# Tertiary Education and the Internet

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## INTRODUCTION

For many years, information technology (IT) has been used to find ways to add value for customers to entice them to purchase the products and services of a business. Many educators use the Internet to supplement existing modes of delivery. Importantly, the Internet is providing a number of added value supplemental benefits for subjects and courses delivered using this new, hybrid teaching mode. There are two aspects to subject delivery to where added value benefits may be applied, and that is in the *administrative tasks* associated with a subject and the *educational tasks*. In both instances, IT solutions can be employed to either fully or partially process some of these tasks. Given the complex and often fluid nature of the education process, it is rare that a fully integrated solution can be found to adequately service both aspects of subject delivery. Most solutions are partial in that key components are targeted by IT solutions to assist the subject coordinator in the process. If we examine closely the underlying benefits gained in the application of IT to these tasks, there is a strong parallel to the benefits to be gained by business organizations with similar applications of IT. While the actual benefits actually sought by academics depend on the motivation for the IT solution, the perceived benefits can be classified using standard categories used to gauge similar commercial applications. This article examines the possibility of translating the benefits of added value to the use of the Internet by tertiary educators for subject and course delivery. A brief discussion will occur on aspects of course and subject delivery in tertiary education and the use of information technology for added value. These concepts are drawn together to indicate how the Internet may be used for added value in tertiary education. Finally, these concepts were tested with a survey of members of the IS World list serve.

## BACKGROUND

### Aspects of Course and Subject Delivery in Tertiary Education

For the purposes of this article, when the authors refer to tertiary education they mean university level education. There are two overall aspects to course and subject delivery, the educational and administrative components (Darbyshire & Wenn, 2000). Delivery of the educational component of a subject to students is the primary responsibility of the subject coordinator, and this task is the most visible from a student's perspective. However, the administration tasks associated with a subject form a major component of subject coordination, but these responsibilities are not immediately obvious or visible to the students.

It is essential that all aspects of subject delivery be carried out as efficiently as possible. To this end, IT, and in particular, Web-based solutions can be applied to both aspects of subject delivery. That Web-based solutions are a suitable vehicle to use has been almost universally accepted by students, teachers and academic administrators (Scott Tillett, 2000). Other advantages are the ease with which information can be disseminated, its interactivity, its use as a real-time communication medium and the ability to use text, graphics, audio and video (Kaynama & Keesling, 2000).

There are a number of administrative tasks associated with subject coordination for which IT solutions can be applied in the application. These include (Byrnes & Lo, 1996; Darbyshire & Wenn, 2000):

- *Student enrollment*. While most universities have a student enrolment system administered at the institute level, there are often local tasks associated with enrolment such as user account creation and com-

pilation of mail lists, and so forth. Some of these tasks can be automated (Darbyshire & Wenn, 2000).

- *Assignment distribution, collection and grading*. The written assignment remains the basic unit of assessment for the vast majority of educators, and there have been many initiatives to computerize aspects of this task. Some of these include *Submit* (Hassan, 1991), *NetFace* (Thompson, 1988), *ClassNet* (Boysen & Van Gorp, 1997) and *TRIX* (Byrnes & Lo, 1996).
- *Grades distribution and reporting*. Techniques for this range from email, to password protected Web-based database lookup.
- *Informing all students of important notices*. Notice boards and sophisticated managed discussion facilities can be found in many systems. Examples include products such as *TopClass*, *Learning Space*, *Virtual-U*, *WebCT*, and *First Class* (Landon, 1998).

Many of the tasks viewed as educational can also employ IT solutions in order to gain perceived benefits. Some of these include: *online class discussions*; *learning*; *course outline distribution*; *seminar notes distribution*; *answering student queries*. Just how many of these are actually implemented will relate to a number of factors, such as the amount of face-to-face contact between lecturers and students. However, using the Internet for many of these can address the traditional problems of students misplacing handouts, and staff running out of available copies.

Discussion management systems are being integrated into many Web-based solutions. These are usually implemented as threaded discussions, which are easily implemented as a series of Web pages. Other tools can include chat rooms or listserv facilities. Answering student queries can take place in two forums, either as part of a class discussion or privately. Private discussions online are usually best handled via an email facility, or in some instances, store and forward messaging systems may replace email.

Implementing IT solutions to aid in the actual learning process is difficult. These can range from intelligent tutoring systems (Cheikes, 1995; Ritter & Koedinger, 1995), to facilitated online learning (Bedore, Bedore, & Bedore, 1998). However the major use of IT solutions in the learning process is usually a simple and straight forward use of the Web to present hypertext-based structured material as a supplement to traditional learning.

## Information Technology: Efficiency and Added Value

There are a number of reasons for using IT in organisations today (O'Brien, 1999):

- *For the support of business operations*. This is usually to make the business operation more efficient (by making it faster, cheaper and more accurate).
- *For the support of managerial decision making*, by allowing more sophisticated cost benefit analyses, providing decision support tools and so forth.
- *For the support of strategic advantage*. This refers to the use of Porter and Millar's (1985) three generic strategies as a means of using information technology to improve competitiveness by adding value to products and services.

It has been recognised for a number of decades that the use of computers can provide cost savings and improvements in efficiencies in many organisations. Porter & Millar (1985) have generally been credited with recognising that the capabilities of information technology can extend further to providing organisations with the opportunity to add value to their goods. Value is measured by the amount that buyers are willing to pay for a product or service. Porter & Millar (1985) identify three ways that organisations can add value to their commodities or services (known as *generic strategies for improving competitiveness*):

- Be the lowest cost producer.
- Produce a unique or differentiated good (providing value in a product or service that a competitor cannot provide or match, at least for a period of time). If an organisation is the first to introduce a particular feature, it may gain a competitive advantage over its rivals for a period. Some ways in which information technology can be used to differentiate between products and/or services are (Sandy & Burgess, 1999):
  - Quality
  - Product Support
  - Time
- Provide a good that meets the requirements of a specialised market.