaluations of teaching between online and face-to-face courses. *Internet and Higher Education*, 10, 89-101.
- Leh, A. S. C. (2002). Action research on hybrid courses and their online communities [Electronic version]. *Education Media International*, 31-38.
- Light, G. & Cox, R. (2001). *Learning and teaching in higher education*. London: Paul Chapman Publishing.
- Margolis, M. (2000). Using the Internet for teaching and research: a political evaluation. In R. A. Cole (Ed.), *Issues in web-based pedagogy*. (pp. 9-22). Westport, CT: Greenwood Press.
- O'Quinn, L. & Corry, M. (2002). Factors that deter faculty from participating in distance education. *Online Journal of Distance Learning Administration*, 5(4), 1-16.
- Rourke, L. & Anderson, T. (2002). Using peer teams to lead online discussions. *Journal of Interactive Media in Education*, 1, 1-21.
- Sandor, M. & Harris, N. (2008). Understanding the experience of university students as facilitators of the learning process within the medium of online discussion forums. In I. Olney, G. Lefoe, J. Mantei, & J. Herrington (Eds.), *Supporting a Learning Community*. Proceedings of the Second Emerging Technologies Conference 2008, Wollongong: University of Wollongong, 173-181.
- Spector, J. M. (2005). Time demands in online instruction. *Distance Education*, 26(1), 5-27.
- Stodel, E. J., Thompson, T. L., & MacDonald, C. J. (2006). Learners' perspectives on what is missing from online learning: Interpretations through the community of inquiry framework. *The International Review of Research in Open and Distance Learning*, 7(3), 1-24.
- Tallent-Runnels, M. K., Thomas, J. A., Lan, W. Y., Cooper, S., Ahern, T. C., Shaw, S. M., & Liu, X. (2006). Teaching courses online: a review of the research. *Review of Educational Research*, 76(1), 93-135.

## CHAPTER 9

# Podcasting: a learning technology



BY PALITHA EDIRISINGHA AND ANGUELINA POPOVA

**P**odcasting, originally developed and used for creating and distributing personal radio shows on the Internet is gaining popularity amongst academics as a technology to support teaching and learning. In this chapter, we provide definitions of podcasts and podcasting, their potential uses in education, and guidance on using podcasts and finding podcasts suitable for education.

## What are podcasts and podcasting?

Salmon and her colleagues define podcasts as digital media files that play audio and/or audio and vision (also known as vodcasts) that are made available from a website, can be opened and/or downloaded and played on a computer, or downloaded from a website to be played on a small portable player designed to play the sound and/or vision. Podcasting is the action of both creating podcasts and distributing them (Salmon et al., 2008).

Technically speaking, podcasts are MP3 or MP4 files delivered automatically to a user through subscription to a syndication feed.

We can view educational podcasts as digital audio or video files containing

meaningful content for learning.

Podcasting is the process of creating and distributing such learning material.

Educational podcasts can be considered different from other general types of podcasts; educational podcasts are integrated with the teaching/learning process, addressing learner needs, and targeted for a defined group (e.g. students studying a particular module, a cohort of students, or students from one university). Alongside with audio and video podcasts, enhanced podcasts are in use, offering built-in functions such as inserted slides or chapter titles to aid navigation.

## Why should podcasting be used in education?

Certain forms of learning, such as distance, online or blended learning, can particularly benefit from using podcasts for delivering content (both teacher and student created), for feedback or other relevant information (for examples, see Salomon and Edirisingha, 2008). Certain groups of learners can also benefit from learning from audio, such as those with dyslexia and those who prefer listening to reading, or students who spend much time travelling. Moreover, there is a growing

body of empirical evidence suggesting that podcasts can support learning in traditional classrooms and for on-campus students with no specific learning needs. The key factors for success are the thoughtful choice for the type of content to be delivered through podcasts to address learner needs, pedagogical design and how podcasts are integrated with the teaching and learning process. Edirisingha, Salmon and Nie (2008) provide a model for developing successful podcasts.

Podcasts can support and enhance different kinds of learning. To give few examples:

### **Conversational and collaborative learning**

Effective learning takes place when learners can discuss with each other, interrogating and sharing their knowledge and understandings. Hearing a conversation such as an interview with an expert or teacher talking about his/her background, or a peer group discussing on a topic may help establish an empathetic relationship for the learner. Podcast technology provides for a shared conversational space. Approaches to developing podcasts with peer discussions, such as the one developed by Rothwell (2008) prove that podcasts can successfully be used to support conversational and collaborative learning among students.

### **Constructivist learning**

Constructivist learning is the active process in which learners construct new ideas or concepts based on their current and past knowledge (Bruner, 1966). What determines the construction of knowledge is the design of the podcast and the

learning activity the podcast is designed to stimulate or facilitate. This can be shared construction with the aid of peers, or individual construction through reflection (e.g., Ng'ambi, 2008) and internal dialogue stimulated by questions or tasks in the podcast.

### **Situated learning**

Brown et al. (1989) emphasise the idea of cognitive apprenticeship where teachers (i.e., the experts of subject knowledge) work alongside students (i.e., the apprentices) to create situations where the students can begin to work on problems even before they are capable of fully understanding them. Listening to pre-prepared instructions, recording one's own reflections or listening to peers reflecting on a subject are examples of situated

learning, where podcasts can be successfully used.

**Reflection is probably the most important and final aim of education. It is about having a critical thought of what one knows, what has been learned, the way it was learned or performed, what could have been done or could be done further**

### **Reflective learning**

Reflection is probably the most important and final aim of education. It is about having a critical thought of what one knows, what has been learned, the way it was learned or performed, what could have been done or could be done further. Podcasts can support reflection in many ways, for example, by simply providing easily accessible information to reflect upon, or by providing with reflection-stimulating tasks.

### **Flexible and mobile learning**

Flexible learning is about giving learners more choices of the places, times and pace of learning (Collis and Moonen, 2001). Mobile learning is generally about making flexible learning possible through mobile devices (Kukulska-Hulme and Traxler, 2005). Podcasts are ideal support for these

## STRIDE HANDBOOK 8

two types of learning, as they have a time-shifting capability to be listened any time, and a space-shifting capability to be listened anywhere. Also, they do not band the learner to listen through only one device.

The usage and effectiveness of podcasts largely depends on the pedagogical purpose and the context in which the teachers intend to use it, and on the way the students are using it.

Finally, from a practical perspective, podcasts are simple to create and distribute and their production is near to costless.

### How to use podcasting?

Edirisingha, Salmon and Nie (2008, pp. 153-154) recommend 10 factors to be taken into consideration when designing podcasts. Although these factors have been

discussed in context of higher education, they can be applied for educational podcasts in general. These factors are:

- the purpose of the pedagogical rationale;
- the medium used (audio only or audio and video);
- the convergence (how much the podcasts are integrated with other e-learning);
- the authors and contributors of content;
- the structure of podcasting (frequency and timing);
- the reusability of content;
- the length;
- the style (presentation, interview, dialogue);
- the framework of content organisation;
- the access system (via VLE or Internet-based feeder service such as RSS)

Depending on the pedagogical rationale and the type of content, podcasts can

**TABLE 9.1. A framework relating types of podcasts and possible learning outcomes (Source: Popova and Kirschner, 2008)**

Type	Content	Examples of learning outcomes
Lecture delivery	Lectures, guest lectures (video and audio)	Learning through repetition, revision; supports recall, better understanding, independent learning
Feedback	Audio recording of instructors remarks, suggestions	Supports self-reflection, critical thinking
Additional material	Discussions, interviews, key concept explanations, reminders, summaries of previous lectures or upcoming lectures, advice for reading and work	Conversational approach to learning, emotional engagement of the learner, support understanding, priming, preparation for new knowledge, help organisation
Supplementary material	Interviews (with experts or others), speeches, music or other audio recordings, support materials, class discussions and conversations, instructions	Supports learning activities, (e.g. developing listening and speaking skills in foreign language learning), supports thinking skills and deep learning Stimulate satisfaction, motivation
Preparatory material	Instructions, all types listed in supplementary materials, but used for preparing students for face-to-face or online sessions and thus differing by design and format	Priming Supports reflection
Specific learning practice and needs	Heart sounds in medicine, phonetics, assistance for auditory learners	Supports developing practical skills (subject specific)
Assignments	Student created content as a response to a given task (tours/field works, interviews, oral reports or other audio data)	Active learning, motivation, self-reflection, deep learning Can support collaborative learning
Creative activities	Students generated content on their own such as pieces of theatre or music, impressions from a field trip or city / museum visit, or as supplementary material for own blogs	Motivation, (self)reflection, deep learning, collaborative, active learning Can support collaborative learning

support a range of learning outcomes. The practice shows that podcasts can be grouped by types; each type is related to certain content and learning outcomes. Popova and Kirschner (2008) propose a framework to help educators decide on the most appropriate type of podcast to support learning.

### Where to find examples and resources?

Many universities and schools are now experimenting with or using podcasts as part of their teaching and learning provision. The IMPALA project (<http://www.le.ac.uk/impala/>) started in 2006 and conducted by the University of Leicester has been creating a rich resource on how to successfully use podcasts in education. The project website offers valuable information for teachers who are willing to introduce this technology into their practice. A book published in 2008 entitled *Podcasting for Learning in Universities* edited by Gilly Salmon and Palitha Edirisingha, summarises success stories in using podcasts in different settings and for a range on learning experiences. The book's website at <http://www.podcastingforlearning.com> offers examples of podcasts and resources for practitioners.

Other examples of podcasts can be found on universities websites - such as Duke University and Stanford, and on specialised platforms for podcast searching such as iTunes, Podcast Alley or Odeo, just to mention a few.

### References

- Brown, J. S., Collins, A., and Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18, 32-42.
- Bruner, J. (1966). *Toward a Theory of Instruction*, Cambridge, MA: Harvard University Press.
- Collis, B., & Moonen, J (2001). *Flexible learning in a digital world: experiences and expectations*, London: Kogan Page.
- Edirisingha, P., Salmon, G., & Nie, M. (2008). Developing pedagogical podcasts, In G. Salmon and P. Edirisingha (Eds) *Podcasting for Learning in Universities*, Maidenhead: Open University Press and SRHE.
- Kukulka-Hulme, A., & Traxler, J. (Eds) (2005) *Mobile Learning: A Handbook for Educators and Trainers*, London: Routledge.
- Ng'ambi, D. (2008) Podcasts for reflective learning, In G. Salmon and P. Edirisingha (Eds) *Podcasting for Learning in Universities*, Maidenhead: Open University Press and SRHE.
- Popova, A., & Kirschner P.A., (2008) Innovative pedagogical and psychological perspectives of podcasts. In Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2008 (pp. 3899-3903). Chesapeake, VA: AACE.
- Rothwell, L. (2008) Podcasts and collaborative learning, In G. Salmon and P. Edirisingha (eds) *Podcasting for Learning in Universities*, Maidenhead: Open University Press and SRHE.
- Salmon G., & Edirisingha P. (Eds) (2008) *Podcasting for Learning in Universities*, Maidenhead: Open University Press and SRHE.
- Salmon G., Mobbs, R., Edirisingha P., & Dennett C. (2008) Podcasting technology, In G. Salmon and P. Edirisingha (Eds) *Podcasting for Learning in Universities*, Maidenhead: Open University Press and SRHE.

## CHAPTER 10

# Online Video



BY KEVIN BURDEN

### What is online video?

Online video is not a new phenomenon as streaming and peer-to-peer sharing of video clips have been common practice for many years. But the phenomenal growth of YouTube, launched only in 2005, and the competition it has since fuelled, represents a steep change in the way online video is created, managed and shared.

YouTube is not alone in terms of online video. Other online video services such as Blip TV, Vimeo, Google Video and Yahoo all compete in a highly competitive and potentially lucrative international market. All of these online video services share a set of characteristics and features which mark them apart from other forms such as streaming and peer-to-peer networked video.

1. The ability to upload and share online video content - user-generated content or UGC – is the key feature which sets it apart from previous video formats. Most online video services are free to users, generating income from advertising and sponsorship. They enable users with little or no technical knowledge to upload their own video content onto the Internet from a wide variety of different file

formats which generally include AVI, MPEG, MOV and WMV. To overcome many of the problems associated with these proprietary formats online video providers convert the original file format to a standardised format based around Flash (FLV). This is rapidly becoming a de facto standard for video viewing online and makes codec problems and errors virtually a thing of the past.

2. In addition to uploading their own video content to these online services owners can also attach information about their content (metadata) which makes the resource easier and more likely to be discovered by other viewers. This includes features such as keywords and personal tags. These perform a critical function in enabling other users to find and locate the resource itself but also other similar video resources related to it. In effect it enables users to network their video resources generating what Milgram<sup>1</sup> terms a 'small-world network'. Unlike streaming video, which usually provides users with a link to a single unique resource, tagging, keywords and other social media metadata, enable users to identify other associated resources making for a viral network of

resources which characterises online video. This kind of resource is usually located in a library or repository of similar resources as typified by YouTube.

- The Flash format of online video also brings about other benefits for users including the ability to manage and share video content. Using features such as the 'share link' button (which generates a URL to the clip) and the 'embed' button which generates html code allowing the user to embed a direct link to the resource from their own web-site, blog, wiki or other html based service.

In these different ways online video services have transformed the way in which video content is uploaded, managed and shared. Technical expertise is no longer so critical. Today almost anybody with an Internet connection can upload and share their own video content with the world, including an increasing number of services which even accept video directly from a mobile phone or similar device.

These features along with the simplicity associated with the process have tended to encourage users to upload short clips or even segments rather than full length video. Ninety-nine per cent of YouTube videos, for example, are less than 11.5 minutes in duration and many are no more than three minutes long (Cha, et al, 2007). Users also seem to prefer shorter clips or segments which offer greater flexibility in how they are used. Indeed services like YouTube are set to introduce new features to their service (available already via a third-party piece of software) which will allow users to mark in and out points in an online video clip enabling them to locate and play very specific instances of the original clip.

### Why and how should online video be used in education?

In a recent study undertaken in the United States, Hobbs (2006) discovered a range of what she termed 'non optimal' uses of video in a large number of classrooms which she investigated. She concluded that in these cases teachers frequently used video inappropriately as a reward for good behaviour; in order to combine several classes due to teacher absence; without interruption or intervention from the teacher; for overly long periods of time; and without clear learning objectives or outcomes for students. We can conclude that these approaches are unlikely to yield high quality pedagogical outcomes and should direct us to alternatives which are more appropriate and rewarding for teachers and learners.

Users and advocates make a convincing case, however, for the use of online video which can be summarised as:

- Greater flexibility
- Networking capability
- Motivation and engagement for the student
- Support for higher order thinking skills

- Online video can be used in a wide variety of different teaching spaces, not only online, making it a very *flexible* learning resource. It can be shown directly on a large screen through a data projector to supplement or support traditional teaching approaches. It can be used in mobile contexts on mobile phones and other devices linking with associated data such as GIS and enabling the user to upload from the device itself. And it can be used as part of a blended learning approach where the video is embedded in a wiki or webpage to

**Online video can be used in a wide variety of different teaching spaces, not only online, making it a very flexible learning resource**

## STRIDE HANDBOOK 8

support learners outside of formal face to face lessons. The simplicity associated with linking to and embedding online video resources encourage users to build it into their teaching in a wide variety of different learning spaces and contexts.

2. By using social media features such as user-generated tags or keywords, online video resources become part of a wider *network* and in doing so are far easier for users to locate and access. So for example, a user searching for a video on action research techniques in the YouTube library will quickly identify and locate many more associated resources which have been tagged by their creator and/or subsequent users as valuable and relevant. Following the links which these services automatically create users are able to locate many more video resources than would otherwise be the case and the creators of this content are guaranteed a far higher chance of their resource being watched. This viral networking phenomenon is one of the principal changes which sets the like of YouTube apart from traditional video providers.
3. In educational terms there is a growing recognition and feeling amongst educators that short, focused video clips, which typify online video repositories, *motivate and engage* learners when used appropriately. As part of a strategy to hook the learner at the start of a lesson or lecture, a powerful and emotive short clip, can often achieve engagement and curiosity to learn more in a way that traditional methods struggle to match. Online video clips can be shown as part of a presentation, perhaps embedded directly into a presentation software like PowerPoint, without needing to be stored or housed on the computer itself. In these situations the teacher is able to locate and play a specific section or segment of the resource avoiding the distraction associated with traditional VHS resources which cannot be easily searched or interrogated.
4. And there is also evidence which suggests that these resources can encourage the development of *higher order thinking* skills when they are used appropriately as part of a carefully considered instructional or pedagogical process. For example using a short online video clip of a jelly-baby being dropped into a test-tube of potassium chlorate (<http://www>.

The screenshot shows the eGyanKosh website, which is the digital library of Indira Gandhi National Open University. The interface is in Hindi. At the top, there is a Google search bar and a 'Translate' button. Below the search bar, the eGyanKosh logo and 'Indira Gandhi National Open University' are displayed. There are four navigation icons: 'SCHOOLS', 'LIVE', 'IGNOU', and 'REPOSITORY'. A main banner area contains a video player showing a man speaking, with the text 'eGYAN RAJESH KHARAN LIVE' and 'कुलप इग्नू'. To the right of the video player, there is a list of 'अपलोड (32)' (Uploads) with three items: '2nd Annual Mother Teresa Memorial Lecture', 'Silver Jubilee Celebrations of IGNOU', and '26th Foundation Day Lecture (2009)'. The page also includes a 'Translate' button in the top right corner.

youtube.com/watch?v=Rc0KW7kXBDo ) students are able to witness an experiment which might otherwise be too dangerous to undertake in their own classroom, and if they are able to use the pause and slow motion features, they are also able to stop and *analyse* in detail a process which happens too quickly in real-time to fully comprehend. The reverse is true in situations where processes, such as the growth of a plant or the pattern of clouds in the sky, occurs too slowly for students to fully comprehend what is taking place.

High level skills such as *hypothesis* and *extrapolation* are also made more accessible to students when online video is used as a stimulus. Asking learners to predict what might happen next when they are shown the start of a particular video clip is more than a simple guessing game if the material is selected carefully. In an engineering lesson, for example, students are asked to *predict* (hypothesise) how to demolish a building as part of a controlled explosion and are then shown a video of this actual process (<http://www.youtube.com/watch?v=qZ1oza93Y24>). They are encouraged to reflect upon and evaluate the accuracy of their original prediction using features such as slow motion, frame freeze and the reverse button to analyse the precise stages in the demolition. This model of predict, observe and evaluate (POE) has been shown to have positive learning gains for students (Kearney, 2002) and video provides a powerful stimulus upon which the exercise can be based.

There are many similar practices and techniques for using online video which are beginning to challenge the traditional

paradigm for the use of moving image resources which is characterised by long video clips (or full programmes) shown without interruption or intervention from the teacher. In this paradigm the transmission of subject content is the underlying pedagogical purpose or rationale for using video. With online video and the features described above, a much wider range of strategies and pedagogical

**With online video, a much wider range of strategies and pedagogical techniques are beginning to be explored by teachers looking for an alternative pedagogical paradigm**

techniques are beginning to be explored by teachers looking for an alternative pedagogical paradigm. These ideas are explored further by the author himself in his own research around the use of digital video in online contexts. The Digital Artefacts for Learner Engagement (DiAL-e) framework is a pedagogical tool that teachers can use to identify different techniques and ideas for using online video in a range of different learning contexts (Burden & Atkinson, n.d.).

But the use of online video is not without its problems. By definition it requires the user to have access to a live Internet connection in order to view and upload content. If the Internet connection is interrupted the video cannot be played. Although some online video providers have introduced a download facility to overcome this potential problem these are not ubiquitous and may contravene copyright law which does not authorise such use. As Internet speeds and bandwidth improve these problems are likely to diminish but users need to be aware of the problem in order to anticipate an alternative strategy when, or if, it occurs.

Users also report problems playing online video in situations where the bandwidth is diminished. Unlike streaming video, which can start to be played before the entire resource is available, online video

# STRIDE HANDBOOK 8

needs to be fully downloaded to the local machine before it is ready to start, preventing users from easily jumping through the clip at this point. Again the problem can sometimes be overcome by caching the relevant clip before it is needed although this is not failsafe.

## Where to find examples and resources?

There are a growing number of collections or repositories containing online video which educators will find

useful. In addition to the online video services themselves (which are listed below), the links and resources mentioned in this section will enable users to identify further collections and advise and guide about using online video.

### Online video services:

YouTube: <http://www.youtube.com/>

TeacherTube: <http://teachertube.com/>

Vimeo: <http://www.vimeo.com/>

Yahoo Video: <http://uk.video.yahoo.com/>

Blip TV: <http://blip.tv/>

The screenshot shows the YouTube channel page for 'eGyanKosh', which is the 'IGNOU Broadcast Archive'. The channel has 398 subscribers and 26,039 total uploads. The featured video is '2nd Annual Mother Teresa Memorial Lecture by Shri. Navin B. Chawla - December 2009', which has 112 views. The page also lists several other uploads, including 'Silver Jubilee Celebrations of IGNOU (2009)', '24th Foundation Day Lecture (2009)', and 'MOU between IGNOU and Maulana Azad National Urdu University'.

**Repositories and collections:**

Digital Artefacts for Learner Engagement (DiAL-e) [www.dial-e.net](http://www.dial-e.net)

The Enhancing Teaching and Learning with Digitised Resources <http://213.133.67.199/JISC/index.php>

EduTubePlus Digital Video Library: <http://www.edutubeplus.info/>

BBC Learning Zone Broadband Clips: [http://www.bbc.co.uk/learningzone/clips/Cassiopeia project](http://www.bbc.co.uk/learningzone/clips/Cassiopeia_project): <http://www.cassiopeiaproject.com/>

The Internet Archive (Prelinger): <http://www.archive.org/details/prelinger>

**Note**

1 See [http://en.wikipedia.org/wiki/Small\\_world\\_experiment](http://en.wikipedia.org/wiki/Small_world_experiment)

**References**

Burden, K., & Atkinson, S. (n.d.) Beyond Content: Developing Transferable Learning Designs with Digital Video Archives Available at [http://hull.academia.edu/documents/0009/1443/Beyond\\_content\\_fullpaper.pdf](http://hull.academia.edu/documents/0009/1443/Beyond_content_fullpaper.pdf)

Cha, M., Hwak, H., Rodriguez, Pablo, Ahn, Yong-Yeol, & Moon, Sue (2007). I Tube, You Tube, Everybody Tubes: Analysing the World's Largest User Generated Content Video System. IMC 2007 Conference, (Retrieved 20th June 2009 from <http://www.imconf.net/imc-2007/papers/imc131.pdf>)

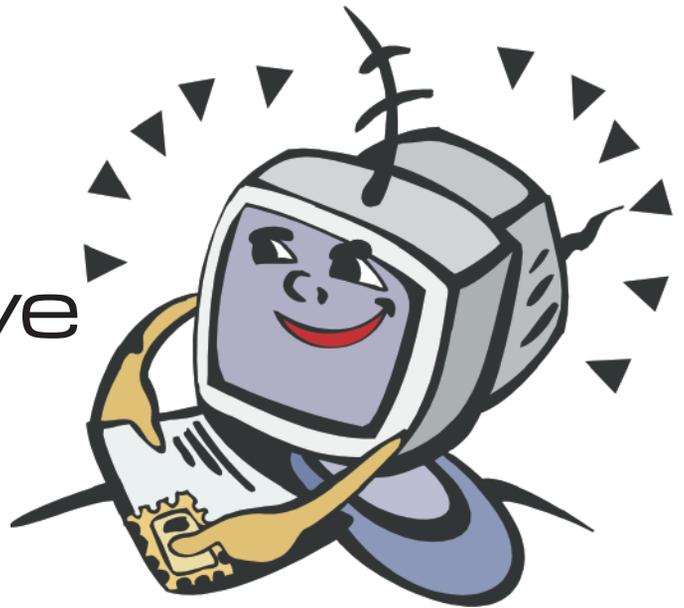
Hobbs, R. (2006). Non-optimal uses of video in the classroom. *Learning, Media and Technology*, 31(1), 35. Retrieved September 23, 2007, from <http://proquest.umi.com/pqdweb?did=1041177331&Fmt=7&clientId=25727&RQT=309&VName=PQD>

Kearney, M. (2002). Using digital video to enhance authentic-technology mediated learning in science classrooms. In Paper presented at the Australian Computers in Education Conference, Hobart. Retrieved 22nd June 2009 from <http://www.ed-dev.uts.edu.au/personal/mkearney/homepage/acrobats/accec.pdf>



## CHAPTER 11

# Using Collaborative Video for e-Learning



BY LEIGH BLACKALL

## Introduction

Thanks to services like YouTube and many others, you and I and many others are able to publish video at next to no cost, in hardly no time, and with very little technical ability or expense. That's a media revolution right there! With so many of us taking advantage of this opportunity, there is A LOT of video out there. Combined with Internet search and social networking technologies, the chances of each of us finding something that is interesting, useful or unique becomes very likely. With so much video made accessible out there now, we are a lot more ready to forget about questions of material quality - because we have rediscovered the importance of content - what it means for a video to be interesting, useful or unique. That's another revolution right there! We've learned to accept that it is the content of the video that matters, regardless of the image quality and cost of production. TV news is less interested in "broadcast quality" images, and are quite happy using footage from YouTube at 320x240 compressed at 15 frames per second or less. Even cinema these days is imitating the DIY, making it an aesthetic quality in its own right! So the barrier of

entry is now low on all fronts — access, cost and quality... all that remains is content. Do you have the content?

If you want more to think about on this, I'd highly recommend Michael Wesch's presentation to the Library of Congress: *An Anthropological Introduction to Youtube* (See [http://www.youtube.com/watch?v=TPAO-IZ4\\_hU](http://www.youtube.com/watch?v=TPAO-IZ4_hU))

This chapter will survey and explain the world of online video and collaborative editing as it exists today. We will look at Vlogging, how collaborative web based editing works, make a comment or two on the educational implications, and suggest how you - the teacher might consider using these new video technologies.

## Vlogging

Vlogging combines the words video and blogging. You should by now know what a blog is, but in case you're new to it — here's my attempt to explain a big thing: A blog is a website that is regularly updated with new content by the same author/s. Each new addition of content is called a blog-post or post and appears at the top with old content moving down the blog. A blog provides readers with subscription

features that alert them when new posts are added. Most blogs today include options for readers to add comments as a way of encouraging discussion and feedback with the blog author/s. Many journalists and social commentators use blogs, as do some teachers and politicians. A video-blog or vlog then, is simply a blog that uses video as its primary medium in each post. Vlogging therefore is the act of publishing video to a blog.

### **Collaborative web-based editing**

Web based image, audio and video editing has been making quiet but significant progress over the years. Much of this progress has been dependent on the development and uptake of the Flash media player in web browsers. Web based editing means every day punters like you and I can edit directly on the website where the media is stored — rather than storing media yourself and running your own editing software on a computer. With nothing but a portable recorder like a mid range phone, we are free to wander the streets uploading media as we go, and then jump into a cafe or onto a friend's computer, to edit the media straight through a standard web browser with broadband Internet connection — no need for special software or fancy computer, its all done on the web.

For example, on a recent holiday, I uploaded photos to Flickr.com and video to YouTube.com directly from my phone using its media messaging. If I saw something of interest, I would just snap a shot, or take a few seconds of video, and send the media up by a special email address that both Flickr and YouTube provide me in my account settings there. A

while back Flickr quietly added web based image editing for touch ups, so when I get on the Internet its as simple as clicking the "edit" button above my image on Flickr, and I'm adjusting brightness and contrast, adding colour and text, cropping and rotating. As for video, there's a promising bit of web based video editing software called Kaltura that is currently used by Wikieducator.org and being considered by the Wikimedia Foundation for sites like Wikipedia.org. Not only does Kaltura offer reasonably stable video editing, it enables collaboration as well, meaning you and I

can edit the same video from wherever we may be in the world. At the moment I am using Kaltura to piece together my holiday video, using titles and credits frames I made on Flickr!

### **Educational implications**

The educational implications of Internet video and web based and collaborative editing should be obvious. The home schooler and classroom

teacher/student alike now have access to a massive library of video that explains and demonstrates seemingly all imaginable techniques and ideas. It is adequate access to a broadband Internet, coupled with the necessary skills for manipulating this vast library that become new and important priorities for educators to think about. The emerging technologies of web based editing point to a market trend towards utility Internet services providing less expensive access to participate. This social media landscape is important for schools and education generally to come to terms with, as it is impacting on what it means for more and more people to be media literate and actively engaged with information and communication.

**This social media landscape is important for schools and education generally to come to terms with, as it is impacting on what it means for more and more people to be media literate and actively engaged with information and communication**

## STRIDE HANDBOOK 8

### Using vlogs and collaborative video

Ok, so now you know what a vlog and collaborative video editing is, and maybe some of you want to set one up and have a go. Well, that's easy and wont cost you a cent! (Except for the Internet charges in your country).

First step is to create an account on YouTube. It doesn't have to be YouTube, there are other video publishing services, but let's keep it simple.

Your next step is to post your first video to your YouTube account.

There are three ways:

1. Upload a video you have from your computer
2. Record a video directly onto YouTube by way of your webcam
3. Record a video with your mobile phone and send it to your YouTube account via its own email address. See YouTube help pages for more advice on these three options.

That's it! You have created your first post to your YouTube vlog. Other people can access your vlog by going to <http://youtube.com/YOURUSERNAME>

Some people take vlogging further by setting up a blog on a service like Blogger, and then either linking their YouTube video into their blog, or uploading a video directly into their blog with Blogger's video upload features. Its up to you, each way has its benefits and downsides.

If you want people to be able to download your videos so they can play them on a computer or device that is not connected to the Internet, then you'll have to use a different service than YouTube for the time being. I use Blip.tv. It offers you all the features of YouTube (less the popularity) plus some significant extras, such as file download, and cross posting your video to

other sites like the Internet Archive. Such a cross posting feature is a great benefit when thinking about backup and cross purposing.

There are free services you can use to post your video across multiple video sharing websites at once, thus helping with backing up and cross purposing your work. I use Tubemogul.com to do this.

If you want your video to be used in an online editing project, for example you may want your students to sample and edit video on a topic together, then you will

need a web-based video editing service like Kaltura. Kaltura is currently available for use on Wikieducator.org.

When you are looking at a Kaltura player/editor you have two options: "add to this video", and "edit this video". Pretty self explanatory hey. When you click "add to this video", you have the options to add video from YouTube, photos from Flickr, and audio from CCMixer, among others.

This is pretty handy if you already load footage via the phone to Youtube and Flickr. When the "clips" are all loaded over to your Kaltura editor/player, you're ready to get to work editing on its basic (but not too basic) time line based editor. Other's can come in on your edits too, importing their own video clips and photos, and editing it as well.

There's one downside to Kaltura sadly. We're still waiting for the obvious feature that enables the downloading of a finished video for playing off line. Unfortunately this is not offered yet so we're left with online viewing only.

### Video formats to use

Video file formats are a real nightmare! Sites like YouTube - or specifically the Flash media player have helped solve this

**There are free services you can use to post your video across multiple video sharing websites at once, thus helping with backing up and cross purposing your work**

problem of consistent and reliable viewing on the Internet, but its still a problem for those who like to download and perhaps even edit videos offline. So what format should you use when considering this?

Here are three rules of thumb — that work for me:

1. The master copy of your digital video should be in AVI set to play at 25 frames per second, displaying a size of 720x576 pixels.
2. Use this master AVI to export Internet ready versions in MP4, WMV and Ogg Theora, all set to play at no less than 12.5 frames per second, displaying at 320x240 pixels.
3. Upload the MP4 to your preferred video publishing service (eg YouTube or Blip.tv) and that service will convert your video to the Flash Video format for reliable playback on all computers.

But how do you get video into all those formats? There are a few free to use video converters you can use. These applications can take just about any video format and convert it into any other format. I install the free software SuperC or AnyVideoConverter for such purposes. Alternatively, you can upload your video to Archive.org and they will convert your video on their website for you.

### Using Archive.org

Archive.org will take your video and turn it into Mp4, Ogg Theora, and even a Flash Video (FLV) and animated Gif preview just for good measure! They'll keep it there for ever, serving it day after day, year after year. Archive.org has been accepting anyone's media and making it available online for free since 1996. Its amazing what they have there now!

Archive.org do not create WMV though. They know WMV is not a very useful format, so you'll have to create it yourself to keep Windows users happy. So if you're using Window's Movie Maker then creating a WMV is easy for you. Simply select the option for exporting WMV and upload it to Archive.org and sit back and wait, you'll soon have your WMV, with an MP4 and an Ogg Theora sitting right there next to it. If you're not using Windows, best to just skip the WMV entirely. No one will notice.

### Resources and links

<http://leighblackall.blogspot.com/search/label/how-to>

<http://www.freevlog.org>

<http://archive.org>

<http://www.youtube.com/user/YouTubeHelp>



# CHAPTER 12

## Synchronous Conferencing



BY JON BAGGALEY

### Introduction

Classic critiques of distance education (DE) stress the impersonal 'off-the-shelf', cafeteria-like style of its asynchronous (non-real-time) course delivery methods (Noble, 1985, 2001; Moll, 1998). The educational impact of these techniques can certainly be improved when combined with good face-to-face (f2f) tuition. It should not be forgotten, however, that asynchronous DE methods were originally conceived for situations in which physical teacher-student interaction was not available. Moreover, the definition of 'f2f' communication has evolved in the past two decades, owing to the wide range of synchronous (real-time)

techniques by which teachers and students can now interact with each other, f2f and at no cost, across many miles and time-zones (Figure 12.1).

This chapter summarises the 15-year history of synchronous audio/video-conferencing in DE. It stresses online VoIP methods rather than the older, less cost-effective telephone-based conferencing methods (Integrated Services Digital Network: ISDN).

### Synchronous conferencing methods

Voice over Internet Protocol (VoIP) methods trace their origin to the 'packet network' technique developed by Cerf & Khan (1974). The first commercial Internet audio software became available in 1995, when VocalTec introduced its *Internet Phone* freeware for one-on-one, online audio interaction over 28 kbps Internet connections. It was a technical breakthrough though by no means user-friendly, requiring configuration with both participants' IP addresses before each session. The author and a friend fought in vain with these settings for days, until finally giving up.



Figure 12.1. A live online video presentation.

A graphic user interface (GUI) was featured in online conferencing by *ThePalace* software, also introduced in 1995. Although not providing audio communication, *ThePalace* involved synchronous text-conferencing in chat rooms decorated by graphic images (avatars) on a visual background. The computing sciences department at Athabasca University in Canada immediately adopted this software and its community-building features in DE course delivery.

Such methods were not easily used by non-technical DE specialists, however. In 1998, an online audio service named *Firetalk* overcame the basic set-up and usage problems of other products, and rapidly became popular as a means of creating online DE communities (Baig, 1999). Informed about it by his students, the author used *Firetalk* in his teaching from 1999 onwards. It provided clear audio transmission, free of charge, between many people simultaneously. In the same year, the author and colleague Patrick Fahy talked to their Canadian students from Japan. Even with a delay of up to 15 seconds between signal and response, the experience represented an encouraging breakthrough, for it was now evident that the impersonal nature of DE communication could be reduced by live online audio interaction. Simultaneously, other products — e.g. *HearMe* and *CU-SeeMee* were developing rapidly.

In 2001, online support for *Firetalk* was discontinued, and the product was purchased by AVM Software, owner of the *Paltalk* service. By then, numerous audio and video-conferencing products and services had become available, many of them combining A/V conferencing features with previously 'stand-alone'

applications (e.g., text-chat, whiteboards, polling, co-browsing, and other shared tools). Some services provided dedicated 'chat room' services for a minor charge (approx. USD 40 per month for *PalTalk* and *iVocalize*) while others (e.g. *Yahoo Messenger* and *MSN Messenger*) offered free services. The latter were rapidly adopted by millions of international users, though with the disadvantage that a student might have to navigate through non-educational, even disreputable discussion areas in order to enter a dedicated DE conference.

From the point at which conferencing products and services proliferated, the author and his DE graduate students evaluated over 150 softwares and services (see the *International Journal of Research in Open & Distance Learning*, Technical

Reports, 2001-06). Their audio/video-conferencing ratings criteria were reported by Baggaley (2001a, b). A persistent finding was that students prefer products which do not involve complicated usage skills and a steep 'learning curve'. They commonly state that multi-feature software packages are too cumbersome, difficult to

**A persistent finding was that students prefer products which do not involve complicated usage skills and a steep 'learning curve'**

navigate, and require high-speed broadband connections that are not available to them. In addition, many students choose not to reveal themselves via online webcams unless there is a clear justification for doing so, which in many academic contexts is not the case.

For similar reasons, many DE teachers remain slow to adopt the synchronous techniques in their courses. Moderating an online conference is no easy task, whichever software is used, for it requires practice and the observance of clear protocols (Baggaley et al., 2004). Useful teacher-moderator practices include the use of an assistant to coordinate

## STRIDE HANDBOOK 8

participants' questions and comments via the text-box, and careful effort to involve as many participants in the discussion as possible.

DE teachers' hesitancy to use these techniques has been partially allayed by support for server-based conferencing packages at the institutional level. Examples include *Elluminate*, a Canadian product used at Athabasca University, and *Marratech*, a Swedish product used at the Royal Institute of Technology in Stockholm. From the educational institutions' point of view, however, server-based software licenses tend to be expensive. The charges of online services such as *Paltalk* and *iVocalize* (above) are minimal compared with those typical of server-based packages (e.g. USD 15,000 to 50,000 annually).

Inexpensive products that do not require a complex technical infrastructure are proving valuable for DE in developing countries. The *iVocalize* software, for example, was widely used by the PANDora Asian DE network from 2005-08, owing to its user-friendliness and low bandwidth requirements; and the *Skype* freeware, with a simple telephone-style interface and relatively few extra gadgets, has rapidly become the most universally recognised online audio/video communication tool of all.

### The Next generation?

Online conferencing methods will continue to evolve with the emergence of 'social networking' techniques (Facebook, MySpace, Second Life, Bebo, etc.). These online environments have become popularly identified with the marketing label 'Web 2.0' (O'Reilly, 2005), although neither the bundled nor stand-alone methods associated with that term are essentially different from the techniques

used in DE for over a decade. The writer remains personally skeptical about the educational value of current social networking methods in DE, despite the enthusiasm of many teachers and students for the online networking process. His view is based on analyses of the short life-spans of online communities after the initial novelty effect (Garber, 2004; Carter, 2009), and the frustration expressed by some students on being required to use complex graphic-based networking software for activities that they regard as mere play (Cleal, 2009).

Conferencing approaches will also evolve with their integration into open-source learning management systems (LMS). A study by the Asian PANDora network has created a video module for the popular Moodle LMS (Batchuluun & Wikramanayake, 2007), although the team also notes the serious access delays caused by Moodle's

programming methods on the slow Internet connections typical of the region (Baggaley & Batchuluun, 2007).

The most sophisticated online conferencing techniques known to this writer are being developed in Norway and Sweden, using broadcast-style TV techniques and special effects to clarify the educational content (Knudsen, 2004). These methods remain to be applied in popular usage. With adjustment on the part of DE teachers, however, broadcasting models can offer a wide-ranging studio-style schedule of synchronous/asynchronous activities with great potential in DE (Baggaley, 2008).

It will be interesting to see if the current economic recession will put an end to educational uses of the more lavish conferencing softwares, which often provide surprisingly few extra options compared with their cost-free

**Inexpensive products that do not require a complex technical infrastructure are proving valuable for distance education in developing countries**

rivals. In the so-called developed and developing worlds alike, uncomplicated products such as *iVocalize* and *Skype* may become staples in e-learning, while, for activities requiring a more complex graphic interface, pioneering packages such as *ThePalace* can still be downloaded and used free of charge, even though they no longer have technical support.

It is to be hoped that synchronous conferencing methods will be increasingly supported in DE, owing to their cost-effectiveness and as a counter to the common criticism that DE is essentially impersonal and involves no effective face-to-face teacher-student interaction.

### Acknowledgements

Thanks to Andrew Agostino for our pioneering web-phone tests of the mid-90s; and to colleague Pat Fahy for sharing online conferencing adventures at Athabasca University since 1999.

### References

- Baggaley, J. (2001a, b). Synchronous conferencing evaluation criteria. Retrieved from: [cde.athabascau.ca/softeval/ratAUD.php](http://cde.athabascau.ca/softeval/ratAUD.php); [cde.athabascau.ca/softeval/ratVID.php](http://cde.athabascau.ca/softeval/ratVID.php)
- Baggaley, J., de Schutter, A., Fahrni, P & Rudolph, J. (2004). Best practices in online conference moderation. *International Review of Research in Open & Distance Learning* 5 (1). Retrieved from: [www.irrodl.org/index.php/irrodl/article/view/164/245](http://www.irrodl.org/index.php/irrodl/article/view/164/245)
- Baggaley, J. (2008). Where did distance education go wrong? *Distance Education* 29 (1) pp. 39-51.
- Baggaley, J. & Batchuluun, B. (2007). The world-wide inaccessible web. I. Browsing. *International Review of Research in Open & Distance Learning* 8 (2). Retrieved from: [www.irrodl.org/index.php/irrodl/article/view/438/917](http://www.irrodl.org/index.php/irrodl/article/view/438/917)
- Baig, E. (1999). Firetalk sparks friendship: netsurfing without that pesky social isolation. *USA Today*. Retrieved from: [www.usatoday.com/tech/columnist/cced010.htm](http://www.usatoday.com/tech/columnist/cced010.htm)
- Batchuluun, B. & Wikramanayake, G. (2007). Open-source and mobile multimedia in distance education. A-V presentation at Global Knowledge Conference 2007, Kuala Lumpur. Retrieved from: [www.pandora-asia.org/panprojects.php?main=panprojects\\_3.htm](http://www.pandora-asia.org/panprojects.php?main=panprojects_3.htm)
- Carter, D. (2009, in press). The global internet pandemic. *International Review of Research in Open & Distance Learning* 10 (4).
- Cerf, V. & Kahn, R. (1974). A Protocol for Packet Network Intercommunication. *IEEE Transactions on Communications* 22 (5), May, pp. 637-648.
- Cleal, C. (2009). Student perceptions of a course taught in Second Life. *Innovate* 5 (5). Retrieved from: [www.innovateonline.info/index.php?view=issue&id=32](http://www.innovateonline.info/index.php?view=issue&id=32)
- Garber, D. (2004). Growing virtual communities. *International Review of Research in Open & Distance Learning* 5 (2). Retrieved from: [www.irrodl.org/index.php/irrodl/article/view/177/259](http://www.irrodl.org/index.php/irrodl/article/view/177/259)
- Knudsen, C. (2004). *Presence Production*. Stockholm: Royal Institute of Technology.
- Moll, M. (1998) *No more teachers, no more schools: information technology and the "deschooled" society*. Toronto: Elsevier.
- Noble, D. (1985). *Smash Machines, Not People: fighting management's myths of progress*. San Pedro, Ca.: Singlejack Books of Miles & Weir.
- Noble, D. (2001). *Digital Diploma Mills: the automation of higher education*. New York: Monthly Review Press.
- O'Reilly, T. (2005). What is Web 2.0? Design patterns and business models for the next generation of software. Retrieved from: [oreilly.com/web2/archive/what-is-web-20.html](http://oreilly.com/web2/archive/what-is-web-20.html)
- Details of the conferencing products and services cited in the section are accessible at:*
- Bebo: [www.bebo.com](http://www.bebo.com) CU-SeeMe: [hoople\\_ny.tripod.com/whitepine.htm](http://hoople_ny.tripod.com/whitepine.htm)
- Illuminate: [www.illuminate.com](http://www.illuminate.com) Facebook: [www.facebook.com](http://www.facebook.com)
- Firetalk: [en.wikipedia.org/wiki/Firetalk](http://en.wikipedia.org/wiki/Firetalk) HearMe: [www.hearme.com](http://www.hearme.com)
- Internet Phone: [en.wikipedia.org/wiki/VocalTec](http://en.wikipedia.org/wiki/VocalTec) iVocalize: [www.ivocalize.com](http://www.ivocalize.com)
- Marratech: [www.marratech.com](http://www.marratech.com)
- Moodle: [www.moodle.org](http://www.moodle.org)
- MSN Messenger: [webmessenger.msn.com/](http://webmessenger.msn.com/)
- MySpace: [www.myspace.com](http://www.myspace.com)
- Paltalk: [www.paltalk.com](http://www.paltalk.com)
- Second Life: [www.secondlife.com](http://www.secondlife.com)
- Skype: [www.skype.com](http://www.skype.com)
- ThePalace: [www.thepalace.com](http://www.thepalace.com)
- Yahoo Messenger: [messenger.yahoo.com](http://messenger.yahoo.com)



## CHAPTER 13



# Webcasting

BY PUNYA MISHRA AND M. LAEEQ KHAN

The transformation of the Internet towards the Web 2.0 and its proliferation has opened new avenues for its use in the education sector. Expansion and development of the broadband services coupled with better and improved infra-structure besides ever increasing content development, have created a nexus in which the benefits of streaming audio and video are increasingly being realised. The tide may be turning in favour of developing countries, where an increasing amount of content is being produced and consumed that is different from the traditional media.

As with other Internet technologies that transcend national boundaries, webcasting provides opportunities to receive content ranging from sports to entertainment and education, at the click of a button. Internet users are also offered greater choice in what they view and listen. An Internet user in the United States may view or listen to streaming content produced in another part of the world. Similarly, students in a school in Kenya with access to the Internet may listen to video lectures produced in the United Kingdom. Scientific conferences today are increasingly being webcast to allow those without the means and the

ability to physically attend, benefit from experiencing the event.

Webcasting offers great potential in the field of distance learning. It serves as a cost-effective and efficient mechanism to deliver lectures on a global scale. It also allows for harnessing multiple intelligences for the benefit of a wider audience.

### What is webcasting?

Webcasting may simply be defined as the dissemination of recorded or live content over the Internet. Schneider (2001) describes webcasting as follows:

Webcasting can mean a lot of things, but if you can produce sound or video over the Web and make it available as a live, real-time recording or provide it for download later, it's a Webcast. The difference is whether you experience the Webcast while it's happening or whether you are able to download it later (p. 94).

According to Lin (2004), Webcasting technology represents an amalgamation of audiovisual communication technology online, one that is as fluid as it is rich in the communicative meanings. Fundamentally, webcasting technology has reinvented the conventional broadcasting platform and places it in a different technical venue. This

dynamic new technical venue has essentially liberated the rigid technical, social, political, and economic constraints associated with the infrastructure for launching a traditional broadcasting operation.

It is worth noting that Webcasts may usually be live presentations but real-time interaction is not “critical” to the definition of a Webcast (Bell, 2002). Mostly recorded as compared to live programs or lectures are convenient for users who take advantage of webcasting.

When live webcasting takes place, students are able to ask questions and receive answers immediately even though they are at a distance. In other words, distance learning is greatly facilitated. In addition to the possible interactivity, the instructor can receive feedback and participation from students. This may be a bit problematic if the number of learners exceed a certain limit when it becomes difficult to answer everyone in the webcast. Nevertheless, learners can access recorded webcasts and engage in a process of feedback and review through discussion forums and chats with other learners. Other web technologies can be complemented with webcasts to create a useful learning environment. Recorded webcasts also give users an opportunity to watch the content at a later convenient time.

In the United States, major broadcast networks have been increasingly streaming their programs such as, news, and sports online (Ha & Ganahl, 2007). In the field of education, webcasting can provide beneficial features for learners. These are discussed in the following section.

### **Webcasting – Application in education**

Transmitting video and audio streams

over the Internet allows events such as lectures, seminars, and webinars, to become available to users in remote locations. There is immense potential for its use in education such as to facilitate guest lectures, classroom webcasting, library applications, training, decreased travel time and cost saving.

Though Webcasting is a powerful tool, its integration into formal (or informal) educational practice is not straightforward. It requires paying attention to all aspects of teaching, such as the pedagogical approach being used, the content to be covered and

the overall learning context.

This is consistent with the *Technological Pedagogical Content Knowledge* (TPACK) Framework, an approach that has received significant research attention lately (Koehler & Mishra, 2008; Mishra & Koehler, 2006; TPACK wiki, 2009). With this in mind, we list a few examples below of

how Webcasting can be used in the formal (or informal) educational process.

#### **Guest lectures**

Guest lectures serve as an important tool to give students an enhanced learning experience by combining academic theory with real world experiences. Experts from the industry can be invited in the academia to speak about their experiences that make learning more enriching for students. This is relatively easier in cities where businesses are located close to the educational setting. However, this can be difficult where educational institutions are located far from cities and industrial/business establishments. Webcasting can play an important role here by making guest lectures possible from across a distance. Subject specialists and experts can be easily accessible through this online technology.

**Transmitting video and audio streams over the Internet allows events such as lectures, seminars, and webinars, to become available to users in remote locations**

## STRIDE HANDBOOK 8

### Classrooms webcasting

Technology is already changing the traditional classroom environment. Where facilities are available, multimedia presentations are making learning more interesting. Some classrooms may use other technological tools such as videos.

Webcasting shares some characteristics with the technological tools just mentioned. Besides guest lectures in a classroom, students may be given access to webcasts to complement the study material. Using webcasting, the instructor can also deliver important study material at will without being bound by time.

Moreover, webcasts can serve as an important motivator for learning amongst students.

Students can also become creators of webcasts. This is a powerful tool that allows students to become responsible for their own learning and to contribute in authentic ways to knowledge on a global scale.

It is pertinent to mention here that technological inculcation in the classroom can have issues in developing countries where occasional breakdowns can diminish full utilisation of such useful tools. Server errors, on which instructors may have no control, can become a problem. Webcasting can also suffer due to unreliable internet connections and power failures. Nevertheless, advanced preparation and careful planning can still allow for the use of such a useful resource such as webcasting in classrooms.

### Staff development and library applications

Quality lectures and talks can be made available to staff in educational institutions to better manage resources such as in a library. Besides enhancing personal

development, webcasts can also prove beneficial for groups of learners allowing staff and faculty to learn about new services and technologies. Besides staff and development of the library capacity, faculty members can also learn from webcasts to update their skills and knowledge base in an ever-advancing world.

### Decreased travel and cost saving

Webcasting can especially prove useful for delivering educational content in rural areas. Even with slow Internet connections, at least audio webcasts can benefit students who are at the other side of the digital divide. Not only would this save costs but also enable dissemination of lectures from universities or educational institutions in city centres to rural towns. A one-time investment in a computer, video camera and audio equipment besides an Internet connection can change how learning takes place.

Increasingly conferences and meetings are being Webcast – which means that one can learn about the cutting-edge work in a field without necessarily having to travel to a conference or a meeting. This allows learners to engage with the latest work in a domain – something that could be extremely difficult to achieve otherwise.

### Webcasting how?

The technology needed to view a webcast is not very sophisticated. To produce a Webcast, the following resources are needed: A camera (for video), microphone, a personal computer or a laptop, a media software, and Internet access (Ghalili, Lynne, & Rodney, 2004).

The development of webcasting has primarily been shaped by the development of the broadband communications.

**Students can also become creators of webcasts. This is a powerful tool that allows students to become responsible for their own learning and to contribute in authentic ways to knowledge on a global scale**

Advancements in telecommunications infrastructure provided an impetus for production and dissemination of audio and video content in particular. Due to greater Internet speed or bandwidth, the quality of a webcast became comparable to television.

Streaming media is the software that enables Webcasting (Bell, 2003). This software transmits video and audio from a server to a media player on a personal computer. Upon request by the user, a stream of digitised data is sent over a medium such as the Internet, thus enabling a webcast. Anyone with a basic know-how of computers can webcast. Most importantly, better bandwidth will allow webcasts to flourish and become available to more people on a global scale.

### Webcasting resources & future possibilities

Various search engines can be utilised to search for webcasts. Leading providers of webcasts are some academically oriented organisations such as HorizonLive, LearningWeekLive, CERN TechTalk Transcripts (audio webcasts), The Chronicle of Higher Education, and Penn State University etc. (Bell, Discovering Cyber-Lectures, 2002).

As developing countries increasingly go online, the potential to enhance education for millions is not a distant reality. Increased penetration of internet and broadband is set to make global connections through technologies such as webcasting. The face of distance education is also set to transform due to positive developments.

### Conclusion

Clearly Webcasting has much to offer the world of education. We must, however, be careful as to how we use it. It may be tempting to use this technology by just placing students in front of the computer, however there is enough evidence (with television and film) to show that such passive learning approaches do not help advance student learning. In no way should this new technology be seen as a replacement for the teacher. Clearly the integration of Webcasting into the educational process requires a careful consideration of the context, the content and the pedagogy (as described in the TPACK framework).

### References

- Bell, S. (2003). Cyber-Guest Lecturers: Using Webcasts As a Teaching Tool. *TechTrends*, 47 (4), 10-14.
- Bell, S. (2002). Discovering Cyber-Lectures. *Library Journal*, 12.
- Schneider, K.G. (2001). Lights! Cameras! Action! *American Libraries*, 32(7), 94.
- Ghalili, R., Lynne, O., & Rodney, K. (2004). Webcasting: A New Instructional Technology in Distance Graduate Nursing Education.
- Ha, L., & Ganahl, R. (2007). *Webcasting Worldwide: business models of an emerging global medium*. Routledge: New York.
- Koehler, M.J., & Mishra, P. (2008). Introducing tpck. AACTE Committee on Innovation and Technology (Ed.), *The handbook of technological pedagogical content knowledge (tpck) for educators* (pp. 3-29). American Association of Colleges of Teacher Education and Routledge, NY, New York.
- Lin, C. A. (2004). Webcasting Adoption: Technology Fluidity, User Innovativeness, and Media. *Journal of Broadcasting & Electronic Media*, 48 (3), 157-178.
- Mishra, P., & Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A new framework for teacher knowledge. *Teachers College Record* 108 (6), 1017-1054.
- Reynolds, P. A., Mason, R., & Eaton, K. A. (2008). Webcasting: casting the web more widely. *British Dental Journal*, 145 - 149.
- Wingfield, N. (2002, July 31). ABC starts charging viewers for news in expanded webcast. *The Wall Street Journal*, pp. B5.
- TPACK wiki (2009). Technological Pedagogical Content Knowledge. Available at <http://www.tpack.org/>

## CHAPTER 14

# Blogs in Learning



BY STEPHEN DOWNES

## What is a blog?

A blog is a personal website that contains content organised like a journal or a diary. Each entry is dated, and the entries are displayed on the web page in reverse chronological order, so that the most recent entry is posted at the top. Readers catch up with blogs by starting at the top and reading down until they encounter material they're already read.

Though blogs are typically thought of as personal journals, there is no limit to what may be covered in a blog. It is common for people to write blogs to describe their work, their hobbies, their pets, social and political issues, or news and current events. And while blogs are typically the work of one individual, blogs combining contributions of several people, 'group blogs', are also popular.

While the earliest blogs were created by hand, blogging became widely popular with the advent of blog authoring tools. Among the earliest of these were Userland and LiveJournal ([www.livejournal.com](http://www.livejournal.com)). Today, most bloggers use either Google's popular Blogger service ([www.blogger.com](http://www.blogger.com)) or WordPress ([www.wordpress.com](http://www.wordpress.com)). These services allow users to create new blogs and blog posts by means of simple

online forms; the writer does not need to know any programming or formatting. As a result, blog aggregation services such as Technorati ([www.technorati.com](http://www.technorati.com)) have reported that tens of millions of blogs have been created (Technorati, 2008).

Blogs are connected to each other to form what is commonly known as the 'blogosphere'. The most common form of connection is for blogs to link to each other. Blog authors may also post a list of blogs they frequently read; this list is known as a 'blogroll'. Blogs may also be read through special readers, known as 'RSS readers', which aggregate blog summaries produced by blog software. Readers use RSS readers to 'subscribe' to a blog. Popular web-based RSS readers include Google Reader and Bloglines. See Chapter 20 for more about RSS.

While blogs once dominated the personal publishing landscape, they now form one part in a much more diverse landscape. Many people who formerly write blogs are using social networking sites such as MySpace ([www.myspace.com](http://www.myspace.com)) or Facebook ([www.facebook.com](http://www.facebook.com)). Others use 'microblogging' services such as Twitter ([www.twitter.com](http://www.twitter.com)). And blogs, which began as text-based services, have branched into

audio blogs (also known as 'podcasts') and video blogs ('vlogs'). Authors typically upload a wide range of multimedia content such as art to sites like deviantart ([www.deviantart.com/](http://www.deviantart.com/)), and videos to hosting services such as YouTube ([www.youtube.com](http://www.youtube.com/)), slide shows and PDFs to SlideShare ([www.slideshare.net](http://www.slideshare.net/)) and photos to sites like Flickr. ([www.flickr.com](http://www.flickr.com/)).

### Why use blogs in education?

Blogs are widely popular in education, as evidenced by the 400,000 educational blogs hosted by edublogs. ([www.edublogs.org](http://www.edublogs.org)) Teachers have been using them to support teaching and learning since 2005 (Downes, 2004). Through years of practice, a common understanding has formed around the benefits of the use of blogs in education (see <http://anne.teachesme.com/2007/01/17/rationale-for-educational-blogging/>).

Because blogs are connected, they can foster the development of a *learning community*. Authors can share opinions with each other and support each other with commentary and answers to questions. For example, the University of Calgary uses blogs to create learning communities.

Additionally, blogs give students ownership over their own learning and an

*authentic voice*, allowing them to articulate their needs and inform their own learning (Uniservity, 2007). Blogs have been shown to contribute to identity-formation in students (Bortree, 2005).

Further, blogging gives students a genuine and potentially *worldwide audience* for their work (Aguilar, 2009). Having such an audience can result in feedback and greatly increase student motivation to do their best work (See <http://www.big6.com/2006/06/12/motivating-middle-schoolers-grades-5-8/>). Students also have each other as their potential audience, enabling each of them to take on a leadership role at different times through the course of their learning.

Moreover, blogging helps students see their work in different subjects as *interconnected* and helps them organise their own learning. Working with the teacher and informed by blogs authored by experts in the field, students can conduct a collective enquiry into a particular topic or subject matter creating their own interpretation of the material.

Blogs teach a variety of skills in addition to the particular subject under discussion. Regular blogging fosters the development of writing and research skills. Blogging also supports digital literacy as the student

The screenshot shows the Technorati website interface. At the top, there's a green navigation bar with the Technorati logo and a search bar. Below this, there are several tabs for different categories: Technology, Business, Entertainment, Lifestyle, Sports, Politics, Videos, Blogging, and Twittorati. A secondary navigation bar includes links like 'Blog Directory', 'Top 100', 'Tags', 'People', 'Technorati Blog', 'Write for Technorati', 'State of the Blogosphere', 'Android', and 'Guru'. The main content area is titled 'Today on Technorati' and features several article previews with images and titles. On the right side, there's a large advertisement for 'Savings Account' and a section for 'Recently updated features' listing items like 'Blog Focus', 'State of the Blogosphere 2008', and 'State of the Blogosphere 2009'.

## STRIDE HANDBOOK 8

learns to critically assess and evaluate various online resources.

### How to use blogging in learning?

- **Begin simply.** Most uses of blogs in the classroom began with the instructor using blogs to post class information such as lists of readings and assignment deadlines (Downes, 2004). This fosters in the teacher a familiarity with the technology and with students a habit of regularly checking the online resource.
- **Lead by example.** Before requiring students to blog, instructors should lead by example, creating their own blogs and adding links to interesting resources and commentary on class topics. This not only produces a useful source of supplemental information for students, it creates a pattern and sets expectations for when students begin their own blogging.
- **Read.** Students should begin their entry into blogging by reading other blogs. Teachers should use this practice not only to demonstrate how other people use blogs to support learning but also to foster critical thinking and reading skills. Teaching how to respond to blog posts is as important as creating blog posts.
- **Create a context.** Like the author facing a blank sheet of paper, a blogger will be perplexed unless given something specific to write about. Have students blog about a current issue, about a specific piece of writing, or some question that comes up in the course.
- **Encourage interaction.** Blogging should not be a solo activity. Encourage bloggers to read each other's work and to comment on them. Encouraging students to set



up an RSS reader with each other's blogs will make reading and commenting a lot easier. Teachers, also, should subscribe to student blogs and offer comments, again setting an example of the expected practice.

- **Respect ownership.** A student blog becomes important because it is a manifestation of his or her own work. However, to have this value, a student's ownership of a blog must be genuine. While reasonable limits or codes of practice (See [http://www.digitalquery.com/2005/08/hill\\_knowlton\\_o.html](http://www.digitalquery.com/2005/08/hill_knowlton_o.html)) need to be respected, student bloggers should have the widest latitude possible for personal expression and opinion.
- **Address issues immediately.** The most significant danger to students online is posed by other students. In particular, bullying (or ragging) is a significant problem (See <http://en.wordpress.com/tag/school-bullying/>). It is important to spot instances of bullying as soon as they occur and to take steps to prevent further incidents. Teachers should educate themselves as online bullying can be invisible and hard to address.

## Reference

- Aguilar, E. (2009). Blogs gives students an audience, Available at <http://www.edutopia.org/student-blogging-classroom-tips>
- Bortree, D.S. (2005). Presentation of self on the Web: an ethnographic study of teenage girls' weblogs. *Education, Communication & Information*, 5(1), 25-39
- Downes, S. (2004). Educational Blogging, *Educause*, September/October, 14-26. Available at <http://net.educause.edu/ir/library/pdf/ERM0450.pdf>
- Technorati (2008). State of the Blogosphere, Available at <http://technorati.com/blogging/state-of-the-blogsphere>
- Uniservisty (2007). Removing barriers and creating new opportunities for learning Available at [http://www.uniservisty.com/\\_library/download/www/PDF/Best%20Practice/cLc%20Best%20Practice%20Student%20Voice%20and%20Choice.pdf](http://www.uniservisty.com/_library/download/www/PDF/Best%20Practice/cLc%20Best%20Practice%20Student%20Voice%20and%20Choice.pdf)

## CHAPTER 15



# Wikis

BY KE ZHANG AND STACEY DELOOSE

### What is a wiki?

As a widely applied Web2.0 technology, wikis are open, dynamic websites with collaboratively constructed knowledge, information, and resources, which are freely available to any Internet user. The first wiki, “wikiwikiweb” was created and made available in March 1995 by Ward Cunningham, which soon witnessed the booming phenomenon of wikis worldwide. Originated in Hawaiian, “wiki” means quick, and it is backronym of What I Know Is (Wikipedia, 2009), reflecting its nature of open, social construction. As a typical Web 2.0 technology, wikis allow users virtually from anywhere to create and contribute to any wiki of their choice. At the same time, wikis enable users of the technology to critically review and collaboratively revise the wiki they use. As a result, users can quickly and frequently update information, fix errors, and constantly extend the knowledge network.

Wikis are essentially dynamic databases for creating, sharing, updating, using and searching knowledge and information, which also promote meaningful associations among different topics with hyperlinks. As indicated in its name, wikis provide a quick way for all Internet users to

share knowledge through collaborative efforts (Leuf & Cunningham, 2001). The level of openness may vary, as Lamb (2004) describes a continuum of wiki formats: at one end, there are wikis open for anonymous authoring; at the other end, there are wikis with restricted access, private workspace, hierarchical organisation, and even integration with centralised content management systems.

### Benefits

Wikis provide a wide variety of tools, resources and opportunities for teaching and learning. For example, Wikimedia Foundation (2009) operates several online collaborative wiki projects, including Wikipedia, Wiktionary, Wikiquote, Wikibooks, Wikijunior, Wikisource, Wikimedia Commons, Wikispecies, Wikinews, Wikiversity, Meta-Wiki and more. These Wikimedia projects provide a wide range of tools, content, and resources for learners and educators, such as encyclopedia, media resources, quotes, books and so forth. More importantly, learner-generated wikis represent their learning outcomes, and such assignments and activities provide continuous opportunities for interactive learning,

collaboration and knowledge construction beyond traditional classrooms.

As powerful cognitive tools (Jonassen, 2000; Jonassen & Howland, 2003), wikis allow learners to contribute actively to knowledge construction, networking and collaboration. A wiki is an ever-growing web of knowledge that any user may append. A wiki may be reused by many class sessions and different groups of learners, with content being added to and modified on a continual basis. Wiki-related learning activities enable collaborations among different learners, instructors, classes, schools, universities, and experts from anywhere across the globe (Bonk & Zhang, 2008). Wiki applications facilitate teaching and learning by providing shared knowledge repositories that are constantly updated and corrected. Learners may not only use existing wikis for information and resources, but also create new wikis or add to existing ones, which further empowers them with a strong sense of ownership in the learning process. Engaged in a wiki project, such as writing a wikibook, learners have opportunities to share knowledge through active, meaningful, and collaborative learning and research. Changing from passive knowledge receivers to knowledge creators, learners are highly motivated to work and collaborate continuously in wiki-related learning tasks (Watson, Boudreau, York, Greiner, & Wynn, 2008). Wiki-related learning activities may also address the demanding needs of generational learners (Zhang & Bonk, in press) and different types of learning preferences and learner needs (Bonk & Zhang, 2008; Zhang & Bonk, 2008). The easy function of incorporating multimedia also enables learners to add various forms of expressions in wikis, addressing multiple intelligences (Zhang &

Bonk) without complex technical operations (Choy & Ng, 2007).

## Educational applications of wikis

### K-12

Wikis may supplement traditional face to face classes by providing information and resources, or be integrated as a part of hybrid or blended courses, or as a main component of an online environment. Wikis may also be used as an alternative to a course management system (CMS) (e.g., Moodle, Blackboard, etc.). For example, wikis are employed to engage students in inquiry-based learning in multiple disciplines (Engstrom & Jewett, 2005; Stahmer, 2006) or as a major portal of school-wide curriculum (e.g., <http://west-wood.wikispaces.com>). Outside of the classroom, teachers and administrators use wikis for school planning, parental communication, and professional development.

**Outside of the classroom, teachers and administrators use wikis for school planning, parental communication, and professional development**

### Higher education

In higher education, wikis are deployed as an alternative to discussion boards on CMS (Bold, 2006) and for a variety of learning activities (e.g., Bonk & Zhang, 2008; Zhang & Bonk, 2008, in press). Additionally, wikis are replacing traditional CMS, such as the one at Brown University's Neurobiology site (<http://tinyurl.com/men8m6>). Wikis are also created for community building and social networking at the organisational level (e.g., the Davis Wiki at: <http://daviswiki.org/>).

### Corporation

Corporations adopt wikis to create robust intranets for organisational knowledge management. This is especially useful with

## STRIDE HANDBOOK 8

the global communities that businesses could reach. Companies also employ wikis to add to or replace content management systems and to provide information to consumers. Other wiki applications include providing templates for reports and memos, and allow virtual teams to share information and collaborate on projects from anyway at any time.

### Government

Increasingly more governments and government agencies have established wikis to communicate with the public. For example, the Government Transition Wiki (<http://govtransition2009.wik.is/>) is intended to make the initial phase of the Obama Whitehouse transparent to anyone interested. The Collaborative Work Environment wiki (<http://colab.cim3.net/cgi-bin/wiki.pl/>) serves citizens by providing communities of practice and linking to other governmental communities, news, and events. Such wikis may be used in authentic case based learning, dynamic analyses, and other course projects (Bonk & Zhang, 2008).

### Non-profit organisation

Non-profit organisations utilise wikis for a variety of purposes, such as fund raising, engaging volunteers, training and education, community building, evaluation and more. The bamboo project lists and explains how non-profits can use Web 2.0 tools at <http://tinyurl.com/nbduf3>. A wiki event hosted by TechSoup at <http://tinyurl.com/azaler> invited users to share knowledge and trade tips about using wikis. As related to education, online charity, DonorsChoose.org uses a wiki to connect classrooms in need with individuals who want to help. Teachers are able to ask for classroom project materials, users are able to give to specific projects and students learn with the aid of the donations.

### Summary

Increasingly applied to all levels and forms of education, wikis bring great opportunities for teaching and learning, and serve as powerful cognitive tools for exploring, searching, creating, constructing and updating knowledge. Wikis not only provide free content, tools and resources for learning, but also stimulate different ways of knowledge construction, sharing and networking. Learner-generated wikis benefit learners as they create it, as well as into the future as they continue to edit and learn from the constant updates of the knowledge base. Because of their open nature, wikis face issues of versioning, quality and content control. Accordingly, some wikis archiving older versions for revisiting as applicable (Trentin, 2009), require owner approval for changes, or restrict access to specific users or groups. For educators, challenges such as how to appropriately assess learner contribution and participation in wiki creations (Wheeler, Yaomans, & Wheeler, 2008) are yet to be addressed in practice as well as research. With more research conducted on its learning benefits and challenges, wikis will be utilised more widely and more wisely in global education.

### Wiki examples

Wikipedia: <http://www.wikipedia.org/>

Wikibooks: <http://en.wikibooks.org/>

Wikinews: <http://wikinews.org/>

Wikiquote: <http://wikiquote.org/>

Wikisource, an online library of free content publications:

<http://wikisource.org/>

Wikispecies: <http://species.wikimedia.org/>

Wikiversity, providing learning resources, learning projects, and research for use in all levels, types, and styles of education from pre-school to university, including



professional training and informal learning: [http://en.wikiversity.org/wiki/Wikiversity:Main\\_Page](http://en.wikiversity.org/wiki/Wikiversity:Main_Page)

Wiktionary: [http://en.wiktionary.org/wiki/Wiktionary:Main\\_Page](http://en.wiktionary.org/wiki/Wiktionary:Main_Page)

Wikimedia Commons: [http://commons.wikimedia.org/wiki/Main\\_Page](http://commons.wikimedia.org/wiki/Main_Page)

Wikispaces: <http://www.wikispaces.com/>

PBWorks: <http://pbworks.com/academic.wiki>

Wikis in Education: <http://wikisineducation.wetpaint.com/?t=anon>

Seedwiki, a wiki farm, a place where people can create web sites and edit them directly in their browser: <http://www.seedwiki.com/> -

TikiWiki: [http://tikiwiki.org/tiki-view\\_articles.php](http://tikiwiki.org/tiki-view_articles.php)

Wiki Resources: [https://www.socialtext.net/medialiteracy/index.cgi?wiki\\_resources](https://www.socialtext.net/medialiteracy/index.cgi?wiki_resources) , a list of wiki resources, such as Wikis, comparative lists, wiki communities, and wikis in the classroom

50+ Web 2.0 ways to tell a story: <http://cogdogroo.wikispaces.com/50+Ways>

Web 2. 0 Wiki: [http://en.wikibooks.org/wiki/Web\\_2.0\\_and\\_Emerging\\_Learning\\_Technologies](http://en.wikibooks.org/wiki/Web_2.0_and_Emerging_Learning_Technologies) -

Student created Wikis <http://wikisineducation.wetpaint.com/page/Student+Created+Wikis>

A Whole New Mind Story: <http://awnm.pbworks.com/FrontPage>

Our Environment - <http://ourevironment.tk/>

A wiki comparing wiki farms: [http://en.wikipedia.org/wiki/Comparison\\_of\\_wiki\\_farms](http://en.wikipedia.org/wiki/Comparison_of_wiki_farms)

A list of notable wikis: [http://en.wikipedia.org/wiki/List\\_of\\_wikis](http://en.wikipedia.org/wiki/List_of_wikis)

A comparison of wiki software: [http://en.wikipedia.org/wiki/Comparison\\_of\\_wiki\\_software](http://en.wikipedia.org/wiki/Comparison_of_wiki_software)

## References

- Bold, M. (2006). Use of Wikis in Graduate Course Work. *Journal of Interactive Learning Research*. 17(1), 5-14.
- Bonk, C. J., & Zhang, K. (2008). *Empowering Online Learning: 100+ Ideas for Online Reading, Reflecting, Displaying, and Doing*. San Francisco, CA: Jossey-Bass.
- Choy, S. O., & Ng, K. C. (2007). Implementing Wiki Software for Supplementing Online Learning. *Australasian Journal of Educational Technology*. 23(2), 209-226.
- Cole, M. (2009). Using Wiki Technology to Support Student Engagement: Lessons from the Trenches. *Computers & Education*. 52(1), 141-146.
- Engstrom, M. E., & Jewett, D. (2005). Collaborative Learning the Wiki Way. *TechTrends*. 49(6), 12-16.
- Jonassen, D. H. (2000). *Computers as mindtools for schools: Engaging critical thinking* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.
- Jonassen, D. H., & Howland, J. (2003). *Learning to solve problems with technology: A constructive perspective* (2nd ed.). Upper Saddle River: Pearson Education.
- Lamb, B. (2004). Wide Open Spaces: Wikis Ready or Not. *EDUCAUSE Review*. 39(5), 36, 38, 40, 42, 44-46, 48.
- Leuf, B. & Cunningham, W. (2001). *The Wiki way: quick collaboration on the Web*. Boston, MA: Addison-Wesley Longman Publishing.
- Oatman, E. (2005). Make Way for Wikis. *School Library Journal*. 51(11), 52-54.
- Stahmer, T. (2006). Think Outside the Blog. *Technology & Learning*. 26(6), 28.
- Trentin, G. (2009). Using a Wiki to Evaluate Individual Contribution to a Collaborative Learning Project. *Journal of Computer Assisted Learning*. 25(1), 43-55.
- Watson, R. T., Boudreau, M.-C., York, P. T., Greiner, M., & Wynn, D. E. (2008). Opening the Classroom. *Journal of Information Systems Education*. 19(1), 75-86.
- Wheeler, S., Yeomans, P., & Wheeler, D. (2008). The Good, the Bad and the Wiki: Evaluating Student-Generated Content for Collaborative Learning. *British Journal of Educational Technology*. 39(6), 987-995.
- Wikipedia. (2009). Wikipedia Retrieved April 14, 2009, from Wikipedia Web site: <http://en.wikipedia.org/>
- Wikimedia Foundation. (2009). Wikimedia Foundation. Retrieved on July 12, 2009 from the Wikipedia Website: [http://en.wikipedia.org/wiki/Wikimedia\\_Foundation](http://en.wikipedia.org/wiki/Wikimedia_Foundation)
- Zhang, K. & Bonk, C. J. (2008). Addressing diverse learner preferences and intelligences with emerging technologies: Matching models to online opportunities. *Canadian Journal of Learning and Technology*, 34(2), 309-332.
- Zhang, K. & Bonk, C. J. (in press). Generational learners and e-learning technology, in H. Yang & S. C.-Y. Yuen (eds.). *Handbook of Research on Practices and Outcomes in E-Learning: Issues and Trends*. Hershey, PA: IGI Publishing.

## CHAPTER 16

# Social Networking

BY TERRY ANDERSON

**S**ocial networking is a term in common use only since 2003. The term has been defined by many and generally viewed as referring to networked tools that allow people to meet, interact and share ideas, artifacts and interests with each other. Social networking applications have been phenomenally popular with sites such as Facebook, MySpace, SecondLife and LinkedIn counting their user numbers in the tens of millions. Social networking to date has found applications primarily in the contexts of informal learning and entertainment however there is growing interest in its use in formal education in face-to-face, distance and blended modes. I have refined the definition of social networking and especially that used in distance education as *networked tools that support and encourage learning through face-to-face and online interactions while retaining individual control over time, space, presence, activity and identity* (Anderson, 2006). Key to understanding both the power and the disruptive affordances of social networking is what Dalsgaard (2008) refers to as transparency — making visible and retrievable the activities, ideas, communications, artefacts and interests of others.



Pedagogical rationale for use of social networking in all forms of education has steadily been increasing for over 100 years. This rationale extends from social cognition theories, (Vygotsky, 1978) through social learning (Bandura, 1977) to social constructivism (Bruner, 1986), all of which emerged as driving forces for educational design and development in the 20th Century. In this century, these rationale have been strengthened by developments in connectivism (Siemens, 2005), complexity theory (Horn, 2008), theories of cooperative freedom (Paulsen, 2008) and heutagogy (Hase & Kenyon, 2000). Each of these pedagogies stress the value of social interaction in motivating, modeling, validating, supporting, challenging and providing new perspectives throughout the learning process. These theories also acknowledge the central role of technologies in supporting human communication and in finding, retrieving and distributing information.

There are many different network learning applications. Some are generalised and multi-faceted application systems that combine social networking applications including blogs, wikis, profiles, resource tagging, documents sharing and other

services. Conversely, there are specialised social networking applications focusing on particular applications such as language learning, meeting people who live near by or those who share common interest, hobbies or goals, scheduling and many other applications. The web 2.0 aggregation site <http://gotoweb20.net> currently lists over 2,800 applications — most of which could be classified as social networking applications.

For e-learning applications social networking serves three broad functions which I refer to as socialising, sharing and sojourning.

- **Socialising:** Many forms of distance education and their e-learning derivatives have focused on the provision of content to students and provided only limited contact between student and teacher and often no opportunity for student-student interaction. This lack of social interaction, help seeking and provision, and lack of general interpersonal communication and support opportunities has been associated with lack of social integration and resulting higher levels of attrition in both distance education and e-learning (Kember, 1995; Rovai, 2003; Tinto, 1987; Woodley, 2004). Of particular concern in modern e-learning is the inability of institutions to provide contact information to fellow students owing to restrictions on release of private student information to other students. Thus, it can easily happen that students enrolled in the same course, living in the same apartment building, have no opportunity to connect with each other for mutual support, engaging in 'study buddy' or study group type interaction, engage in cooperative or collaborative work or to build social

**For e-learning applications social networking serves three broad functions which I refer to as socialising, sharing and sojourning**

networks and social capital with other students. Social networking first allows learners to find each other by browsing the profiles of other learners. Profile systems encourage learners to share their interests, aspirations, locations, hobbies, past course completions, photographs and other personal information.

Typically systems provide hot links that provide easy electronic access to other students who share these interests or characteristics. However, it is critical that students have control over the release of this personal information (Anderson,

2009). Some social networking applications require wide distribution across the entire Internet to be effective, whereas some information can be effectively shared in restricted subsets such as registered students at an institute, those in a particular class, programme or club or even particular 'friends' of that

student. There is no single best permission setting, rather students need to be able to set, and change as necessary, the extent of the distribution of personal information and content they create.

- **Sharing:** One of the most common informal and formal learning applications of network software is the capacity to store, organise and annotate network resources. These include favourite web sites, photographs, music, travel recommendations, references, books and many other electronic resources that people want to be able to quickly retrieve, annotate and share with others. If these resources are stored in accessible networked locations and tagged or identified by the user, they can be combined with other people's resources to create aggregated collections. These collections allow users

## STRIDE HANDBOOK 8

to discover what others have found, to rate and comment on these resources and generally add value to the individual collection by collective aggregation (Dron & Anderson, 2007). These shareable resources need not be restricted to those created by others. Rather resources created by students and teachers such as learning diaries (blogs), student created learning resources (portals, wiki contributions, original music, multi-media art, reports and essays) can also be shared. These collections need not be bound to particular courses, cohorts or even institutions. Rather they can be used to create permanent, yet continuously growing and evergreen resources as they are used and augmented by multiple groups of learners and educators.

- **Sojourning:** I refer to the final “s” function of social networking in e-learning as sojourning. To sojourn means to travel or work with others. There is ample evidence from both classroom delivery and distance education at all levels of formal education that collaborative and cooperative learning increases learning effectiveness, motivation, persistence and develops interpersonal and communications skill collaborative (Fisher, Phelps & Ellis, 2000; Gokhale, 1995; Johnson & Johnson, 1994; Kaplan-Leiserson, 2003; Kaye, 1991; Kreijns, Kirschner & Jochems, 2002; Shindler, 2004; Springer, Stanne & Donovan, 1999; Stacey, 1999). However, providing collaborative learning opportunities for distance education students has, until the development of networking software, always been inconvenient, restrictive and often expensive (Paulsen, 2008). Social

software allows groups of students to efficiently schedule their activities, meet online via text chat, audio, video or immersion technologies and to engage collaboratively in a variety of brainstorming, mind mapping, group games, simulations, project management, and other types of organisational, administrative and learning activities.

### Challenges of utilising social networking in e-learning

Like all technologies, the use of social networking presents both opportunities and challenges to educators and learners. Of course, social networking requires easy access to the Internet and some applications (notably immersion technologies such as SecondLife) require high speed connections and relatively advanced computer hardware. In addition, some educational institutions and workplaces actively discourage or block access to social networking sites in mistaken attempts to constrain learner exploration and use of these potentially distracting tools. Secondly, social networking is new and

**Social networking is new and novel and can challenge students' and teachers' network and computer efficacy, and their capacity to easily adapt to new learning tools and contexts**

novel and can challenge students' and teachers' network and computer efficacy, and their capacity to easily adapt to new learning tools and contexts. Thirdly, social networking is a very disruptive technology (Christensen, 1997; Christensen, Horn & Johnson, 2008) that challenges many of our notions of privacy, individual and institutional control – generally moving control from the institution and the teacher to the learner. Fourthly, social networking provides tools that can be used for plagiarism, cheating, harassment and other types of academic and social misconduct. None of these challenges are insurmountable, but they highlight the

challenges of rapid and wholesale implementation and point to the need for pilot projects that guide adaptive policies, training and support development.

### **Using social networking effectively**

The use of social networking evolves a process of exploration and learning for all participants. Many of the technologies and their applications are emergent, meaning that it is impossible to predict in detail what will be the outcomes of their use. However, the potential advantages described above give promise that social networking learning designs will prove more effective, efficient and motivating ways to support learning than any previous forms – including both traditional campus based and distance education. Thus, educators should be piloting educational applications in their courses to provide opportunities for themselves and their students to explore and evaluate the effect of social networking tools use on their formal and informal learning. Many social networking tools are open source, can be used in trial applications or with advertising support at very low or no cost. Educators should however note the pervasive interest in busy and often

instrumental learners in being rewarded course credits for their use and learning with these tools – thus suggesting development of compelling but optional and graded activities that enhance e-learning and face-to-face courses. Finally, educators would create ways in which learners can help each other to learn and overcome logistical, technical, institutional and learning challenges. It is unrealistic to expect the high degree of institutional support for these emerging technologies as we have attempted to provide for earlier administrative and educational technologies. However, by guiding and facilitating the use of social networking to encourage learners to support each other, we can create largely self-supporting and cost effective learning communities.

### **Further support**

The Internet abounds with individuals, communities and resources, in many formats, that can be used to learn about and garner support for social networked teaching and learning. The listing below provides a very tiny subset of these resources and a set that will be out of date by the time you read this printed text. Nonetheless, it provides starting points for further exploration.





## References

- Anderson, T. (2009). My place or yours? Hosting Web 2.0 Education. Virtual Canuck Retrieved April 2009 from <http://terrya.edublogs.org/2009/04/08/my-place-or-yours-hosting-web-20-education/>.
- Bandura, A. (1977). *Social Learning Theory*. Englewood Cliffs, N.J: Prentice-Hall.
- Bruner, J. (1986). *Actual minds, possible worlds*. Cambridge: Harvard University Press.
- Christensen, C. (1997). *The innovator's dilemma - When new technologies cause great firms to fail*. Cambridge: Harvard University Press.
- Christensen, C., Horn, M., & Johnson, C. (2008). *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns*. New York: McGraw Hill.
- Dalsgaard, C. (2008). Social networking sites: Transparency in online education. Paper presented at the European University Information Systems Organisation. from Retrieved June 2008 from <http://eunis.dk/papers/p41.pdf>
- Dron, J., & Anderson, T. (2007). Collectives, Networks and Groups in Social Software for E-Learning. Paper presented at the Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education Quebec Retrieved Feb. 2008 from [www.editlib.org/index.cfm/files/paper\\_26726.pdf](http://www.editlib.org/index.cfm/files/paper_26726.pdf).
- Fisher, K., Phelps, R., & Ellis, A. (2000). Group processes online: Teaching collaboration through collaborative processes. *Educational Technology and Society*, 3(3), 484-495
- Gokhale, A. (1995). Collaborative learning enhances critical thinking. *Journal of Technology in Education*, 7(1) Retrieved June 29,2004 from <http://scholar.lib.vt.edu/ejournals/JTE/jte-v7n1/gokhale.jte-v7n1.html>.
- Hase, S., & Kenyon, C. (2000). From Andragogy to Heutagogy. UltiBase Retrieved Dec 28, 2005 from [ultibase.rmit.edu.au/Articles/dec00/hase2.htm](http://ultibase.rmit.edu.au/Articles/dec00/hase2.htm).
- Horn, J. (2008). Human research and complexity theory. *Educational Philosophy and Theory*, 40(1)
- Johnson, D., & Johnson, T. (1994). *Learning Together and Alone: Cooperative, Competitive, and Individualistic Learning*. Toronto: Allyn and Bacon.
- Kaplan-Leiserson, A. (2003). We Learning: Social software and e-learning. *Learning Curcuits*(December) Retrieved Dec 20, 2003 from <http://www.learningcircuits.org/2003/dec2003/kaplan.htm>.
- Kaye, A. (1991). Collaborative Learning Through Computer Conferencing. Berlin: Springer-Verlag.
- Kember, D. (1995). *Reconsidering open and distance learning in the developing world*. Englewood Cliffs, NJ: Education Technology.
- Kreijns, K., Kirschner, P. A., & Jochems, W. (2002). *The Sociability of Computer-Supported Collaborative Learning Environments* (Vol. 5).
- Paulsen, M. F. (2008). Cooperative Online Education. Seminar Net, 4(2) Retrieved Oct. 2008 from [http://www.seminar.net/images/stories/vol4-issue2/paulsen\\_-\\_cooperative\\_online\\_education.pdf](http://www.seminar.net/images/stories/vol4-issue2/paulsen_-_cooperative_online_education.pdf).
- Rovai, A. (2003). In search of higher persistence rates in distance education online programs. *Internet in Higher Education*, 6(1), 1-16
- Shindler, J. (2004). Greater than the sum of the parts? Examining the soundness of the collaborative exam in teacher education courses. *Innovative Higher Education*, 28(4), 273-283
- Siemens, G. (2005). A Learning Theory for the Digital Age. *Instructional Technology and Distance Education*, 2(1), 3-10 Retrieved Oct. 2005 from <http://www.elearnspace.org/Articles/connectivism.htm>.
- Springer, L., Stanne, M., & Donovan, S. (1999). Effects of small-group learning on undergraduates in science, mathematics, engineering and technology: A meta-analysis. *Review of Educational Research*, 16(1), 21-51
- Stacey, E. (1999). Collaborative Learning in an Online Environment. *Journal of Distance Education*. 14(2), 14-33
- Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of college attrition*. Chicago, IL: University of Chicago Press.
- Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press.
- Woodley, A. (2004). Conceptualising student dropout in part-time distance education: pathologising the normal. *Open Learning*, 19(1), 47-63

## CHAPTER 17

# Social Bookmarking (Delicious) in Education



BY GABRIELA GROSSECK

## What it is?

**D**el.icio.us (<http://delicious.com>) as a free social bookmarking service is a special web-based software for identifying, organising, storing, finding, classifying and, at the same time, sharing favourite web resources, not only among browsers and work places, but also among people. In addition, it can be accessed anywhere in the world where there is an Internet connection based on an account which requires only basic information to be created (user name, password, and email). The site appeared at the end of 2003 and now belongs to Yahoo.

The del.icio.us homepage gives an overview of the current resources (*hotlist* and *tags to watch*), and this constitutes the starting point for browsing through the most popular/recent posted links. To view one's own collection of resources one has to click either on "*your bookmarks*" in the top left side or on "*my bookmarks*" from the *Bookmarks* tab menu. A user's collection is found at the address <http://del.icio.us/username> and has the RSS <http://del.icio.us/rss/username> (in fact, any del.icio.us page allows an RSS subscription). The fundamental unit of del.icio.us is the *post*. When adding a resource it is specified the URL, its description (*Title*), personal

observations (optional, *Notes* — maximum 1,000 characters), *Tags* — one or several words, space separated. The resource can be public or private. At the address <http://del.icio.us/username/tag> we find the resources of the *username*, saved under the specified tag. Del.icio.us also has a search feature: In one's own collection, the general links library and the Web.

## Using social bookmarking in education

Del.icio.us is not a revolutionary service (we've had social bookmarking applications for over a decade) but the novelty it brings is the possibility of classifying online content according to our own vocabulary. The activity of tagging websites according to the users' own criteria, is called folksonomy = folk+taxonomy (Vander Wal, 2007).

Although folksonomy promises to redefine surfing/searching the Web, the most acute problem of del.icio.us is precisely dividing the information on the Web in categories (the three axes of del.icio.us are users, resources and tags). Joshua Schachter (delicious creator) didn't impose any rules as far as tagging is concerned, but he left it up to the users' latitude to establish the taxonomy of online resources.

Obviously, del.icio.us has benefits and limitations. We shall mention some of its *advantages*:

- *Independence from a platform.* Neither the operating system, nor the browser is important. We have those small buttons which can be installed.
- *It is easy to use:* we don't need to save addresses or to have special knowledge.
- *Ubiquity:* sites can be saved and accessed on any computer with an Internet connection, anywhere in the world.
- *Personalising:* Social bookmarking offers all users the possibility of making their lists of relevant websites public, or of keeping them private. Other users can access these resources and can choose to save them. In this way, every user creates his/her own vision of the Internet, according to the nature of the network, which isn't an organised entity, but an entanglement of sites.
- *Finding information/research:* The real strength of del.icio.us resides in a certain form of "collective intelligence", because new information is always added, revised and filtered. Thus, the so-called architecture of participation is set up. Unlike classic search engines (Google, Yahoo), this system has the advantage that the importance of a resource is established by a person, not by an algorithm. Thus, in a certain way, the serendipity of social browsing leads to finding useful links/collections.
- *Evaluation:* A resource is considered important if it is stored in more del.icio.us accounts, and we can notice this by looking at the number of persons who added the respective resource (which is attached to each link). Thus, the number of users who saved a certain site becomes an indicator of the respective resource's value/utility/

**Collective intelligence, Collaboration and Communication strengthens the synergy of del.icio.us**

notoriety. If we click on the counter which indicates the magnitude of the resources, we access the respective users' collections and the tags under which they had saved the resource.

- *The 3Cs of delicious:* Collective intelligence, Collaboration and Communication strengthens the synergy of del.icio.us. Although the facility "your network" is correlated more to the bookmarks saved by Internet users than to the users themselves, we rely on the experience/ opinion of these people we have included in our circle of users and who have already evaluated the respective resource (users can choose to include persons with similar interests in their network by attributing them the quality of "member", or mere "observer", called "fan"). We can communicate resources either by "links for you", or by attributing the tag "for:username".
- *Flexibility:* del.icio.us allows us to create a personal library of resources which can (or not) be tagged, classified in several categories, shared with others, taken from others, and can be published as web links or RSS on blogs or personal sites, or exported as HTML file, etc.
- *Using 3rd party tools* developed for delicious (see <http://delicious.com/help/thirdpartytools>) useful in different interdisciplinary activities. And some *disadvantages*:
  - Being a web service it requires an *online connection*.
  - The *absence of tags* (the majority of Internet users don't place web resources in a category).
  - The *impossibility to control vocabulary*. Tags aren't subjected to any hierarchy which gives del.icio.us a chaotic and ambiguous character. There are those relational tags which classify categories according to common URLs, but

## STRIDE HANDBOOK 8

because the database belongs to the users there is no standardisation. The popularity of del.icio.us increased precisely because of its system's flexibility, fluidity and lack of control imposed by a certain taxonomy.

- *Merging tags and eliminating the singular-plural dichotomy:* “blog”, “blogs”, “blogging”, “blogosphere”, etc. — instead of using four tags, it's better to use just one.
- The *evolution of language* (synonyms, writing with or without spaces, with or without capital letters, using or not the underscore, using a certain language, etc.). Because there isn't a distinction between capital and small letters we have to be extra careful when we tag - within phrases we either use the underscore or we unite words.
- *The lack of precision:* Misspelled terms, superficiality, uncertainty, incorrect placement in several categories, etc.
- Del.icio.us *isn't literally a social network*, centered more on people than on the data. For instance, the only way of creating a profile is to include a link to your own blog or page (there is also the possibility of including an email address but we strongly don't recommend this options for using in schools), which makes it difficult to find persons with similar interests. However, the beauty of del.icio.us lies in its simplicity and efficiency, which is why the envisioned social upgrade remains a peripheral function to most of its users.
- *Information load.* A big number of links and/or a large network might require more time/attention to browse through the information flow, etc.

**One of the most interesting challenges addressed to researchers is the way in which people understand the information they find on del.icio.us and how they can transform it into knowledge**

### How to use it?

Starting from the aspects described above, below one can find a few guidelines for using del.icio.us in the educational context:

- *Online daily practice.* Since del.icio.us is web-based, it is useful for those who work on several computers, such as students at the faculty or in campus, teachers at school and at home, etc.
- *Support for lectures.* Tags from the personal collection can be recommended to students attending various courses as sources for research for producing a paper (article, report, project, etc.).
- *Mechanism for building learning communities.* During each lecture we can establish together with the students a tag which will be used for the resources we consider useful. Students can be invited to contribute to this link archive. In addition, they start to recommend sites to each other, thus contributing to the lecture's resources.
  - *Research.* The same mechanism can be chosen when we collect useful resources for projects, especially if we have foreign partners, and when we communicate with students who work on their dissertation or MA paper. On the other hand, one of the most interesting challenges addressed to researchers is the way in which people understand the information they find on del.icio.us and how they can transform it into knowledge. Sometimes, it's a bit difficult to decipher posts, especially since we find them in all languages, and they may not have tags or notes attached.
- *Support for individual or group projects:* Students/teachers make comments, tag resources with quality notes, share links,

etc. In this way, the “audience” of our del.icio.us account can increase and the students/teachers become credible sources of information.

- *Editing educational materials.* Del.icio.us can also be used as bibliographic aid for editing magazines, journals, books, etc.
- *Mechanism for informal, formative feedback.* The teacher can discover what the students’ needs and interests are by following their accounts: What tags they use, how they annotate and classify the resources, etc. Having such an indicator of what students are looking for as far as learning resources are concerned, the tutor/lecturer can make teaching much more efficient.
- *Developing content management abilities.* First of all, storing a web resource is in fact a cognitive, constructive activity. Secondly, tagging, including the link in categories and writing notes about it represent a qualitative analysis of the resource. Together with the documentation alert through RSS, this can only bring benefits to students who have problems learning: it helps them organise; it engages them in the learning process, etc.
- *e-portofolio in professional development* (Martin, 2008).
- *Microblogging as a cataloging form of the online activity.* For the educational actors who have a blog, del.icio.us offers a series of options which allow *posting the most recent links on the blog* (linkroll, tagroll, daily blog posting) (Belan, 2008).
- Based on del.icio.us tags, *diagrams can be generated.* These graphic representations materialise either in presenting content under a different form (another interface for instance), or in mixing content with other sites and getting the so-called mashups. Or, it can focus only on visual exploitation of a single account (See <http://www.visual-complexity.com/vc/discussion/2.cfm>).

### Examples, resource, etc.

1. <http://en.wikipedia.org/wiki/Del.icio.us>.
2. Cyprien P. Lomas, 7 things you should know about ... social bookmarking, 2005, <http://net.educause.edu/ir/library/pdf/ELI7001.pdf> - The Educause article on 7 reasons to use Social Bookmarking
3. Begin with the CommoCraft show: Social Bookmarking in Plain English, <http://www.youtube.com/watch?v=x66IV7GOcNU>
4. Waters, Sue, Use del.icio.us for social bookmarking, <http://aquacultur.epda.wikispaces.com/delicious>.
5. The Open University, Using del.icio.us effectively for teaching and learning, 27 May 2008, [http://www.open.ac.uk/wikis/SNPL/Using\\_del.icio.us\\_effectively\\_for\\_teaching\\_and\\_learning](http://www.open.ac.uk/wikis/SNPL/Using_del.icio.us_effectively_for_teaching_and_learning)
6. Sean P. Aune, Delicious Toolbox: 80+ Updated Tools and Resources, <http://mashable.com/2009/02/20/delicious-new-tools/>, February 20th 2009.
7. Social bookmarking tools, [http://www.teachinghacks.com/wiki/index.php?title=Social\\_bookmarking\\_tools](http://www.teachinghacks.com/wiki/index.php?title=Social_bookmarking_tools), 28 May 2007.
8. Delicious4teachers wiki, <http://delicious4teachers.pbworks.com/>
9. del.icio.us A-to-Z by Functions : All 150+ hacks, <http://www.eco.nusultant.com/delicious-by-function/index.html>.
10. <http://delicious.com/grosseck>



### References

- Belan, Martin (2008). 10 tips for integrating your del.icio.us links into your blog, Available at [http://www.currybet.net/cbet\\_blog/2008/02/10\\_delicious\\_blog\\_tips.php](http://www.currybet.net/cbet_blog/2008/02/10_delicious_blog_tips.php)
- Martin, Michele (2008). Using Del.icio.us to Create an Easy, Always Updated Online Portfolio, available at <http://michelemartin.typepad.com/thebambooprojectblog/2008/06/using-delicious.html>
- Vander Wal, T. (2007). Folksonomy coinage and definition, Available at <http://vanderwal.net/folksonomy.html> (accessed on 2009/09/23)

# CHAPTER 18

## Slideshows



BY BRIAN KELLY

### Desktop presentation tools

We will all be familiar with Microsoft PowerPoint, the best-selling example of a desktop presentation authoring tool. But in addition to PowerPoint there are a number of other desktop presentation tools which are popular, including Keynote on the Apple Macintosh and the open source Open Office suite of programmes which includes the Impress application.

These tools are widely used in business and educational contexts when giving presentations, talks and lectures. Many of these applications will be bundled with desktop computer systems or will be available on an organisation's local area network. In light of this mature environment is there a role for Web-based solutions? This is the question which will be addressed in this Chapter.

### What can the web offer?

The Web can be used as a repository of files, allowing them to be downloaded using a Web browser. A simple use of the Web is to provide access to slide presentations. Provided the Web server is suitably configured (to give an appropriate MIME type) clicking on a Microsoft Power-Point

file, for example, will download the file to the local computer and, if Microsoft PowerPoint is available locally, load the file.

This approach will not work if Microsoft PowerPoint is not available locally (possibly including mobile devices) or if firewalls block downloading of non-native file formats. In order to overcome such problems it may be desirable to convert the slide show to HTML format. Many desktop presentation authoring tools allow this to be done easily, although it should be noted that using Microsoft PowerPoint it is recommended that the file is converted into a HTML format that can be read by all browsers and not just Internet Explorer.

### Slideshows on the web

Although easy to do, using the Web simply to download slideshows has its limitations: there is no community based around a presentation and the presentation cannot be easily embedded into other Web resources.

Web-based slideshow services overcome such limitations by embracing a number of Web 2.0 characteristics. Typically a slideshow will:

- Allow users to comment on the slides in a community area.

- Allow users to bookmark ('favourite') slideshows.
- Allow users to assign tags to slideshows.
- Allow users to embed the presentation in other Web resources.

Such useful services for end users can also provide benefits to the author of the presentation:

- Authors can receive feedback on their presentations.
- Authors can maximise the impact of their ideas by allowing their presentations to be reused elsewhere.
- Authors can receive statistics on usage of their presentations.

## Slideshare

A well-known example of a Web-based presentation service is Slideshare (<http://www.slideshare.net/>) which has been listed as one of the Top 100 Tools by Centre for Learning & Performance Technologies since 2007. An example of a Slideshare presentation is shown in Figure 18.1.

The following features should be noted:

- The toolbar at the top of the screen

allows the presentation to be shared with others via email); added to the user's list of favourite presentations or downloaded to the user's local PC.

- The **Post To** toolbar at the bottom of the screen which allows the presentation currently being viewed to be easily described in a blog post (on Blogger and WordPress); included in a Twitter post; uploaded to the Facebook social networking service or bookmarked in del.icio.us.
- The area on the right provides access to information supplied by the content creator (or the person who uploaded the resource). This includes statistics on use of the slideshow, including direct views in the Slideshare environment and views of the slideshow if it has been embedded within other Web resources. This also provides access to the HTML code which allows the slideshow to be embedded in other Web pages, blogs, etc.

The popularity of Slideshare can be seen from the display of the author's most popular presentations (Fig. 18.2). If these presentations had been made available

The screenshot shows a Slideshare presentation page. At the top, there is a navigation bar with links for HOME, BROWSE, COMMUNITY, WIDGETS, BUSINESS, and an UPLOAD button. A search bar is also present. The main content area displays the title "From Web Accessibility 2.0 to Web Adaptability (1.0)" and the author's name, Brian Kelly, from UKOLN at the University of Bath. A prominent "Acceptable Use Policy" box is overlaid on the presentation content, stating that recording/broadcasting, taking photos, and discussing content using email or instant messaging are permitted, while providing distractions to others is minimized. The right sidebar provides statistics (1899 views, 0 favs, 3 embeds) and lists related presentations and more by the user. At the bottom, there is a "Post to" toolbar with options for Blogger, WordPress, Twitter, Facebook, and Delicious.

Figure 18.1. Slideshare Example

## STRIDE HANDBOOK 8

The screenshot shows a Slideshare interface with a navigation bar at the top containing 'Presentations', 'Documents', 'Following', 'Favorites', 'Groups', 'Events', 'Comments', and 'Wall'. Below the navigation bar, there are two tabs: 'Latest' and 'Most viewed'. The 'Most viewed' tab is selected. The main area displays a grid of eight presentation thumbnails, each with a title, a small image of the slide, and statistics. The presentations are:

- Introduction To Facebook...**: 3 years ago, 13103 views, 5 comments
- Developing a Web 2.0 Strategy**: 4 years ago, 7635 views, 2 comments
- Web 2.0: Opportunity Or ...**: 3 years ago, 6216 views, 2 comments
- Web 2.0 a learning and teaching viewpoint**: 4 years ago, 6133 views
- Web 2.0: What Is It, How...**: 4 years ago
- Web 2.0: What Can It Off...**: 3 years ago
- What Does Openness Mean ...**: 4 years ago
- Deployment Strategies Fo...**: 3 years ago

Figure 18.2. The Author's Most Popular Presentations on Slideshare

only on the author's institutional Web site they would not have achieved the high numbers of views.

### Additional Slideshare features

The most popular slideshow, entitled "Introduction To Facebook: Opportunities and Challenges For The Institution", is also a 'Slidecast'. This is a term used by Slideshare to describe a presentation which has an accompanying audio track. Typically this is the talk which accompanies the slides, which is synchronised with the individual slides.

It should also be noted that a plugin to integrate Microsoft PowerPoint directly with the Slideshare service is available. This allows presentations to be uploaded directly from the PowerPoint tool. In addition resources on Slideshare can be managed directly and Slideshare statistics can be viewed from within PowerPoint.

Presentations hosted in Slideshare can also be accessed from a number of social networking services. The Facebook and LinkedIn services, for example, have plugins

which allow Slideshare presentations to be viewed from within the social network. This enables information about your presentations to be easily accessed via your contacts on these social networking services, as well as allowing you to view slides uploaded by your contacts.

Slides hosted on Slideshare can also be grouped into a 'presentation pack'. A presentation pack widget can then allow a group of related slideshows to be embedded on other Web resources.

### Best practices

No matter which Slideshow service you use there are a number of issues you will need to address in order to make effective use of the services.

**Rights:** Do you have permission to upload the slideshow? You should not upload files to slideshows services if you do not have permission of the copyright holder.

**Downloads:** Will end users be able to download the presentation or just view it within the slideshow environment? If you

wish others to be able to access the master file, perhaps to edit it and reuse it you should allow the file to be downloaded from the slideshow repository.

**Creative Commons licence:** If you wish to maximise the impact of the ideas provided in your slides you may wish to make the slides available under a Creative Commons licence.

**Tags:** If you wish your slides to be easily found you should make use of tags which other users are likely to use for searching for resources.

**Metadata:** As well as tags describing the content of the slideshow you can also provide additional metadata. As can be seen from Figure 18.1 the author uses the description field in Slideshare to give a summary of when the slides were presented as well providing details about the author and his host institution.

**Groups:** If a slideshow is part of a set of related presentations, such as presentations given at a conference, the Group facility which is available in services such as Slideshare can be used to group together the related presentations.

**Long term persistence:** There are risks in hosting slides on third party Web services. What happens if the service goes out of business, becomes unreliable or changes its terms and conditions? The approach taken by the author is to make use of a service which appears to be financially viable and has a thriving community of users. In addition slides which are uploaded to the service will contain details of the location of a master copy of the slides, as can be seen in Figure 18.1.

## Conclusions

This Chapter has given an introduction to slideshow services and described Slideshare, the leading provider in this area. The author is a long-standing user of Slideshare which enables his presentations, in the areas of Web 2.0, standards and Web accessibility, to be accessed more widely and reused more easily by others.

It should be noted that in addition to Slideshow services there are also now an increasing number of Web-based slide creations services available, such as Acrobat.com Presentations, Google Presentations (which is part of the Google Docs suite) and Prezi. Such services may have an important role to play as the use of Web-based application services becomes more prevalent. In this environment the richness provided by slideshow repository services will be more closely integrated with the creation of the slides themselves.

## Resources, links, etc.

Slideshare, <<http://www.slideshare.net/>>

CLPT (n.d.). Top 100 Tools, Centre for Learning & Performance Technologies, <<http://www.c4lpt.co.uk/Top100Tools/slideshare.html>>

From Web Accessibility 2.0 to Web Adaptability (1.0), Brian Kelly, <<http://www.slideshare.net/lisbk/from-web-accessibility-20-to-web-adaptability-10>>

The Author's Most Popular Presentations on Slideshare, Brian Kelly, <<http://www.slideshare.net/lisbk/presentations?order=popular>>

Introduction To Facebook: Opportunities and Challenges For The Institution, Brian Kelly, <<http://www.slideshare.net/lisbk/introduction-to-facebook-opportunities-and-challenges-for-the-institution>>

Presentation Pack, Slideshare, <<http://www.slideshare.net/widgets>>

Presentations, Adobe.com, <<http://labs.adobe.com/technologies/presentations/>>

Google Docs, Google <<http://docs.google.com/>>

Prezi, <<http://www.prezi.com/>>



## CHAPTER 19

# Virtual Worlds

BY SANJAYA MISHRA



A virtual world is an Internet-based, simulated environment where users interact via motionable *avatars*, graphical images that represent people” (Antonacci et al. 2008). Use of virtual world can foster collaborative learning, and give opportunity to carry out tasks that could be difficult in the real world. Since the virtual worlds are 3-D environments, they can be used in a variety of ways:

- Discovery learning by clicking on objects
- Reinforcement of learning by offering a repository of learning aids and tools
- Collaborative workspaces, encouraging informal discussions
- Traditional instructor-led learning at a distance
- Simulated learning by modeling a process or interaction that closely resembles the real world

The virtual worlds are platforms enabled by multi-user three dimensional (3D) software environments to provide an effect of real world scenario. Most discussions on virtual worlds today focus on *Second Life* (see <http://secondlife.com>). However, there are other virtual worlds such as *Kaneva* (see [\[aneva.com/\]\(http://www.aneva.com/\)\), \*Twinty\* \(see <http://www.twinty.com/en>\), \*The Palace\* \(see <http://www.the.palace.com/>\), etc. These virtual world environments provide broadly four characteristics \(Robbins-Bell, 2008\):](http://www.k-</a></p>
</div>
<div data-bbox=)

- **Persistence:** A virtual world can't be paused; it exists whether or not a user is logged in.
- **Multiuser:** A virtual world must be populated or at least have the potential for population.
- **Avatars:** Rather than offering an icon to represent a user, a virtual world allows a user to create an agent that takes action, an avatar that can perform action on the request of the user.
- **Wide Area Network:** A virtual world is facilitated via a wide area network rather than a local machine or a network of workplace.

Virtual worlds show potential and promise for improving teaching and learning by motivating and stimulating the learners through engagement and immersion in the learning event/process. So, it is believed that virtual worlds can be used as a constructivist approach (Coffman and Klinger, 2007). The virtual world environment such as Second Life

(SL) provides opportunities for both the student and the teacher to create and manipulate objects in the virtual environment leading to a dynamic and rich learning environment. Subjects like History to Marine Science could be taught using the virtual world that would have 'real effect' of teaching in the past or going down the sea. In the learning process, the individual students through their personalised avatars should also be engaged in discussion, debate, designing and decision-making as in the real world. Robbins and Butler (2009) present a pedagogical model for choice of virtual world as a learning platform. They present a taxonomy of virtual worlds (first person simulations, gaming world, emergent worlds such as the SL, and task worlds). They further go on to use teaching (objectivist — constructivist) and learning (declarative knowledge — procedural skills) as two dimensions and suggest that use of virtual world in education should be based on clear purpose and adequate planning.

### Using virtual worlds

To start with you can create a free account in the website of SL. This asks you to create a name for your avatar, and see how your would look like in the virtual world. Though this gives you limited options, it is quite interesting to see oneself in a disguised way! Once you complete the required processes, including the email authentication, you need to download the desktop application and run it in your computer. The minimum system requirements to run the application in Windows are: XP or Vista Operating System, 800 MHz Pentium III or Athlon, or better, 512 MB RAM,

1024X768 pixel screen resolution, On board Graphics Card with NVIDIA GeForce 6600 or better, and Cable or DSL Internet connection. It is better that you have higher recommended system requirements to run the application without problems, as the heavy multimedia environment requires more RAM and high-speed broadband connection. This is surely a limitation for the developing countries to make full usage of the virtual worlds. The SL provides you with orientation to use the system effectively, and then you can use the teleport facility to go to a specific address by using the secondlife universal resource locator (slurl).

As a teacher what you can do is limited only by your imagination. Here follows

some tips:

- You can use existing virtual worlds (as activity) to design teaching-learning around it. So, you direct your students to a specific slurl and allow them to discover, interact, discuss and prepare reports.
- Create simulation for role-play such as in a business environment.
- Provide virtual experience of space, sea and historical events through existing resources or create your own applications.
- Teach interpersonal communication, team spirit and other soft skills. Provide internship opportunities in virtual world.

In whatever way you use virtual worlds, do not forget to provide initial orientation to the learners about the technology, avatars, user interfaces, keyboard short-cuts, etc. (Calongne, 2008). Some time spent on these activities help students to feel not only comfortable about the

**In the learning process, the individual students through their personalised avatars should also be engaged in discussion, debate, designing and decision-making as in the real world**

## STRIDE HANDBOOK 8

TABLE-19.1. Considering the attributes of virtual worlds for usage

Attributes	Description	Questions for consideration
Learner control	Learner/user control and interactivity through the creation of an avatar.	Would the learner require engagement? Would interactivity help to engage the learner or learner group?
Collaboration	Emphasis upon collaboration and community building.	Are the learning outcomes facilitated through collaborative rather than independent learning approaches? Are the learning outcomes supported through community building and ongoing support?
Persistence	Persistence of the world has led to the capacity for immediacy and synchronous use of the world has appeal.	Would the group require support beyond the seminar face-to-face contact times? Are the learners distributed across a wide geographical area?
Requirement for 3D interactions and experiences	While the user interface is often 3D, this is not always the case. Some social worlds, particularly social worlds for children, are animated and 2D, and some mash-up applications of mirror worlds are distinctly non-3D but rely upon a layering of data and data sets.	Would the learners learn more effectively in a closer to real situation? Are there scenarios of practice that could be role played in virtual worlds? Would experience-based learning benefit the learner group? Could social software and games be integrated into the experience?
Inclusion of sharable and user generated digital content	Most of the virtual worlds have included digital interactive content, be it games (which are particularly popular) or content generated by users to share with others.	Would the learners benefit from a multimodal approach which would use visual and social software tools? Are the learners engaged and motivated by making their own content and sharing it with others?
Immersion and interactivity	Immersion and interactivity are the additional characteristics to include in any list of requirements for a serious virtual world; the user must feel immersed in the environment and fully engaged in the activities being undertaken. This is normally achieved through the representation of the user and environment in-world.	How immersive does the learning experience need to be to convey the learning outcomes? What level of detail is required? Does the learner perform better with more control over what they are attempting?

(Source: de Freitas, 2008)

technology, but also develop social skills required for learning. Based on review of virtual worlds, de Freitas (2008) presents a set of attributes and related questions to be asked while using virtual world. It is presented in Table-1 for your reference and use.

### Examples of virtual worlds

Active Worlds: <http://www.activeworlds.com/>

Cyber Town: [http://www.cybertown.com/main\\_iframes.html](http://www.cybertown.com/main_iframes.html)

NASA World Wind: <http://worldwind.arc.nasa.gov/>

Media Grid: Immersive Education: <http://immersivededucation.org/>

Qwaq Forum: <http://www.qwaq.com/>

## References

- Antonacci, D., DiBartolo, S., Edwards, N., Fritch, K., McMullen, B., & Murch-Shafer, R. (2008). The Power of Virtual Worlds in Education, *ANGEL Learning White Paper*, July 2008. Retrieved on 07/09/2009 from the WWW at [http://www.angellearning.com/products/secondlife/downloads/The%20Power%20of%20Virtual%20Worlds%20in%20Education\\_0708.pdf](http://www.angellearning.com/products/secondlife/downloads/The%20Power%20of%20Virtual%20Worlds%20in%20Education_0708.pdf)
- Calongne, C.M. (2008). Educational Frontiers: Learning in a Virtual World, *Educause Review*, 43 (5), 36-48.
- Coffman, T., & Klinger, M.B. (2007). Utilising Virtual Worlds in Education: The Implications for Practice, *International Journal of Social Sciences*, 2 (1), 29-33.
- de Frietas, S. (2008). Serious Virtual Worlds: A Scoping Study. JISC Report. Retrieved on 07/09/2009 from the WWW at <http://www.jisc.ac.uk/media/documents/publications/seriousvirtualworldsv1.pdf>
- Robbins-Bell, S. (2008). Higher Education as Virtual Conversation, *Educause Review*, 43 (5), 24-34.
- Robbins, R.W. & Butler, B.S. (2009). Selecting a Virtual World Platform for Learning, *Journal of Information Systems Education*, 20 (2), 199-210.



## CHAPTER 20



# Really Simple Syndication

BY SANJAYA MISHRA

**R**SS stands for Rich Site Summary or Real Simple Syndication. It is a type of XML document used to share news headlines and other web pages. Any web page with an RSS feed enables the user to track updates on that specific page in an automated manner through a single subscription, and without having to visit the page from time to time. “Because the data is in XML, and not a display language like HTML, RSS information can be flowed into a large number of devices. In

addition to being used to create news summary web pages, RSS can be fed into stand alone news browsers or headline readers, PDAs, cell phones, email ticklers and even voice updates” (Downes, 2002).

A single RSS file is called a channel. It consists of two major sets of elements:

- *Channel properties*: The name of the channel, the URL and an image for the channel; and
- *Item properties*: Separate items listed in the channel with specific title and link.

## Example

```
<?xml version="1.0" encoding="utf-8"?>
<rss version="2.0">
  <channel>
    <title>Website Feed</title>
    <description>Website Feed coded manually</description>
    <link>http://www.yourdomain.com</link>
    <item>
      <title>Title of the item</title>
      <description>Description of the item</description>
      <link>Exact link for the item in your domain</link>
    </item>
  </channel>
</rss>
```

Where, this is coded as XML version 1, and RSS version 2, with the channel name Website Feed, and having one item.

The RSS file which is in XML can be created using a plain text editor (such as Word Pad or Note Pad). However, in practice you may not require to create an RSS file manually as most blogs, wikis and LMSs provide RSS feed as an automatic feature.

Typically RSS feeds would be used through a RSS Reader (like Google Reader or Bloglines) or an Aggregator (such as FeedReader or Yahoo Pipes). It could be desktop-based or web-based, but you need to subscribe to the RSS channels from varieties of sources into your Reader/Aggregator to receive updates without visiting the specific pages. Thus, it is like receiving only relevant news items from select sources and serve it at one place.

### Why RSS in education?

In today's fast changing world, it is important to remain up-to-date without spending too much time for relevant information on the web. Pre-identification and subscription to relevant XML files can save time and efforts of searching. While using collaborative social software like wikis, it is possible to get information about group contributions without visiting the wiki. You can subscribe to student blogs in a course to monitor their progress. One of the most important aspects of RSS is that while you use it, there is no need to supply your email, and thereby reduce the chance of spam in your inbox, as it usually happens with subscription to email newsletters. RSS can be used for a variety of purpose where it is important to be up-to-date. For instance,

**In today's fast changing world, it is important to remain up-to-date without spending too much time for relevant information on the web**

the Athabasca University's Centre for Distance Education used RSS feed in Blogger.com to provide required updates in the Centre's website (Mason and Rennie, 2008). Thus, while the faculty members maintained their own blogs, the programmes in the computer centre maintained the website by subscribing to the RSS feeds of individual faculty. Thus, the faculty was no more dependent on the programmers and the programmers also

had enough time to think about new design issues.

### Using RSS

You can use RSS readers to remain up-to-date by becoming member of free services like Google Reader, Bloglines or Netvibes. If you have a Gmail, it is pretty easy to create a Google Reader account. Just go to

<http://www.google.com/reader> and log in with your current Gmail userid and password. Once you log in, you will find the Google reader interface with left pan for subscription and the right pan for slowing the news items. In the left pan, you have link — Add a Subscription (see Figure 20.1). By clicking to that you will get a small field, to type the RSS feed that you want to subscribe. For this, you need to identify the specific newsfeed. For example, the newsfeed for my personal blog is <http://teachknowlogist.blogspot.com/feeds/posts/default>. Once the same is typed/pasted in the field and click "Add"; you are subscribed to the feed, and start getting the updates as and when the blog gets a new entry!

It is also possible to embed a specific RSS feed into a web page. For this, you need to convert the RSS feed into Javascript (a simple facility is available at RSSxpress Lite on UKOLN) and embed in the web page.

## STRIDE HANDBOOK 8

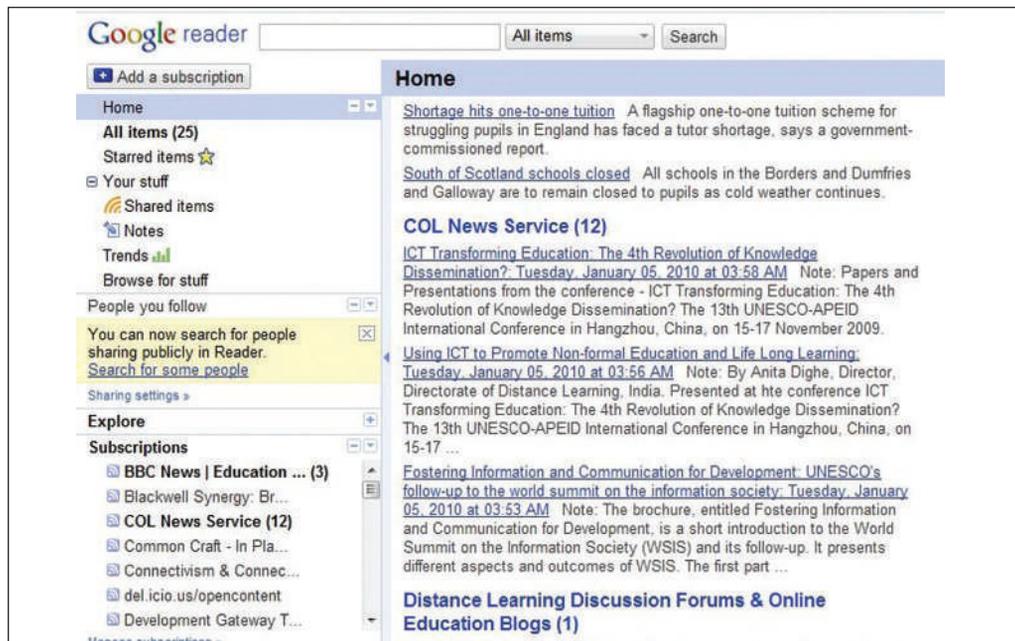


Figure 20.1. Example of RSS Reader.

### Suggestions

If you write a blog or engage in a collaborative wiki, you can use the RSS effectively to save your time and that of your students.

You can encourage students to create their own Google Reader or Yahoo Pipes

account on topics of interest to remain up-to-date.

You can create news feed on select keywords through different search engines. For example, through Google News I searched “web 2.0” and the RSS feed generated was <http://news.google.com/>



news?pz=1&ned=us&hl=en&q=web+2.0&output=rss that can provide regular feeds to my RSS reader.

You can subscribe to social bookmarking sites to know what other users are marking and tagging. For Example the RSS feed for my Delicious account is <http://feeds.delicious.com/v2/rss/missan?count=15>

### Resources and references

Bloglines: <http://www.bloglines.com/>

Downes, S. (2002). An Introduction to RSS for Educational Designers, Retrieved on August 8, 2009 from the Web at [http://www.downes.ca/files/RSS\\_Educ.htm](http://www.downes.ca/files/RSS_Educ.htm)

FeedReader: <http://www.feedreader.com/>

Glotzbach, R., Mohler, J. & Radwan, J. (2007). The Usefulness of RSS in Higher Education. In R. Carlsen et al. (Eds.), *Proceedings of Society for Information Technology and Teacher Education International Conference 2007* (pp. 3019-3026). Chesapeake, VA: AACE

Google Reader: <http://www.google.com/reader>

Mason, R., & Rennie, F. (2008). *E-Learning and Social Networking Handbook: Resources for Higher Education*, New York: Routledge.

Richardson, W. (2005). RSS: A Quick Start Guide for Educators, Retrieved on August 8, 2009 from the Web at <http://weblogg-ed.com/wp-content/uploads/2006/05/RSSFAQ4.pdf>

RSSxpress Lite: <http://rssxpress.ukoln.ac.uk/lite/include/?t=1>

Yahoo Pipes: <http://pipes.yahoo.com/pipes/>

**FeedJournal**  
THE NEWSPAPER YOU ALWAYS WANTED

Start Reader Publisher Blog Forum Support About FeedJournal Contact FeedJournal

## FeedJournal Publisher for Bloggers and Content Providers

FeedJournal Publisher is a one-stop service for generating paper publications from your aggregated online content - an attractive offering to your readers. Contact us to discuss your custom requirements.

- **Online newspapers:** Offer your readers a paper version download.
- **Bloggers:** Have your visitors read your content uninterrupted,

doxtop™  
UPLOAD SHARE 1 / 69

Liberty Newsprint

Internet | Protected Mode: On

## CHAPTER 21

# Using Micro-blogging (Twitter) in Teaching and Learning



BY ANDY RAMSDEN

## Introduction

In this Chapter, I intend to describe micro-blogging and how it differs from other types of blogging. Then I will show how it might be used in an educational context, as part of an ePortfolio, in face-to-face teaching, and to enable learning through private learning networks. Finally, it provides a pointer to how you might get started.

## What is micro-blogging?

Wikipedia describes micro-blogging as: "Micro blogging is a form of multimedia blogging that allows users to send brief text updates or micromedia such as photos or audio clips and publish them, either to be viewed by anyone or by a restricted group which can be chosen by the user. These messages can be submitted by a variety of means, including text messaging, instant messaging, email, digital audio or the web.

The content of a micro-blog differs from a traditional blog in that it is typically smaller in actual size and aggregate file size. A single entry could consist of a single sentence or fragment or an image or a brief, ten second video. But, still, its purpose is similar to that of a traditional blog... Many micro-blogs provide short commentary on a person-to-

person level... or provide logs of the events of one's life." (<http://en.wikipedia.org/wiki/Microblogging>, accessed: 3rd August, 2009).

Clearly micro-blogging is different to blogging; blogging is associated with longer, more reflective pieces often developed away from the spatial/temporal location where the initial thoughts occurred, while, micro-blogging is restricted to short pieces which are captured and immediately posted.

Within a learning context it is very obvious to see a symbiotic relationship between the two. For example, an individual may capture material, thoughts or evidence, store this in their micro-blog, and later develop it through a longer, more thoughtful piece on their blog. Clearly, this approach implies micro-blogging has an obvious application within ePortfolio based learning. 'An e-portfolio is a purposeful aggregation of digital items - ideas, evidence, reflections, feedback etc. which 'presents' a selected audience with evidence of a person's learning and/or ability' (JISC, 2007). A key question is, *outside of the very obvious ePortfolio applications how else might it be used in teaching and learning?*

## Using Micro-blogging in educational contexts

There are a growing large number of technologies and services being used for micro-blogging. At the time of writing, one of the most popular is Twitter (<http://twitter.com>). This offers a very interesting variation to traditional micro-blogging services. Twitter is primarily a social networking tool. Therefore, within the educational context discussed previously, it will allow the individual to discuss their emerging ideas rapidly with others to assist in their construction of knowledge and understanding.

The following suggests micro-blogging can be effectively embedded within a more orthodox teaching situation. The next section discusses two scenarios within face-to-face teaching. However, a cautionary note when reading these ideas is to consider the thoughts of Tom Barrett concerning Twitter, “it is one of many tools that we have at our disposal. I do not see it replacing any of the others we use nor do I see the positive impact upon learning being exclusive to Twitter” (Barrett, 2008). In other words, a similar outcome could be achieved using different tools.

### Disseminating suggested class readings

This is a teacher (academic) centred activity. The teacher is the micro-blogger, and they publish information which they perceive the student might need, for instance, links to online news items applying the curriculum to current affairs.

To achieve this in a traditional model would involve either uploading the information to a Virtual Learning Environment (such as Moodle) or emailing

the students. However, the Twitter model (read the item online and then post) reduces the number of steps in the process and the information disseminates quicker.

The following example was implemented by Dr Sabah Abdullah when she lectured an Economics course at the University of Bath. Her intention was to supplement the recommended reading list with news items during the course.

Sabah created a new account on

Twitter which followed the course code (ec10160). She provided instructions for students on how to create a Twitter account, and follow the EC10160 account. She encouraged the use of Twitter through referring to listed news items during her lectures. Overall, the process was very straightforward; she would be reading an online newspaper, and when she

found an appropriate article she'd post a TinyURL of the article through Twitter. For illustrative purposes I have included three posts from EC10160.

- Post 1: Japan's current account deficits  
<http://tinyurl.com/awph2s>
- Post 2: reading the FT news on UK output  
<http://tinyurl.com/bbm39q>
- Post 3: fancy a political-econ article?  
Read <http://go.bath.ac.uk/njlv>

These illustrate how short the posts are and how effectively they link the news item to the curriculum. The third post is particularly appealing to me as it's more intriguing and motivates me to click on the link. Sabah suggested as she progressed with the pilot she favoured the more informal style. Overall she posted 19 updates. Interestingly, when asked, 5 out of 8 students responded they thought Twitter could be used to improve the learning experience. So although Twitter is still very new to students (only

**The teacher is the micro-blogger, and they publish information which they perceive the student might need, for instance, links to online news items applying the curriculum to current affairs**

## STRIDE HANDBOOK 8

2 out of the 8 had used Twitter before), in this scenario students are seeing an educational application.

### Facilitating academic discussion between students

This is a student centred activity. The role of the teacher is to encourage its use, monitor discussions and respond in the class if appropriate. The scenario has not yet been implemented at the University of Bath (although variations have at other institutions). However, it has been discussed with various parties in conjunction with their current teaching methods. The approach is illustrated

through the evolving Design Brief (JISC, 2004) as shown in Table 21.1.

The final example I will discuss is a different take on micro-blogging. This is where we learn through constructing knowledge and ideas through interactions within our expanding personal learning networks. The expectation would be the student's personal network is larger than simply their peers on the course. The proposal is interactions with their personal network would enable learning through facilitating effective and timely communication, introducing people to new ideas, and opening up opportunities for discourse. To investigate this proposal I

**TABLE 21.1. Design Brief: Using Twitter to promote informal academic discourse during face to face teaching**

Issues to consider	Details of your planned learning activity
<b>1. Learners</b> (their needs, motives for learning, prior experience of learning, social and interpersonal skills, preferred learning styles and ICT competence.)	Final year computer science students. The class size is about 80 students. They use Moodle and other ICT. But I cannot assume they use Twitter.
<b>2. Intended learning</b> outcomes (acquisition of knowledge, academic and social skills, increased motivation and ability to progress.)	Currently using an Audience Response System (ARS) to gather feedback during the lecture. However, the focus is on the lecturer. We need to create an opportunity for students to lead academic discourse. This will enable them to expose their ideas to their peers, and construct knowledge and understanding. These ideas have been influenced by the thoughts around self-regulated learning (Nicol & MacFarlane-Dick (2006).
<b>3. Learning environment</b> (face-to-face or virtual) – available resources, tools, facilities and services and their match with the learners' needs.	<b>Where does the activity take place?</b> Primarily within the lecture, however, the discourse can continue outside the classroom
	<b>What resources are available?</b> Will use Twitter. Also being used in the sessions will be ARS technologies. We will create a getting started guide, suggested models of participation, and recommend a hash tag convention.
	<b>What technologies are available?</b> <b>What features of established practice will be important?</b>
<b>4. The learning activity</b> (the means by which the practitioner brings about learning and seeks to influence the development of the learners.)	<b>Describe the learning activity</b> Students will be able to update their Twitter status using an agreed (recommended) hash tag convention in response to their peers or based on their thoughts as the lectures progress.
<b>5. The approach taken</b> (related to learners' needs, preferred learning styles, the nature of the learning environment and the intended outcomes.)	<b>Associative, constructive (individual focus), constructive (social focus), or situative</b> Constructive (social focus)
	<b>Learning styles</b>
	<b>Inclusion</b> The hash tag will be RSS'd into the Moodle course. Therefore, people can follow the discussion if they so wish without creating a Twitter account. However, the success will depend on the size of the network. Students will be encouraged to participate.
	<b>Assessment</b> It will not be assessed. However, it will be monitored by the lecturer to see if themes emerge which they might need to respond to, i.e., a misunderstanding, need to re-visit previous content. Also to monitor if the level of discretion becomes to great and starts to have an adverse impact (a concern of some lecturers). The discourse will be reflected on over the longer period to provide additional insight into the curriculum design (triangulated with end of unit evaluations).

surveyed my Twitter followers (225 people) to try to identify the importance of micro-blogging on their continuing professional development? When asked to what extent would they agree with the following statement, "Twitter is one of my primary tools to connect me with my peers and ideas", 45% (9 people) strongly agreed, 30% (6 people) agreed and only 15% (3 people) disagreed (total of 19 responses). This implies the sample group viewed Twitter (micro-blogging) as very important for their learning. The following are some extracts from the respondents on why it is important. Please note, the caveat on being a small sample size will hold, and these people are self selecting.

- Extract 1: "It's where I can ask questions of fellow professionals and get quick responses/ideas and suggestions"
- Extract 2: "I use Twitter to connect with others involved in using technology in teaching in learning in higher education and in medical education. Twitter connects me with people and also links me to helpful sources of information on the web, new ideas, research, blogs etc."
- Extract 3: "It's widened my network of people interested in similar subjects, alerted me to new ideas and materials and allows me to ask questions openly and receive speedy responses."

Hence as educators we need to encourage our students to micro-blog and use social networks to develop their own personal learning networks, so they can share, develop and challenge their ideas.

### The next steps for you?

As a learning technology, micro-blogging is still evolving, therefore, I would recommend the following three steps to help you get started.

Step 1: Read the following blog posts.

- Rankin, M., (2009), Some general comments on the "Twitter Experiment", <http://tinyurl.com/l6w5ue>. These are some of the personal reflections from the lecturer who used Twitter at U.T. Dallas. She attempted to use Twitter in large group teaching to make it more student centred, and enhance feedback loops.
- Diamon, A., (2009), Twitter at <http://tinyurl.com/n6rwsb> (accessed 10th August, 2009). An introduction to Twitter written by Aurel Diamond, Student Intern, LTEO, University of Bath

Step 2: Search Google Scholar using the terms micro-blogging and Twitter

Step 3: Create a Twitter account, start micro-blogging and reflect on what it offers you in your teaching and learning.

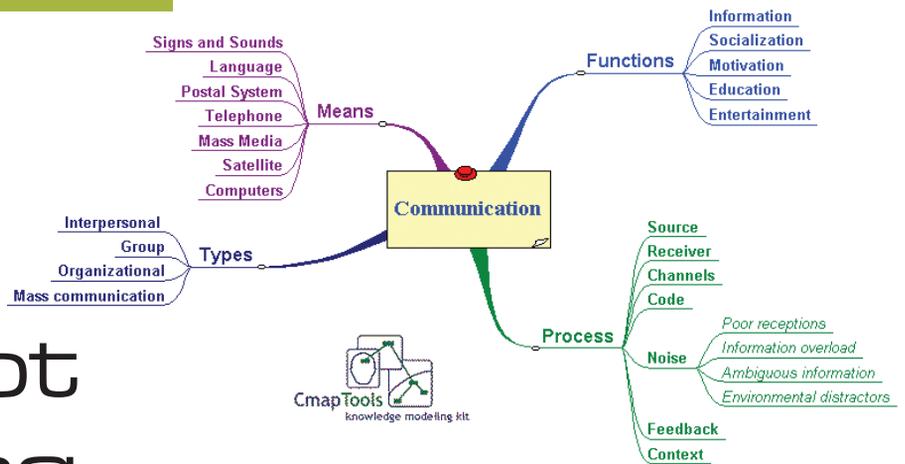
### Acknowledgements

I'd like to thank various people at the University of Bath for contributing ideas to this paper, including, Mr Aurel Diamond (Student Intern, LTEO), Dr Sabah Abdullah (Department of Economics), and Alan Hayes (Director of Studies, Department of Computer Science).

### References

- Barrett, T. (2008). Twitter: A Teaching and Learning Tool, Available at <http://tbarrett.edublogs.org/2008/03/29/twitter-a-teaching-and-learning-tool/>, (accessed: 6th August, 2009)
- JISC (2004). Effective Practice with E-Learning, Available at <http://www.jisc.ac.uk/media/documents/programmes/elearningpedagogy/planner.doc> (accessed 5th August, 2009).
- JISC (2007). e-Portfolios: An Overview, available at <http://www.jisc.ac.uk/whatwedo/themes/elearning/eportfolios.aspx>, (accessed 6th August, 2009)

## CHAPTER 22



# Concept Mapping in e-Learning

BY ALBERTO J. CAÑAS, PRIIT REISKA AND JOSEPH D. NOVAK

## Introduction

Expressing one's understanding about a particular domain in a clear and concise form has forever been a key objective in education, from both the teacher and the student's perspective. Students must clearly express their knowledge so they can be properly assessed by teachers; and teachers must express themselves, whether in written or oral form, in ways that students can comprehend and at a level that makes sense to them given their previous knowledge. Concept maps are a tool that enables users of all ages to express their knowledge about any domain in a graphical form that is easy to comprehend by others, and used extensively by both teachers and students from pre-school to graduate school worldwide. When linked together with Internet and the Web, concept mapping software tools facilitate collaborative learning, knowledge sharing, publishing and a means of organising content based on experts' knowledge of the domain.

## Concept maps

Concept maps, developed by Novak and Gowin (1984) are graphical tools for organising, representing, and sharing

knowledge. A concept map is a two-dimensional graphical representation of a set of concepts connected by directed arcs encoding propositions in the form of simplified sentences, such that the interrelationships among them are evident (see Figure 1). Novak and Gowin (1984) define concept as a perceived regularity in events or objects, or records of events or objects, designated by a label, and in a concept map they are usually enclosed in circles or boxes. A *proposition* contains two or more concepts connected using linking words or phrases to form a meaningful statement. In Figure 22.1, "Organised Knowledge", "Concepts" and "Effective Learning" are concepts, and "Organised Knowledge is comprised of Concepts" and "Organised Knowledge is necessary for Effective Learning" are *propositions*. When users engage in the construction of a concept map, they need to decide on the list of concepts and, more importantly, how these concepts are related. Propositions require careful consideration of the words chosen so they express clearly what the map constructor means to say. When this construction is done as a collaborative effort, the participants enter a negotiation process when determining what are the

best linking words that express the relationship between pairs of concepts. For example in Figure 22.2, which shows a concept map about Birds with linked resources (images, videos, Web pages, other concept maps), the proposition “Rapid Digestive System -> is necessary due to -> High metabolism” shows a careful choice of words and an understanding by the map constructor.

best linking words that express the relationship between pairs of concepts. For example in Figure 22.2, which shows a concept map about Birds with linked resources (images, videos, Web pages, other concept maps), the proposition “Rapid Digestive System -> is necessary due to -> High metabolism” shows a careful choice of words and an understanding by the map constructor.

### Concept Mapping by Students

Educators use concept maps as a means to assess the understanding of students, whether individually or in groups, about a particular topic. By assessing we don't imply limiting the use of concept maps to “grading” (i.e. assigning a grade to the

student) for evaluation purposes. A key principle of the Ausubelian learning theory (Ausubel, 1963, 1968) on which concept maps are theoretically grounded comes from the epigraph of his 1968 book:

If I had to reduce all of educational psychology to just one principle, I would say this: The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly.

We propose that concept maps be used to assess students' understanding at the beginning of a unit or module, making it possible for the teacher to determine what each student knows about the topic. This initial (and possible poor) concept map, however, is not ‘thrown away’. It is modified and refined as the student learns about the topic, until at the end of the unit the concept map reflects the increased knowledge by the student (or group of students), as shown in Figure 22.2 for the topic Birds. Teachers are able then to evaluate not only the final concept map, but the whole process that the student(s) went through during the learning of the topic. Computer-based concept mapping tools

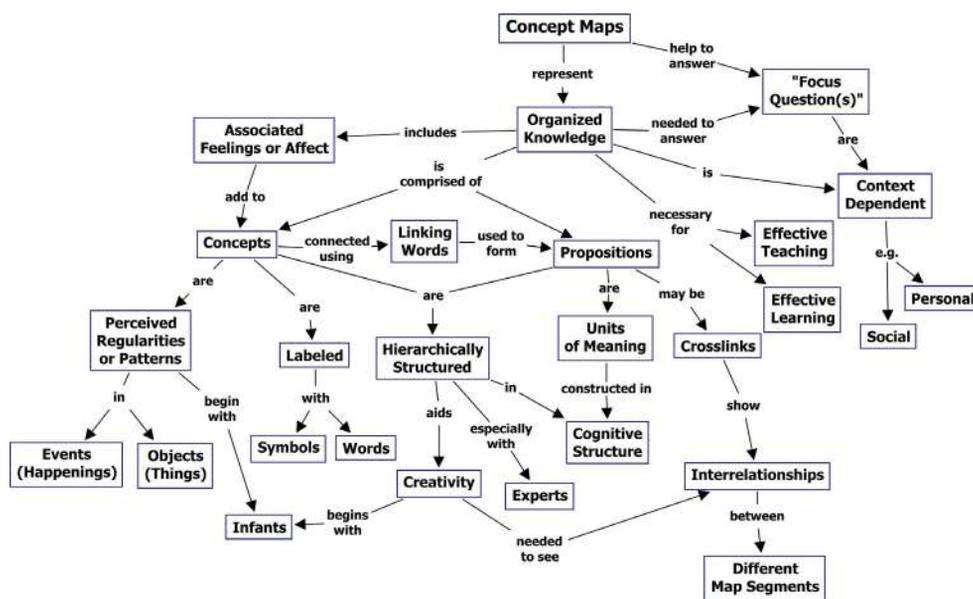


Figure 22.1. A concept map showing the key features of concept maps (Novak & Cañas, 2008). Concept maps tend to be read progressing from the top downward.

## STRIDE HANDBOOK 8

such as CmapTools (Cañas, et al., 2004) have been designed to aid the student by facilitating an iterative process of research, including searching through the Web for information relevant to the concept map, refining the map based on the resources found and increased understanding, while linking relevant resources to the map as shown in Figure 2. This iterative process of researching and searching to improve understanding, reflected in a refined and more complete concept map at each step, when combined with proper questioning and motivation on the part of the teacher leads to increased meaningful learning (Cañas & Novak, 2005, 2006; Novak & Cañas, 2004).

The marriage of concept mapping with Internet and the Web as implemented by software such as CmapTools enables students to publish their resulting knowledge portfolios or models on the Web, and, more important, to collaborate with other students during the construction of these models. Through shared spaces where students can collaboratively build their

shared concept maps from distant locations, whether synchronously or asynchronously, students negotiate in the meaning-making process of jointly learning and understanding the topic of study. Through annotation tools and discussion threads, students can criticise and comment on each other's concept maps, and teachers can actively participate during the process of map construction.

### Concept mapping by instructors

The clear depiction provided by a concept map of a topic of study allows the instructor to clearly plan the way and order in which concepts need to be introduced to his/her group of students, departing from the concepts that the students already comprehend. Not surprisingly, often instructors reorganise their courses after they prepare a concept map of its content, since they discover that key relations clearly seen in the concept map are not covered appropriately in the course as its being taught. However, it is important to

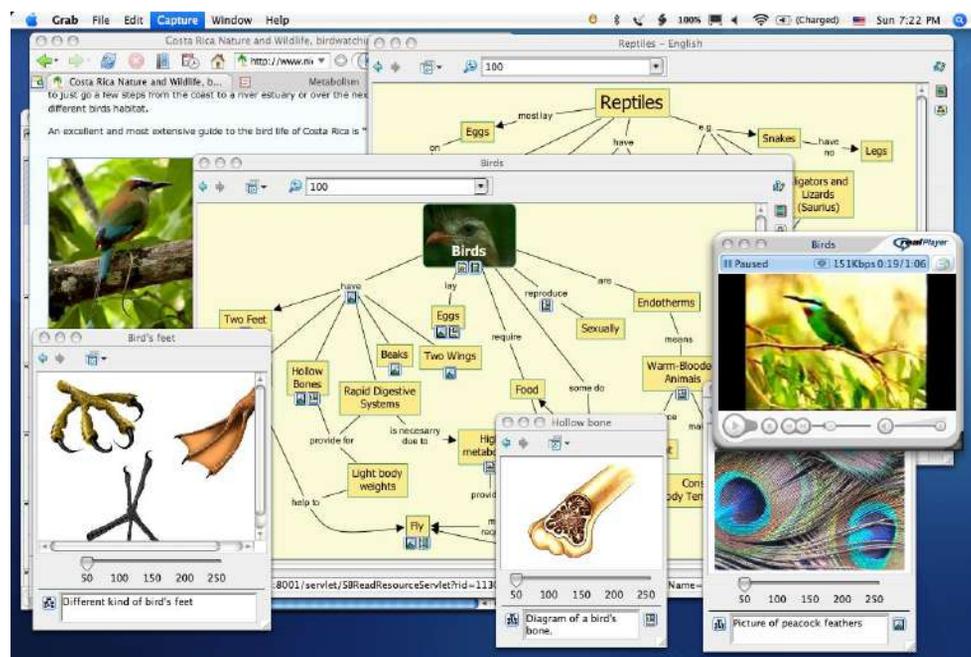


Figure 22.2. Concept map about Birds, with attached resources and links to other Cmaps, creating a knowledge portfolio.

emphasise that we don't recommend that instructors provide already-constructed concept maps for students to study. This defeats the main strength of concept maps, which comes about the metacognitive process students go through when constructing the map themselves, trying to clearly express their understanding. Providing a 'skeleton map', where a few key concepts serve as a scaffold has been found useful when students have problems

'getting started' from a blank canvas (Novak & Cañas, 2008).

Concept maps created by experts and instructors have shown to be useful as a means to organise resources for a course or topic. The large collection of concept maps on Mars constructed at NASA Ames (Briggs, et al., 2004, <http://cmex.ihmc.us>) is a good example of how an expert's knowledge expressed in the form of concept maps provides learning environment where it is easy to browse, search through and find information that is of interest to the learner without providing a linear organisation of the content in the form of a textbook or regular pages. Similar organisations are being used to organise content for eLearning. A good example is the Cmappers site to learn about concept mapping (<http://learn.cmappers.net>).

### Concept mapping as an assessment tool

In addition to use as a learning tool in education, concept mapping is also widely used as an assessment tool.

One significant component of using concept mapping in school or in research is evaluation of concept maps. Reiska (2005) describes four different types of evaluation. They range from intuitive impressions only to computer-aided quantitative evaluation. For assessment, Cañas, et al. (2006) and

Miller and Cañas (2008) have developed taxonomies for evaluating concept maps.

Although Ruiz-Primo and Shavelson (1996) show also the problems in using concept mapping as assessment tool, there are many studies showing that concept mapping is an appropriate tool for testing students achievement (McGaghie, et al, 2000; West et al, 2000; Fischler et al, 2001; Reiska 1999, 2005). Some of the studies also show that there is a high correlation

between the concept mapping and other knowledge tests (Mikelskis, 1999) but some studies did not prove the correlation between concept map scores and e.g. multiple choice exam performance (McGaghie, et al, 2000).

Concept maps can be evaluated according to size, content and structure. The

evaluation of the maps is usually based on a comparison with a reference map, i.e. the propositions from the students' maps are compared with those of a reference map.

### Summary

For many years concept maps have been used by instructors all over the world that comprehend its capability as a means to "look into the student's mind" through their graphical expression of their understanding. With the advent of software tools that leverage the Web and Internet, concept mapping becomes a powerful tool that is a perfect fit for eLearning environments that pursue meaningful learning instead of merely copying textbooks on the Web.

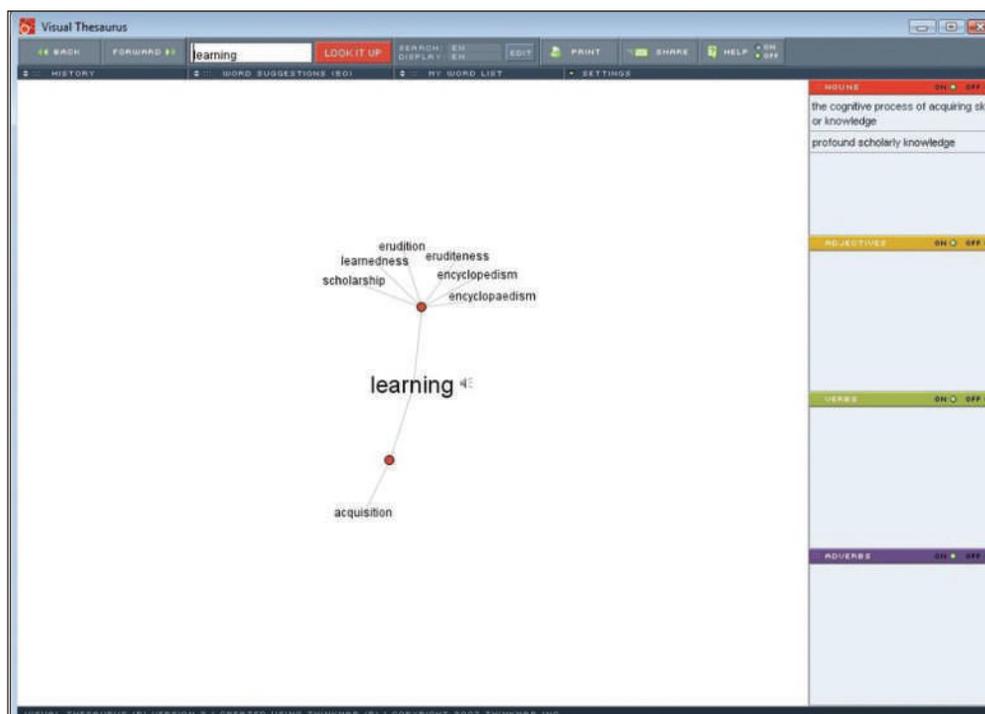
### References

- Ausubel, D. P. (1963). *The Psychology of Meaningful Verbal Learning*. New York: Grune and Stratton.
- Ausubel, D. P. (1968). *Educational Psychology: A Cognitive View*. New York: Holt, Rinehart and Winston.
- Briggs, G., Shamma, D. A., Cañas, A. J., Carff, R.,

**Concept maps created by experts and instructors have shown to be useful as a means to organise resources for a course or topic**

## STRIDE HANDBOOK 8

- Scargle, J., & Novak, J. D. (2004). Concept Maps Applied to Mars Exploration Public Outreach. In A. J. Cañas, J. D. Novak & F. González (Eds.), *Concept Maps: Theory, Methodology, Technology. Proceedings of the First International Conference on Concept Mapping* (Vol. I, pp. 109-116). Pamplona, Spain: Universidad Pública de Navarra.
- Cañas, A. J., Hill, G., Carff, R., Suri, N., Lott, J., Eskridge, T., et al. (2004). CmapTools: A Knowledge Modeling and Sharing Environment. In A. J. Cañas, J. D. Novak & F. M. González (Eds.), *Concept Maps: Theory, Methodology, Technology. Proceedings of the First International Conference on Concept Mapping* (Vol. I, pp. 125-133). Pamplona, Spain: Universidad Pública de Navarra.
- Cañas, A. J., & Novak, J. D. (2005). A Concept Map-Centered Learning Environment. Paper presented at the Symposium at the 11th Biennial Conference of the European Association for Research in Learning and Instruction (EARLI), Cyprus.
- Cañas, A. J., & Novak, J. D. (2006). Re-Examining The Foundations for Effective Use of Concept Maps. In A. J. Cañas & J. D. Novak (Eds.), *Concept Maps: Theory, Methodology, Technology. Proceedings of the Second International Conference on Concept Mapping* (Vol. 1, pp. 494-502). San Jose, Costa Rica: Universidad de Costa Rica.
- Cañas, A. J., Novak, J. D., Miller, N. L., Collado, C. M., Rodríguez, M., Concepción, M., et al. (2006). Confiabilidad de una Taxonomía Topológica para Mapas Conceptuales. In A. J. Cañas & J. D. Novak (Eds.), *Concept Maps: Theory, Methodology, Technology. Proceedings of the Second International Conference on Concept Mapping* (Vol. 1, pp. 153-161). San Jose, Costa Rica: Universidad de Costa Rica.
- Fischler, H., Peuckert, J., Dahncke, H., Behrendt, H., Reiska, P., Pushkin, D., Bandiera, M., Vicentini, M., Fischer, H., Hucke, L., Gerull, K., Frost, J. (2001). Concept Mapping as a Tool for Research in Science Education. In: Behrendt, Dahncke, Duit, Gräber, Komorek, Kross, Reiska (Eds.): *Research in Science Education – Past, Present and Future*, (pp. 217-224). Kluwer Academic Publishers, The Netherlands, Dordrecht.
- McGaghie, W.C., McCrimmon, D.R., Thompson, J.A., Ravitch, M.M. & Mitchell, G. (2000). Medical and veterinary student's structural knowledge of pulmonary physiology concepts. *Academic Medicine*, 75: 362–368.
- Mikelskis, H., F. (1999). Empirische Studie über den Einfluß von Lernvoraussetzungen und Lernumgebungen auf Lernerfolg. In: Brechel, R. (Hrsg.): *Zur Didaktik der Physik und Chemie - Probleme und Perspektiven*. Alsbach/ Bergstr.: Leuchtturm, S. 179-181.
- Miller, N. L., & Cañas, A. J. (2008). A Semantic Scoring Rubric for Concept Maps: Design and Reliability. In A. J. Cañas, P. Reiska, M. Åhlberg & J. D. Novak (Eds.), *Concept Mapping - Connecting Educators. Proceedings of the Third International Conference on Concept Mapping* (Vol. 1, pp. 60-67). Tallinn, Estonia: Tallinn University.



- Novak, J. D., & Cañas, A. J. (2004). Building on Constructivist Ideas and CmapTools to Create a New Model for Education. In A. J. Cañas, J. D. Novak & F. M. González (Eds.), *Concept Maps: Theory, Methodology, Technology. Proceedings of the 1st International Conference on Concept Mapping*. Pamplona, Spain: Universidad Pública de Navarra.
- Novak, J. D., & Cañas, A. J. (2008). *The Theory Underlying Concept Maps and How to Construct Them* (Technical Report No. IHMC CmapTools 2006-01 Rev 01-2008). Pensacola, FL: Institute for Human and Machine Cognition.
- Novak, J. D., & Gowin, D. B. (1984). *Learning How to Learn*. New York, NY: Cambridge University Press.
- Reiska, P. (1999). Physiklernen und Handeln von Schülern in Estland und in Deutschland. Eine empirische Untersuchung zu zwei unterschiedlichen Unterrichtskonzepten im Bereich von Energie und Energieversorgung mit den Methoden Concept Mapping und Computersimulation. Dissertation. Christian-Albrechts-University of Kiel, 1-315.
- Reiska, P. (2005). Experimente und Computersimulationen. Empirische Untersuchung zum Handeln im Experiment und am Computer unter dem Einfluss von physikalischem Wissen. Frankfurt a. M.: Peter Lang.
- Ruiz-Primo, M. A., Shavelson, R. J. (1996). Problems and issues in the use of Concept maps in science assessment. *Journal of Research in Science Teaching* 33, 569-600.
- West, D.C., Pomeroy, J.R., Park, J.K., Gerstenberger, E.A. & Sandoval, J. (2000). Critical thinking in graduate medical education: a role of concept mapping assessment? *JAMA*, 284, 1105–1110.

## CHAPTER 23

# Interactive Whiteboard



BY ROZHAN M. IDRUS AND  
RAJA MAZNAH BINTI RAJA HUSSAIN

## What is it?

An **interactive whiteboard (IWB)** is a large interactive display that connects to a computer and a projector. A projector is used to display a computer's video output onto the whiteboard, which then acts as a huge touch screen, where users control the computer using a pen, finger, or other device (SMART technologies, 2006). The various components are connected wirelessly, or via USB or serial cables. The boards can be mounted on a wall or a floor stand and is used in face-to-face or virtual settings in education.

Interactive whiteboard (IWB) are usually equipped with four digital writing utensils that use digital ink replacing the traditional whiteboard markers. The digital ink work by using an active digitiser that controls the PC input information for writing capabilities such as drawing or hand-writing. Interactive whiteboards have a pen tray on the front of the interactive whiteboard that holds four plastic pen tools and an eraser. The pen tools have neither electronic components nor ink: the technology is in the pen tray. When a pen tool is removed from its coloured slot in the

tray, an optical sensor recognises its absence and projects that colour on the screen. The boards utilise notebook software as a content delivery platform that gives users access to interactive, multimedia content and the tools to edit, save and share that content ([http://en.wikipedia.org/wiki/Smart\\_board](http://en.wikipedia.org/wiki/Smart_board)).

## Why it should be used in education?

In line with the major objectives in education, the IWB would seek to create a stimulating, engaging and participatory learning environment, enhance instruction and learning, increasing enjoyment and motivation and appealing to a broader range of student learning styles. Highly visual and engaging for today's tech-savvy students, interactive whiteboards create a focal point for whole-class learning. They also simplify the integration of multimedia in lessons and can improve student achievement.

The boon of the IWB is the *multiple means of representation*; key strengths includes the ability to simplify and speed the process of sharing information using a variety of media formats, either as planned

or spontaneous elements of a lesson. The interactive whiteboard acts as a multi-modal portal, giving teachers the potential to use still images, moving images and sound, and when used in this way, it can address the needs of learners who find text difficult as the only mode of communication (Somekh, et al., 2007). The IWB technology *enables multiple means of expression*, benefiting students of all ages and abilities; visual learners, kinesthetic or tactile learners, deaf and hearing-impaired learners, visually impaired students as well as students with special needs.

In the post-digital era, it is imperative that we provide digital tools for digital natives. The ability of the IWB to *provide multiple means of engagement* caters well for the students of today who are 'tech savvy' with inclinations getting immediate feedback and the ability to find, create, synthesise, share, organise and play with information in new and exciting ways. Interactive whiteboards are suitable for presentation and interaction, and they provide access to all types of media and the Internet. To engage these learners effectively, teachers need technologies that enable their students to speak their "native" tongue (Prensky, 2001).

The key determinant is the use of the board itself by pupils, where they are able to respond to the materials presented on the board in an active fashion. Thus, interactivity is boosted in the learners. Solvie (2004) states, "Writing with fingers allowed the children to feel the shapes of words they outlined, feel and see letter components that created sounds they uttered, and experience a true hands-on approach to creating and erasing text. The board allowed use of multiple senses,

leading to increased levels of engagement and greater understanding." The IWB also appeals to both intrinsically and extrinsically motivated students.

The use of an IWB provides a way in which the board becomes the focus of learning for the whole class, and the teacher is able to deploy all of the affordance of ICT to facilitate the learning of her students. Moreover, the computer

network becomes the repository of teaching and learning materials; the materials prepared by the teacher can be modified and updated, there is no reliance on old, paper-based worksheets and, most importantly of all, the teacher finds that her learning and that of the pupils comes together through the focus of technology.

**The IWB has been an effective way to interact with digital content and multimedia in a multi-person learning environment whether in face-to-face or in an open and distance learning format**

### How to use it?

The IWB has been an effective way to interact with

digital content and multimedia in a multi-person learning environment whether in face-to-face or in an open and distance learning format. Examples of learning activities with the IWB could be in the forms of;

- Manipulating text and images
- Making notes in digital ink
- Saving notes for later review by using e-mail, the Web or print
- Viewing websites as a group/search the Internet
- Demonstrating or using software at the front of a room without being tied to a computer
- Creating digital lesson activities with templates, images and multimedia
- Writing notes over educational video clips
- Using presentation tools that are

## STRIDE HANDBOOK 8

included with the white boarding software to enhance learning materials

- Showcasing student presentations
- Integrate with video-conferencing or computer-conferencing

Just like any other technology, it is the pedagogy that drives it; efficient use of the IWB by educators is an essential component of the successful enhancement of student learning. Interactive whiteboards enhance lesson preparation by (SMART Technologies, 2006):

- Shortening start-up time for integration into lessons because they are easy to use for both teachers and students
- Motivating teachers to incorporate and develop more digital resources and include them in lessons. Teachers respond enthusiastically when they observe positive attitudes and behaviours from students using interactive whiteboards.
- Enabling teachers to save notes for use next class or next year. Interactive whiteboards make it easier to build a collection of learning materials that can be constantly updated and written over, keeping lessons fresh and interactive.

Although the term interactive whiteboard is more readily associated with those large touch sensitive boards used in classrooms and training courses, web-based interactive whiteboards that will run via your Internet browser will epitomise true interactivity as they allow more than one user to use and update them at the same time, in real time. For example, in the teaching of Science, Wetzel (2009) strategised the engagements of the science students via Brainstorming, Mind Mapping, Interactive Lessons, Problem-Based Learning through the integration of text, sound, video, and

graphics based on the tactile nature of the IWB. There are numerous web-based tools that utilises the IWB for educational activities such as the Groupboard (see <http://www.groupboard.com/products/>).

Groupboard is a set of multi-user java applets including whiteboard, chat, message board, games and voice conferencing which you can place on your web page by simply copying a few lines of HTML code. With the whiteboard one can upload background gif/jpeg images and draw on top of them, and all of the users connected to the board will see the changes in real-time. Etherpad (see

<http://etherpad.com/>) is a web-based word processor that allows people to work together in really real-time. When multiple people or students edit the same document simultaneously, any changes are instantly reflected on everyone's screen. This gives rise to a new and productive ways to collaborate on text documents, useful for meeting notes, drafting sessions, education, team programming, and many more. With skbrl (read as scribble), (see <http://www.skbrl.com/>), student and teachers can write notes online, sketch drawings, upload pictures and files. One can switch between freehand drawing and rich text entry modes easily and it saves and syncs one's work automatically.

Technically, a qualified technician should set up the IWB for classroom use, as the personnel will be aware of safety warning and precautions in the process. Teachers should adhere to basic rules of use such as supervising the students when they are using the IWB and advising them not to look directly at the light beam. Always move away from the beam before turning to face the class.

**Web-based interactive whiteboards that will run via your Internet browser will epitomise true interactivity as they allow more than one user to use and update them at the same time, in real time**

For teachers, a quick reference is available to start using the IWB in projected mode, starting, orienting and controlling the projected applications. Mastering the notebook software is essential and the accompanying guide is organised around the tasks commonly performed for preparing and delivering presentations. The software includes many tools and applications in the form of:

- a start centre to access tools,
- applications and files,
- handwriting recognition,
- notebook software for creation and delivering presentations,
- gallery collection, to insert images and templates
- floating tools for writing notes and drawing shapes
- recorder, to save a recording of the content on the screen
- video player, to create notes over video print capture capabilities

To gain competence, it would be useful to refer to the tutorials as well as tips, tricks and troubleshooting hints from the software help centre. Pre-constructed templates are available to jumpstart your educational activities as you generate your own unique and distinct activities for the students.

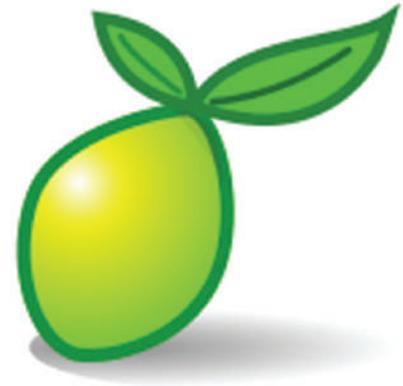
From the available body of research, several themes and patterns have emerged, including the positive effect interactive whiteboards have on student engagement, motivation, the ability to accommodate a variety of learning styles (including special needs students) and the capacity to enhance student understanding and review processes. Observations also indicate that designing lessons around interactive whiteboards can help educators streamline their preparations and be more efficient in ICT integration, thereby enhancing their overall productivity (SMART Technologies, 2006).

## References and Resources

- Check out Becta's website for advice on how to use Whiteboard for primary education:  
[http://schools.becta.org.uk/index.php?section=tl&catcode=ss\\_tl\\_use\\_02&rid=11900](http://schools.becta.org.uk/index.php?section=tl&catcode=ss_tl_use_02&rid=11900)
- Free materials for use on an interactive whiteboard. Materials for Foundation Stage through to Key Stage 3: <http://www.iwb.org.uk>
- Get the contents for Whiteboard here: <http://www.shambles.net/pages/staff/IWBcontent/>
- Learn to use SMART board software and applications: <http://smarttech.com/Trainingcenter/material.asp>
- Looking for some simple resources to use on your whiteboard. Try these from Birmingham Grid for Learning. <http://www.bgfl.org/bgfl/15.cfm>
- Prensky, M. (2001). Digital natives, digital immigrants. Retrieved on August 13, 2009, from [www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf](http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf)
- Smart and Promethean whiteboard resources for KS3 Science <http://www.think-bank.com/iwb/>
- SMART Board interactive whiteboard: [http://en.wikipedia.org/wiki/Smart\\_board](http://en.wikipedia.org/wiki/Smart_board)
- SMART Technologies (2006). The Interactive Whiteboard in Education, Available at [http://www2.smarttech.com/NR/rdonlyres/2C729F6E-0A8D-42B8-9B32-F90BE0A746D8/0/Int\\_Whiteboard\\_Research\\_Whitepaper\\_Update.pdf](http://www2.smarttech.com/NR/rdonlyres/2C729F6E-0A8D-42B8-9B32-F90BE0A746D8/0/Int_Whiteboard_Research_Whitepaper_Update.pdf)
- Solvie, P.A. (2004). The digital whiteboard: A tool in early literacy instruction. *Reading Teacher*, 57(5), 484–7.
- Somekh, B., Haldane, M., Jones, K., Lewin, C., Steadman, S., Scrimshaw, P, et al., (2007). Evaluation of the Primary Schools Whiteboard Expansion Project: Report to the Department for Children, Schools and Families. Centre for ICT, Pedagogy and Learning Education & Social Research Institute, Manchester Metropolitan University. Retrieved on December 29, 2008, from [http://partners.becta.org.uk/upload-dir/downloads/page\\_documents/research/whiteboards\\_expansion\\_summary.pdf](http://partners.becta.org.uk/upload-dir/downloads/page_documents/research/whiteboards_expansion_summary.pdf)
- Wetzel, D.R. (2009). 6 Interactive White Board Strategies in Science: Integration Techniques of Web-Based Resources for Engaging Students. Retrieved 20 September 2009 from: [http://teachingtechnology.suite101.com/article.cfm/6\\_interactive\\_white\\_boards\\_strategies\\_in\\_science](http://teachingtechnology.suite101.com/article.cfm/6_interactive_white_boards_strategies_in_science)

## CHAPTER 24

# Web Surveys and Quizzes



BY SANJAYA MISHRA

**A**ssessment of students is a major task undertaken by all teachers. It is a process of obtaining information about student progress, their strengths and weaknesses, to provide relevant feedback to them. It is also a process to evaluate instructional effectiveness and curricular adequacy. The assessment process is a combination of a number of activities such as preparation of the assessment questions, conducting the test, collection and storage of the test materials, grading/marking, moderation and declaration of scores/ results. With the advent of the computers and the web, a variety of options are available to the teachers to use technology in all these tasks. In this Chapter, we will discuss about the online web survey and quiz tools, and their use in educational contexts.

“On-line quizzes can be used as an instrument for providing *feedback* to students on the degree of their understanding of course material. Such quizzes can be used at the beginning of a course for *diagnostic* purposes to indicate any areas where prerequisite knowledge may be inadequate, during the course to measure *progress* in understanding, or at the end of a course to assist in *revision*” (Judge, 1999). When a large number of students are taking a course, it becomes difficult to mark and provide comments, properly designed online quizzes can help teachers. There can be a number of formats for online quiz,

covering:

- True/False
- Multiple Choice [pick one response only to be correct]
- Multiple Response [pick all that apply]
- Matching Lists [includes ranking and drag & drop]
- Fill in the Blank [single keyword]
- Short Answer [free form text response seeking several keywords]
- Numerical Response [ number entered via the keyboard - questions could possibly be based on a randomly generated set of parameter values]
- Hot Spot Response [questions involving identifying the correct position on a diagram or picture]

Apart from gathering data about the learners' progress, online surveys can be used to gather data about student satisfaction and feedback on the course delivery.

## Using survey and quiz tools

Normally, if you are using a Learning Management System, it will come with its online quiz module. The Moodle LMS has a quiz module and a survey module. The Quiz module enables creation of a question bank and thus, items created in the system can be re-used. It is an extremely flexible module that give a number of options such as quizzes with different question types, randomly generated quizzes from pools of questions, allow students to have repeated

attempts at a question or retake quizzes multiple times, and have the computer score it all. Such flexibility is not possible in paper based testing. For effective quiz preparation, Moodle provides the following guidelines:

- Consider the course goal while framing a question. After all, you want to know whether your students are achieving the goals of the course, so why not ask them directly?
- Try to ask multiple questions about each important idea in the class. This gives you more data points about student understanding.
- When writing a multiple-choice question, be sure each wrong answer represents a common misconception. This will help you diagnose student thinking and eliminate easy guessing.
- Write questions requiring your students to think at different levels. Include some recall questions, some comprehension questions and some application and analysis questions. You can determine where students are having problems in their thinking. Can they recall the material, but not apply it?
- Test your questions. After you've established an initial question bank, use the system reports to determine which questions are useful, and which aren't. As you write new questions, give them a lower point value and throw in a few to establish their reliability.

Moodle provides the following question types as options:

- Essay type question to be marked by the tutor
- Short answer type
- Fill in the banks
- Multiple choice (single answer or multiple answer)
- True-False
- Matching
- Graphical (Drag and Drop)

Besides, the comprehensive feature of Moodle, you can also use other third party software like *HotPatato* (available free for educational institution as long as the questions are made available free to others) or *OpenMark* (the open source question banking software developed by Open University) that you can use for creation of off line and online questions and can import to Moodle. The Survey option in Moodle provides opportunity to gather data about course satisfaction and evaluation. It also provides a number of verified survey instruments, including COLLES (Constructivist On-Line Learning Environment Survey) and ATTLS (Attitudes to Thinking and Learning Survey). You can also use other free survey software available online such as *SurveyMonkey*, *SurveyShare*, *SurveyGizmo*, etc. If you have access to a web server, you may like to host *LimeSurvey*, which is open source. Most of these tools are intuitive and simple link based that you can use and practice. You may like to open an account in some of the free survey tools for practice.

## References and resources

HotPatato: <http://hotpot.uvic.ca/index.htm>

Judge, G. (1999). The production and use of on-line web quizzes for economics, *Computers in Higher Education Economics Review*, 13 (1) Retrieved on 17/08/2009 from the Web at [http://www.economicsnetwork.ac.uk//cheer/ch13\\_1/ch13\\_1p21.htm](http://www.economicsnetwork.ac.uk//cheer/ch13_1/ch13_1p21.htm)

LimeSurvey: <http://www.limesurvey.org/>

Moodle Quiz: <http://docs.moodle.org/en/Quizzes>

Moodle Survey: <http://docs.moodle.org/en/Survey>

OpenMark: <https://openmark.dev.java.net/>

SurveyGizmo: <http://www.surveygizmo.com/>

SurveyMonkey: <http://www.surveymonkey.com/>

SurveyShare: <http://www.surveyshare.com/>



## CHAPTER 25



**Blackboard**

# Learning Management Systems

BY SANJAYA MISHRA

As discussed in Chapter 3, in order to provide online courses and programmes on the World Wide Web (WWW), we require a software system called Learning Management System (LMS). An LMS is an integrated set of software/programs that automate the administration, tracking and reporting of online courses/programmes. It provides a centralised organisational approach to learning for scheduling of courses and registration of learners, and assessment of their learning outcomes. Prominent example of LMS include Moodle, Blackboard, etc. Often the LMS is used interchangeably with Content Management Systems (CMS) and Learning Content Management Systems (LCMS).

According to IDC, LCMS is a system that is used to create, store, assemble and deliver personalised elearning content in the form of learning objects (IDC, 2001). Most LMS include some basic form of content creation and storage. While LMS provides much sophisticated student registration and tracking of course completion, the LCMS provides tracking of learners' interaction with the content objects.

Content Management Systems (CMS) are “designed for a much broader purpose than

learning content management systems.

They are usually used to create information portals for organisations and can serve as the foundation for the practice of knowledge management, but they can also be used for simply organising documents and media assets” (Chapman and Hall, 2002; p. 11). Common CMS includes Drupal, Joomla, etc. The LCMS follows the basic architecture of CMS and also integrate the features of LMS and therefore, the use of the phrase LCMS.

According to Brandon-Hall (2009), the general difference between LMS and LCMS are given in Table 25.1.

Generally LMS should be able to do the following (ASTD, 2009):

- centralise and automate administration
- use self-service and self-guided services
- assemble and deliver learning content rapidly
- consolidate training initiatives on a scalable web-based platform
- support portability and standards
- personalise content and enable knowledge reuse.

As can be seen from the table, and the ASTD's listing of LMS's functions above, it is becoming difficult to differentiate between LMS and LCMS as both types of products

TABLE 25.1. LMS vs. LCMS

	Learning Management Systems	Learning Content Management Systems
Provides primary management of -	Learners	Learning content
Management of classroom, instructor-led training	Yes	No
Performance reporting of training results	Primary focus	Secondary focus
Learner collaboration	Yes	Yes
Keeping learner profile data	Yes	No
Sharing learner data with an ERP system	Yes	No
Event Scheduling	Yes	No
Competency mapping – skill gap analysis	Yes	Yes (in some cases)
Content Creation capabilities	Yes (in some cases)	Yes
Organising reusable content	No	Yes
Creation of test questions and test administration	Yes	Yes
Dynamic pre-testing and adaptive learning	No	Yes
Workflow tools to manage the content development development process	No	Yes
Delivery of content by providing navigational controls and learner interface	No	Yes

are available with different functionalities. For our purpose, we consider LMS as the generic term covering CMS and LCMS. Interestingly, LMS is also used synonymously with Course Management Systems. The LMS market is full of proprietary and open source software with over 30 proprietary products reported in the Bersin and Associate's research report (Mallon, et al., 2009) and over 15 open source products are listed by Edutools (2009). The first LMS — eCollege — was reported in 1996 when the University of Colorado used a web-based system to offer online programmes. Blackboard (started at Cornell University) and WebCT (started at University of British Columbia) emerged in the year 1997. WebCT is now merged with Blackboard, and represents a major share in the proprietary market. However, with the emergence of open source LMS such as Moodle in 1999, more and more educational institutions are preferring to use the same. Though selection of right LMS should be dependent on the needs of

the institution and the budget and expertise level available, Moodle is being used by over 4,000 institutions in over 203 countries.

### Features of LMS

Generally, LMS consists of a variety of features and Edutools (2009) provides a comparison of both proprietary and open source products based on the features identified by the users. We have listed some of the basic features of LMS based on Edutools here:

#### Learner tools

##### Communication tools

- Discussion forum is a threaded online text conversation between participants.
- Discussion Management includes all of the accessing and scheduling associated with running a discussion forum.
- File exchange tools allow learners to upload files from their local computers and share these files with instructors or other students in an online course. Note: File attachments to messages are part of

## STRIDE HANDBOOK 8

- Internal Email and Discussion Forums.
- Internal email is electronic mail that can be read or sent from inside an online course.
  - Online Notes/Journal enable students to make notes in a personal or private journal. Students can share personal journal entries with their instructor or other students but cannot share private journal entries.
  - Real-time chat is a conversation between people over the Internet that involves exchanging messages back and forth at virtually the same time.
  - Whiteboard tools include an electronic version of a dry-erase board used by instructors and learners in a virtual classroom (also called a smartboard or electronic whiteboard) and other synchronous services such as application sharing, group browsing, etc.

### *Productivity tools*

- Bookmarks allow students to easily return to important pages within their course or outside their course on the web. In some cases bookmarks are for an individual student's private use and, in others, can be shared with an instructor or amongst a group.
- Calendar/Progress Review tools enable students to document their plans for a course and the associated assignments in a course.
- Searching within a course is a tool that allows users to find course material based on key words.
- Work offline/Synchronise is a set of tools that enable students to work offline in their online course and for their work to be synchronised into the course the next time they log-in. Sometimes students can download

**Community Networking tools allow students to create social ties, study groups, clubs, or collaborative teams, without instructor intervention**

course content to their local computers and work offline.

- Orientation/Help tools are designed to help students learn how to use the course management system. Typically, these tools are self-paced tutorials, user manuals, and email or telephone helpdesk support.

### *Student involvement tools*

- Group Work is the capacity to organise a class into groups and provide group work space that enables the instructor to assign specific tasks or projects.
- Community Networking tools allow students to create social ties, study groups, clubs, or collaborative teams, without instructor intervention.
- Student Portfolios are areas where students can showcase their work in a course, display their personal photo, and list demographic information.

### **Support tools**

#### *Administration tools*

- Authentication is a procedure that works like a lock and key by providing access to software by a user who enters the appropriate user name (login) and password. Authentication also refers to the procedure by which user names and passwords are created and maintained.
- Course authorisation tools are used to assign specific access privileges to course content and tools based on specific user roles, e.g. students, instructors, teaching assistants. For example, students can view pages and instructors can author pages.
- Registration tools are used to add students to and drop students from an online course. Administrators and/or instructors use registration tools but

students also use them when self-registration is available. Students can also be added to or dropped from the course.

- Hosted Services means that the product provider offers the course management system on a server at their location so the institution does not provide any hardware.

#### *Course delivery tools*

- Test types indicate which types of questions the software supports.
- Automated testing management includes the control of when and where tests may be taken and under what conditions.
- Automated testing support includes system services for importing and exporting tests and test banks as well as statistical analysis of test results.
- Online marking tools enable instructors and assistants to evaluate and mark student work while online.
- Online gradebook includes supports for keeping track of student progress and

work online in support of assigning course grades.

- Course management tools allow instructors to control the progression of an online class through the course material.
- Student Tracking is the ability to track the usage of course materials by students, and to perform additional analysis and reporting both of aggregate and individual usage.

**Student Tracking is the ability to track the usage of course materials by students, and to perform additional analysis and reporting both aggregate and individual usage**

#### *Content development tools*

- Accessibility compliance means meeting the standards that allow people with disabilities to access information online. For example, the blind use a device called a screen reader to read the screen but Web pages need to be designed so that screen readers can navigate it easily.
  - The product provider self-reports that the software complies with the WAI WCAG 1.0 AAA guidelines.
- Course templates are tools that help instructors create the initial structure for an online course.
- Customised Look and Feel is the ability



## STRIDE HANDBOOK 8

to change the graphics and how a course looks. This also includes the ability to institutionally brand courses.

- Instructional design tools help instructors creating learning sequences, for example, with lesson templates or wizards.
- Instructional standards compliance concerns how well a product conforms to standards for sharing instructional materials with other online learning systems and other factors that may affect the decision whether to switch from this product to another.
- Content Authoring and integration in text, audio, video, graphics, animation and multimedia.
- Provision for student and instructor blogs and wikis.

### Using LMS

The use of LMS has received its share of criticism for replicating the conventional classroom based learning and teaching practices. The template driven approach to

organisation of learning is yet another criticism against the use of LMSs (Naidu, 2006). However, the LMSs today provide sophisticated set of software tools to engage the learner in dialogue and interaction with the learning content as

well as the teachers and the peer group. Though template driven, the expert user can also create and adopt alternative styles and approaches. The content can be rich in terms of multiple sensory inputs rather than just 'page turners'. Students can be engaged in design-based learning pursuit and can discuss and reflect on the content using various tools available. Formation of

groups and portfolio, blogging and wiki-based group work are all possible these days with the use of appropriate LMS. For the teachers/instructors, it provides an easy way to organise courses and deliver it to a large number of students. Tests can be built into the system that can reduce teacher work and allow the teacher to take-up other activities and provide inputs in the discussion forums. The effective use of

**The effective use of LMS requires adequate training in the software and a deep understanding of instructional design, to plan, develop, and implement online courses / programmes systematically**

The screenshot displays the user interface of the Post Graduate Diploma in E-Learning system. At the top, the header includes the logo of Indira Gandhi National Open University and the text 'Post Graduate Diploma in E-Learning'. Below the header, the user is logged in as Sanjaya Mishra. The main content area is titled 'My courses' and lists two courses:

- Introduction to E-Learning**: Teacher: Sanjaya Mishra. This course is part of the Post Graduate Diploma in E-Learning. Start: February 1, 2010. End: March 14, 2010. Credits: 4 (120 hrs).
- Design and Facilitation of Online Courses**: Teacher: Sanjaya Mishra. This course is part of the Post Graduate Diploma in E-Learning (PGDEL). Start: March 15, 2010. End: April 25, 2010. Credits: 4 (120 hrs).

The interface also includes a sidebar on the left with 'Main Menu' (Video Conferencing, ePortfolio, Site News, Learner Introduction) and 'Site Administration' (Courses, Front Page). On the right, there is a 'Calendar' for December 2009 and an 'E-Learning News' section with links to 'Add/Edit Feeds', 'einnovation.com', 'JISC CETIS Conference', and 'TheLearningCircuitsBlog'.

LMS requires adequate training in the software and a deep understanding of instructional design to plan, develop, and implement online courses/programmes systematically.

## References

- ASTD (2009). Field Guide to learning Management Systems, Retrieved from the WWW at <http://www.astd.org/LC/LMSfieldguide.htm> (accessed on 12/09/2009)
- Brandon-Hall (2009). LMS and LCMS Demystified, Retrieved from the WWW at [http://www.brandon-hall.com/free\\_resources/lms\\_and\\_lcms.shtml](http://www.brandon-hall.com/free_resources/lms_and_lcms.shtml) (accessed on 12/09/2009)
- Chapman, B., & Hall, B. (2001). *Learning Content Management Systems*, Sunnyvale, CA: Brandon-Hall EduTools. (2009). CMS: Feature List. Retrieved from the WWW at [http://edutools.info/feature\\_list.jsp?pj=4&f=823](http://edutools.info/feature_list.jsp?pj=4&f=823) (accessed on 14/09/2009)
- IDC (2001). The Learning Content Management System, Retrieved from the WWW at <http://www.lcmscouncil.org/idcwhitepaper.pdf> (accessed on 14/09/2009)
- Mallon, D., Bersin, J., Howard, C., & O'Leonard, K. (2009). *Learning Management Systems 2009*, Oakland, CA: Bersin and Associates
- Naidu, S. (2006). *E-Learning: A Guidebook of Principles, Procedures and Practices*, New Delhi: CEMCA.

# About the Contributors

**Alberto J. Cañas** is Associate Director of the Institute for Human and Machine Cognition. Until 2005 he was also an Associate Professor at The University of West Florida, where he was a member of the Department of Computer Science. Prof. Canas is interested in understanding the pedagogical aspects of using technology, and taking advantage of his Computer Science background to come up with innovative solutions. He is interested not only in the theoretical aspects, but also in the implementation details and scalability of the use of computers in education. His research include: uses of computers in education, knowledge management, knowledge acquisition, information retrieval, and human-machine interface. He is currently involved in research projects at IHMC in: Knowledge Modeling and Sharing, Performance Support Systems with Embedded Training, Collaborative Tools for Education and for Research, Multimedia-based Knowledge Construction and Browsing Tools, Distance Education, and Corporate Memory. He can be reached at Email: [acanas@ihmc.us](mailto:acanas@ihmc.us)

**Andy Ramsden** is Head of e-Learning at the Learning & Teaching Enhancement Office, University of Bath, United Kingdom. His current interests lie in re-visiting how technology can be effectively used to enhance the learning experience in large group teaching, factoring in the mobile dimension, and the direction of personal learning environments. For instance, how Web 2.0 technologies (externally hosted) can be effectively integrated with institutional systems. The test bed for this is through an action research approach to the use of Web 2.0 technologies to enhance cohesion within the e-learning team. He can be reached at Email: [a.ramsden@bath.ac.uk](mailto:a.ramsden@bath.ac.uk) or Twitter: [andyramsden](https://twitter.com/andyramsden)

**Anguelina Popova** is a PhD student at the University of Utrecht, the Netherlands. She is researching the educational value of podcasts and their effectiveness for learning. She is interested in exploring the potential of the podcast technology with a focus on stimulating students' reflection and deep learning. She also has research interests in using Web 2.0 technologies for learning and knowledge management. Anguelina is holder of the prestigious grant of the Huygens Scholarship Programme for excellent students, attributed by the Dutch Ministry of Education, Culture and Science. She can be reached at Email: [A.Popova@uu.nl](mailto:A.Popova@uu.nl)

**Badrul H. Khan**, is an international speaker, author, educator, and consultant in educational technology, distance education and e-learning. Dr. Khan has the credit of coining the phrase 'Web-based instruction' and popularising the concept. He is the author

of several books including *Web-Based Instruction*, *Web Based Training*, *Managing E-Learning Strategies*, *Flexible Learning In An Information Society*, and *Learning on Demand*. Dr. Khan's thoughts on e-learning processes and practices have been widely accepted through his book *Managing E-Learning*, which has been translated into 17 languages. He served as a consultant/advisor to distance education and educational technology related projects at the World Bank, Asian Development Bank, US Department of Education, US Department of Defense, Ministry of Education in several countries, and academic institutions and corporations in the U.S. and other countries. He is founder of two separate Educational Technology Leadership graduate programmes at The George Washington University in Washington, D.C and The University of Texas at Brownsville. Dr. Khan is President and Founder of McWeadon Education, USA. He can be reached at Email: badrulkhan2003[at]yahoo.com

**Brian Kelly** works for the United Kingdom Office for Library and Information Networking (UKOLN), a national centre of expertise in digital information management at the University of Bath, U.K. Brian's job title is "U.K. Web Focus" and in this role he provides a national advisory service to the U.K.'s higher education community on best practices for exploiting the potential of the Web. His particular areas of interest include Web 2.0, Web standards and Web accessibility. Brian publishes frequently on his U.K. Web Focus blog, which is available at <http://ukwebfocus.wordpress.com/>. He is also a passionate Twitter user and can be contacted at <http://twitter.com/briankelly>. In addition, he is a long-standing user of Slideshare. His slides are available at <http://slideshare.net/lisbk/>.

**Gabriela Grosseck** is Assistant Professor at West University of Timisoara, Faculty of Sociology and Psychology, Department of Modern Languages and Social Informatics, Timisoara, Romania. She can be reached at Email: ggrosseck[at]socio.uvt.ro.

**Jon Baggaley** is Professor of Educational Technology at the Centre for Distance Education at the Athabasca University, Canada. He is a psychologist specialising in the educational effects of communications media. He has previously taught at universities in Liverpool, Newfoundland, and Montreal, and is author/editor of 10 books/volumes including *Dynamics of Television* (with Steven Duck), *Psychology of the TV Image*, and *Evaluation of Educational Television*; he is also the author of over 100 articles on media research and evaluation. Baggaley was the founding editor of the *Journal of Educational Media* (formerly J. E. TV). He has consulted on the design of educational media campaigns for government and broadcasting organisations in Canada and the U.S., Bangladesh, Brazil, the Dominican Republic, Germany, Kenya, Mexico, Norway, Russia, Ukraine, South Africa, the U.K., and a dozen countries in Asia. He is Associate Fellow of the British Psychological Society, and a member of the New York Academy of Sciences. As Chair and Director of Educational Technology at Athabasca University, Baggaley has been responsible for the development of new media technologies, and of policy for the distance-based delivery of the University's programmes. He can be reached at Email: jonbaggaley [at]gmail.com

**Joseph D. Novak** is an American educator, and Professor Emeritus at the Cornell University, and Senior Research Scientist at Institute for Human and Machine Cognition. He is known for his development of concept mapping in the 1970s. He can be reached at Email: jnovak[at]ihmc.us

## STRIDE HANDBOOK 8

**Ke Zhang** is Associate Professor in the Instructional Technology Program at Wayne State University. From 2003-2006, she was an Assistant Professor at Texas Tech University. She received her Ph.D. and Master's of Science in Instructional Systems from the Pennsylvania State University with a minor in Business Administration. Dr. Zhang has consulted in areas such as e-learning, instructional technology, organisational change, training; and workforce development with clients like Siemens, Proctor & Gamble, Pepsi, Otis, medical schools, government, and public school systems. Her extensive research activities have resulted in dozens of refereed journal articles, book chapters; plus national and international conference presentations on online learning, collaborative technology, problem solving, and e-learning technologies. Dr. Zhang's popular book, *Empowering Online Learning*, was published by Jossey-Bass in 2008. She may be reached by email at ke.zhang[at]wayne.edu

**Kevin Burden** is Director of Postgraduate Professional Development at the Centre for Educational Studies, and a member of the Faculty of Institute for Learning at the University of Hull, U.K. He is the programme director for the Advanced Certificate in Sustained Professional Development (ACSPD), a Teacher Development Agency (TDA) programme based in the work-place. Kevin's own research interests are related to both professional development and the role and impact of new and emerging technologies. He is particularly interested in the emergence of new media forms and how they can be incorporated into teaching and learning. His other research interest relates to the potential affordances and constrains of Web 2.0 technologies in terms of teachers' professional learning. He can be reached at Email: k.j.burden[at]hull.ac.uk

**Leigh Blackall** works full time with Otago Polytechnic in Dunedin, New Zealand, in educational research, development and implementation. His professional interests are in social media, education and networked learning. He is an elected member of the WikiEducator Community Council, and can be reached at Email: leighblackall[at]gmail.com

**M.Laeq Khan** is a Ph.D candidate at the Michigan State University.

**Maria Sandor** is at the School of Life Sciences, University of Skövde, P.O. Box 408, 541 28 Skövde, Sweden, Email: maria.sandor[at]his.se

**Neil Harris** is Lecturer at the School of Public Health, Griffith University, Australia. He specialises in Environment and Population Health, and Workplace Health. He is an active user of educational technologies, and can be reached at Email: n.harris[at]griffith.edu.au

**Palitha Edirisingha** is Lecturer in E-Learning at Beyond Distance Research Alliance, University of Leicester, in the UK. He holds a Ph.D degree from Institute of Educational Technology at the U.K. Open University and a Masters degree in Education and the Mass Media from Manchester University. He obtained his first degree in Agriculture from Sri Lanka. Dr. Palitha works on a number of research projects at the University of Leicester, including IMPALA (podcasting), WoLF (mobile learning) and MOOSE (3D virtual worlds) projects, and ELKS (an e-learning community of practice project). Dr. Palitha's research interests include the role of emerging learning technologies (mobile, social Web services

and tools); for facilitating informal learning within academic contexts and for creating social capital and communities of practices among students to support formal learning; and open and distance learning for education in developing countries. He can be reached at Email: pe27[at]leicester.ac.uk

**Priit Reiska** is Professor and Dean of Faculty of Educational Sciences at the Tallinn University, Estonia. She can be reached at Email: priit[at]tlu.ee

**Punya Mishra** is Associate Professor of Educational Psychology and Educational Technology at the College of Education at Michigan State University. He directs the Master of Arts in Educational Technology programme and co-chairs the Innovation & Technology Committee of the American Association of Colleges of Teacher Education. He can be reached at Email: punya[at]msu.edu

**Raja Maznah Binti Raja Hussain** is Professor of Curriculum and Instructional Technology at the Faculty of Education, Universiti Malaya. She can be reached at Email: rmaznah[at]um.edu.my

**Rozhan M. Idrus** is Professor of Open and Distance Learning & Technology at the Universiti Sains Malaysia, Penang. Dr. Rozhan is the first Professor of Open and Distance Learning (ODL) appointed in a public institution of higher learning in Malaysia. He holds a Ph.D in Solid State Physics and has been trained in various aspects of ODL in Australia, Canada and the U.K. Trained as an instructional designer, he has published more than 130 scholarly works in the form of books, chapters in books as well as refereed journal contributions and has presented 11 keynote addresses in Malaysia, Thailand, the Sultanate of Oman, Turkey, Mauritius and Bahrain. He is the Founding Chief Editor of the *Malaysian Journal of Educational Technology*, the Chief Editor of the *International Journal of Excellence in e-Learning* (based in Dubai) and is a member of the Editorial Board of ten international journals. He can be reached at Email: rozhanmidrus[at]gmail.com

**Sanjaya Mishra** is Associate Professor of Distance Education at the Staff Training and Research Institute of Distance Education, Indira Gandhi National Open University (IGNOU), New Delhi. He compiled and edited this Handbook, and is also the editor of the *Indian Journal of Open Learning*, published by IGNOU. He can be reached at Email: s-mishra[at]ignou.ac.in

**Som Naidu** is Director of Teaching & Learning Quality Enhancement and Evaluation Services at the Learning and Teaching Services of Charles Sturt University, Bathurst N.S.W., Australia. He is also the Executive Editor of *Distance Education*, the official journal of Open and Distance Learning Association of Australia, published by Taylor and Frances. He can be reached at Email: snaidu[at]csu.edu.au

**Stacey DeLoose** is a Ph.D student and Graduate Research Assistant in Instructional Technology at Wayne State University, U.S.A. Her focus is on making instruction accessible to both students and faculty. She uses technology and web-based tools to enable teaching and learning success. She also teaches online at Lawrence Technological University, U.S.A. She can be reached at Email: staceydeloose[at]yahoo.com

## STRIDE HANDBOOK 8

**Stephen Downes** is a designer and commentator in the fields of online learning and new media. Born in Montreal (Quebec, Canada) Downes lived and worked across Canada before joining the National Research Council of Canada as a senior researcher in November 2001. Currently based in Moncton, New Brunswick, at the Institute for Information Technology's e-Learning Research Group, Stephen has become a leading voice in the areas of learning objects and metadata as well as the emerging fields of weblogs in education and content syndication. Downes is widely acknowledged as a central authority for online education in the edublogging community. He is also widely acknowledged as the originator of ELearning 2.0. He is also the winner of the Individual Blog award in 2005 for his blog OLDaily. Downes is Editor at Large of the *International Journal of Instructional Technology and Distance Learning*. He can be reached at Email: [stephen\[at\]downes.ca](mailto:stephen[at]downes.ca)

**Steve McCarty** is Professor since April 2004 at the Osaka Jogakuin College, Japan. He is also President Emeritus of the World Association for Online Education. He specialises in EFL, Bilingualism and multi-culturalism. He can be reached at Email: [mccarty\[at\]mail.goo.ne.jp](mailto:mccarty[at]mail.goo.ne.jp)

**Terry Anderson** is Professor and Canada Research Chair in Distance Education at the Centre for Distance Education, Athabasca University, Canada. He is also the Editor of *International Review of Research in Open and Distance Learning*, a peer-reviewed online open access journal published by the Athabasca university. As an active researcher in technology-enabled teaching and learning, Prof. Anderson's personal interests are in the area of Telecommunications, especially social and learning uses of the Net. He can be reached at Email: [terrya\[at\]athabascau.ca](mailto:terrya[at]athabascau.ca)

**Tony Bates** is President and CEO of Tony Bates Associates Ltd., a private company specialising in consultancy and training in the planning and management of e-learning and distance education. The company was started in 2003, and since then has served over 30 clients in 18 countries. He was Director of Distance Education and Technology in the Continuing Studies Division of the University of British Columbia, Vancouver, Canada, from 1995 to 2003 and also Research Team Leader of MAPLE, the Centre for Research into Managing and Planning Learning Environments in Education at UBC. From 1990 to 1995, he was Executive Director, Research, Strategic Planning, and Information Technology at the Open Learning Agency of British Columbia. Prior to that, he was Professor of Educational Media Research at the British Open University, where he worked for 20 years as one of the founding members. He can be reached at Email: [tony.bates\[at\]ubc.ca](mailto:tony.bates[at]ubc.ca)

# **STRIDE**

## **ACADEMIC PROGRAMMES**

P. G. Diploma in Distance Education (PGDDE)  
M.A. in Distance Education (MADE)  
P.G. Diploma in E-Learning (PGDEL)

## **INTERNATIONAL OPERATIONS**

Rajiv Gandhi Fellowship (RGF) Scheme  
STRIDE-IICBA (UNESCO) Scheme  
ADB-DEMP, Sri Lanka

## **TRAINING**

Induction Programmes  
Orientation Programmes  
Advanced Level Programmes  
Training of Trainers Programmes  
Need-Based Training Programmes  
Attachment Programmes

## **RESEARCH**

Medium of Instruction in Distance Education  
Strategies to Meet the Needs of the Disabled  
Survey of Partner Institutions  
Training Needs Analysis and Training Design for Government Trainers  
Distance Education and Job Market  
Use of Activities in SIM by Distance Learners  
Impact of STRIDE Training Programmes  
Models of Course Development  
Student Attrition and Dropout  
Objectives in Self-Learning Materials

## **CONSULTANCY**

State Open Universities  
CCIs/DEIs  
Indian Army  
DOPT, Govt. of India  
Institute of Rail Transport, New Delhi  
NIE, Bhutan  
Africa, the Caribbean, Sri Lanka and Bangladesh

# SOME IMPORTANT STRIDE PUBLICATIONS



**Indira Gandhi National Open University**  
Maidan Garhi, New Delhi - 110068  
[www.ignou.ac.in](http://www.ignou.ac.in)