ELECTRONIC PEDAGOGY AND FUTURE UNIVERSITY BUSINESS MODELS

SENIOR SCHOLAR'S FORUM -- 2014

CO-CHAIRS:

Fred Niederman
Shaughnessy Professor of Decision Science and Management Information Systems
St. Louis University
niederfa@slu.edu

Brent Gallupe
Professor of Information Systems
Queen's University, Canada
bgallupe@business.queensu.ca

PARTICIPANTS:

Brian Butler
Professor
University of Maryland
bsbutler@umd.edu

Brent Gallupe
Professor of Information Systems
Queen's University, Canada
bgallupe@business.queensu.ca

Bernard Tan
Vice Provost and Shaw Professor of Information Systems
National University of Singapore
btan@comp.nus.edu.sg

Cathy Urquhart
Professor
Manchester Metropolitan University
c.urquhart@mmu.ac.uk

Introduction

The cost of higher education is increasing rapidly and has already exceeded the ability of many middle class Americans to pay without incurring significant debt or obtaining significant scholarship funds or other financial aid. In the UK, the marketization of Higher Education has pushed the average cost of an undergraduate degree to approximately £9000. While students are not expected to start repaying their loan until they earn a reasonable salary, this marketization has changed how people select their undergraduate majors. In some sectors in Europe rising costs threaten the continuation of "free" education for students or, alternatively, requires that the quality of education drops through lack of reinvestment and reinvigoration. This forum examines how this landscape might be affected by Massively Open Online Courses (MOOCs) and other computer-mediated mechanisms for the delivery of pedagogy. Historically, information technology has been used to make business organizations in many industries more effective and more efficient, particularly by automating repetitive, computationally-intensive tasks and freeing people to engage in more creative problem-solving tasks. It can also affect the creation and delivery of content (e.g. industries pertaining to music, films, and books).

The single largest cost component of higher education is faculty salaries. Hence, there are significant pressures on institutions to leverage faculty time by using information technology as a supplement or replacement. We stand at the confluence of economic stresses on higher education and the transformative nature of information technology as applied to education. The fundamental question to be considered in this forum is: how will the concept of Massively Open Online Courses (MOOCs) be used and what impact will it have on the pedagogy, the business model and, perhaps, the entire paradigm of higher education?

Higher education business models can be viewed largely in terms of their mixture of sources of income. University income derives largely from five sources – tuition from students, funding from government agencies, grants, and donations, and, where available, investment income from endowments. An increasing number of generally government supported universities, such as Queens University in Canada, are now conducting programs sustained only through tuition. State supported and private universities vary in the relative emphasis placed on research grants vs. tuition-generating teaching. Such differences affect the institutions' ability to gather revenue, but may also affect expenses for laboratories, support infrastructure, and labor to fulfill the grant purposes. A growing crop of "for profit" universities exemplified by the University of Phoenix in the US, have little or no direct government funding or grants, except as loans to students, but will have significant revenue from tuition and capital through issuance of equity and bonds.

In the light of these forces and trends, there are in some quarters serious pressures exerted to lower the cost of higher education. Unfortunately, while cost is relatively easy to measure quality is not. Many of these pressure sources are inclined to view education as a commodity where lower cost means a bargain rather than a simple trade off on a cost-quality continuum. The measure applied of cost per credit hour may not take into account that the value of all credit hours is not necessarily equal. The threshold of knowledge for award of units, the contextual richness and larger mental map into which knowledge fits, the ability to create, investigate, and question beyond the packaged content are difficult to assess and reward. In the general atmosphere of "dumbing down" of curricula the problem may be less about contrasting units across programs but the meaning of a unit of learning at its most fundamental.

Electronically mediated pedagogy varies in terms of three dimensions: delivery mechanism, class size, and approach to content. Delivery mechanisms can range from posting some reading or administrative materials online (at a minimum) to complete content delivery through online mediation; class sizes can range from smaller seminar sized groups with only a few students to the thousands enrolled in MOOC programs; and the approach to content can range from "automation" of traditional models through the central distribution of static material online to the use of interactive on-line activities that provide educational experience that are either impossible or impractical in the face to face settings. In terms of delivery mechanisms, major categories include, but are not limited to: face-to-face, teleconferences, static on-line content, and dynamic on-line content. We would see class size generally as small, medium and large where small is perhaps less than 50 and large greater than 100. We note, though, that many schools will implement face-to-face courses of 500 or more using mass lectures (typically delivered by a professor) coupled with smaller discussion groups (typically facilitated by a teaching assistant). Considering these dimensions, there are countless variations on the specific implementation of electronic pedagogy. While it is well beyond the scope of this panel to present a comprehensive taxonomy of all combinations of these, these dimensions provide an indication of the complex design space institutions face when developing pedagogy and course delivery strategies.

MOOCs offer a number of theoretical advantages as a tool for learning. Recording a lecture once, particularly from an outstanding presenter, and having it viewed by a global population of students has potential economic advantages

over local creation and delivery of lecture for smaller groups. When content is relatively stable and pedagogical strategies are well understood this method presents the prospect of significant cost savings. Incorporating social media and discussion capabilities allows questions to be addressed within a MOOC forum and answered by other students with assistance from a TA. This arrangement potentially allows students have the benefit of viewing lectures from gifted faculty members and assistance from peers at reduced cost and greater convenience.

On the other hand, the use of MOOCs is not without risks and costs. Such costs include: running and supporting the platform; verifying and screening applicants; making sure participants have correctly completed the requirements; updating content (particularly for IS topics which are subject to continual change); supporting student queries and problems; and general administrative costs, Schools also risk of cannibalizing their own students from other programs (thus incurring additional costs, but without new revenue) and creating brand confusion if their online presence degrades their traditional image (rather than their traditional image elevating their online presence). More generally, whether students do in fact receive the same value from a MOOC programs and traditional programs remains a matter of significant debate.

Some established faculty object to such programs, seeing them as a substitute which reduces the need for traditional educators and creating downward pressure on faculty pay (where else would savings come but through lowering personnel costs?), but then we in IS should be sensitive to similar complaints in many industries where automation replaced workers and/or shifted jobs to new information enhanced ones. San Jose State University proposed using a MOOC created by a Harvard Philosophy Professor Michael Sandel as the primary lecture for its Philosophy course in social justice, with its own faculty serving as discussion leaders. It was not well-received by the faculty who viewed it as a mechanism of reducing faculty head-count. The Philosophy Faculty also articulated a number of pedagogical concerns in an open letter to Professor Sandel (http://s3.documentcloud.org/documents/695245/san-jose-state-u-open-letter.pdf). We summarize some of the issues with MOOCs below.

There is a growing body of evaluative research pertaining to the various approaches to electronic delivery of content. For example, some recent studies have found that a small percentage (but still large absolute number) of MOOC participants actually finish. They also find that those who do finish likely already have undergraduate degrees, suggesting that these programs may be more effective for offering continuing education than basic educational content. It is also not clear that these programs would exist at all without significant direct funding from players like the Gates Foundation and indirectly subsidies from universities which make the cost (nearly) zero to participants but creates an unstable long term model for their institutionalization. Proponents counter that much remains unknown about how to make best use of these tools. Early experiments with the "flipped" classroom show that under ideal conditions these can increase learning, particularly for those not successful in traditional programs.

Organization of the Forum

We intend for the panel to have four distinct phases. The major one relies on the participation of the audience. For the first phase, the facilitator will present the topic with a few slides featuring a few key questions (5 minutes). Each of the panelists will then outline key issues and solutions in 5 minutes each (20 minutes). The floor will be opened to questions and comments (50 minutes). During the final 20 minutes each panelist will summarize key "take away" points. The facilitator will finish with a brief final summation of emergent themes.

Controversial Issues

(1) Is online content delivery as the primary mechanism for delivering education inevitable? (2) Given issues of educational quality, are there effective strategies to insure education delivered through MOOCs will be adequate? (3) What will the role of faculty be in a new MOOC age and what ought current educators do to prepare for it? (4) To what extent should IS faculty and institutions champion MOOCs (and electronic pedagogy in general)? (5) How do we prepare for the likely evolution of MOOC content and business models related to it?

The Panelists Positions

Brent Gallupe will provide an administrator's perspective on the evolution of online delivery of post-secondary education. He will argue that this evolution has been going on for over fifty years and will continue to do so at an increasing pace. Individual faculty members can chose to ignore or passively resist this movement, or seek to be participants in processes that will affect how technology is to be used in higher education. It is clear that most post-secondary institutions world-wide are under increasing pressure from reduced funding and greater demands from students. Administrators at these institutions are actively seeking, developing, and testing ways/models to reduce these pressures. MOOCs are one manifestation of these efforts. However in general, faculty members are seen as non-supportive and resistant. Administrators are well aware of the challenges of implementing a sustainable model around MOOCs. What is clear to many administrators is that the concept of MOOCs will morph! MOOCs will evolve to meet the expectations and motivations of their stakeholders. Hybrids are currently being developed and tested at many institutions. MOOCs as we think of them today will not be the predominant MOOCs of the year 2020.

Brian Butler. For individual faculty members the most significant implication of MOOCS and online delivery of educational experiences is that the practices and skills needed to be an "efficient, effective teacher" are changing. As a result, we don't have the luxury of assuming that what we have seen in the past is the best approach for now or the future. Established faculty will be increasingly faced with the challenge of learning new ways of doing otherwise familiar tasks and much of the collective tacit knowledge that is the basis for mentoring and professional development may need to be critically reexamined. For institutions MOOCs are just the latest round in the tension between an arms-length, product-oriented model of education (e.g. students as customers, universities as producers, and education a product) and a relational, community-based model of education (e.g. students as participants, universities as communities, and education as investment in students by institutions, instructors and society). Many of the claims made about MOOCs in this latest round of debate and discussion are based on misinformed assumptions about higher education business models. Effective universities have long operated under a model of mass customization -- multi-level, segmented offerings that are adapted for the need of individual students by instructors who were "there" and engaged. MOOCs and "economies of scale" are dreams that education can be offered through mass-production, not unlike claims from the early history of print, mechanized print, radio, and television. As such, this is another case of legislators, managers, and university leaders diligently (but somewhat thoughtlessly) trying to lead universities into the early 20th century --- while other organizations are struggling to adopt the model that universities already use as the based for their 21st century operations. Ultimately we must adapt the tools to the goal of providing high-quality education -- not adapt the definition of education to the capabilities and affordances of the tools (as tempting as that may be).

Bernard Tan. MOOCs offer an opportunity for instructors to introduce new pedagogical approaches into the classroom. Various types of flipped classrooms, leveraging on MOOCs, have emerged that allow instructors to use the classroom time for higher value-added activities rather than simply delivering contents via lectures. To be effective for learners, flipped classrooms should be designed with learning outcomes in mind. MOOCs can be used to deliver contents centered on key concepts (the use of multimedia in MOOCs has helped learners understand key concepts better). Classroom time (including virtual forum discussion) can be utilized to reinforce this learning by helping learners appreciate the relationships among key concepts. Assessments can be used to further strengthen this learning by allowing learners to see when and how they can apply key concepts (this is assessment for learning as opposed to the traditional assessment of learning). In the 21st century, university graduates would have to engage in lifelong learning to remain valuable in the workforce. It is likely that such learning would occur predominantly in less formal settings (e.g., MOOCs) rather than more formal settings (e.g., higher degree programs). In this sense, exposing university students to MOOCs can potentially prepare them for the future. In the 21st century, the pedagogical approaches used in universities (that have remained relatively unchanged for several centuries) are likely to undergo massive changes enabled by technological advances. Incumbents in tertiary education need to be vigilant about such changes and willing to innovate in order to thrive. In this sense, the willingness of universities to improve learning outcomes through trying out and learning about new pedagogical approaches (e.g., MOOCs) help universities to build organizational agility and be better prepared for the future.

Cathy Urquhart will examine MOOCs in the context of the UK university system. She will argue that while MOOCs are excellent for self-study and the self-directed learner, they are far from the disruptive technology that they are said to be. MOOCs have low completion rates – not everyone can learn without face to face teaching. Cynically, many MOOCs can be seen as a wealthy universities shop window which gives a marketing advantage. The real issue lies in certification of completion, and establishing if the person who claims to have completed the course has actually

completed it on line. There are some implications here for the business model of education – in the future, universities could choose to decouple teaching from assessment, and concentrate on assessment, for instance.

Forum Participant Bios

Brian Butler is a Professor in the College of Information Studies at the University of Maryland; Director of the Master of Information Management Program; and Director of the Center for Advanced Study of Communities and Information (CASCI). His research, which has appeared in *Information Systems Research*, *MIS Quarterly*, *Organization Science*, *Journal of Biomedical Informatics*, and the *Journal of Medical Internet Research*, combines theories and methods from organizational theory, information systems, and information studies to better understand how emerging technologies affect teams, communities, and organizations. Current projects include studies of policy formation and application in Wikipedia, technology use in local food systems, the design of online communities for large-scale education initiatives, and models and metrics for systems of online groups.

R. Brent Gallupe is a Professor of Information Systems; Director of the Queen's Executive Decision Center; and former Associate Dean – Faculty at Queen's School of Business, Queen's University at Kingston, Canada. He also holds an on-going Visiting Professor appointment at the University of Auckland, New Zealand. His current research interests include IT and organizational transparency, collaboration technologies, and learning in a digital world. He has held editorial appointments at a number of leading IS journals including *MIS Quarterly*. His work has been published in such journals as *Management Science, MIS Quarterly, Information Systems Research, Academy of Management Journal, Sloan Management Review,* and *Journal of Applied Psychology.*

Fred Niederman serves as the Shaughnessy Endowed Professor of MIS at Saint Louis University. He obtained an MBA and a Ph.D. in Management Information Systems from the University of Minnesota. He is a proponent of grounded theory and theory building as a way to enrich the MIS discipline and build intellectual content customized specifically to our field of practice. He has published more than one hundred articles in leading research journals and refereed conference proceedings. He serves on editorial boards for the *Project Management Journal*, *TMIS, JAIS, CAIS, Human Resource Management, Journal of International Management*, *IEEE Transactions on Engineering Management* and the *Journal of Global Information Management.*

Bernard C.Y. Tan is Vice Provost at the National University of Singapore (NUS), where he was formerly Head of the Department of Information Systems. He is Shaw Professor of Information Systems at NUS, where he has won university awards for research and for teaching. He was the 15th President of the *Association for Information Systems*. He is a Fellow of the *Association for Information Systems*. He has served on the editorial boards of *MIS Quarterly* (Senior Editor), *Journal of the AIS* (Senior Editor), *IEEE Transactions on Engineering Management* (Department Editor), *Management Science* (Associate Editor), *ACM Transactions on Management Information Systems* (Associate Editor), and *Journal of Management Information Systems* (Editorial Board Member). His research has been published in many IS journals including *ACM Transactions on Management Information Systems*, *Communications of the ACM*, *Decision Support Systems*, *European Journal of Information Systems*, *IEEE Transactions on Engineering Management*, *Information and Management*, *Information Systems Frontiers*, *Information Systems Research*, *Journal of Global Information Management*, *Journal of Management Information Systems*, *Journal of the AIS*, *Management Science* and *MIS Quarterly*. His current research interests are social media, virtual communities, and Internet commerce.

Cathy Urquhart is Head of Research at Manchester Metropolitan University and Professor of Digital and Sustainable Enterprise at the Manchester Metropolitan University Business School. She is a past Senior Editor for *MIS Quarterly*, and an Associate Editor for *Information Technology and Development*, as well as an Editorial Board member for *Information Systems Journal.* She has published in many journals such as the *Journal of Information Technology*, *the European Journal of Information Systems*, *Information Systems Journal* and others. She is past Vice President for Special Interest Groups and Member Services of the Association for Information Systems (AIS), which is the premier organization for IS academics. Dr. Urquhart is a member of the AIS Special Interest Groups for Global Development (SIGGLOBDEV), Grounded Theory Method (SIGGTM) and of the IFIP 9.4 Working Group on the Social Implications of Computers in Developing Countries and IFIP 8.2 Working Group on Information Systems and Organizations. She is a member of the ICIS Women's Committee. She is author of *Grounded Theory for Qualitative Research: A Practical Guide,* published by Sage in 2013.