THE EVOLVING TEXTBOOK:

THE DEVELOPMENT AND MARKETING OF

NEW-MEDIA PRODUCTS IN EDUCATIONAL PUBLISHING

by

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ABSTRACT

Educational institutions, instructors and students are increasingly embracing information technologies in their teaching and learning. Educational publishers, meanwhile, aim to develop and market new-media educational materials that meet and satisfy the needs of institutions, instructors and students, as well as to increase their competitive advantage in the educational-publishing industry. To help it reach its goal, an educational publisher formulates a new-media strategy based on information gathered through market research. Rapid development of information technologies, the high costs of their implementation, as well as limited technical skills among instructors and students, however, are causing uncertainty in how to best integrate information technologies into education. Consequently, a company's development of a new-media strategy is a slow process.

This report brings together market research in four areas to better understand the uncertainty surrounding information technologies in education. It presents

an evaluation of delivery systems for educational materials,

a comparative analysis of educational publishers' web sites and textbook sites,

an analysis of the competitive environment,

an analysis of trends and issues in both education and information technologies.

The first three areas are based on market research conducted at McGraw-Hill Ryerson in 1999. The fourth area is primarily a review of secondary sources that explore trends in education and information technologies.

Based on analysis of these four areas, this report concludes with four opportunities that an educational publisher might pursue. These opportunities are

1. employing flexible delivery systems for content that respond to the changing needs of instructors and students, the changing capabilities of information technology and the constantly shifting priorities of the educational marketplace,

2. forging partnerships with companies with core competencies that can increase the value of an educational publisher's products,

3. investing in customer support as a means of training instructors in the use of an educational publisher's products,

4. developing customer loyalty through customer support and other marketing strategies.

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Definition of Terms

Delivery system is any means used to transfer information and educational materials. This includes print, audio, video, information technologies, educational technologies, new-media technologies, telecommunications and on-line technologies.

Information technologies are old and new technologies that facilitate the storage and transfer of information. Information technologies, in the context of this paper, are primarily electronic.

Institution may be a university, college, public school, trade school, distance-learning institution or continuing-education branch of a university, college, professional association or business.

Instructor refers to the professor, seminar leader, tutor, faculty member, facilitator or teacher, as well as to authors and subject experts, who work in academic institutions.

Student has a broad meaning similar to that of instructor, referring to the recipient of an education.

List of Acronyms

CBL - computer-based learning

CD-ROM - compact disk - read only memory

CMS - course management system

EOE - Educational Object Economy Foundation

HTML - hypertext markup language

IMS - instructional management systems

ISP - Internet service provider

MHHE - McGraw-Hill Higher Education

MHR - McGraw-Hill Ryerson

OLC - On-line Learning Centre

PDA - personal digital assistant

WBL - web-based learning

WFH - work for hire

Introduction

This paper is based on research undertaken during an internship with McGraw-Hill Ryerson in the summer of 1999. My role as a publishing intern was to gather market research that would help McGraw-Hill Ryerson develop a new-media strategy.

McGraw-Hill Ryerson, with its headquarters in Whitby, Ontario, is the Canadian subsidiary of the educational-publishing division of the McGraw-Hill Group of Companies based in Chicago, Illinois. During my internship, I worked in the College division of McGraw-Hill Ryerson, which concentrates on producing educational materials for higher education in the Canadian market. McGraw-Hill Ryerson is formulating its own new-media strategy in conjunction with the education-publishing division of the McGraw-Hill Group of Companies in the United States.

McGraw-Hill[1] is formulating a new-media strategy to help it develop and present educational material in an electronic format for institutions, instructors and students. McGraw-Hill is in the business of content development and seeks the best means to deliver educational material in a productive, rewarding and financially responsible way. This requires understanding the trends in new media (such as new teaching services, changes in content delivery, multimedia convergence[2], and "go-to" solution providing[3]) and identifying where opportunities exist to improve its new-media strategy.

To gain a better understanding of the new-media industry, an educational publisher requires answers to a number of questions. What are the major needs of the Canadian market? How can we satisfy those needs? What tools and capabilities do we have now? What are their key characteristics and what can we build on? What new initiatives need to be developed? Who are our competitors and what are their capabilities? Much of the information needed to answer these questions can be gained through market research.

The research objectives of my internship at McGraw-Hill Ryerson were to create a map of the new-media landscape that outlined

the needs and wants of institutions, instructors and students,

the capabilities of different platforms and the delivery systems available,

the competitive environment and McGraw-Hill Ryerson's position in this environment.

At the outset, I produced the following research plan:

1. Compile a list of colleges and universities in Canada and determine the new-media platforms they use.

2. Evaluate industry segments and their pricing analyses based on a value chain diagram for the educational publishing industry.

3. Use secondary sources to evaluate various platforms and delivery systems.

4. Prepare a comparative analysis of Canadian educational publishers' web sites.

5. Prepare a comparative analysis of Canadian educational publishers' book sites.

6. Survey users (students, instructors) to determine the optimum elements of and capabilities of delivery systems.

My market research was intended to provide information about

the popularity of new-media platforms in use among colleges and universities,

pricing models for new-media programs,

a comparative analysis of the capabilities of the major new-media platforms,

a comparative analysis of the companies involved in new-media platform development,

segmentation of course-management systems and distant-education players based on existing information,

a comparative analysis of publishers' web sites and book sites,

market trends and demographics,

segmentation of new-media users (instructors and students by region, age, technological expertise, price expectations, new-media platforms used and needed).

In consultation with McGraw-Hill Ryerson, I estimated that a total of fifteen days would be needed to conduct research for the project. During these fifteen days I realized that my original estimates had been very ambitious and that it was going to take longer than expected to accumulate enough research to effectively analyze all the areas I had planned to study. For example, a survey of students and instructors would be ineffective because most of them would not be available in sufficient numbers during the summer.

Recognizing the time-frame in which I had to work, I decided to focus my research in four areas:

An evaluation of various new-media platforms and delivery systems

An evaluation of educational publishers' web sites and book sites

A reorganization of a value-chain diagram that had already been developed at McGraw-Hill Ryerson

A detailed analysis using secondary sources of trends and issues in education and information technologies

The report that follows is divided into two parts. Part I is itself divided into three chapters and covers the first three areas described above. These three chapters are based on primary research undertaken by McGraw-Hill Ryerson to which I contributed.

Chapter 1 examines the capabilities of two types of new-media delivery systems for educational materials: proprietary systems developed by educational publishers and more complex course management systems (CMSs) developed by software development companies.

Chapter 2 provides a comparative analysis of educational publishers' web sites and book sites. An educational publisher's web site acts primarily as a marketing tool for the publisher and its products. Book sites contain the new-media educational materials that make up the on-line components of a publisher's textbook. Supplemental learning materials are located in what McGraw-Hill terms the *Online Learning Centre* (OLC). For

reasons of clarity, I also use this term to describe the areas that serve a similar function in competitors' book sites.

Chapter 3 looks at the competitive environment by developing a value-chain diagram into a value-system diagram. The value-system diagram places market research into a format that helps to determine relationships between the players and the processes and to seek out new opportunities.

Just as important as knowledge of delivery systems and competitors in developing a new-media strategy is understanding the needs and wants of the customer. As information technologies become increasingly integrated into education, institutions, instructors and students are all being directly affected. What are the attitudes of these three players towards technologies in education? How are institutions managing their information-technology strategies? How are instructors incorporating information technologies in their courses? What are students' goals in higher education, and how are information technologies helping or hindering students in reaching these goals? Part II of this report, focuses on the fourth area described above and contains the bulk of my research.[4]

This part of the paper is primarily a literature review of secondary sources. Most of the papers reviewed were written by professionals in the fields of information technologies, education and business. While researching information technologies, I concluded that there is still no agreement among these professionals on how information technologies are influencing education.

Chapter 4 examines some of the attitudes towards information technologies expressed by institutions, instructors and students, and asks why instructors are slow to adopt information technology in their teaching.

Chapter 5 explores the current technological capabilities of institutions, instructors and students: what steps are they taking to improve their technological capabilities?

Chapter 6 examines the problems associated with matching new-media technologies and their users in the educational environment. These problems include a lack of

technological proficiency, the financial burden of information technologies and the quality and availability of content. A solution may lie in a hybrid form of teaching and learning that uses only those information technologies most appropriate to each subject.

Chapter 7 suggests some opportunities that an educational publisher can pursue, taking into account the uncertain future of information technologies in education and educational publishing.

This report places the information I have collected into a broader picture of information technologies in education. It examines some of the problems associated with developing and marketing new-media educational products to a targeted clientele. In this context, I feel this report should help McGraw-Hill Ryerson to better understand how its products could satisfy the needs of institutions, instructors and students while maintaining competitive advantage in the educational publishing industry.

PART I

Chapter 1 — An evaluation of delivery systems for educational materials

This chapter looks at the information technologies currently being used to deliver educational materials. The challenge to an educational publisher is how best to match the needs of instructors and students to available technologies. To meet this challenge, the educational publisher needs to know what information technologies exist, which are most successful and how these technologies can be used to deliver new-media educational products.

Information technologies are widely perceived among the many ways to deliver an education, either on their own or to complement other delivery systems. The rapid rate at which information technologies are developing means that people are always learning new technologies, both at work and in their leisure activities. The Internet, MP3, cell phones, personal digital assistants (PDAs), e-books[5] and satellite communications are just some of the new technologies influencing how people communicate. This paper looks specifically at the computer-based information technologies that are most commonly used in an educational environment.

The strengths of computer-based information technologies are in their ability to organize and store images and words and to deliver them, on demand, to almost anywhere. Vast amounts of information are available via the Internet, in electronic libraries, on CD-ROMs and in databases. Businesses in industry, media, finance, entertainment and education are all discovering the advantages of creating on-line content that can be updated quickly and cheaply as information changes.

The majority of new-media educational products are produced as supplemental materials to textbooks. These include common materials such as transparencies,

videotapes and CD-ROMs. A CD-ROM is a cheap and versatile delivery system that can be purchased separately or included with a printed text. CD-ROMs can offer interactive instruction and exercises using animation, voice-overs and video to guide students through course material, as well as self-tests that provide immediate feedback as each new skill is presented.

For the educational publisher, the CD-ROM is a step between the printed book and the Internet. The cost of reproduction is low, and a CD-ROM is physically more convenient than a printed book. However, a CD-ROM is still a tangible object that must be physically transported to the user in order to be used. The initial cost of production, which itself can be technically complex, is a disadvantage, as is the inability to make rapid updates and changes. For both these reasons, the Internet, as a low-cost and instantaneous delivery system, has become a major delivery system not only in educational publishing, but in society in general.

The Internet has emerged as one of the most important technologies of the twentieth century and "the first interactive means of social transmission since the village storyteller" (Tapscott, 1998, p. 80). It is already a major resource for information and a major means of delivering information, offering access to an increasing volume of information to anyone who has a computer and a telephone line. The telephone on its own can be called interactive, but it is a closed communication system that excludes anyone but the users. Television, although accessible to all, is essentially a one-way transmission. The Internet, on the other hand, is both interactive and targeted to a wide audience. E-mail, a product of on-line technologies, is now used by nearly 80 percent of instructors as part of their courses (*McGraw-Hill Ryerson "Student Success" DBI Quantitative Research [Survey]*, 1999, chart 2).

Educational publishers and educational institutions are experimenting with using the Internet to deliver courses. The degree to which they are integrating on-line elements into a course can be broken down into four categories:

1. *Stand-alone* or *fully developed*, in which all elements of a course are on-line

2. *Dependent*, in which a major part of a course is on-line, supplemented by some in-person or space-time-dependent activities

3. *Supplemental*, in which a course is delivered primarily off-line but is supplemented by and links to on-line or web-based resources

4. *Informational*, in which only information about a course is available on-line (Canadian Network for New Media Learning, 1999)

Stand-alone courses are typically used in distance education, but in many cases these also require a text that is delivered to a student by regular mail. Most courses and programs that have an on-line component can be classified as either *dependent* or *supplemental*. To what degree an instructor will design an on-line course will depend on the kind of material that needs to be covered, the instructor's comfort level with technology and the amount of collaboration the students request or need. As web-based learning becomes more student-centred, it will be most valued for offering students the control over their learning experiences and for enhancing collaboration among students and communication between students and the instructor.

This chapter looks at two main types of delivery systems that utilize the Internet as well as other information technologies: proprietary systems developed by educational publishers and more complex high-end course-management systems created by software-development companies.

1.1 Proprietary systems[6]

1.1.1 PageOut

PageOut is McGraw-Hill's proprietary software, available to instructors who wish to set up their own course web pages without having to know any complex Internet programming. PageOut contains basic interactive features that offer instructors a variety of ways to present their material. These features include true-or-false and multiple-choice

questions, chat rooms, a library of Internet links, test banks, lecture notes, an instructor page and limited customization.

PageOut does not take advantage of cutting-edge multimedia technologies, nor is it designed to compete with course-management systems such as WebCT and Learning Space. These course-management systems, discussed later in this chapter, have been specifically designed to contain extensive teaching and learning features that can manage the delivery of complex courses to large numbers of people. Instead, the rapid development of the more sophisticated course-management systems has meant that McGraw-Hill is working on a new distribution strategy for PageOut.

By offering PageOut free to educators, McGraw-Hill hopes to demonstrate to instructors the opportunities presented by information technologies and to persuade them to adopt a textbook and its accompanying supplemental materials. At first, educators will be able to test PageOut without having to adopt the textbook, but the company will emphasize that the features work best with McGraw-Hill content. PageOut helps users to become familiar with information technologies as viable mediums for learning materials, and it prepares them for more developed products. Eventually, PageOut might be phased out as McGraw-Hill concentrates on developing content for component modules of other course-management systems.

1.1.2 Syllabus Builder and World Class

Prentice-Hall owns proprietary software similar to PageOut called Syllabus Builder and ITP Nelson uses software called WorldClass. Each of these three proprietary systems—PageOut, Syllabus Builder and WorldClass—has distinct characteristics. Syllabus Builder has an attractive intuitive interface that accentuates ease of use and that closely integrates content and system. WorldClass concentrates on a comprehensive list of features such as a Frequently Asked Questions (FAQ) section, a question bank and flash-cards. Although these features provide an instructor with a wide range of learning

and teaching possibilities, WorldClass tends to sacrifice content and manageability.
PageOut seems to sit somewhere in the middle; it has more features than Syllabus Builder,
but its content integration is better than that of WorldClass. The general opinion at
McGraw-Hill Ryerson is that PageOut offers the best balance of features among the
proprietary-software programs available.

1.2 Course-management systems

Course-management systems (or CMSs) are sophisticated software programs that can
deliver courses on-line. Like specialized web browsers, web-based CMSs contain a
variety of features. These allow instructors to manage multimedia presentations, e-mail
and newsgroups. They provide self-assessment and motivational tools for students,
facilitate course planning, allow customizing of delivery and monitoring of students'
progress, and provide administrative support, such as security tools.

CMSs provide a comprehensive learning environment that brings together educational
components such as content, grading, tests, communication capabilities and other features
into an integrated environment. CMSs offer opportunities for instructors to expand the
electronic testing capabilities of educational materials. Some CMSs can randomly generate
on-line tests so that no two students get exactly the same one. Timed quizzing is also
possible on-line: students are given a fixed length of time to complete a test from the
moment they open it. After a specified time has passed, the test closes and is no longer
accessible.[7]

Course-management systems now in use include Virtual-U (developed at Simon
Fraser University), LearningSpace, CourseInfo, TopClass and FirstClass. The most
popular CMS on the market is WebCT, developed by Murray Goldberg at the University
of British Columbia.[8] WebCT is a tool that facilitates the creation of web-based
educational environments by providing an on-line interface in which the course is
presented; a set of educational tools that enable learning, communication and

collaboration; and a set of administrative tools that help the instructor manage and revise the on-line course.

Until recently, a lack of programming standards has hindered the integration of complex information technologies and educational materials. Educational publishers could not guarantee that content designed for one CMS would also be compatible with another CMS. This lack of a standard was the main reason for the slow development of educational materials while educational publishers tried to determine which course management system would prevail.

Platform compatibility is one of the keys to a convenient and practical web-based application. This standard would be similar to the coding standards drawn up for Internet browsers to harmonize management of HTML tags. Standardized guidelines for CMSs would make Online Learning Centres easier to develop: content could be redesigned to take advantage of multimedia opportunities and new learning practices industry-wide, and OLCs could bring printed texts and multimedia products together into a single collection of learning materials. In 1998, EDUCAUSE, a consortium of industrial, academic and government partners, announced an agreement on an IMS (Instructional Management Systems) standard for metadata. As a precursor to a set of open standards for Internet-based education, EDUCAUSE specified an industry-wide coding framework for managing educational content stored in library databases. Metadata, which is information about the information, makes it easier for people to find educational resources, design individualized learning experiences and manage the resources within the electronic marketplace. An IMS standard has two consequences for an educational publisher: metadata labels attached to digital files can specify pedagogic information such as learning level and format, as well as business information such as licensing requirements and e-commerce prices. Such a standard also makes content more readily available to individuals and institutions through versatile delivery systems.

A single collection of learning materials heralds a new direction in the development of educational products: the emergence of preformatted learning modules. Publishers of educational materials would develop products that are "packaged" according to IMS open standards. Instructors would be able to choose modules, as they currently choose textbooks and other educational materials, and integrate them seamlessly into a course using a CMS. The preformatted learning module has another potential application: the e-book.

In the United States, WebCT has entered into partnerships with several educational publishers. By mid-1999, 87 institutions across Canada were using WebCT as their primary delivery system for distance-education courses.[9] This degree of market penetration by one CMS is valuable for an educational publisher trying to decide which course-management system to adopt for its own products.

McGraw-Hill is in the business of content development, not software development. Although information technologies play a central role in how it will develop its new-media strategy, McGraw-Hill recognizes that it cannot compete with software-development companies that focus on the development of sophisticated information technologies. McGraw-Hill needs to concentrate on producing content-rich educational materials that can be seamlessly integrated into a course-management system. As part of its new-media strategy, McGraw-Hill could benefit from partnerships with software-development companies that would enhance its own products and increase its competitive advantage over other educational publishers. The development of a programming standard makes this task much easier. It also expands the market for the materials an educational publisher produces. In this scenario, a proprietary system such as PageOut acts as a marketing tool for information technologies. It educates customers about the benefits of information technologies and helps to create customer loyalty.

Until course-management systems are more fully developed, McGraw-Hill Ryerson will use the Internet to deliver simple course materials closely integrated with its

textbooks, as well as to market information on its products. The next chapter examines the web sites and book sites of educational publishers as basic ways they are marketing and delivering their educational materials.

Chapter 2 — A comparative analysis of educational publishers' web sites and book sites

In response to the changing needs of educational institutions, instructors and students, McGraw-Hill Ryerson employs the Internet both to market its products and to deliver educational materials. It uses two vehicles: the web site and the book site. The web site is mainly for information on an educational publisher and its products. The book site is mainly an on-line supplement to a printed textbook.

2.1 Publishers' web sites

An educational publisher's web site serves a number of purposes. First, it is a marketing tool that cultivates visitors' interest and directs them to further information. It is an opportunity for an educational publisher to present its business policies to its customers, to display its products and services, and to offer information to and answer questions from potential customers and business partners. Second, a web site is also often a visitor's introduction to the educational publisher. In this sense, it is instrumental in offering a positive first impression: how a company presents itself at the front door often offers clues to how it behaves in the backyard. A good first impression combined with the delivery of appropriate information in an easily accessible format is an opportunity for an educational publisher to differentiate itself from its competition.[10]

An analysis of publishers' web sites offers clues as to how educational publishers are managing the on-line part of their new-media strategies. Where are they directing visitors who enter the site? What kind of impression are they trying to give? What new products are they highlighting? The following comparative analysis looks at the web sites of all the major educational publishers in Canada.[11]

McGraw-Hill Ryerson's main competitors in Canada are similar large educational publishers such as Prentice-Hall Canada, Addison-Wesley Canada, Harcourt-Brace

Canada, ITP Nelson and Wiley Canada. Prentice-Hall Canada and Addison-Wesley Canada are now part of Pearson Education Canada.

There are numerous smaller educational publishers. Most are Canadian-owned, but few of these have the ability to compete with the large educational publishers in the development and marketing of new-media educational materials. For this reason, this report confines itself to the products and services developed by the large educational publishers, which make up the vast majority of the retail textbooks and on-line resources used in educational institutions.

2.1.1 Design and layout

A well-designed web site is informative, attractive and easy to navigate. McGraw-Hill Ryerson's web site is not informative, nor is it attractive. The opening page does not even make it immediately apparent that McGraw-Hill Ryerson is an educational publisher. For example, the title "Serving your need for knowledge" and a navigation menu with a general list of contents such as "All about us" and "What's new" could be the opening page of almost any business. A web site is an opportunity to make a statement about a company or create an individual look, but McGraw-Hill Ryerson's does not pursue this opportunity.

As a marketing tool, McGraw-Hill Ryerson's opening page is unlikely to entice a visitor to explore further. Nor does it clearly direct a visitor to the company's products. One can draw a parallel between the layout of a web site and the layout of a bricks-and-mortar store. The opening page of a web site can be said to function as both a display window and a store directory. Once inside, visitors must be able to find their way around easily. The higher-education division of an educational publisher is generally the most profitable. Therefore, it should be in the most prominent location on a web site in order to direct visitors as quickly as possible to that division's products.

Most Canadian educational publishers ensure that visitors are quickly led to the higher-education division. The Prentice-Hall web site is designed so that different publishing divisions are immediately accessible from the opening page. The opening page is divided into departments so that access to each department is quick and easy. Each division then has its own unique design, but the overall design is consistent to avoid confusion.

2.1.2 Product and site search

It should be just as easy for visitors, especially instructors, to find a product on a publisher's web site as it is to find a publishing division. The fewer clicks visitors have to make, the less time they has to spend finding their way around the web site. Unless visitors have a particular title in mind, they will be searching first for a text about a particular subject.

If a visitor has some information about a product, then a search engine is an efficient way to find it. The search engines on both the McGraw-Hill Ryerson and Prentice-Hall web sites allow searches by title, author, ISBN or keyword. The results returned by the McGraw-Hill Ryerson search engine, however, tend to contain unnecessary data, such as a measure of the success of the search rendered as a percentage and the size of files. Some educational publishers have their search engines on the opening page. Although this can offer quick access to a title, some search results can be so large as to be overwhelming. Some educational publishers avoid this by first directing the visitor to a division such as higher education and locating the search engine there.

Another way to avoid large search results is to first divide titles into Canadian and American editions. Because most Canadian educational publishers also market titles produced in the United States by their American parent companies, it might be important to an instructor in Canada to know how to identify the Canadian titles. The Prentice-Hall and Nelson web sites allow visitors to search for either a Canadian title or an American

title or both. In a search of all titles, Canadian titles are marked with an icon, such as a small maple leaf or a Canadian flag.

Some educational publishers' web sites display new products on their opening pages. Again, similar to a bricks-and-mortar store, this display draws attention to a product that likely has an active marketing program under way. ITP Nelson, for example, employs a simple JavaScript application that runs a small slide show of new titles. Because the new products are always changing, this is an opportunity to alter the look of the opening page regularly, so that returning visitors are greeted with something new each time.

2.1.3 Customer services

Facilities for purchasing products on-line from Canadian educational publishers are still in their infancy. Sales representatives still manage most of the orders in the higher-education market. The major hurdle to on-line ordering is a secure transmission of personal financial data. Only ITP Nelson currently has this capability, but its web site could benefit from a notice stating that the transmission uses a secure server. In the future, when customers feel comfortable that on-line security systems will protect their private information, e-commerce capabilities will likely be commonplace. For now, customers will have to settle for e-mailing, faxing or telephoning orders.

There is no consistency regarding the on-line and customer-support information that educational publishers provide. Most offer a company history and a list of employees. But more important for visitors are lists of regional sales representatives, permission requests, manuscript and author guidelines, catalogues and other on-line resources. A web site should supply this information quickly and easily so that a visitor does not have to interrupt an employee with routine requests for help. Few of the educational publishers' web sites provide adequate support in these areas. An educational publisher that does invest in this area will differentiate itself from many of its competitors.

2.2 Publishers' book sites

Book sites are second only to printed textbooks as the major product and delivery system of Canadian educational publishers.[12] Not every printed textbook has a matching book site. Book sites aim to combine the organizational qualities of a book with the ease and versatility of presentation offered by the Internet. The layout of book sites varies among educational publishers, but most book sites are divided into four sections: About the Book, About the Authors, Instructor Resources On-line and Student Resources On-line. The first two sections describe features of the printed book, give information about the authors and describe supplemental materials included with the text or as optional components. The main feature of the book site, and the core product of an educational publisher's on-line educational strategy, is what McGraw-Hill Ryerson refers to as the *Online Learning Centre* (OLC). The OLC, located in the Student Resources On-line section, contains most of the supplemental learning resources for a printed textbook. The OLC is discussed in further detail later in this chapter.

Supplemental materials for instructors vary between textbooks. They can include an instructor's manual, transparencies (overheads), example cases, a list of teaching videos from Canada and the U.S., software for computer-aided problems, simulated cases for both the instructor and the student, and possibly an author-prepared manual of tests based on the book. Occasionally McGraw-Hill supplies an instructor's manual both on-line and on a disk with a text. In most cases, the instructor resources available on-line are password protected, which makes a detailed analysis of these features on other educational publishers' web sites difficult to achieve.

The Instructor Resources On-line section, on McGraw-Hill Ryerson's book sites, contains the Web Community, a password-protected area where instructors can share and discuss learning resources and teaching strategies with colleagues and peers. Each Web Community is discipline-specific and contains web links, lecture ideas and current events. Any instructor can contribute to it, and either a faculty member from a Canadian

institution, a McGraw-Hill Ryerson editor or both moderate it. McGraw-Hill Ryerson's Web Communities serves two purposes: in concert with various seminars and discussion forums, such as On-line by Design,[13] they help to improve communication between faculty members; and they raise awareness of McGraw-Hill Ryerson's involvement in the learning process.

A book site should follow the same design guidelines as those for the web site. It should be informative, attractive and provide easy access to useful information. The objectives of the publisher and the instructor should be to inform and educate with content, not to dazzle and amaze with technology. Overall, most book sites are well designed.

The temptation to use many features can be great, and this can be confusing to the user. Some of the 11 book sites analyzed here,[14] such as those developed by Prentice-Hall and Addison-Wesley, contain an extensive array of on-line features. McGraw-Hill Ryerson's *Principles of Macroeconomics* book site offers an on-line graphing tool for making simple graphs. Others, such as that for Kisen's *Intermediate Accounting* by Wiley, are less rich in features. Overall, however, few of the book sites display any great differentiation. This can be attributed to the limited, low-tech nature of the interactive features available; the extensive maintenance necessary to keep a large number of book sites current and functioning; and the need to cater to the generally low-tech capabilities of instructors.

In fact, some of the book sites appear to be more concerned with marketing the printed text than with providing on-line resources. One interesting aspect is the list of student resources for Gibbins's *Financial Accounting*, third edition, by Nelson. This book site includes a long list of Internet links to career sites, companies, banks and annual reports, accounting associations, accounting glossaries and on-line accounting courses. The list appears to be mostly concerned with developing the site as a career resource for students as much as a study resource for the text. Some of the other book sites, such as

Kotler's *Principles of Marketing,* fourth Canadian edition, by Prentice-Hall, also have a long list of non-textbook-related links to marketing magazines, marketing newsgroups and the unusual "Commando Guide to Unconventional Marketing and Advertising Tactics". Should course-management systems, in the future, take over many of the educational features of learning on-line, these educational publishers may be positioning their book sites as marketing tools for the text and "go-to" resource sites for students.

2.2.1 The Online Learning Centre (OLC)

The Online Learning Centre, located generally in the Student Resources On-line section of a book site, contains most of the supplemental learning resources for a printed textbook. The OLC is flexible. It can be delivered either through a password-protected web site hosted by McGraw-Hill, through the McGraw-Hill Learning Architecture,[15] or through a McGraw-Hill proprietary course-management system. Thus, a teaching and learning tool can deliver content in multiple ways, increasing access without significantly increasing production costs.

The OLC is where McGraw-Hill Ryerson wants to concentrate its resources by focusing on two critical factors: an aggressive editorial effort that will bring creative ideas and effective teaching and learning practices on-line; and development of strong technical capabilities and competitive advantage (*Irwin/McGraw-Hill Preliminary Digital Publishing Plan*, 1999, p. 1).

Each OLC contains a list of chapters from the printed text. Each chapter is then reviewed through a variety of learning features such as PowerPoint slides, several types of quiz questions based on the text, and other quiz questions that require the student to visit web sites that illustrate examples or concepts. Currently, most OLCs deliver only very basic supplemental activities: readings on-line, reviews of points and concepts made in the printed text, links and quizzes. Through links to specifically chosen web sites, students are able to study real-world applications of the text ideas, a valuable feature that

helps to impress upon a student the relevance of a particular lesson. Quizzing, on the other hand, offers mixed results.

Quizzing is a common feature found on the book sites of all educational publishers. Quizzing allows instructors to test students' comprehension without the need to meet in person. Quizzes include true-or-false questions, multiple-choice questions and essay questions that are then e-mailed to the instructor for marking. Some of the quiz questions may be self-grading, which gives the student immediate feedback.

Although a variety of electronic quizzing formats are available on OLCs, data suggests that electronic testing is not a widely used feature. While 75 percent of instructors use test scores and quizzes to measure learning, only 10 percent of those surveyed said they plan to use the quizzing capabilities of information technologies. Furthermore, only 13 percent of faculty believe their students would pay as much as $7 per course if on-line quizzing was charged as an extra service (*McGraw-Hill Ryerson "Student Success" DBI Quantitative Research [Survey]*, 1999, Charts 4, 15 and 24). This data begs the question: if electronic quizzing is held in low regard, why do educational publishers make it such a large part of their book sites?

One answer may lie in the simplicity of the technology. Many printed textbooks include quizzes and questions, and moving these on-line introduces instructors to the capabilities of electronic delivery systems. As instructors become more comfortable with information technologies such as course web sites and book sites, educational publishers will be able to incorporate newer and more versatile technologies. Educational publishers are already showing a growing interest in the delivery possibilities of course-management systems. Secondly, educational publishers may want to capture some of the market for testing. Testing has always been a chore to instructors, and educational publishers are happy to take on the task. By providing resources and tools to relieve instructors of a burden, educational publishers may feel that they can improve their market share and gain an element of loyalty to their product.

In summary, a web site is a major marketing tool for an educational publisher—an opportunity to interact with customers and display its products. Educational publishers' web sites are generally well designed, but some are unfocused. A book site and its contents are a major on-line product and supplement to the printed text. Both web sites and book sites are rapidly changing in design and layout as new information technologies appear and educational publishers feature different products. A comparative review of book sites and web sites provides an educational publisher with clues as to how its competitors are positioning their on-line products based on how they interpret the needs of their customers.

How an educational publisher develops its book sites and web sites depends on its capabilities. Specialized course-management systems are able to manage all aspects of a course, including the new-media components of a textbook. But developing CMSs is beyond the capabilities of an educational publisher. For example, many of the multimedia-rich features of supplemental materials are too technically complex and financially demanding for the educational publisher focused on content to develop.

The demands and needs of instructors and students and the necessity to remain competitive in an uncertain marketplace can play havoc in the development of a new-media strategy. The educational publisher needs to look for ways that it can enhance its products beyond its own core competencies. An analysis of the competitive environment, as undertaken in the next chapter, can help an educational publisher to explore the players and processes that are contributing to the rapidly changing development of new-media educational products and may suggest opportunities to expand its own educational publishing business.

Chapter 3 — The competitive environment and strategic planning

Marketing is defined as "the process of defining, developing and delivering value to customers" (Collins & Devanna, 1994, p. 130). In a competitive environment, to deliver a product with superior value requires a company to analyze not only its company activities but also how its activities compare with those of other companies, or players, in the same industry. Both the relationships between the players and their activities in the industry have changed as information technologies have had an impact on the development of new-media educational products. Traditional linear business models, such as the value chain, do not reflect new methods of development and delivery that are more flexible, repetitious and non-linear. A new model is needed, one which recognizes that the development of a product is a continuing process of adaptation and redevelopment. This same flexible business model, outlined in this chapter, can be used to describe the relationships between players and processes that occur in the new-media educational-publishing industry.

The greater flexibility of information technologies has enabled educational publishers to provide a wide array of supplemental materials and delivery systems. CD-ROMs are often bundled with textbooks. On-line, instructors and students have access to news, Internet links, archives of materials, search mechanisms, interactive components, course-management utilities, plus many more features of an "extended" book.[16] Instructors can choose the materials, enhance the core text and complement their teaching styles and objectives. Some now even *require* multimedia content as a prerequisite for adoption of a text.

In addition, information technologies allow educational publishers to revise and update their products faster than they can produce a traditional printed text. This allows them to reduce costs. McGraw-Hill estimates that the supplemental features of a

textbook, such as the on-line instructor's manual, could reduce the fixed costs of updating content by more than 30 percent (*On-line Opportunities, Higher Education, Professional and Distance Learning*, 1998, p. 11). Information technologies also allow instructors to extend the life of an edition. For example, electronic supplements such as the On-line Learning Centre can be revised and updated annually or even monthly without having to reprint the textbook. The average life of a textbook edition is three years, but after the first year sales drop off considerably. For textbooks packaged with technology-based products, the drop-off rate for second- and third-year sales is not as great (ibid., p. 7). The greater flexibility of information technologies means that the traditional linear development model for educational products needs to be adapted to take into account the iterative support activities involved in developing new-media educational products.

A *value chain* is a way of analyzing a company's value-focused activities. The *value system*, in turn, recognizes that the value-focused activities of a company are just part of a larger series of activities that encompass a whole industry. To understand this process more clearly, we must move through the steps that lead to the development of a value system diagram.

3.1 The value chain

Michael Porter introduced the concept of the value chain as a tool for analyzing sources of competitive advantage in his 1985 book, *Competitive Advantage: Creating and Sustaining Superior Performance*. "The value chain disaggregates a firm into its strategically relevant activities in order to understand the behaviour of costs and the existing and potential sources of differentiation" (Porter, 1985, p. 33). Porter identified two separate and fundamental sources of competitive advantage—a lower relative cost advantage or some form of differentiation—and argued that attaining one or the other depends on all the activities that a company undertakes (ibid., p. 33). These activities can be broken down into two elements:

1. *primary activities*, or those activities directly involved in the creation of a product,

2. *support activities*, activities that support the primary activities and other support

     activities.

The value chain is designed to help analyze the relationships and linkages between the

elements and to identify areas in which a company can develop competitive advantage

(Porter, 1985, p. 38).

   The value chain was originally designed for the manufacturing industry. Marion and

Hacking (1997) describe how the value chain reflects the stages in the development of the

traditional textbook. The process is divided into five stages: creation of the concept,

development and production, manufacturing, marketing, and sales and distribution. The

main characteristics of this process are (a) it is linear, (b) it is a one-way process, (c) it

works well in a stable and predictable market environment, and (d) it lends itself to mass

production (Marion & Hacking, 1997, para. 24). Because of the flexibility of the

electronic medium, however, publishing new-media educational products is not

necessarily a linear process. Therefore, a new model must reflect how the production of

new-media educational materials is evolving.

3.2 The value circle

Marion and Hacking introduce the concept of the *value circle*, which shares elements of

the value chain but adapts to the more complex processes involved in new-media

educational publishing (see Figure 1). "Participants in the value circle interact more

frequently, and these interactions drive customization of products and services. The

consequence is an increasingly intimate integration of customer needs with publishers'

products and services" (ibid., para. 25). Content is created by a single author or bundled

with material from a variety of sources. Material is stored electronically, and reorganized

or adapted as requested. It can be outputted or delivered in print, on CD-ROM or over

the Internet. Feedback from users is constant, and revisions are made to adapt quickly and

effectively to customer needs. Compared to the value chain, the value circle is cyclic,

collaborative, two-way, has shorter cycles and is adaptable to mass customization (ibid.,

para. 28).

Figure 1—Value-Circle Diagram
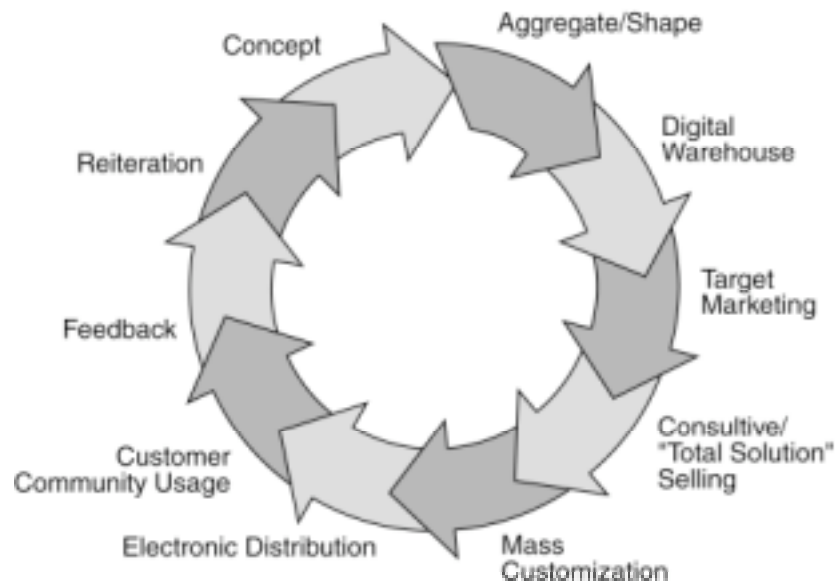
Source: Marion & Hacking, 1997, para. 35.

An educational publisher can use a value circle to understand how it can use

information technologies to reorganize its internal business processes. However, as

information technologies have expanded development and delivery opportunities, they

have also increased the number of players in the industry and created an unpredictable

marketplace. In order to attain competitive advantage, educational publishers need some

method of taking into account external influences. A new model must reflect the evolution

of the new-media educational publishing industry and describe how information

technologies have influenced this evolution.

3.3 The value system

The value circle is an adaptation of the value chain that describes the new process of producing new-media products within a single company. This same concept can be adapted to describe the industry as a whole through a *value-system diagram*. Michael Porter describes the value chain as "embedded in a larger stream of activities that I term the *value system*." (Porter, 1985, p. 34) The value system adapted here applies the characteristics of the value circle to the educational-publishing marketplace as a whole by recognizing three things: the intimate integration of customer needs, the non-linear development process of new-media educational materials, and the capabilities of information technologies and industry players. For example, it recognizes the integral position of instructors as Drivers, Content Producers, Input and Buyers (see Figure 2). Recognition of these elements is necessary for strategic planning, which requires a company to not only analyze customers' concepts of value but also examine the company's capabilities and its positioning relative to its competitors' products. Competitive advantage can be attained by readjusting activities within the company and also by developing relationships between companies and by creating industry alliances in which players, partners and customers all win.

The value-system diagram of the educational publishing marketplace shown in Figure 2 graphically displays a network of many of the players in the industry.[17] Essentially, it is a map of the industry showing the players, processes and technological systems. It describes the paths along which information, software, hardware, ideas and money travel. It also shows company-independent value chains such as supplier value chains and delivery value chains. A value-system diagram of the educational publishing process (Figure 3) can help to show how industry players integrate their roles in the marketplace. (For a detailed description of each segment of the value-system diagram, see Appendix F.)

Figure 2—Value-System Diagram – Players in the Educational Marketplace
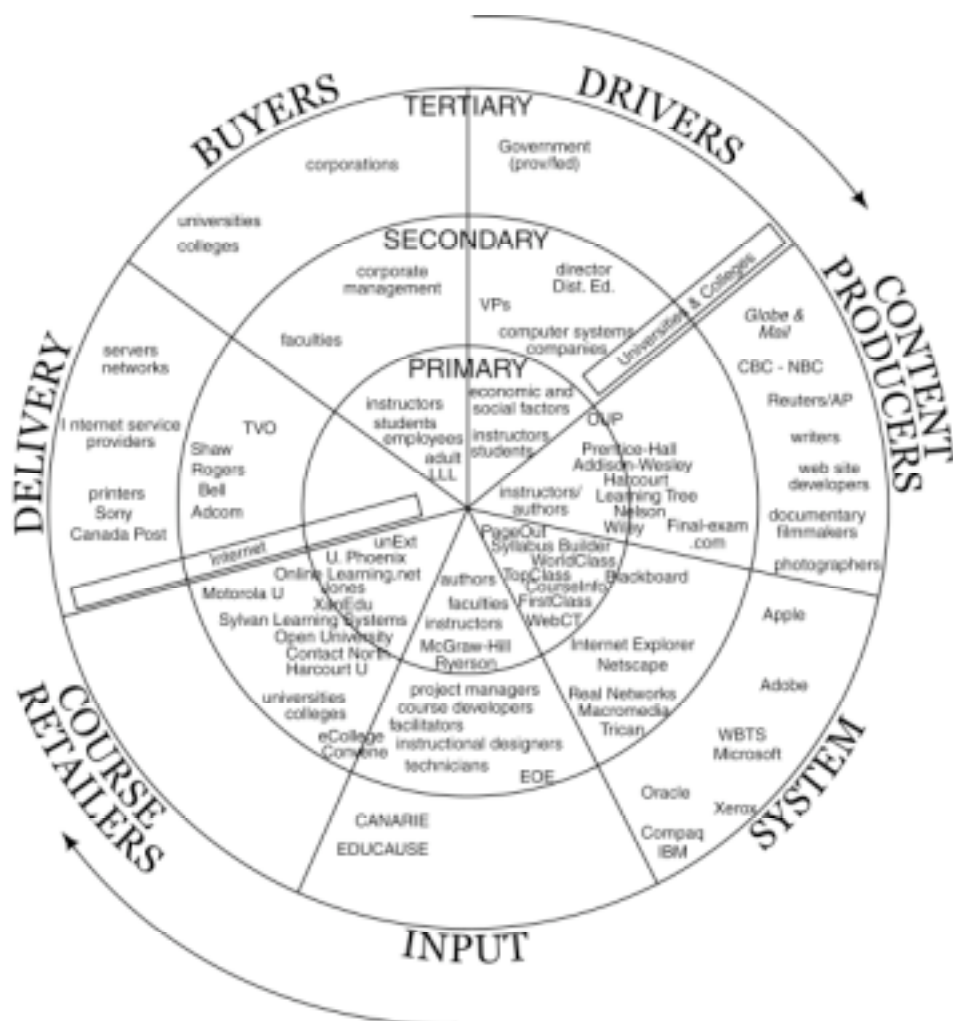
Source: Based on a distance-education diagram created in 1998 by Joe Saundercook of McGraw-Hill Ryerson. See Appendix E.

The value-system diagrams in Figures 2 and 3 are composed of two axes that describe the dynamics of the industry. The first, or player, axis is made up of the players who have been divided into seven categories: Drivers, Content Producers, System, Input, Course Retailers, Delivery, and Buyers (or Users). Players can appear in more than one category, for example, universities and colleges appear as Drivers, Course Retailers and

Buyers. The flow of value is circular, reflecting the iterative process of product

development and the relationships between players.

Figure 3—Value System Diagram – Process in the Educational Marketplace

Source: Based on a distance-education diagram created in 1998 by Joe Saundercook of McGraw-Hill
Ryerson. See Appendix E.

The second, or delivery, axis is based on the relationship of the players to the core

delivery of the technology or educational product. This axis is divided into three

levels—Primary, Secondary and Tertiary—similar to the primary and support activities

of the value chain as described by Porter in section 3.1. Primary-level players include

those that are integral to the actual delivery of instruction, whether in classrooms or through various distance-learning vehicles. Secondary-level players are those that assist in making that delivery possible. They include people such as subject matter experts and instructional designers, and products such as clip art and authoring software. Tertiary-level players are indirectly involved in the development and marketing of new-media educational products but influence the process through their normal products or services. These players include accountants, copyright lawyers, associations, registration services and classroom facilities.[18]

3.3.1 The gap analysis

The value-system diagram assists one to understanding the market forces in educational publishing by forcing one to think of the industry as a kind of ecosystem in which the players, in partnership or in competition, work together to maintain a life cycle. In an industry such as educational publishing, no single organization has a monopoly, although it can have varying degrees of influence over some sectors (Collins & Devanna, 1994, p. 305). The value system diagram helps to focus analysis of the industry by itemizing the players and processes at varying stages.

Some areas of the marketplace are becoming heavily populated. For example, the course-management software industry in the System section of Figure 2 shows numerous competitors, as does the Course Retailers section. A *gap analysis* shows where opportunities may lie by identifying gaps that may exist in the marketplace. The numerous Content Producers on the tertiary level may also be an opportunity for educational publishers to enhance content through subject matter experts. Or educational publishers may want to explore on-line custom publishing. Printed textbooks are necessarily content specific, with the publisher hoping a particular textbook will cover enough of an instructor's course to warrant adoption. On-line textbooks can be

customized for a particular course by an instructor who downloads and pays for only what he or she needs (McCollum, 2000, p. A49).

A gap analysis can also alert an educational publisher to areas where competition may increase. Private business has begun to see a profit potential as Course Retailers, offering short, inexpensive, market-specific training that is highly relevant to students. These training programs directly compete with traditional college programs for students (Treuhaft, 1995, para. 15). Private training companies are particularly interested in educational technology because of the opportunities to reach a large market while keeping costs down. Final-exam.com, for example, plans to sell web-based study guides for first- and second-year university and college courses.

An analysis of the value-system diagram can also suggest opportunities for partnerships. These are opportunities where two or more players work together to mutually enhance their competitive advantage. As the marketplace for developing and delivering educational materials has expanded, educational publishers are realizing that to pursue every opportunity will draw them away from their core competencies. The value-system diagram helps to identify which players may have similar intentions in the marketplace and whether or not a partnership would be an opportunity to increase the value of a product and maintain competitive advantage.

As tools of market research, value-circle and value-system diagrams help an educational publisher to estimate its position in the marketplace relative to the competition. Such an analysis can, in turn, influence the educational publisher's management of strategic planning.

3.4 Strategic planning

The educational-publishing industry in Canada is very competitive. Therefore, it is necessary for an educational publisher to study the products and business tactics of the competition and to make a comparative analysis of the strengths and weaknesses of each

of them. An educational publisher looks for any information on how the industry is developing and how these developments will affect its own publishing strategies.

Strategic planning entails both defensive and offensive actions. Defensively, it involves maintaining market position and neutralizing the competitive advantage of competitors by offering comparable products with reasonable financial investment. Offensively, it involves research and development and the creation of new products. Both actions should be based on research into what competitors are doing: how they are designing on-line products; what sort of supplemental materials they are bundling with texts; and with whom they are signing partnership deals. This information ensures that an educational publisher remains aware of developments in the industry and does not get left behind when new technologies appear.

A first step is to identify the *key growth drivers* for the industry. These drivers are trends in the industry that are expected to influence the ways in which educational products will be developed in a technologically-based educational system. These key growth drivers include

more efficient delivery of learning resources,

improvements in information technologies that allow for more effective content,

more users attracted by improvements in information technologies and content,

improved technical capabilities of users,

industry-wide standards that will increase accessibility and reusability of content,

a growing market as more people take advantage of greater access.

All educational publishers should be intimately aware of these key drivers, which generally affect them equally, with no specific competitive advantage. The challenges for McGraw-Hill Ryerson are to be creative as it undertakes market research, analyzes the results and explores opportunities.

How a company differentiates itself from its competitors is a source of value known as *differentiation*. "Without some degree of differentiation, customers have no particular

reason to purchase an organization's product offerings rather than those of its competitors" (Collins & Devanna, 1994, p. 315). A company can enhance differentiation in a number of ways, among them a broad range of products, variety of features, product benefits, customer service, product availability, reputation (of product and company), sales relationships and price (ibid., p. 316).

For an educational publisher, establishing a degree of differentiation is a priority. The ability to offer a specific or unique feature as a result of market research can determine success measured by sales and market share. Educational publishers naturally look to each other for ideas on how to present products as well as for clues to how a competitor is managing its new-media products. However, the costs involved in information technologies, combined with publishers' fear of obsolescence, have created a leapfrog approach to product development, in which each educational publisher takes a small step forward, then watches the next step of its competitors. Although understandable, this tentative approach to product development does not make for great leaps forward.

The unresolved role of information technologies in education, plus the capability of educational publishers to quickly change electronic learning materials and delivery systems means that they will constantly experiment with new technologies and styles. Similarly, the relationships between Buyers, Drivers, Content Producers and Course Retailers outlined in the value system diagrams will always be in a state of flux. The value system diagram is a valuable marketing tool for analyzing the competitive environment, but it must be constantly updated. In terms of marketing and delivering educational materials, however, this value-system approach is only one part of a larger field of market research that can suggest areas of opportunity to educational publishers.

Another significant area of market research is understanding the target market for educational products. The debate around the role of information technologies in education is focused on serving the majority, not experimenting with revolutionary new delivery systems. The second part of this paper explores two fundamental aspects of a new-media

strategy: the impact of technology on instructors, students, and institutions, all of whom are becoming increasingly technically literate; and the importance, to an educational publisher, of "creating a customer."

PART II

Chapter 4 — Attitudes towards information technologies

A major objective of the educational publisher's marketing effort is to create a customer (Collins & Devanna, 1994, p. 144). Market research in support of this objective is key to understanding attitudes towards information technologies, for it provides valuable clues about how to develop educational materials that contribute to "the education of the mind, body, emotions, and spirit" (University of Illinois, 1999, p. 12).[19] Attitudes towards information technologies are measurable and reveal definite trends and issues.

Creating a customer by understanding the needs of that customer is an important part of business. Most efforts in developing and marketing educational products would be fruitless if the educational publisher could not match its products to the needs of its customers. Neither information technologies nor web sites can help an educational publisher remain competitive if its products do not satisfy its customers' needs.

But the use of information technologies in education is a relatively new and constantly changing phenomenon. As a result, there is no firm consensus, at least among the authors of the papers I reviewed, on how information technologies are affecting education or what are the best ways to manage an increasingly technology-based educational system. My objective here is to bring together a wide range of views concerning the roles of information technologies in education and to shed light on some of the trends and issues that are appearing.

Combining education and technology can be a challenge. Increasing computerization has caused divisions between those people, both instructors and students, who are adept at learning new technologies and those who are less adept. Such divisions might be due to a number of factors. The less adept might perceive little use for information technologies in their program of study, might be reluctant to try new methods, or might even fear what

they don't understand. Additionally, limited access might not have provided them with sufficient opportunity to personally experiment with information technologies.

According to Watson (2000):

Technology changes very fast, but educational institutions are large organizations that are usually slow to adopt new practices. Sometimes the reason for late adoption is budgetary: change is expensive. But there is also something of a cultural clash between the education and technology. Academia is built on the distillation of wisdom through the ages, an evolutionary approach, while technology is faddish and revolutionary, prone to abrupt disruptions when newer technologies debut. In months, an idea can go from the concept stage to forming the basis for an entire industry, but even when such a clear winner emerges it takes time to properly design courses and find people qualified to teach them. (p. 40)

Many instructors are reluctant to embrace information technologies without a clear understanding of the benefits they bring or the work required on their part to reap those benefits. Successful applications of new technologies tend to be those that are attractive to the technically minded, but are also simple enough to appeal to the majority of users who are focused more on "the concrete professional problems of teaching and learning" (Geoghegan, 1994a, para. 24). Instructors might reject a technology for any number of reasons. They might simply feel uncomfortable with a technology, feel that a particular technology is not helping him or her to teach, or feel that it is taking up too much time. Alternatively, the students might not like it. Most instructors recognize that incorporating information technologies into teaching can be time-consuming and complex. Thus, they need to be shown that the benefits will outweigh the drawbacks.

William Geoghegan of IBM Academic Consulting takes a different approach to explaining the problem. He theorizes that successful adoption has less to do with inadequate or obsolete hardware and software, insufficient support, complex systems or lack of time or money than it does with the social and psychological factors that accompany change (Geoghegan, 1994a, para. 17). Geoghegan describes two groups of instructors, early adopters and members of the mainstream. These two groups reflect

differing attitudes towards technology, but more specifically, differing attitudes towards change (See Table 1). He goes on to suggest that the significant difference between the two is not an aversion to technology but an aversion to risk (ibid., paras. 23–24). Many instructors are overwhelmed with administrative and research work in addition to teaching commitments: 61 percent of instructors state a lack of time and a heavy workload as the biggest obstacles they face while preparing for courses (*McGraw-Hill Ryerson "Student Success" DBI Quantitative Research [Survey],* 1999, chart 30). With limited time and money, instructors are not inclined to risk abandoning familiar teaching practices for new and unknown techniques. Thus, even if mainstream instructors are excited by the possibilities of new learning technologies, the weight of other responsibilities often hinders their opportunities to experiment.

Table 1—Attitudes of Faculty towards Technology

Early Adopters	**Mainstream Faculty (Instructors)**
• Favour revolutionary change	• Favour evolutionary change
• Visionary	• Pragmatic or conservative
• Strong technology focus	• Strong problem and process focus
• Risk takers	• Risk averse
• Experimenters	• Want proven applications of compelling value
• Largely self-sufficient	• May need significant support
• "Horizontally" networked	• "Vertically" networked

Source: Geoghegan, 1994b, para. 6.

Incorporating information technologies into teaching can be a complex process. The development of human knowledge is a dynamic process, and respecting this requires an approach to teaching that ensures students are exposed to knowledge in appropriate forms. "To maintain pedagogical competence, an instructor takes active steps to stay current regarding teaching strategies that will help students learn relevant knowledge and skills" (Society for Teaching and Learning in Higher Education, 1996, p. 3). At the same time, good teaching practices need to be preserved in such a way that information

technologies serve the aims of teaching—and not the other way around. Each instructor needs to find the right balance of traditional and new technological practices and materials (Green & Gilbert, 1990, para. 86). To help instructors achieve this balance, educational publishers need to demonstrate the benefits of learning technologies to students and instructors. Once convinced of their benefits, instructors often move quickly to implement the new learning technologies (Betts, 1998, para. 10).

A review of the attitudes of instructors towards information technologies reveals some important information. For both instructors and students, the objective of an education is to develop knowledge and improve the mind, body, emotions and spirit. Information technologies can help instructors and students to achieve this objective. Instructors, students, institutions and educational publishers are all slowly becoming aware of the implications of information technologies as they relate to education. At the same time, they are recognizing the benefits of information technologies not only to learning, but to society as a whole. New information technologies can be used to construct pedagogical environments that are conducive to good teaching and learning. Instructors, however, remain reluctant to embrace new technologies for a number of reasons: high cost, their own low technical capabilities, lack of best practices in using information technologies, lack of knowledge about the capabilities of information technology or, finally, lack of time. Educational publishers, armed with this understanding of their customers, have gained valuable insight into how information technologies can be integrated into teaching and learning. This knowledge, in turn, will contribute to an effective new-media strategy.

Chapter 5 — Current use of information technologies in education

Chapter 4 described the attitudes of instructors and students towards information technologies as they explore their objectives in education. Attitudes range from enthusiastic to suspicious, but this does not mean that institutions and instructors are reluctant to experiment with information technologies. Most educational institutions in Canada are investing large amounts of money and expertise into incorporating information technologies of their own educational strategies.

This chapter examines some of the ways institutions, students and instructors are meeting the challenges posed by information technologies, both financially and practically. It also looks at how instructors are incorporating information technologies into their teaching. Educational publishers developing and marketing new-media educational products need to be very attuned to how institutions and instructors are adapting to information technologies. Awareness of changes in information technologies and changing attitudes towards information technologies can help educational publishers to know best how to develop or adapt their current products to a new educational environment.

5.1 The institutions

Information technologies can benefit teaching and learning in institutions as much as they can hinder them. For most institutions, the benefits of investing in information technologies are proving to be the greater force. First, educational institutions are finding that information technologies are a core element in their quests to be knowledge centres and to lead in the accumulation and analysis of knowledge. Second, information technologies attract financial support and reputation.

Most educational institutions have two major roles: they are centres for learning and they are centres for research. As older learning materials such as videotapes and

correspondence courses make way for newer technologies such as computer-based learning (CBL), web-based learning (WBL) and interactive multimedia products (Canada, 1998, p. 1), institutions are beginning to think about new ways of incorporating information technologies into their teaching and research.[20]

The University of British Columbia, for example, has created a strategic plan called Trek 2000 to address the long-term challenges and opportunities of education. Trek 2000 describes strategies the university will employ to manage people, learning, research, the community and internationalization in a development plan. One strategy explores opportunities to

> fully integrate information technology with instruction,
>
> upgrade classrooms and laboratories to support research-based interactive learning environments,
>
> ensure faculty and staff are prepared to operate in a learner-centred environment,
>
> develop alternative ways to deliver educational programs to students, including distance education and lifelong-learning programs (University of British Columbia, 2000, pp. 7–8).

For some institutions, information technologies are becoming an integral part of their functions. Instead of trying to "graft technology departments onto existing institutions" (Watson, 2000, p. 40), some newer institutions, especially those that offer distance-education programs, are making information technologies a core component of their educational strategies. Athabaska University in Alberta, for example, offers predominantly home-study programs with bachelor degrees in six fields and master's degrees in three others. Distance-education technologies range from simple student manuals, study guides and textbooks to audiotapes, videotapes, CD-ROMs and the Internet.

The time, expense and complexity of adopting information technologies, however, can tax the abilities of an educational institution. Moreover, educational institutions do

not, in most cases, have the same centralized management structure that a corporate business might have and to which employees are required to adhere. A standard four-stage implementation cycle for a corporation generally starts with (1) planning, investigation and experimentation; then moves through (2) a few years of increased capital expense with few offsetting increases in productivity; (3) cost and implementation adjustments; and, finally, (4) a couple of years of increased levels of efficiency and effectiveness (Green & Gilbert, 1990, para. 15). In a decentralized educational institution, however, this four-stage cycle can be more complex, because it may not necessarily be implemented in all faculties and departments at the same time or at the same rate. The varying rate of adoption of technologies by instructors and the costs of installing technologies further complicate the process. Thus, a slow implementation cycle can work against an institution's desire to be at the forefront of knowledge accumulation.

Even as educational institutions are realizing the financial burden of providing an education using new learning technologies, they are finding that having newer technologies attracts financial support, students and prestige.[21] This leads to the second reason institutions find they need to upgrade their current technologies.

Students attend universities to increase their knowledge and gain an education. They choose an institution because it offers the courses and instructors that they feel will provide the training to advance in a chosen career. Furthermore, an institution provides facilities that enhance training and opportunities for a student to gain extra credits or skills. As information technologies such as computers and the Internet become increasingly desirable in education, students will often take into account the technological resources an institution has to offer. Thus, institutions are finding that in order to maintain their reputation and attract the right students, they must invest in technology.

On the financial front, university funding from government sources has dropped by an average of 20 percent across Canada since 1993. On a per student basis, government funding has dropped from a high of $11,500 per student in 1978 to less than $7,000 in

1996 (Association of Universities and Colleges of Canada). In contrast, private-sector and foundation support for university research has doubled from 18.4 percent in 1984–85 to 36 percent in 1996–97 (ibid.). A loss in government support means that institutions have to look at alternative sources of funding. As they do so, institutions are recognizing that the corporate sector has an interest in making major investments in information and educational technologies.

Corporations look to an educational institution as a source of educated human resources. If the university is not current in its technology, it will not be able to train graduates to the requirements of the corporate sector. And the school that produces the best-prepared graduates will receive the most benefits, such as funding and recognition, in return. Thus, the success of an educational institution's new-media strategy can be seen not only in how it manages its financial responsibilities, but also in how it integrates information technologies into its educational programs, addresses the academic mission and goals of the institution, and meets the needs of its students and faculty.

5.2 The students

Social and economic factors that affect students are changing some of the ways educational institutions operate. Institutions are realizing they have to go to greater lengths to attract good students. As students become more aware of the highly competitive job market and the skills and experiences they will need to help them succeed, their expectations of an educational institution change. Students consider degrees from reputable institutions a label of their credibility and, in the marketplace of knowledge, a personal sign of increased net worth. Some students see up-to-date technology in an institution as an indication of excellence. They expect efficient learning resources and access to quick-and-easy support for their learning needs (Boettcher, 1999a, para. 37; Green & Gilbert, 1990, para. 31).

In addition, more students now prefer to pick up degrees over a longer period, "snatched between jobs and bank loans, when time, money, interest, and opportunity arise" (Brown & Duguid, 1995, para. 8). Alternatively, many professionals prefer to focus on updating certification and skill sets rather than acquiring additional academic degrees (Boettcher, 1999a, para. 21). The changing needs of students put pressure on institutions to make their educational opportunities attractive to career professionals.

More students are taking advantage of distance-learning programs offered by institutions in Canada. McGill University, in an effort to avoid the increasingly competitive undergraduate market, is considering concentrating on high-profile distributed learning activities for graduates and professionals (McGill University, 1998. p. 1). Queens University offers an MBA program across the country using interactive video conferencing. Athabaska University and the Open Learning Agency in British Columbia deliver most of their programs through various distance-teaching delivery systems. Mount Royal College has been offering distance-education for more than 10 years and is developing a critical-care nursing program for delivery over the Internet. The University College of Cape Breton offers a graduate-level certificate program in educational technology entirely over the Internet. On another front students (and professionals) can take advantage of a customizable form of learning is through what are called *modularized educational components* (Boettcher, 1999a, para. 23). This innovation enables students to take the building blocks of a degree program in set stages in self-contained units.

These developments suggest that students are taking advantage of flexible delivery systems when they take programs that address their career and social needs. Educational materials that promote flexibility in their delivery will be attractive to students who have expressed interest in new ways of learning. They will also appeal to instructors developing courses that take into account new technologies and the changing demands of students.

5.3 The instructors

As mentioned earlier, the decentralized nature of an educational institution slows the implementation rate of new technologies. The factor governing the rate of implementation is the speed at which instructors adopt new learning technologies. However, as we have already seen, "The successful integration of information technologies is almost always associated with significant structural change—the very kind of change which educational institutions routinely resist" (Green & Gilbert, 1990, para. 22; see also Brown & Duguid, 1995, para. 7). Some educators view technology as a brave new solution to the challenges of learning and teaching; others dismiss it as irrelevant to real learning (Canada, 1998, p. 1). As a result, there has not been a wholesale move by instructors to adopt new learning technologies.

A study of the trends in education shows that there is widespread interest in information technologies and how they can be used in education. In a recent survey, 93 percent of instructors expressed an interest in new technologies as a teaching tool. (See Figure 4, next page) But only a relatively small number of instructors actually use information and learning technologies, or have the skills to use these technologies effectively. (See Appendix B for a more detailed description of the categorization of instructors based on technical abilities.) The most technically proficient are the inventors and super-innovators—early adopters who make up about 24 percent of instructors. These are people who are perfectly comfortable with new technologies and often develop or program them for their own purposes. The majority, or mainstream instructors (59 percent), however, count themselves as innovators or "tech able," with average to limited technical skills. They may be able to understand new technologies, but they are more comfortable with those similar to what they already know.

Figure 4—Planned Use of Technology as a Support Tool – By Total Sample (228)
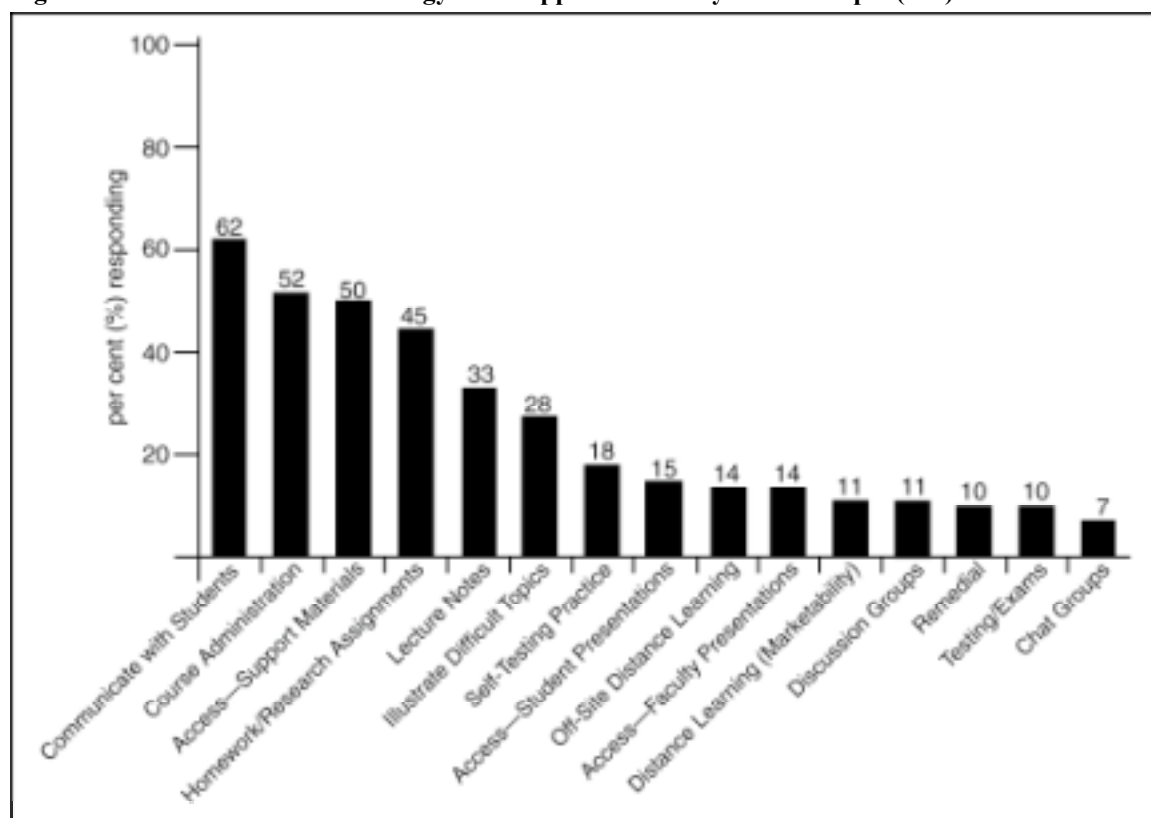
Source: *McGraw-Hill Ryerson "Student Success" DBI Quantitative Research [Survey]*, 1999, Chart 4.

Between the technically proficient inventors and super-innovators on one side and the mainstream instructors on the other lies a gap that has two interesting aspects. First, this gap can represent the challenge of incorporating information technologies into teaching. How easily this chasm can be bridged will determine how readily new technologies will be adopted by the majority of instructors. Most new technologies are adopted initially by the inventors and super-innovators, who are eager to try new things. The more conservative majority does not grasp new possibilities as quickly. The value and success of a new application depends on how easily it can traverse this gap between the small, technologically adept group and the large less technologically adept mainstream group. Second, from an educational publisher's point of view, this gap represents a

division in the market for new-media educational products. The sooner this gap can be bridged, the larger the market for more advanced products becomes.

Information technologies are becoming an integral part of the education system. Institutions are investing in information technologies as a way of attracting both students and funding. Students recognize the value of information technologies in providing a more flexible education. Instructors are slowly using more information technologies in their teaching but instructors and students possess a wide range of abilities. A definite gap exists between the early adopters and the mainstream instructors.

Certainly, institutions are becoming increasingly aware of the importance of incorporating information technologies in education. But simply imposing new technologies upon instructors will only increase resistance to their implementation. Instead, information technologies need to be introduced in ways that effectively explain their benefits and provide incentives for instructors to explore and experiment. Integration new media into teaching, therefore, is a question of matching high-tech opportunities to a low-tech environment.

Trends suggest that instructors are interested in the possibilities that new information technologies offer and would be willing to experiment with them if training and support were provided as well. Through experimentation, instructors are developing best practices that will not only help to improve the quality of teaching using information technologies but will also influence the slow adopters. The current situation should provide educational publishers with guidelines for product development as well as ideas for new services for instructors and students.

Chapter 6 — Integrating information technologies into education

Despite all the advantages of information technologies that have been discussed, there are problems inherent in applying new-media solutions to educational situations. The challenge of matching people to technologies has existed since the beginning of the industrial age and will continue to do so as long as technologies play a part in human life. Meeting this challenge is vital to an educational publisher's new-media strategy.

6.1 Teaching and information technologies

Efficient use of technologies begins with identifying good pedagogical practices and then determining which technologies are best at supporting those practices (Ehrmann, 1995, para. 27). Four traditional areas of concern for instructors are preparing courses, communicating with students, seeking out relevant and appropriate content, and measuring success through tests and student work (*McGraw-Hill Ryerson "Student Success" DBI Quantitative Research [Survey]*, 1999, p. 6). Good teaching practices should address these areas of concern. The question then is: how can information technologies be best put to use to enhance the learning process?

As information technologies develop, so too do styles of teaching and learning that use them. "Broadcast learning," for example, is a model of instruction in which information is transmitted or broadcast from instructor to student. Learning takes place through instruction that is "one-way, centralized, and with an emphasis on predefined structures that will work best for the mass audience" (Tapscott, 1998, p. 129). Information is received through repetition and rehearsal, then stored. It is then retrieved, tested and measured to determine learning. Curricula designed with this broadcast model represent a "one-size-fits-all" approach (p. 130). This is the "knowledge-delivery" system of learning that Brown and Duguid (1995) criticize on the basis that it

misunderstands the process of learning by assuming that students are "empty vessels into which the university pours information" (p. 10).

Teaching as a "delivery service" and information technology as "an intellectual fork-lift truck" do not take into account education as an intellectually active process that occurs only partly in the classroom (Brown & Duguid, 1995, pp. 9–10). Information technologies can support best pedagogical practices by giving both the instructor and the student the freedom to make learning an exploratory experience rather than a mere absorption and processing of information. Even if many of the features of information technologies appear to be designed to replicate existing tools, they should not be used simply as electronic replacements for traditional tools of education such as blackboards and notes. Rather, they should be regarded as tools that expand the instructional and learning process (Green & Gilbert, 1990, p. 18). E-mail and web links, for example, are of particular value because they are conducive to good learning as well as being simple and efficient to use.

Successful integration of learning technologies has three advantages that increase the value of an educational supplement: (i) new media have been shown to improve student performance (Tapscott, 1998, p. 136); (ii) fluency in new media will serve students later in life; and (iii) many people who use new-media technologies teach themselves. Successfully integrated technologies help students to develop analysis skills, confidence, perception and memory.

The Australian Computer Society and the Australian Council for Computers in Education describe five basic ways in which technology can be used in education:

1. *Support mode:* technology is used to increase accuracy and enhance presentation of work. Such tools include word-processing packages, computer-aided drafting and design, and desktop publishing.

2. *Exploration and control mode:* the student is able to explore, examine, experiment with and build situations. Software packages include adventure games and other types of simulation, databases, expert systems, and statistical analysis packages.

3. *Tutorial mode:* here the information is presented at an appropriate level and pace for the user, giving the student the opportunity to receive feedback on progress. This is seen as technically possible in core areas such as mathematics, literacy and science, where more objective testing is possible.

4. *Resource mode:* the technology is used to access information and other resources, whether on-line through means such as the Internet or off-line using CD-ROMs and other software.

5. *Link mode:* technology is used for communication between individuals. Examples are electronic mail and desktop video conferencing (Australian Computer Society and the Australian Council for Computers in Education; Byron & Gagliardi, 1998, para. 19).

In overview, information technologies are most valuable as aids to illustration and explanation, as tools that can assist in analysis and synthesis of information, as aids to visualization, as a means of access to sources of information that might otherwise be unavailable, and as vehicles to enable and encourage active, exploratory learning on the part of students (Geoghegan 1994a, para. 11).

6.1.1 The changing roles of instructors

As information technologies change, the roles of instructors are also changing (Nasseh, 1998, p. 10; Van Dusen, 1997, para. 2). A commonly recited jingle describes the new instructor is as "a guide on the side," not "a sage on the stage". This epithet reflects some characteristics of the Socratic method of teaching, which, in its purest form, employs questioning to arouse curiosity and serves as a logic-based and incremental guide to help students to think through and understand complex issues on their own. Dialogue

enhanced by information technologies that maintain a two-way communication between instructor and students promote the use of personal experience as a foundation of knowledge rather than second-hand sources. This new teaching model is based on flexible learning, but while it expands opportunities for both students and instructors, it has been slow to be adopted. Table 2 outlines some of the changing roles of instructors and students in this new model of flexible learning.

Table 2—Changing Roles of Instructors and Students

Changing Instructor Roles	Changing Student Roles
From oracle and lecturer to consultant, guide and resource provider	From passive receptacles for hand-me-down knowledge to constructors of their own knowledge
Teachers become expert questioners, rather than providers of answers	Students become complex problem-solvers rather than just memorizers of facts
Teachers become designers of student learning experiences rather than just providers of content	Students see topics from multiple perspectives
Teachers provide only the initial structure to student work, encouraging increasing self-direction	Students refine their own questions and search for their own answers
Teachers present multiple perspectives on topics, emphasizing the salient points	Students work as group members on more collaborative / co-operative assignments; group interaction significantly increased
Movement from a solitary teacher to a member of a learning team (reduces isolation sometimes experienced by teachers)	Students increase their multicultural awareness
From teacher having total autonomy to activities that can be broadly assessed	Students work towards fluency with the same tools as professionals in their field
From total control of the teaching environment to sharing with the student as fellow learner	More emphasis placed on students as autonomous, independent, self-motivated managers of their own time and learning process
More emphasis placed on sensitivity to student learning styles	More discussion of students' own work in the classroom
Teacher-learner power structures erode	More emphasis placed on knowledge use rather than only observing the teacher's expert performance or just learning to "pass the test"
	Increased emphasis on acquiring learning strategies (both individually and collaboratively)
	Access to resources is significantly expanded

Source: Collins & Berge, 1996, para. 29.

There is always a danger that information technologies will become an end in them selves rather than a means for learning. After all, they are essentially passive tools that rely for their effectiveness on the creativity of the instructor. Because of instructors' critical role, the fear that instructors will be supplanted in favour of electronic interfaces and the Internet is relatively unfounded. A report titled *On-Line Opportunities, Higher Education, Professional and Distance Learning,* prepared for McGraw-Hill Ryerson in 1998, states that "Technology will improve ineffective and inefficient areas within an educator's teaching processes"(p. 13). It qualifies this statement, however, by adding that actual improvements will depend on the educator's ability to understand and "exploit the real value" of the tools and services. Information technologies are supplemental aids to teaching and learning. Instructors need to guide learners by selecting appropriate resources that incorporate information technologies. They also need to "continually adjust and shape the resources and experiences as the learners grow" (Boettcher, 1999b, p. 2).

Of course, there are limits to the effectiveness of information technologies, and recognition of these limits is fundamental to understanding when and where they should be used. Information technologies does not synthesize knowledge, dictate content or direct learning. In fact, they can restrict access: "When technology is the bottleneck through which instruction must be delivered, then technology, if it does not drive content, most certainly limits content" (Downes, 1998, p. 1). But an analysis by McMaster University of the ratings of the best and worst practices for technologies in education (see Appendix C) reveals that best practices focus on how technologies supports the objectives of learning instead of supplanting them. In all cases, the learners are in control and direct their activities using information technologies to enhance the learning experience by gaining access to alternative ways of experiencing or more ways of communicating. Best practices recognize that learning involves exploration and that information technologies can expand access to knowledge. Recognizing that information technologies

are taking supplemental roles in teaching and learning is key to understanding how they can best be shaped by educational publishers as delivery vehicles for content.

6.2 The problem: Matching technology and the user

The object of marketing is to satisfy consumer needs. For the educational publisher, marketing aims to match the abstract characteristics of human nature to the concrete realities of information technologies and delivery systems. New delivery systems, however, are appearing faster than instructors are able to take advantage of them. It follows that educational publishers cannot hope to introduce radical new educational systems if instructors and students are not prepared to use them.

Notwithstanding the benefits of information technologies, the learning curve associated with many new technologies can be discouraging to many users. If a technology is difficult to learn, then its adoption will be slow. Technologies that are convenient and easy to use will attract more interest at least early on. The following section summarizes some of the issues that hinder the integration of technologies into education.

6.2.1 Technological proficiency

Not all instructors and students have the same technological capabilities. For example, an instructor or student in an arts faculty might not be as technologically proficient, or have as much breadth of technical expertise, as an instructor or student in a science faculty. While tools such as e-mail and word-processing applications are becoming more common in educational institutions, some instructors and students may not have the confidence or willingness to experiment with new learning technologies. Educational technologies, however, can be applied in almost any learning situation. All instructors and students can therefore benefit from training in informational technologies.

The most effective way of increasing technical capabilities among instructors seems to be through interpersonal contacts between instructors. Instructors get most of their information about technologies through their colleagues (86 percent), followed by conferences and seminars (61 percent), and publishers' reps (49 percent) (*McGraw-Hill Ryerson "Student Success" DBI Quantitative Research [Survey]*, 1999, chart 6). According to Geoghegan, to increase the adoption rate of learning technologies, institutions need to

> broaden the mix of instructors on the instructional-technology committees to
> include people with a range of technological experience,
> focus on developing discipline-specific applications of compelling value in excess
> of the money, time and effort needed to provide them,
> provide support for instructors from people who have a solid understanding of
> the discipline (such as peers and publishers),
> encourage team process innovation for the adoption of technology (Geoghegan,
> 1994a, para. 43).

Many institutions provide campus-based training for instructors. For example, the Centre for Academic Technology at the University of Toronto offers extensive programs and seminars to train and support instructors in learning technologies. The Centre for Teaching and Academic Growth (TAG) at the University of British Columbia offers courses in technologies and computers. How experienced and comfortable instructors are with information technologies, along with the accessibility of training and support, will determine to a great extent how and to what degree instructors will incorporate information technologies into their teaching.

6.2.2 Development and implementation costs

The costs of investing in information technologies can be substantial, even excessive. The major costs are in acquiring the hardware and providing support services and personnel to

run the programs. These fixed costs can be mitigated to a degree by spreading them over a larger number of users. To this end, some colleges have explored and expanded partnership agreements with other colleges and with private educational-service providers (Association of Canadian Community Colleges, 1998).

6.2.3 Human interaction

Instructors have identified a lack of group interaction as a major technological and pedagogical challenge in computer-based distance-education classes. Citing the importance of "self-discovery, social interaction, and pleasure of discovering answers in a group" (Nasseh, 1998, para. 47), many instructors consider face-to-face communication and group interaction to be a vital aspect of teaching and learning. Eye contact, body language and the physical presence of a student participating in a class all play a significant role in developing a socialized and communicative individual. Furthermore, most distance-education students themselves say they miss the personal interaction of a seminar or even a good lecture. Achieving the right environment for learning depends on finding an optimum point between human interaction on one hand and the convenience of a self-directed learning style on the other.

6.2.4 Quality and availability of content

The integration of information technologies and content via the Internet creates an information storage and delivery tool by which data can be explored and analyzed at will. Nevertheless, the Internet is not a limitless storehouse of knowledge. At present, few subjects are covered in the kind of detail that can be found in a local library, nor does the degree of analysis equal that which is readily available in printed media. Also, there are doubts about the accuracy of information placed on the Internet and how it can be verified. Finally, the Internet is not organized into a logical and easily searchable database such as one finds in a library.

As more students and instructors use the Internet as a resource for knowledge and information, it is imperative that they recognize that knowledge is the product of critical thinking and the intelligent analysis of information. "To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information" (Green & Gilbert, 1990, para. 45). The Internet is primarily a communications tool, not an analysis tool. Therefore, a high degree of information literacy is needed to simply recognize the insufficiency of information available on the Internet.

6.2.5 Appropriateness of the technology

Synchronous technologies that attempt to copy classroom communications on-line are, so far, not convenient or versatile enough to create an effective learning environment. Synchronous discussion in a chat room setting can get chaotic with a group on-line and all trying to send messages at the same time. Multimedia, while engaging and attractive, is too complex for most current computer systems to manage in real time. Discussion through a keyboard may favour students with the best typing skills or the ones who can respond quickly or initiate discussion (Daniel, 1997, p. 31). Electronic learning spaces also need to be matched to the activities undertaken: a closet, for example, is not the best place to listen to a symphony.

The key to on-line education may, in fact, lie in simple text-based communication activities. Courses that would traditionally be taught as seminars "appear to work well as text-based computer mediated communication," while the traditional lecture is being tested on-line using "interactive graphically-based material" (University of Illinois, 1999, p. 2). This is because text-based communication can be quickly sent, received and revised. Since creating high-quality educational material can be both time and labour intensive and not the lucrative source of income that some institutions might imagine (University of Illinois, 1999, p. 2), the answer, for now, may lie in a "hybrid" approach, in which a

combination of traditional teaching methods and information technologies are used to deliver an education.

6.3 The hybrid learning environment

No single mode of delivery can provide the kind of well-rounded education that a student needs and an instructor wants to deliver. Different delivery systems reflect the different ways in which students will employ information and skills in their lives and careers. Information technologies are intended to expand the options for learning, so that instead of just a blackboard, a book and a lecture, a student can also use animation, video, interactive media, telecommunication, on-line quizzing and Internet links. At the same time, an emphasis on collaborative learning, beginning with e-mail communications, for example, ensures that students do not lose the interpersonal relationships so valuable to the learning experience. A hybrid learning environment seeks to marry the simplest, most convenient and most practical information technologies with elements of the lecture, seminar, tutorial and on-line learning (*On-line by Design*, 1999).

Technology is important only to the extent that it facilitates learning, teaching and human interaction. The relationship between web site facilitators and/or on-line mentors and students is fundamental to an effective learning environment. The amount of technology in the mix depends on the nature of the subject, the quality of lecturing, the ability of students to come together for lectures and seminars, and the technological expertise of the instructor. According to Brown and Duguid (1995), "Learning, at all levels, relies ultimately on personal interactions and, in particular, on a range of implicit and peripheral forms of communication that technology is still very far from being able to handle proficiently" (para. 10). The hybrid model allows information technologies to do what they do best—deliver information and support reflective discussion through communication and collaboration tools—without preventing teachers from doing what

teachers do best—motivate and inspire students, explain concepts and guide learning (*On-line by Design*, 1999).

Each course must be assessed separately. Some courses may prove to be more appropriate to an on-line format than others; introductory courses that teach the basics of a discipline may be the best candidates for on-line learning (*Online Learning Triumphs Over the Traditional Classroom*, 1999). In other cases, some sections of courses will be better suited to an on-line component than other sections. It is the responsibility of the instructor to identify which courses would benefit from an on-line component and to what extent.

An education that has both on-line elements and campus-based or community elements can take advantage of the best each element has to offer. In the traditional learning process, students absorb information, are tested orally or through written exams and then, upon graduation, apply what they have learned in their life and in their workplace. More recent educational practices are moving more towards immersing students in the practical application of the knowledge that they acquire. Technology supports this movement. As Downes (1998) explains, "The point of educational software will not be so much to present a stream of information to a student as it will be to place the student in an environment where the information needed for success in that environment will be actively sought and learned" (para. 25). An innovative educational environment emphasizes personal interaction, stimulates thinking and enhances current learning practices. This environment creates a more rounded, experiential learning situation in which the student can apply what they have learned and receive feedback quickly.

The many opportunities provided by the Internet are still limited by the high cost of software and content development, the capabilities of users and the desire of students and instructors for personal interaction. Forcing adoption of cutting-edge technologies will only increase the gap between those who are competent in information technologies and

those who are less than competent. Educational publishers, aware of the limits of instructors and students and the limits of information technologies themselves, must be careful not to push information technologies that are beyond the abilities of their target market, which, because of its size, is generally the mainstream instructors. To do so would risk alienating their customer base and losing market share.

Previous chapters have discussed the capabilities of information technologies as well as the role they play in higher education. So far no single technology or teaching method has been identified as the "right" one, although some might be better than others. By focusing on the trends and issues in education, it has been possible to identify opportunities that an educational publisher can pursue independent of the capabilities of a particular technology. The following chapter explores these opportunities.

Chapter 7 — Opportunities

The question is not: what can we do and how can we do more, but:

what are the opportunities and how do we take advantage of them?

—John Black, McGraw-Hill Higher Education, 1999

Market research is vital to developing a new-media publishing strategy. It reveals how content, and the delivery of content, is evolving and adapting to the needs of instructors and students. How are information technologies going to change education? How are information technologies going to change educational publishing? And, finally, how will educational publishers manage change in the new educational-publishing marketplace?

Information technologies are changing the roles and responsibilities of educators and administrators, and creating complex webs of financial and technical obligations that are not yet fully understood. The new landscape is a network of complex data, statistics and opinion characterized by conflicting evidence and disagreements among "experts." Nobody is certain to what extent changes in technologies will affect education and students, or whether the massive financial investments demanded will really make a significant difference to the quality of education in the long run. Nevertheless, a few trends have appeared:

1. There is no firm consensus yet on how to incorporate new information technologies into educational practices.

2. The opportunities available in developing new-media products are many. But the capabilities of the educational publisher can be limited, not only by the capabilities of its target market and the as yet unresolved future of technologies in education, but also by the fact that the development of new delivery systems is generally outside an educational publisher's core competency.

3. There is a strong interest in information technologies, but due to high costs, low technical capabilities on the part of instructors and students, and lack of understanding of the capabilities and benefits of information technologies, adoption has been slow. These factors will continue to affect the rate at which and the manner in which information technologies are adopted. They will also affect how educational publishers develop their new-media products to satisfy the market.

According to Van Doren and Smith (1999), "Future strategies need to be designed around how customer and market priorities are changing" (para. 10). Educational publishers need to recognize that, despite the huge anticipated returns that information technologies promise, the majority of their customers are not as technologically advanced as they might wish. They need to remain alert to subtle changes in education and society and be ready to adapt to these changes as well as to constantly visualize new ways to take advantage of innovations. Opportunities must also be adaptable to a constantly changing market, concentrating on customer needs that will be present regardless of the technology employed. Following are four opportunities that might be considered in an environment in which no single information technology prevails.

7.1 Flexible delivery

The educational landscape is always changing, influenced by new technologies, new teaching practices and the changing needs and wants of instructors, students and institutions. Because of this constantly changing landscape, educational publishers tend to develop technological products gradually, reluctant to invest in any major new innovation out of fear it will become obsolete within a few years. As a result, publishers have tended to adopt a trial-and-error approach to product development, introducing small changes to products and then analyzing their reception.

Product development at McGraw-Hill is based on two notions: that incremental advances in new media are important and relatively predictable but unlikely to generate significant free-standing revenues or profits; and that "frame-shifting" advances, or those that will significantly change the landscape, are likely to occur within the next one to five years. McGraw-Hill's new-media strategy emphasizes the importance of anticipation—creating scenarios—in order to stay on top of the incremental changes as well as to avoid getting caught flat-footed when a frame-shifting advance occurs. Unfortunately, the result of product development based on these notions is that any value added to new products is minimal and generally delivered too late to make any real impact (*Irwin/McGraw-Hill Preliminary Digital Publishing Plan*, p. 3).

To combat uncertainty, educational publishers offer a mix of products that they anticipate will meet most of the needs of instructors and students. Electronic supplements are essentially loss leaders for the basic printed book—profits being still in the core print product. In many cases, profits from providing on-line educational materials are realized only through the success of one or two courses that offset the losses (Maclean's, 1999, pp. 27–29). For publishers to maintain their market presence, most supplements have been provided free to textbook adopters. Competition has forced educational publishers to offer a new supplement with each version of the text as an incentive to adopt. Having developed this kind of relationship, publishers now find that the instructors expect all supplements to be provided free. Because of a lack of customer loyalty (see section 7.4), publishers are reluctant to start charging for the supplements for fear of losing sales. As a result, the cost of producing each new edition of a textbook is rising as more free supplements are added to satisfy instructor demands and to maintain competitive advantage. The only recourse for the publisher has been to recover costs through careful increases in the price of the text.

Flexible delivery systems allow the production of educational materials that are not restricted to a single delivery system, a situation that can increase access to the

educational materials. The potential for modular course materials based on an Instructional Management System standard means that learning modules could be "plugged in" to any course-management system in use. In the future, learning materials may be available as course kits on demand—bundles of educational materials drawn from digital databases and distributed on CDs, e-books and other electronic media (Hoffert, 1998, p. 258). Innovations could be offered as value-added supplements on-line, providing opportunities to further reduce production costs, to reach a larger market and to update content faster and more efficiently. These value-added qualities could include enhanced time-and-place learning flexibility for students, increased access to educational resources, cheaper materials, distance education, student-managed learning plans, computer-based learning and web-based learning.

Flexible delivery systems also enable the educational publisher to manage costs and to take advantage of new delivery systems as they appear. New-media supplements could slowly replace the printed components of textbooks. As has been demonstrated, extending the life of an edition with supplements can reduce the cost of production. The Internet can be used to offer regular content updates, maintaining the value of the textbook and the OLC and extending a textbook's life to four years. Textbooks with technology-based on-line supplements have already shown a reduction in the drop-off rate for second- and third-year sales (*On-line Opportunities, Higher Education, Professional and Distance Learning*, p. 5). This extension of a textbook's life can save money in publishing and marketing.

Although unlikely to create any significant revenue on their own, flexible delivery systems should enable McGraw-Hill to stay in a position to react to a "frame-shifting" advance when one does occur.

7.2 Partnerships

Competition in educational publishing is increasing as more companies enter the market. These competitors possess skills that can be tapped to provide greater opportunities for delivering a product. Thus, significant business opportunities lie in the development of partnerships, a way to expand market range and increase the value of products and services.

Since developing all possible on-line opportunities for technology-based education is not within the capabilities of a single company, an educational publisher can seek out partnerships with companies that have expertise in complementary areas of information technology and content development. A partnership can enhance the value of an educational publisher's product through added features, more content or an expanded customer base. It can also help an educational publisher stay competitive through access to more markets. For example, McGraw-Hill does not consider itself to be in the business of developing course-management systems or software, nor does it wish to be in the future. Consequently, McGraw-Hill has entered into partnerships with WebCT, Blackboard and TopClass to provide Online Learning Centre content for use with each of these course-management systems. Thomson has formed an alliance with GTE, a client/server networking company, and Prentice-Hall is working with eCollege.com, a content-development company and on-line course supplier.

Despite the increasing number of players in the educational market, educational publishers are in a unique position to forge important partnerships, primarily due to their role as content producers. As one strategic report stated, "Although technology plays a key role in delivering education, educators and [information technology] developers must remain focused on instructional outcomes, not the technology of delivery" (*On-line Opportunities, Higher Education, Professional and Distance Learning*, 1998, p. 33). McGraw-Hill Ryerson can take advantage of its unique positions as an educational publisher by exploring how it can best develop and deliver educational materials to

instructors and students by acting as a link between technology developers and technology users.

Partnerships also help to alleviate the potential risks of new technologies by spreading the risk among a group of investors. Such arrangements allow two or more companies to concentrate on their core competencies while at the same investing in an innovative technology that may become a frame-shifting advance. McGraw-Hill is developing shared-risk relationships with vendors who will produce illustrations for texts in exchange for lower fees and a percentage of revenues. All work done in this way will be on a work-for-hire (WFH) basis and McGraw-Hill will retain sole copyright of materials. Evaluation of partnerships—their advantages, disadvantages and future potential—is an important part of an educational publisher's new-media strategy.

7.3 Customer support

As explained in chapter 6, a major challenge facing educational publishers is to match high-tech opportunities to users with low-tech skills. Information technologies are developing faster than the ability of most people to learn how to use them effectively. The need for training, therefore, is an opportunity for an educational publisher to educate instructors and students in the value of their products and to encourage their purchase.

The speed of change in information technologies is such that many instructors are not able to keep pace with understanding how to integrate them into their courses. The Campus Computing Project is an annual study, begun by Kenneth Green in 1990, of information technologies in higher education in American institutions. The 1998 survey of instructors revealed that the two most important issues facing instructors are the need to integrate information technologies into instruction (33.3 percent) and to have access to user support (26.5 percent) (Green, 1998, p. 1). The 1999 survey, these figures rose to 39.2 percent and 28.2 percent respectively (Green, 1999a, p. 1).

Instructors need support to adapt to changing learning models. The willingness of instructors to adopt new practices and change pedagogical strategies will greatly determine the speed at which new technologies are introduced. Innovation, or the ability of instructors to be creative with the new technologies, will depend on them having time to test and learn these technologies as well as on the support they receive from deans and administrators (Farrell, 1998, p. 21).

Instructors need to be in constant communication with peer groups, publishers and discipline associations to revise their curricula, ensure their teaching and learning materials are current, and confirm that the technologies they are using are appropriate (Green & Gilbert, 1990, para. 83). They need relevant applicable professional development that

stresses the importance of instructional design,

provides information on the theories of learning based technologies,

educates on the capabilities of the technologies,

suggests the best ways to integrate the technologies into courses,

offers discipline-specific or course-specific guidance about where and how to find computer-based materials (Green & Gilbert, 1990, para. 82).

Support as a product or service offers concise, useable information about best practices for a product. Support for an educational publisher's products should be a major function of an educational publisher's corporate strategy.

A sales representative is one form of support that an educational publisher can provide. Nearly 50 percent of instructors rely on a publisher's sales representative for information about new technologies (*McGraw-Hill Ryerson "Student Success" DBI Quantitative Research [Survey]*, 1999, chart 6). A major part of a sales rep's job is to keep the instructor up to date on the latest product from the publisher. A sales rep will also take time to question instructors to determine how they design courses, then suggest educational materials that are appropriate.

Support, as a value-added service, is an opportunity for an educational publisher to develop a degree of differentiation in a product. Since a successful business is dependent on its ability to outperform competitors and attract customers, the level of support offered by an educational publisher, bundled with a product, can play a significant role in the adoption of that product by instructors. According to Collins and Devanna (1994), "Service is now a primary target of differentiation" (p. 319). A major focus of a company's marketing effort is to show a potential customer how one product (theirs) is different from a competitor's. Service, such as technical support, is as integral a part of a company's product as an instruction manual. By offering support, a company exhibits a dedication to their product and to providing long-term help.

Support for educational products will encourage greater confidence among customers who use information technologies. McGraw-Hill Ryerson can take advantage of the relationship between itself and institutions by providing tools that satisfy students' changing needs. It can build a consumer community by supplying concise, useable information about information technologies and by providing best learning and teaching practices to guide instructors and students in the use of these technologies. The result is the development of customer loyalty.

7.4 Customer loyalty

In the increasingly competitive world of business, a sale cannot be considered the end of a relationship between a business and a customer. Instead a sale must be "the beginning of a mutually rewarding relationship" between a buyer and a seller (Collins & Devanna, 1994, p. 145). The advantages loyal customers bring are many: opportunities for repeat sales where customers are already familiar with a company and its products, lower costs than attracting new customers, and opportunities to develop customer and market profiles and track industry trends. Customer loyalty in a chosen target market should be seen as a key

strategic resource (ibid., p. 142) upon which a company continues to develop its products and maintain competitive advantage.

Customer loyalty is low in the educational-publishing industry partly because the names of educational publishers are not known. McGraw-Hill Ryerson is recognized as a producer of textbooks, but the company's broad product line is little known outside of instructors and the educational-publishing industry. Building a loyal consumer community around the McGraw-Hill Ryerson web offerings by enhancing customer service and expanding value-added services such as consulting or student support could help raise the company's profile in the educational world. Ideally, McGraw-Hill Ryerson would like to cultivate brand recognition, expressed in a word or a short phrase, such as Volkswagen's "Drivers Wanted" or Microsoft's "Where do you want to go today?" Such brand recognition would attract attention to McGraw-Hill Ryerson's goals as a "service provider" to complement its educational products.

Building a consumer community around McGraw-Hill Ryerson web offerings will help to provide feedback on printed and electronic materials. Wal-Mart, for example, has found that information compiled from a network of stores reveals patterns of consumerism, and it takes actions based on this information to stay ahead of competitors (Collins & Devanna, 1994, p. 163). Similarly, an educational publisher needs to remain intimately connected to the trends and issues in the industry. Face-to-face discussions between sales reps and instructors provide information on needs and products. But sales reps are often overworked and don't have the time to provide detailed market research in addition to their many other responsibilities. A broader network, such as the Educational Objective Economy (EOE) Foundation, in which instructors and institutions develop on-line education, can be a source of information and feedback from best practices to current educational information and courses.[22]

Educational publishers have also considered the concept of a "go-to" strategy as a way to make a web site more than just a repository of educational materials but a source

of information to satisfy a wide range of educational needs. Shikar Ghosh, chairman of Open Market Inc., an e-commerce software developer, suggests that instead of focusing on the content or the format of a product, an educational publisher needs to look at how many times it "touches" the customer and how important it is in that customer's cycle of activity (*McGraw-Hill General Management Conference White Paper*, 1998, p. 3). Some traditional publishers have carved out niches for themselves in print publishing, committing to a category and excelling at that. For example, Ulysses Travel Publications of Montreal specializes in publishing travel guides to North and Central America. The same approach can apply to an on-line presence: become a "nexus of buyers, sellers and readers in that area," making a customer come to you for whatever information they want (ibid., p. 6). MyBC.com, part of Telus Communications, is an on-line "go-to" site for news, entertainment and other information targeted towards residents of British Columbia.

In focusing the development of teaching tools around the instructor, there is the danger of overlooking the buying trends and habits of students. Because students are usually at the beginning of their careers of using information technologies, developing product loyalty among students in higher education can build a base for future products and services.

Because price is a primary concern among students, discount-based incentives are considered a sensible means to attract them. A number of different discount business models are available to take advantage of different user practices. For example, a special card subject to a membership fee and valid at merchant stores would make discounts available to all students. Other possible discount packages for students include a bonus program such as frequent-flyer miles in which access is sold to traditional and on-line retailers; lifestyle value services that offer free access to services such as e-mail and web hosting and in which revenue is gathered through advertising; prepaid services such as an

e-card or cash card in which revenues are generated through a cash float (*On-line Opportunities, Higher Education, Professional and Distance Learning*, 1998, p. 29).

Another form of loyalty to consider is that towards the author. In the textbook market that caters to undergraduate courses, the focus is generally on content and less on author recognition. Creating a demand for an author may be more likely for a publisher publishing in the smaller niche markets, where the community is smaller and where the name and reputation of the author is important. Law professors and practising lawyers, for example, recognize Sir William Reynell Anson (1843–1914)[23] as an eminent source of contract law; instructors and students would likely purchased his book regardless of who publishes it. The markets in which name branding can be promoted, however, may not be the ones that are profitable. Many academic authors prefer to be published in the higher-level courses for the prestige rather than the lower-level courses for the money, and it is more difficult for a publisher to turn a profit publishing books for the former, where sales are usually much smaller.

Developing customer loyalty can be a very difficult task for the marketing department, but it is also one of its most important and cannot be taken lightly. Customer loyalty should be a key objective of educational publishers who recognize that service is as integral to the relationship between instructor and educational publisher as is the product.

This chapter has suggested four opportunities that an educational publisher can pursue as it develops its new-media strategy. Much of this paper has focused on understanding the customer: the needs and wants of institutions, instructors and students. At the same time, I have noted the uncertainty of a constantly changing marketplace in which no single product or educational technique has been universally acknowledged as superior. The opportunities suggested here focus on the customer and can be applied to any marketing and delivery situation, independent of the information technology employed. While the customer is certainly changing, information technologies are changing

much more rapidly. In a shifting educational market, educational publishers would do well, as always, to keep their eye on the customer.

Conclusion

Market research serves an important role in the development and marketing of new-media educational products. It keeps the educational publisher aware of what is happening with its customers and in the industry by monitoring trends and issues, identifying the needs and wants of instructors and students, and suggesting further business opportunities. Market research also supplies the valuable information needed for many of the efforts—such as budgeting, managing costs and exploring sales models—that contribute to the development of a new-media strategy.

This paper has focused on providing market-research information as part of the development of a new-media strategy for McGraw-Hill Ryerson. The educational-publishing industry is in a state of flux at present because no one, individual or company, is certain which information technologies are going to predominate or which business models will work best in the marketplace. This uncertainty, combined with the high cost of investing in information technologies, leaves educational publishers uncertain as to how to proceed. Consequently, they have tended to adopt a strategy of "incremental advances" as a means of minimizing risk. Although the objective of this paper is not to propose an exclusive new-media strategy for McGraw-Hill Ryerson, it outlines a conservative strategy for dealing with this uncertain business climate by highlighting opportunities to help maintain competitive advantage without incurring unnecessary risk. The strength of all these opportunities should be their applicability to any stage of a new-media strategy McGraw-Hill Ryerson develops in the future.

Appendix A — The Abstract Objectives of Education

In *The End of Education* (1995), Neil Postman suggests that there is a crisis in the educational system in America and that it can be attributed to the lack of a god or "narrative" of sufficient power and credibility that we can organize our lives around it (p. 6). The genius of humanity, he explains, "lies in our capacity to make meaning through the creation of narratives that give point to our labours, exalt our history, elucidate the present, and give direction to our future" (p. 7). By submitting to the gods of Economic Utility, Consumerism, Technology and Separation, he suggests, we are losing sight of a humanistic purpose of narratives, which is, in part, to bring people together as a civilization.

Schools, he continues, do not create narratives: they gather them, organize them and distribute them as well as confirm and interpret them (ibid., 1995, p. 59). School is where meaning and sense is made of our world. To counteract what he considers a slide into a self-interested state, Postman argues that schools serve several purposes:

1. To understand our roles and responsibilities as stewards of the Earth
2. To cure an itch for absolute knowledge
3. To encourage critical thinking, the ability to agree, disagree and to argue constructively
4. To encourage diversity while recognizing the need for flexibility of standards that contribute to civilization
5. To develop and use language, which makes us human, to transform our world and transform ourselves

Good teaching can be summed up as a teacher's concern that his or her students become well educated. "Good teachers promote cognition by organizing content and by assigning activities . . . that reach students with various learning styles" (University of Illinois, 1999, p. 20). Good teaching promotes key factors in learning such as

interpersonal contact, co-operative learning, attentiveness to and engagement in the subject matter (by both teacher and student), and diversity. Good teaching can take on many forms: there are as many different ways of teaching as there are ways of learning, and likely each teacher and student will have a preference (ibid., 1999, p. 20).

A common teaching method is the lecture. The delivery method of a lecture, imparting wisdom by word of mouth, may be a significant factor in learning and is reflected in the effectiveness of seminars. A good lecturer has a stage presence and can inspire students. Verbal variation and inflection, strategically used, can add emphasis to content in ways that plain text cannot. Alternatively, employing the seminar or tutorial can be a very effective way of teaching because each involves face-to-face interaction between students and instructor. Seminars allow for discussion and group feedback and emphasize interpersonal relationships, which are becoming valuable skills in the workplace. More so, they emphasize the importance of dialogue and open up students to the "collection of communities" that is at the core of the learning experience (Brown & Duguid, 1995, p. 23). These same factors, so valid in the traditional teaching/learning environment, must be key to electronic methods of delivery as well.

The introduction of new information technologies can have a major influence on good teaching and learning in higher education. For example, they can offer the opportunity to integrate collaborative learning, heterogeneous groupings and problem-solving into lectures—learning processes that expand higher-order thinking skills. But the technology must be tailored to the needs of the instructors and students, not the other way around. Otherwise it threatens to alter not just education, but the whole human social fabric. "Education is not just the transmission of knowledge, but is something much more than that, . . . [it] also has to do with the transformation of persons and the development of critical thinking skills" (University of Illinois, 1999, p. 12). Thus, a challenge instructors face is how to use the right technology in the best way.

Appendix B — Definitions: Instructor Involvement with Information Technologies

The *McGraw-Hill Ryerson "Student Success" DBI Quantitative Research [Survey]* divided instructors into six groups based on their technical abilities: Inventor (6%), Super Innovator (18%), Innovator (28%), Tech Able (31%), Tech Lite (9%) and No Tech (8%). Instructors were defined with the following descriptions.

Inventor—Using available programming languages (C++, etc.), I am able to and will spend the time to invent my own course-management software and system. I also prefer to author or source 90% or more of the content myself.

Super Innovator—I am not a programmer but I have above average technical skills and will spend the time to learn and significantly customize existing courseware packages (e.g., WebCT) to suit my course needs. I prefer to author or source at least 50% of the content myself.

Innovator—I have average technical skills and am prepared to spend only minimal time learning and customizing existing courseware packages; I prefer to use courseware packages that are "preloaded" with publishers' content and prefer to source less than 20% of the content myself.

Tech Able—I have limited technical skills and prefer to use turnkey courseware technologies that require little or no time investment on my part. I prefer to use packages that are "preloaded" with publishers' content and prefer to source less than 10% of the content myself.

Tech Lite—I prefer to integrate technology into my course by having the students purchase simple, off-the-shelf commercially available supplementary products. I don't have the time or technical skill to consider course-management systems or to customize content.

No Tech—My technical skills are very limited. I currently do not aim to integrate technology into my course offering. I do not have the time to spend learning how to use these products (*McGraw-Hill Ryerson "Student Success" DBI Quantitative Research [Survey]*, 1999, p. 9).

William Geoghegan produced similar results in his survey for IBM. He divided his cross-section of faculty into five groups: innovators who make up 2 to 3%, early adopters who make up about 10%, the early majority who make up the first half of the mainstream grouping, the late majority who make up the second half of the majority, and finally the "laggards" who comprise about 15% of the total (Geoghegan, 1994a, paras. 22–26).

Appendix C — Best and Worst Practices for Technology in Education

Table 3—Best and Worst Practices for Technology in Education

Worst Practices Labels	Best Practices Labels
"high powered drill and kill" programs	learner driven
"coldware," user unfriendly	enhances control by the user
skill destroying	friendly and intimate; people centred (warmware)
blocks access, or differentiates access by social characteristics (income, employment status, age, region, ethnicity, gender)	democratizes and deregulates the educational experience
loss of control	creates opportunities for meaningful interaction
random, aimless browsing of the Internet; time waster	knowledge building, creative, artistic, constructive
destruction of community and collaborative learning	eliminates routine tasks, allowing more time for higher-order thinking and learning
unidirectional (teacher to student sponge lecturing); no interactivity (common in multimedia presentations)	inclusivity, equity of access (gender, race, income, region)
unidimensional (text or graphics or sound or animation or video)	multidimensional (text, sound, graphics, video and animation in a balanced symphony that is not overpowering)
"old wine in new bottles": repackaging old material with new graphics and sound bites on the World Wide Web	enabling (use of technology to overcome handicaps)
	extending the senses
distancing (technology creates barriers between people who prefer distant e-mail to personal contacts)	enhances user control over time; self paced, not instructor paced or technology paced (any time, any place learning)
speed for speed's sake; pressure to respond immediately to e-mail	
lack of personal support for finding solutions to computer glitches	
expensive and costly	
loss of privacy	
electronic gaming effects (violence; sexism)	
destructive of artistic talent; loss of art forms and culture	

Source: McMaster University, Part D; EvNet Research Project, para 31.

Appendix D — Book Sites

Addison-Wesley

Miller: *Economics Today*: 1999–2000

    http://occ.awlon-line.com/bookbind/pubbooks/miller_awl/

Harcourt Brace

Mankiw, Kneebone, McKenzie and Rowe: *Principles of Macroeconomics*, 1st Canadian edition

    http://www.econ-canada.com/macro.htm

Pride: *Introduction to Business*

    http://business.hmcanada.com/

McGraw-Hill Ryerson

Sayre: *Principles of Macroeconomics*, 2nd edition

    http://www.mcgrawhill.ca/college/sayre/index.html

Nelson

Gibbins: *Financial Accounting*, 3rd edition

    http://accounting.nelson.com/gibbins.html

Lamb, Hair, McDaniel and Faria: *Marketing*, 1st Canadian edition

    http://marketing.nelson.com/

Prentice-Hall

Baron: *Psychology*, 2nd Canadian edition

    http://www.prenticehall.ca/baron/

Kotler: *Principles of Marketing*, 4th Canadian edition

    http://cw.prenhall.com/bookbind/pubbooks/kotler_ca/

Robbins: *Fundamentals of Management*, 2nd Canadian edition

    http://cw.prenhall.com/bookbind/pubbooks/robbins_ca/

Wiley

Kisen *Intermediate Accounting*, 5th Canadian edition

    http://www.wiley.com/products/worldwide/canada/kieso/index.html

Weygand, Kisen and Trenholm: *Accounting Principles*, Canadian edition

    http: www.wiley.com/products/worldwide/canada/highered/index.htm
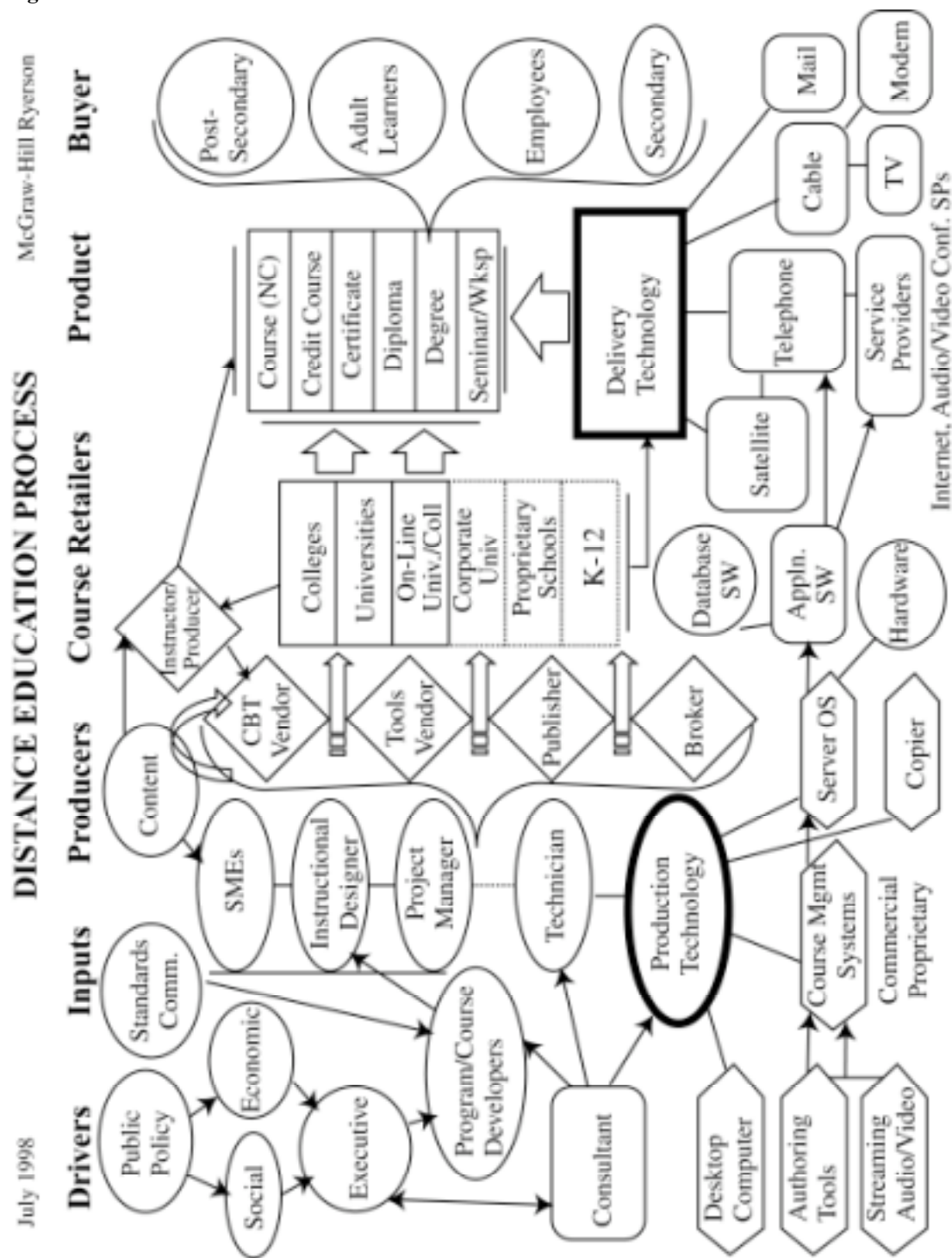
Appendix E — Distance-Education Players and Distance-Education Process

Figure 5—Distance-Education Players
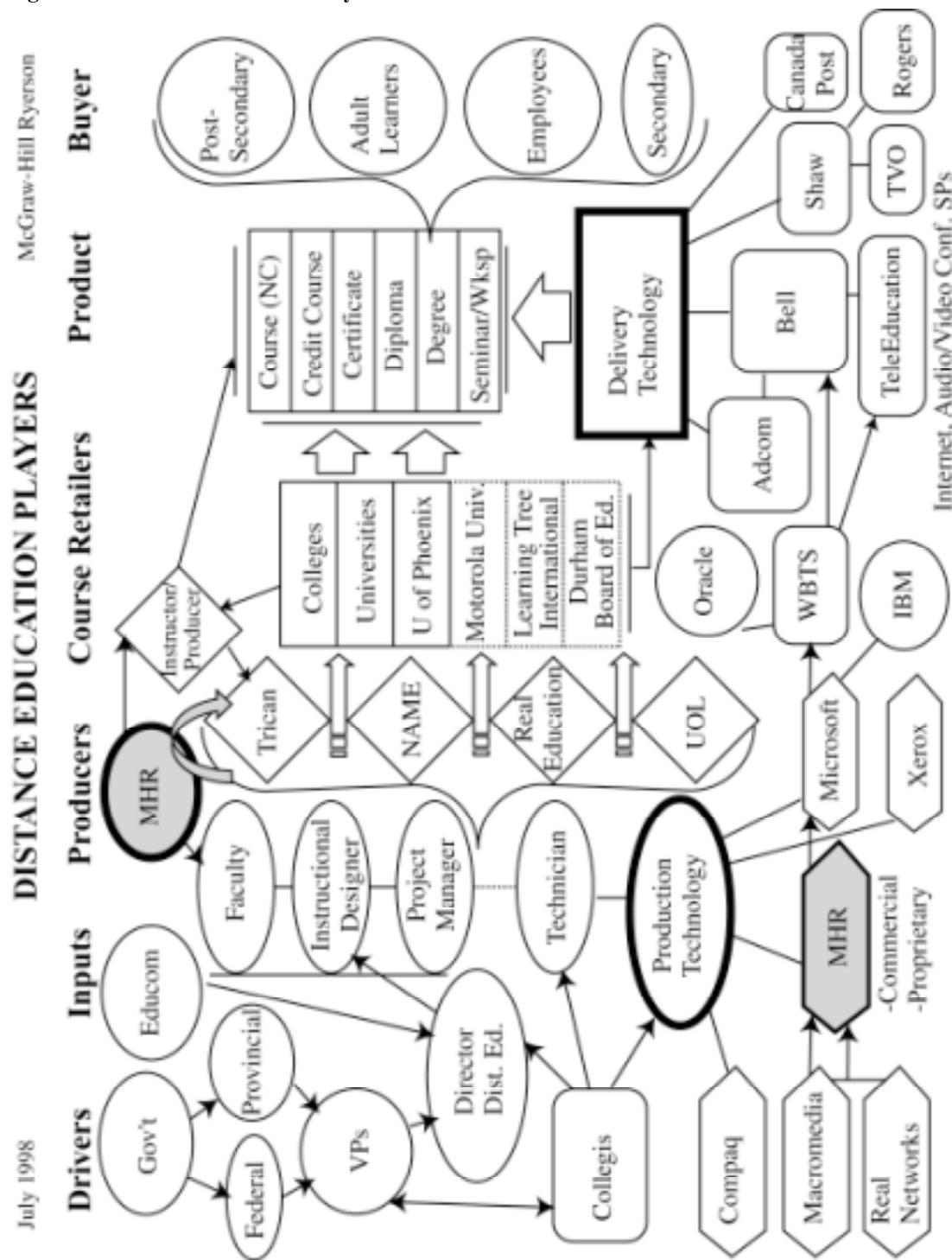
Source: Joe Saundercook, McGraw-Hill Ryerson, 1999

Figure 6—Distance-Education Process

Source: Joe Saundercook, McGraw-Hill Ryerson, 1999.

Appendix F — Value System Diagram

The *Drivers* define a need by articulating what is wanted or what is desired. They are looking for new ways to expand and create more effective teaching and learning materials. The major Drivers are the universities and colleges, who are at the centre of the educational process and span all three levels of delivery. The technical companies are also drivers; they have an interest in the industry and develop new systems as new ideas and technologies appear. This mirrors the usual pattern in the software industry, in which a developer releases newer versions over regular periods of time.

The *Content Producers* seek out the needs of the industry defined by the Drivers and work in partnership with authors to write textbooks and develop other course materials. Most educational publishers such as McGraw-Hill Ryerson are in this group, but the list is expanding as smaller companies are developing products for a more specialized clientele.

System describes the technology, usually software that manages the content. Course management software such as WebCT and Asymetrix ToolBook organize content into courses, which can then be accessible on-line. PageOut, WorldClass and Syllabus Builder are proprietary software similar to course management systems but owned by educational publishers.

Input describes those who, using the technology in System, are responsible for bringing content and technology together into a product or package for use in an educational program. They include individuals such as project managers and designers, and companies and organizations such as CANARIE and EDUCAUSE. Courses are often developed in partnership with Drivers, Course Retailers and Content Producers.

Course Retailers will also define need but also manage delivery of product. They may or may not be like Input, bring educational material into a learning form but may purchase

the products of the Input segment for distribution. Institutions may also be Course Retailers.

Delivery describes the means by which educational material is transmitted or communicated to the buyer/user. These include technologies such as CD-ROM, television or other technological hardware systems and the Internet, but also players such as Internet Service Providers (ISPs) or even the courier companies and the postal system. Where as System describes how the course materials are packaged, Delivery is how the course materials are transferred from Course Retailers to Buyers.

The *Buyers* are the purchasers of the final product. These players complete the circuit of demand and supply that flows between producer and consumer. The difference between Buyers and Drivers is often vague: the Drivers can also be the Buyers or even the Course Retailers, thus the circular pattern, which starts and ends with the same players.

Appendix G — Feature Comparison: Proprietary Course-Development Tools

Prentice Hall *Syllabus Builder*; **ITP** *WorldClass*; **McGraw-Hill** *PageOut*

	PH Syllabus Builder/Companion Web Sites	ITP WorldClass	MH PageOut
Question Types Supported			
True/False	Yes	Yes	Yes
Multiple Choice	Yes	Yes	Yes
Matching	Yes	Yes	
Labeling	Yes		
Pattern Matching - intelligent short answer	Yes		
Simple Short Answer	Yes	Yes	Yes
Algorithms		Yes	
Essay	Yes	Yes	
Multiple correct answers	No	Probably	No
Gradebook			
	None	Very sophisticated. Supports multiple classes using same tests. Tests presented on-line are uploaded from ITP's CBT engine to WorldClass. Results are downloaded to integrate with all other test results.	Simple. Supports any assignment. Results can be displayed as comma delimited file for input into spreadsheet programs.
CommunicationTools			
Discussion Tool	Integrated	Integrated	Third-party interface.
Chat System	Integrated?	Integrated	None
Net Meeting	Supported	Not supported	Not supported
Announcements		Yes	Course homepage is updateable
Email		Yes	
CMS Features			
Associating content to an assignment	Easy. Nice interface. Syllabus Builder presents instructors with a checklist of content available for a title.	Awkward. Webtutor supports instructors with a list of available content as URL links. WorldClass Course doesn't seem to have links to predefined material.	Not as easy or intuitive. Starting from the book site homepage, instructors use a small frame to navigate their way to a desired page within the OLC to indicate that the page should be added.
Can instructors add notes?	No?	Yes, limitless.	Yes, limitless.
Can instructors add media (sound, video, etc.)?	No	Yes, 10 - 15 MB.	No

Can instructors add questions?	No	Yes	No
Can instructors add links to other web materials?	No?	Yes	Yes
Can instructors design tests from available questions?	No	Yes	Yes, but they can't view questions. They can only select the number of questions to present from available questions for a given chapter and question style.
Customize look?	No	Somewhat, can add school logo.	Can choose template design. Cannot ad own graphics to design.
Can instructors customize test randomization?	No	Yes	Yes
Can instructors use question bank to produce option of study test, tutorial or exam?	No	Yes	No
Is testbank available for testing?	No	Yes	Yes
Other testing features		Import graphics. Algorithm questions.	
Multiple syllabi / Instructor ID	Yes		Yes
Help Features			
Email	Yes		Yes
Browser TuneUp - suggests upgrades, plug-ins	Yes		
Site Search	Yes		
Content Integration			
How closely is the content integrated into the system?	Highly integrated. Syllabus Builder and the supporting content are seamlessly bound together. Phlip sites used to be disintegrated but are now finding their way to a common site with the CWs.	Somewhat integrated. Instructor selects resources from a text list of available URLs and descriptions.	Not tightly integrated. Content has look and feel different from the PageOut's systems. OLC content is associated to the PageOut syllabus through URLs under the book site.
Content Commonly Provided			
Objectives	Yes	Yes	Yes
FAQ's		Yes	
Internet Exercises	Yes		Yes
Current Events	Cases added throughout the year. Cases are dated. 1-5 per chapter is common.		Few
Instructor Resources	Build into CW interface password protected.		Via web community.

Internet Resources	NetNews - suggested newsgroups. NetSearch - suggested search terms linked to search engine page results.	Annotated site listings	Site listings. Sometimes annotated, sometimes not.
Flashcards		Yes	
Discussion Topics		Yes	
Multiple Course per Instructor ID	Yes	Yes	Yes
Errata	Publicly accessible.		
On-line Tutor	Publicly accessible.		
Student Supplements	Integrated in CW.		Integrated into book site.
Common Content			
	Writing Centre Career Centre Internet Research Centre	Internet Research Tips Career advice	
Ease of Content Development			
Development Time Required	Low	High	High
	The companion web site engine provides authors with templates to add content directly to the system, much like the web communities currently do.	Content materials are HTML pages without any visible system enabling repurposing of the content.	OLC materials are built from scratch using Word documents as source. Content types are less rigidly defined. This enables us to accommodate more content variations, but the lack of input templates increases production development costs/time.

Source: Thom Hounsell, McGraw-Hill Ryerson, 29 July 1999.

Notes

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[1] I use the title "McGraw-Hill" when referring to McGraw-Hill Higher Education (MHHE), the United States-based educational publishing division of the McGraw-Hill Group of Companies. As it develops a new-media planning strategy, McGraw-Hill Ryerson is reassessing which responsibilities it will undertake in Canada and which will be managed by McGraw-Hill Higher Education. Thus, proprietary information on McGraw-Hill Ryerson's new-media strategy draws on resources from both the Canadian and American companies.

[2] "Multimedia convergence" describes the trend in which the products and services of entertainment, mass media, educational and many other industries in an increasingly more concentrated information- and knowledge-based world are converging towards digitization. The effects of multimedia convergence on education will have a significant impact on how educational publishers manage the development and marketing of educational products.

[3] "Go-to solution providing" refers to a one-stop location catering to the needs of customers. Providing a single location, or closely related series of locations, on the Internet that offer a range of products and services for students, instructors and other educational players is an opportunity for educational publishers to increase branding and customer loyalty. I discuss this subject further in Chapter 7.

[4] One of the objectives of my research was to use focus groups to survey students and instructors to determine optimum elements and capabilities of delivery systems. Because of the difficulty of undertaking this in the summer, I decided to use secondary sources for the bulk of my information. I feel this was a sensible decision for two reasons. One, there is a vast amount of very detailed information already available on the effects of information technology on institutions, instructors and students, much of it available on the Internet. Two, these secondary sources provide a broad range of ideas, opinions and theories from educational experts, which I would not likely have gathered through focus groups. Information from both experts and focus groups, of course, would have provided the most accurate picture.

[5] The e-book, or electronic book, is rapidly gathering interest from many quarters. The e-book is a small handheld computer or PDA (personal digital assistant) into which electronic files can be downloaded

and displayed as text on a screen. Some e-books can display one page at a time, and some copy a traditional book layout and display two facing pages at once. The main selling features of the e-book are its portability and its ability to store almost every textbook a student would need for a year. Other features include a built-in dictionary, highlighting, bookmarking and text searching. Eventually, e-books may be able to display the preformatted learning materials that educational publishers anticipate, further enhancing the portable delivery system.

Educational publishers anticipate that e-books will eventually replace printed texts, a development that would offer considerable savings in production and distribution costs. The e-book, however, also suffers from technological deficiencies similar to those of a computer—it is difficult to read, expensive to buy and short on available content. There is a potential for the e-book in the educational-publishing market because its content can be changed more quickly and cheaply than that of a printed book. Publishers are eager to explore the possibilities of the e-book, particularly if the market shows signs of following the model of the cellular phone industry, in which revenue is realized in the content, and the communications features and hardware are provided at a minimal cost to the consumer.

[6] Data in this section is based on "Feature Comparison: Proprietary Course Development Tools" by Thom Hounsell of McGraw-Hill Ryerson. See Appendix G.

[7] For further comparison of CMS tools, see Landonline, a detailed comparative analysis of course-management systems by Dr. Bruce Landon of Douglas College in New Westminster, B.C.: http://www.ctt.bc.ca/landon-line/.

[8] In 1999, ULT Universal Learning Technologies of Massachusetts purchased the rights to WebCT and subsequently renamed itself WebCT.

[9] Data based on information gathered by Andrew Lawrence during the summer of 1999. Some departments in universities may use two or more course-management systems.

[10] Differentiation is covered in greater detail in chapter 3.

[11] Data gathered by Thom Hounsell and Andrew Lawrence, McGraw-Hill Ryerson, 1999.

[12] Although on-line delivery systems have many advantages, they do not solve all problems. Electronic delivery can reduce production and distribution costs and development times for educational publishers, but it has yet to gather strong support among users as a satisfactory substitute to print, particularly as they weigh the balance between effectiveness and cost. The printed book is likely to remain the preferred method of information transmission for some time, and information technologies will continue to supplement traditional delivery systems. For this reason, the printed book is the still the core product of educational publishers, including McGraw-Hill Ryerson, and new-media technologies are developed around the printed book. The latter is a versatile delivery system, inexpensive for a reader compared to the cost of purchasing a computer, relatively inexpensive to produce, easily portable, quick to search and possessing no complex electronic parts that could break down. Its most important feature, however, is its readability.

The majority of people still prefer to read from a printed page for two reasons. First, the 72 pixels per inch resolution of computer monitors is low compared to the high quality of type that can be rendered in print. Second, computer monitors are a source of direct light, and direct light is difficult to look at for long periods. Reflected light, by which we read books, is much easier on the eyes. Until electronic-display systems such as the computer screen or on-line typography are improved to the point that they can compete with the book in terms of reading comfort, the printed page will remain the preferred medium for reading.

[13] On-line by Design was a 1999 forum on the use of instructional technologies in education sponsored by Seneca College and McGraw-Hill Ryerson.

[14] Data gathered by Thom Hounsell and Andrew Lawrence, McGraw-Hill Ryerson, 1999. See Appendix D for a list of book sites reviewed in this analysis.

[15] The MHLA is not being promoted, although current users continue to be supported.

[16] Some proponents of the use of information technologies in education even claim that experts themselves can be contacted directly by e-mail. In reality, the likelihood that experts have either the time or the inclination to respond to most question they might receive is slim at best.

[17] This value system diagram is based on two distance-education documents created in 1998 by Joe Saundercook of McGraw-Hill Ryerson. See Appendix E for original documents: Distance Education Players and Distance Education Process.

[18] Marion and Hacking (1997) have drawn parallels between the value circle and the Educational Object Economy (EOE) Foundation, which is funded by major businesses interested in on-line education. The goals of the EOE are similar to the goals of the value circle in that "The Value circle depends on components which can be re-aggregated and customized. It also depends on a community of partners who assume different roles in *re-agregation* [sic] and customization" (Marion & Hacking, 1997, para. 31). The objective of the EOE is to bring together educators, developers and business to explore the development of authoring tools that support on-line learning communities. As a tool of the educational publisher, the objective of the value system diagram is much broader and more competitive, in that it provides a map of the processes and players involved in the new-media education industry. The EOE would be a part of the value system diagram (see Figure 2).

[19] An education is more than just the transmission of knowledge but involves the transformation of the whole person (see Postman, 1995). Although the objectives of this paper are to examine the concrete issues to do with creating new-media educational products, an educational publisher should explore some of the more abstract notions surrounding the purpose of education. It is important to consider these abstract notions, if only as guiding beacons to help understand the relationships between users and products. Ultimately, a deeper understanding of the objectives of education provides a context for teaching and learning, a sense of purpose for students and a blueprint for educational publishers on how to design educational materials using the most appropriate technologies. Appendix A briefly covers some of the more abstract issues in education that might be of interest to educational publishers.

[20] The focus of this paper is information technologies in teaching and learning. For more on how information technologies and knowledge-management strategies can increase public accessibility to research knowledge, see the Public Knowledge Project at the University of British Columbia: http://www.educ.ubc.ca/faculty/ctg/pkp/public/about/what.html

[21] The complex questions and issues related to corporate funding for education are beyond the scope this paper. But the subject is unquestionably interesting. The increasing cost of education, coupled with relatively lower government support, means institutions almost certainly have to search for alternative sources of funding. Because institutions are often centres of research and development, business has interests that are usually more than simply benevolent. There is a danger that institutions may receive corporate funding less for educational reasons than for economic and business ones. Thus, the ethical problems of corporate funding for higher education are subject to continuing, and often heated, debate. David Noble, for example, in his series of essays called *Digital Diploma Mills*, takes a decidedly jaded look at corporate influence in centres of higher education. In a more literary manner, Lewis Lapham's essay "School Bells," in the August 2000 issue of *Harper's* magazine, offers a wry perspective on the state of education and the level of corporate influence in secondary schools in the United States.

[22] Some publishers are resorting to more traditional means to attract instructors: Wiley, for example, has a contest, open only to professors who use their textbook *Financial Accounting*, to win either a personal organizer or a selection of Wiley professional books.

[23] Anson's *Law of Contract*, published by Oxford University Press, is currently in its 27th edition.

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