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Accounting Education in the New Millennium: The Internet Challenges

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The methodologies and the mode of delivery for accounting courses are undergoing dynamic changes as Internet-based teaching techniques continue to expand into higher education. Private, for-profit organisations are developing accredited courses and degrees that can be completed at any location, at any time and that compete directly with university programmes of study. The Internet has provided these organisations with an easier entry into the educational market because the infrastructure of a large campus, required for a resident population, is no longer necessary. It has been found that educational institutions with a tradition of providing accounting education courses and degrees to a resident student population have been slow to adopt new Internet teaching methods. This essay examines several issues facing university programmes in accounting as these environmental changes and challenges continue to accelerate in the new millennium.

The Internet is a relatively new medium that requires a new approach to education. This essay discusses the nature of the traditional approach to providing educational services and the changes and challenges that are taking place in the way these educational services are starting to be delivered and will be delivered in the new millennium. Today, the accounting curriculum is experiencing the beginning of an "education upheaval" caused by a clash between Internet-based educational methods and the weight of hundreds of years of a traditional teaching legacy based around "textbook and lecture".

(1) TRADITION AND CHANGE

The traditional approach of educational delivery is largely focused on face-to-face methods through lecture sections possibly supported by fewer smaller seminars in the North American tradition and lectures and tutorials in the British tradition.

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Both approaches provide supplemented extra reading and practice undertaken by students in non-contact time. In most cases, traditional students are physically present at, or near, the institution where they study and attend classes on a daily basis. A learner must enrol in a course offered at a specific time and at a specific location. Consequently, the traditional university's control of education has been described by some authors as a franchise (Sangster and Lymer 1998), monopoly (McGee 1991), or near-monopoly (Marchak 1998) over a local population.

Although there are outstanding examples of the use of television and computer-based methods of learning in use, over the first ninety years of the 20th century there has not been a serious challenge to the traditional methods of educational delivery. Today that situation is changing as noted here:

> .... the education environment is undergoing a technology-driven shift of unparalleled proportions. Traditional higher education, campus-based with its focus upon the physical delivery of material to students is losing its grip on the educational process (Sangster and Lymer 1998).

Over the last 10 years, there has been a change in higher education's franchise over the provision of educational services as a significant growth in non-face-to-face education has occurred. This is a trend that is likely to accelerate in the next century. Such a change could seriously challenge higher education's franchise over the delivery of education.

An increasingly mobile and older student population with family and employment constraints is unable to participate in traditional forms of study that impose place, time, and other residential constraints. In the past, there was little choice for consumers of educational services. Today there is a much greater choice than ever before as well as a rapidly growing population that is willing to both participate in, and accept as valid, other methods of educational delivery. Although various methods of distance education have always been a factor in the delivery of education, the Internet appears to resolve two major problems that have faced distance educators in the past with its (1) ease of use and (2) relatively low per student usage cost.

The response to these environmental changes has been dramatic. For example, in the US, the Western Governors University developed by the governors of 16 western states in the US and Guam has been offering online courses since 1998 (http://www.westgov.org). In reviewing the TeleCampus Online Course Directory (http://www.telecampus.edu), there are no less than 566 online accounting courses. In the for-profit sector, a number of publishers and information intermediaries are developing educational programmes that will compete with the not-for-profit higher education sector. For example, Harcourt Brace and Bergdorf Goodman intend to be the first academic textbook publisher to offer accredited business degrees in an online format (Chronicle 1999). These new digital delivery systems do not recognise any state or national political boundaries.

Nor do they recognise the accepted traditions that are part of a university environment. Furthermore, the lack of a large and costly educational infrastructure no longer prevents an organisation from entering the market for the delivery of educational services.

Not all organisations have enthusiastically adopted these new methodologies. Educators based in more traditional institutions, where students are physically present on a regular basis, have been slower to make use of this technology and where they have done so, it has largely been to address different educational problems.

While many of these new organisations in the field of distance education are intent on providing entire educational environments online, traditional educators have selected specific Web applications to fit within their current delivery methods. These elements have typically been in the area of e-mail communication and supplementary course materials (Debreceny *et al.* 1996, 1999).

Many accounting educators now use e-mail communications with their students and interact with them through this medium. This is convenient for both parties who, though usually geographically closely located, may not always be temporally co-located. If organised appropriately, e-mail goes a long way to providing significant, convenient interaction between faculty and students with limited frustration for both parties.

Supplementary course material using the Internet is usually provided on many Web sites. Many accounting programmes now provide all key course documentation via a Web site that is either globally accessible or, often, available with student password access. These materials typically consist of course descriptions, handouts, tutorial exercises, readings and self assessment materials (Sangster and Lymer 1998), but they can include a range of other materials such as lecture-by-lecture notes, past examination materials, PowerPoint presentations, etc. It is also becoming more commonplace to provide students with network access to journals and other online data sources available on the Internet to support their textbook readings.

Recent research on the knowledge of and use of the Internet by accounting academics has found only limited adoption of Internet usage to teaching and learning methodologies (Debreceny *et al.* 1996, 1999). The primary applications of Internet methods in the classroom are to direct students toward external resources, rather than to exploit the Internet's full potential for non-traditional forms of communication, learning, and delivery of unique educational experiences. Many of the accounting courses being offered online do not use the full potential of the Internet in their delivery of educational materials (Sangster and Lymer 1998). It is believed that one of the principal reasons for relatively low adoption of Internet technologies in accounting education is the absence of materials that can readily be

shared between similar courses.

In a report prepared by the Learning and Technology Committee, President's Task Force on the Future at California State University, Chico (1994), the Committee has recognised the need to adapt to new technologies:

> If the University...does not invest in the technology, people, and programs to remain competitive in distance education, other universities will gradually squeeze CSU, Chico out of the market. This would eliminate a whole range of possibilities for enhancing our own programmes, reaching under-served populations and generating additional revenue for the University (http://www.csuchico.edu/inf/T2000/ptf/techandlearn.html).

(2) THE NEW CURRICULAR APPLICATIONS

Using the Internet-based methods in the classroom calls for an entirely new approach to the presentation of materials. The development of these new approaches requires a shift from providing students with content knowledge to developing their higher-order thinking skills (Bonk and Smith 1998; Roush and Smith 1997). Piece-meal adoptions of e-mail usage or Web browsing within the format of traditional classes only leads to a false sense of confidence that "it's done!"

In this section, methodologies are described for restructuring an undergraduate accounting course in auditing to an Internet format. All these approaches can be used today, and in fact, many have been used. In the examples, it becomes clearer that these new approaches also use thinking styles that better support the development of student's critical judgment and creative thinking skills.

The use of the Web's resources plays an important role in auditing classes. The integration of US SEC EDGAR corporate filings into the advanced audit courses by Oxner (1996) demonstrated how traditional face-to-face classes could be enriched by interactive resources.[1] This is a first step only, however. Case studies can bring a flavour of the "real world" to the classroom and enhance students' critical thinking skills (Wines *et al.* 1994; for auditing examples see Green and Calderon 1994 and Greenawalt 1994).

The Internet provides many opportunities for expanding the textbook case with layered case studies. In layered case studies, student groups study varied auditing issues over several of weeks in an interactive format. This learning approach is similar to the one found in a *Simulated Case for Audit Decisions* (Felix 1996). The case is centred on the audit of a factory - an environment in which many undergraduates have not had direct experience. In order for students to succeed with

this case, they must visually familiarise themselves with the plant's physical environment, conduct online interviews the appropriate staff, and begin to identify possible internal control weaknesses.

First, students embark on a virtual tour of the factory from their home computer. QuickTimeVR is used to provide a walk through the factory, from receipt of materials through the various production stages and on to shipping. Second, VRML is used to represent the offices of the management team. The offices contain "virtual managers" with whom the students interact. Each of the rooms contains the necessary documentation, in Web format, that the students use to assess the internal control aspects of the firm. There are no stated textbook case questions to answer. The students must identify the questions themselves.

John Schatzel at Stonehill College in the US has built a simulation along these lines in Shockwave.[2] The advantage of using the Internet with layered cases is that resources can be released to the students at varied intervals as, for example, when they have identified a need for specific information, or in response to successful completion of initial tasks. This case approach is very different from the standard textbook case. Here, they must identify the critical problems and then solve them.

In many of today's accounting classrooms, class communication is supported by class bulletin boards, and there are many examples of such "first generation" applications. Auditing is, however, fundamentally a group activity. Therefore, students need to use communication software such as *The Palace* (http://www.edupalace.com) for real-time, avatar-based small group communication or Lotus Corporation's *QuickPlace* (http://www.lotus.com/home.nsf/tabs/quickplace) for project development and information sharing. These tools significantly enhance small group student communication and prepare students for the increasingly "virtualised" world of employment.[3]

It can be seen that Web-based simulations enhance the functionality of the audit course. Other areas in the undergraduate auditing course are amenable to use of simulations. For example, an important element of the auditing course is to teach students the essentials of flow charting business processes. This activity can be done using Java with the student's flow charts "living" in a virtual Web site. Students interact online as they prepare the working papers for the case.

These are the Internet tools that can be used today. This brief description is not all-inclusive, but it does demonstrate the basic differences between virtual Internet delivery methods and the traditional classroom lecture, textbook case, and "first generation" Internet applications applied within traditional course structures. Further, it is anticipated that in a very short time the described methods will not be at the "leading edge" of Internet-based teaching and delivery methods.

The Internet provides a new medium for the creation of entirely new educational

environments both in delivery and educational methods, but those institutions using traditional educational methods have not led the way in the adoption of these new methodologies.

(3) THE NEW APPROACH AND ITS CONSTRAINTS

The new learning environments empower accounting educators by allowing them to create educational applications that go far beyond traditional textbook experiences and empower students to play a more active role in the learning experience. Such empowerment can be threatening and as a result there are factors that have the potential to seriously slow the adoption of Internet methods in our accounting classroom. In this section, five of these factors are considered. They are (1) the strategy of the approach; (2) skills development; (3) extensive time commitments; (4) reward structures; and (5) the culture of the academy.

While supplementing the traditional textbook and lecture method with Internet technology is possible, even preferable to not using the Internet at all, it is not what is being suggested. As discussed earlier, the Internet is an entirely new medium with a wide variety of new techniques available. Accounting educators must rethink their approach to education at a time when the educational establishment is firmly entrenched in traditional teaching pedagogy. While changes toward Internet-based teaching methods are occurring and these changes represent movement in the right direction, they also represent an extension of the traditional textbook and lecture method to include Internet-based resources. To fully use the Internet for accounting education, educators must retool themselves and rethink their approach to pedagogy so as not to "force-fit" the traditional model around the Internet. Rather accounting educators must redevelop the model of education from its very foundation. Without such basic reconsideration, the potential of Internet applications will not be realised.[3]

Few accounting educators today possess the required skills to create virtual learning environments. Research is showing that there is a wide gap between the current skill level of accounting educators and those needed to develop Internet-based educational applications. Surveys have shown that the majority of accounting educators currently using the Internet for educational purposes restrict usage to very basic applications (Debreceny *et al.* 1999, 1996). The same surveys found that even basic HTML editing tools are used only by a small number of accounting educators. On the positive side, it was found that the majority of accounting faculty want to know more about the use of the Internet in their courses and a growing number are attending Internet skill development workshops. To develop Internet-based educational environments, accounting educators must have an understanding of its basic potential, develop technological skills, and learn how to combine their new skills with teaching methods that stress the development of

students' critical thinking skills over content retention.

The creation of innovative new educational applications is extremely time-consuming, and educators must balance their available time, energy, and intellectual resources between teaching, research, and service. Currently the amount of time that must be devoted to the creation of effective, stimulating, high quality educational applications is inordinately large. The Debreceny *et al.* (1996, 1999) surveys also found that the majority of accounting faculty considers the Internet to be too time consuming to learn how to use for their courses. This view reflects an awareness of the complexity of developing any computer application, but it may also develop due to a lack of knowledge about the wide array of user-friendly tools available for building Internet-based applications.

Another constraint on implementing more Internet-based applications is the lack of an appropriate reward structure within most universities. Most universities do not recognise and reward educational development efforts in their promotion and tenure process. A recent survey of US accounting educators who use Internet-based technology in their classes found that in 93 percent of the universities surveyed no incentives or faculty rewards for integrating Internet-based applications were made (Baker and White 1999; also see Debreceny *et al.* 1999, 1996). Given the perceived benefits of Internet-based educational applications, there needs to be a rethinking and restructuring of the reward structure for educators who are willing to devote the time and effort to create such applications.

These first four areas of concern help point to a fourth consideration: the underlying culture existing in the academy. In *The Report of the Task Force on Distance Education* prepared for the Provost of The Pennsylvania State University (1992), it states:

> ...one of the greatest obstacles to distance education's growth and success is the current culture in higher education that is generally resistant to change, deeply imbedded in the tradition of resident instruction, and frequently, oppositional to ideas that appear to be new or revolutionary (http://www.outreach.psu.edu/de/de_tf.html).

In order for any accounting curriculum change to be effective, it must successfully interact with underlying university institutions and values. New Web methodologies place stress on accepted teaching methods and core beliefs such as responsibility for learning, classroom privacy, classroom independence, the comprehensiveness of problem solving, and even governance (Smith and Bonk 1995-1996). Without considering these well-accepted traditions, Web-based reforms are viewed as being concerned with the management of technology rather than one that challenges well-accepted academic traditions. Meaningful integration of Web-based teaching methods into the accounting curriculum requires the consideration of these academic values in order for successful integration to occur.

(4) SUMMARY

It is believed that Internet-based educational applications represent the future means for delivering accounting education. Today's university student expects more than the traditional textbook and lecture techniques; deans and college presidents and vice-chancellors want their faculty, programmes, and campuses to be known as innovators in the use of information technology; and the professional world demands graduates with cutting-edge technical skills.

It would be very difficult for one academic acting independently or one accounting department to institute all the changes that are necessary to adopt Internet-based methods within the accounting curriculum. Among accounting academics new ways of working both within and outside our institutions needs to be found as, for example, the role that the Accounting Education Change Commission has played in the United States. Traditional assumptions about our education model needs to be re-evaluated just as those successful Internet businesses have re-evaluated their business models. If academia does not successfully face these issues, other competing institutions will fulfil more of the educational needs of the public with a timely and conveniently delivered educational product in the new millennium.

ENDNOTES

1 See also the use of the Internet in the audit course by Ceil Pillsbury at http://www.uwm.edu/~ceil/audit/.

2 See http://academics.stonehill.edu/accounting/schatzel.html.

3 The following statements provide examples of the need for those skills: (1) Arthur Andersen's Web site: "it is crucial to enter the 21st Century with confidence and ability in Virtual Office technology." (http://www.arthurandersen.com). (2) KPMG's Web site: As part of KPMG's globalisation strategy, the firm is launching a global, online messaging, collaboration and knowledge-sharing platform called KWorld. The first system of its kind built entirely from standard Microsoft components, KWorld will help fulfil the firm's mission to turn knowledge into value for its clients (http://www.us.kpmg.com).

4 Once these fundamental educational changes are made, then it would be appropriate to make comparisons about the level of student learning occurring between the "typical" traditional and Internet-based course model.

REFERENCES

Baker, R. and C. White (1999). Internet Uses in Accounting Education: Survey Results. *Journal of Accounting Education*, 17(2/3), 255-266.

Bonk, C. and G. Smith (1998). Alternative Teaching and Learning Styles in the Accounting Curriculum. *Journal of Accounting Education*, 16(2), 261-293.

Blumensty, K. (1999). Moving Beyond Textbook Sales, Harcourt Plans to Open a For-profit University. *The Chronicle of Higher Education*, June, A35-34.

Debreceny R., G. Smith and C. White (1996). Internet Methodologies and the Accounting Curriculum: A First Look. *Accounting Perspectives*, 2(1), 107-124.

Debreceny, R., G. Smith, C. White, A. Lymer and A. Priest (1999). *Internet Methodologies and the Accounting Curriculum. Research Roundtable.* American Accounting Association Meeting, San Diego.

Felix, W. (1996). *Simulated Case for Audit Decisions*, McGraw-Hill, New York.

Green, B.P. and T.G. Calderon (1994). Using Real-world Cases to Illustrate the Power of Analytical Procedures. *Journal of Accounting Education*, 12(3), 245-268.

Greenawalt, M.B. (1994). Student-written Case Studies: The Benefits to the Internal Audit Curriculum. *Managerial Auditing Journal*, 9(2), 3-7.

Marchak, P. (1996-1998). Universities After a Millennium: Wither or Wither? *Journal of Business Administration and Policy Analysis*, 24-26, 378-392.

McGee R. (1991). Break up the Accounting Education Monopoly. *Financial and Accounting Systems*, 7(1), 48-51.

Needham, R. (1986). Are Communications Technologies in Education a Threat to Faculty? ERIC Document: ED 269114.

Oxner, T. and K.W. Hawkins (1996). Using "EDGAR" in Accounting Education: An Example From an Advanced Auditing Course. *Journal of Accounting Education*, 14(1), 99-102.

Roush, M. and G. Smith (1997). Consultative Teaching in the Accounting Curriculum: International Examples. *Issues in Accounting Education*, 16(2), 261-293.

Sangster, A. and A. Lymer (1988). How to Survive a New Educational Era. *Issues in Accounting Education* 13(4), 1095-1109.

Smith, G. and C. Bonk (1995-1996). Accounting Curricular Reform in the Social Construct of the Academy: Hypotheses for Inertia. *Southern Collegiate Accountant*,3, 1-18.

Wines, G., G. Carnegie, G. Bryce and R. Gibson (1994). *Using Case Studies in the Teaching of Accounting*. Australian Society of CPAs, Melbourne.