

# Learning on the Web

*2002 Edition*

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## Rory's Dedication

This manual is dedicated to my uncle, Paddy McGreal, Owenwee, Westport, County Mayo, Ireland who passed away in December 1996.

- *Rory McGreal*

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## Michael's Dedication

This project has been a labor of love for me for the past 7 years. There was a time when the work I found by helping with this project was what put food on my table. Things have certainly changed in my life, in how we perceive the technology around us. Online education has changed just as much.

I want to thank those who encouraged me, helped me, taught me, directed me, gave me criticism, offered me insight, challenged me, and provided me with vision and humility.

And especially, to my late grandfather, C. Ross Elliott, who showed me that life long learning is a trip and that reading is the roadmap.

- *Michael Elliott*

## Introduction

Welcome to *Learning on the Web*. This guide has been developed by TeleEducation NB a province-wide distance learning network in New Brunswick, Canada and a world leader in distance education.

Students, teachers and instructors are learning how to use computers in their classes, and many are now turning to the World Wide Web and beginning to understand its potential for supporting new forms of learning.

The Internet is populated with good guides on using the Web, HTML and other features; one element that has been lacking has been a dedicated publication on the learner and the teacher, and how they interact and participate together on the Internet in an e-learning environment. Our guide, *Learning on the Web*, has been designed to assist teachers, students, distance education facilitators and educational resource developers in using the Internet to its full potential.

### Who will benefit from this guide?

We hope that this manual will help those involved in teaching and learning, from students to administrators, not only in New Brunswick, but wherever the Web reaches, to begin to understand the potential of the Internet as a teaching resource and a teaching medium and to prepare to adapt and develop their courses for delivery using the Web. *Learning on the Web* is a free self-study guide written by educators for educators. Students interested in migrating from traditional, location-specific instruction to the new and exciting world of online learning can also benefit from this guide.

### TO BEGIN

You can use this guide in the traditional linear fashion, or choose the modules that appeal to you the most. Module 3 (*Effective Online Teaching*) and Module 4 (*Designing an Online Course*) can also be accessed online.

**The original authors of *Learning on the Web*, Michael Elliott and Rory McGreal, thank you for your interest and invite you to draw from the Web's resources to enrich your teaching or learning experience. Become absorbed in reading this guide or benefit from taking the online modules. We also invite you to view our Webliography and our recommended additional links.**

**The 2002 version was made possible due to a collaboration between TeleEducation NB and its partners. During the initial phase of the renewal project, the University of New Brunswick and l'Université de Moncton have taken responsibility for adapting Modules 3 and 4 respectively to their e-learning environments. (As resources become available, other modules may be made available in an online format.)**

**We hope that this guide is useful to you, your colleagues and your students. You can submit your comments or access the online modules by contacting us at <[question@teleeducation.nb.ca](mailto:question@teleeducation.nb.ca)>.**

## Module 1: Welcome to the Web

Module One offers a general introduction to the Internet and the World Wide Web. This section is a useful start for everyone, both beginners and advanced Web Surfers.

### The Fourth Global Medium

me·di·um (mĕdĭ-ŭm)

*n., pl.* me·di·a (-dĭ-ə) or me·di·ums. **Abbr.** med., m., M.

1. *pl.* **media.**
  - a. A means of mass communication, such as newspapers, magazines, radio, or television.
  - b. **media.** (*used with a sing. or pl. verb*) The group of journalists and others who constitute the communications industry and profession.

Print, Radio and Television... the three forms of media that are used around the world, in all walks of life. But the appearance and widespread acceptance of these technologies definitely did not happen overnight. Print required that a user be able to read, and the concept of literacy took hundreds of years to become globally accepted. Radio took decades to permeate everyday society due to the need, on the part of the consumer, to purchase a radio. Television took less time, because the infrastructure was in place with radio.

It has taken the medium of the Internet only a few years to become an inseparable aspect of our lives. It seems hard to imagine how, less than 10 years ago, the Web was a "new" technology, rarely used in schools, businesses, or homes. Many of us could probably remember the first Web site we ever saw as if it were yesterday.

Unlike its predecessors in media, the Web forces us to think in non-linear fashions. Linear thinking is the process of carrying one thought from beginning to end, much like reading a book or listening to a radio broadcast. Non-linear, or Web-like thinking, allows us to think in several different directions at once, or in sequence, like the rings in a spider's web. It is no coincidence that the World Wide *Web* is so named.

The Internet, and specifically the World Wide Web has been likened to the circular snake of mythology, eating its own tail. In a similar vein, the Web is swallowing up other forms of global media. Newspapers, textbooks and novels are being published in electronic formats; radio stations and rock concerts are now "broadcasting" through cyberspace, and Internet-based long distance calling and video broadcasting is becoming a reality. Our computers will soon become our telephones, radios, televisions... our complete communications and entertainment centers. And the Internet is the catalyst.

Recommended Link:

The Ouroboros  
<http://www.dragon.org/chris/ouroboros.html>

## Opportunities for Educators and Students

The Internet offers an incredible number of opportunities for the educator. Classrooms of students can communicate with students in locations across town, across the country or around the world, giving the teacher the opportunity to discuss different cultures, languages or even time zones. In a time when school budgets are being cut, libraries are shrinking, and more information is being squeezed in existing curricula, the Internet provides a wonderful resource for communication and exploration.

On the student's side of things, the "Internet Generation" has embraced the technology. The relative simplicity in creating a personal Web page has encouraged students, teachers and parents alike to re-discover writing and publishing. With a global audience of a third of a billion people, students take increased pride in their work and the material they write for their Web page is often also reflected in increased success in the classroom.

The Web offers research capabilities for students and an expansive resource for teachers. Simulations and video demonstrations of the Water Cycle, Pollution models or wind tunnel experiments can take a science class to another level of interest and participation; links to news articles on the environment or global warming can then take on additional meaning, when cited in this context. Teachers can organize a field trip into an active volcano, plan a tour the International Space Station, or dissect a frog without the need of permission slips. All the information you could ever read is a point-and-click away.

**Take a voyage into an active volcano, tour the International Space Station, or dissect a frog without the need of permission slips.**

From research to publishing class poetry, to math contests to riding inside a virtual space ship, the opportunities for education on the Web are practically unlimited. And for students trying to decide what to do after high school graduation, nearly all universities and colleges now have Web sites which outline program and degree options, areas of study, course descriptions or virtual reality tours of their campus. Interested students can order calendars in print, CD-ROM or online format and apply online.

An increasing number of colleges and universities offer courses and programs of study completely online. Later in Learning on the Web, we will look at a sample of the different kinds of courses that are offered online and the diverse melding of media used in online and distance delivery of courses.

As a student or educator who will undoubtedly be required to use the Internet as a teaching or learning tool, it is essential that you understand some of the basics of connectivity and how the Internet works. Let's have a look at that now.

Recommended Links:

Encarta: Volcanoes

<http://encarta.msn.com/find/Concise.asp?ti=048EC000>

International Space Station

<http://spaceflight.nasa.gov/station/>

Prospective Students' Page – University of Phoenix  
<http://www.phoenix.edu/students/index.html>

Class Poetry Published Online  
<http://www.sd68.bc.ca/coal/peace.htm>

Campus Scenes – Online College Photo Collage  
<http://www.mcgill.ca/photos/>

Applying Online: Tips  
<http://www.wvwc.edu/adm/tipsapply.htm>

## Buckle Up and Hit the Highway

It seems you can't pick up a newspaper or magazine or tune in to a radio or TV program without hearing something about the Information Highway, the Internet, e-mail, or the World Wide Web. But what do these terms mean? Are they synonymous?

The Internet includes all of the above, and more. The term *Internet* refers to not only the physical infrastructure of interconnected computers capable of transporting data in the form of text, messages, graphics and voice, but also the data being transported or stored on these mechanisms. It is a global network, or Web, of optical fibres, wireless connectors and massive thick trunks of cables and wires that link your computer to servers and other computers that in turn are connected by cables and wires to still more servers. It is often referred to as an Information Superhighway because if we were to visualize the cables, wires and fibre as they traverse the planet, it might, indeed, resemble a superhighway.

Like the "physical" highway system, the "virtual" highway has both freeways and toll highways. Some information is free while users are required to pay for other types of information. Much of the Web is still *free*, but free resources are slowly giving way to pay-per-view or pay-per-use sites and resources. Other kinds of resources are supported by advertising, and are free to users, much like a billboard on the side of a highway is an unobtrusive, passive form of advertising.

You don't need a license to drive down the Information Highway\*. All you need is a computer with a modem or direct Internet connection and some software. Of all the software you will need, the most important is an application called a Web browser. If the Internet is seen as the highway, the browser is your *Sport Utility Vehicle*. Web browsers make exploring and learning on the Web easy, practical and fun.

\* Or do you?

European Computer Driving Licence  
<http://www.ecdl.co.uk/>



## Traffic Jam?

How many users are on the Internet?

As more powerful multimedia computers become affordable and more commonplace in Canadian homes and as domestic access to higher speed connections become available outside urban centers, more users are accessing the Internet and beginning to explore the wonders that await.

Depending on which survey you read or Internet Stats site you visit, between 250 and 500 million people are "connected." No one really knows how many Internet users there are. There is no central Internet headquarters where numbers and connections are counted and statistics compiled.

Can each user stand up and be counted? In a sense, yes. Every computer hooked up to the Internet has an **IP address**, a numbered code assigned by an Internet provider. This number acts as the connected computer's identification. The IP address is that computer's unique identifier, like a fingerprint. No two computers can use the same IP address.

However, there has been a recent trend to move away from static IP addresses for home users; Internet Service Providers (the company providing you access to the Internet at home, school or work) now manage large blocks of IP addresses, and assign them to users on an as-needed basis. Each time a user connects to the Internet, his or her IP could be different in this scenario. What's more, counting Internet usage based on IP address or by computer is not necessarily counting each individual user. If a family of four shares one computer, only one "connection" would be counted in the scenario we present above.

So, is there any other way to be a unique Internet user? The only way to be truly unique on the Internet is through your email address. No one else has one like it, or else someone else might be reading your email right now!

## If at first you don't succeed

The Web can be a daunting, frustrating place at first, especially when you can't find what you are looking for. Search Engines are research tools that make the gargantuan collection of information on the web manageable. Where did search engines come from?

The Web experienced a modest to encouraging rate of growth in 1993 and 1994, forcing a number of programmers to invent an indexing and searching tool to allow the average user to search for and find the information she wanted. Called *robots* or *spiders*, these tools would wander the Web, following links, looking for new information, which would be stored in a searchable database. As the Web grew, so too did the number of tools available to search it.

To search for a Web site using one of these search engines, a user simply types a search word or two in some kind of "Search" Box. In no time at all (which can range from a few seconds to a minute or two, depending on the time of day, and on other variables), the user is rewarded with a list of Web sites to try - usually listed or rated by quality or popularity, and hyperlinked. Search tools can locate and retrieve anything written in HTML (Web sites), as well as press releases and online newspapers, Usenet articles and other online text.

Search Tools have, in recent years, adopted impressive Artificial Intelligence characteristics that allow complete sentence searches, such as "How much rain falls in Alberta each year?" or "How many pints in a liter?" By humanizing the sometimes confusing and frustrating search process, these intelligent tools have made the Web easier to navigate for new and experienced users alike.

Since each indexer has different parameters and recommendations for a successful search, we recommend that you read the help file or search tips located on the home page of each search tool.

### Recommended Links:

Ask Jeeves  
<http://www.ask.com>

Altavista.com  
<http://www.altavista.com>

Yahoo!  
<http://www.yahoo.com> or <http://www.yahoo.ca>

Mamma – The Mother of all Search Engines  
<http://www.mamma.com/mammapower.html>

## Starting Points for Teachers

As a teacher or administrator, are you wondering where to start in order to take advantage of all that the Internet has to offer? Since you are reading *Learning on the Web*, then you've already made a good first step.

You can begin by narrowing your search to specific information. Are you looking for lesson plans? Chat rooms for instructors? Grade book software? How about upcoming conferences in your area of study. A quick brainstorming session with your peers or class will undoubtedly lead to a long list of "most important topics." Once you have narrowed your ideas to a list of the more important topics, initiate a web search and bookmark everything that looks interesting or useful. When you are done your search, go back and spend time with each of the resources you have located.

Another way to approach the search is by following the logical steps one would take to CREATE the information. By putting yourself in the shoes of another teacher, for example, imagine the process of writing, editing and posting the content on the Internet. What titles would you use? Would you classify the information by grade level or by subject? Once you have an idea of how you would put your own information online, reverse that process and being your search.

But above all else, remember that the staff room or faculty lounge is a great starting point. Chances are that there are many other teachers or instructors also struggling with the concept of the Internet as a teaching tool.

## **Module 1 - Summary**

The World Wide Web has been considered by many as the fourth global medium, joining print, radio, and television. Indeed, it has surpassed all other forms of media in terms of its speed in reaching a critical number of households worldwide. The Web offers immeasurable opportunities for educators. From research to lesson plan concepts and teaching strategies to electronic pen pals for students, the Internet is the Ultimate Teacher's Aide.

With its seemingly endless paths and trails to knowledge, it is understandably easy to get lost. Fortunately for all of us, help is always right around the corner.

## Module 2: Learning in Cyberspace

Module 2 offers several examples and learning scenarios in which key elements of how the Web can be used as a learning environment are emphasized. The section assumes that you are able to log on to the Web and have already spent a few hours "surfing." You should now be familiar with a variety of Web Sites and search tools.

### To Boldly Learn How No One Has Learned Before

Since the dawn of the computer age, a continuing science fiction theme has been the overthrow of humanity by computers. Computer factory workers, robo-cops. And now computer teachers? The future is already here. Are we entering a brave new world of distance education? Perhaps, although it is not as far-fetched as it may seem.

Can a seamless and truly effective distance-learning scenario, such as the one we have pictured, be realized with current technology and instructional design techniques?

Internet-based long distance calls are a reality today. Web-based and web-enabled customer support and service Web sites are being used to supplement call center services, and remote administration of computers is commonplace. More than a third of all North American homes have a computer and most of these are multimedia capable and equipped with a modem or ethernet card. Over 40% of Canadian homes have Internet-ready computers, and an increasing number of areas have high-speed Internet access. That means that students in more than one in ten homes can already be "surfing" the Web, playing online video games with opponents around the globe, hanging out in a virtual chat room, or using these technologies to learn and further their educations.

Recommended Links:

Remote Computer Administration: PC Anywhere

<http://enterprisesecurity.symantec.com/products/products.cfm?productID=2>

High Speed@Home

[http://www.shaw.ca/products\\_services/internet/index.html](http://www.shaw.ca/products_services/internet/index.html)

Online Game Play: Gamespy

<http://www.gamespyarcade.com/download/>

## How new opportunities affect teaching and learning

Jim Carroll, best-selling author of *The Canadian Internet Handbook* and several other books on the topic wrote, in an article entitled "*Wired for Learning...Why teachers must harness the power of the Internet,*"

### Picture this...

**Anyone introduced to the Internet today soon encounters an all too common sensation - one of being overwhelmed by the sheer volume of information available. There is a sense that it is too big, too massive - and that it is impossible to master.**

**Our youth struggle with a feeling of being overwhelmed on a daily basis - whether when first encountering algebraic equations or when asked to undertake a particularly complicated political science or geography project. One role of an educator is to help the students cope, to help them to learn how to overcome their feelings of inadequacy and concern in order that they can plow ahead and master the subject at hand. The Internet invokes the same type of feelings, even for those who are Internet veterans."**

The World Wide Web is opening up opportunities for business, opportunities for research, opportunities for "browsing" through enormous amounts of information, and most importantly to us, opportunities to enhance how we teach and learn.

Many educators and institutions are realizing the reality of the new face of distance education and are building course material for adults like Mary who want to further their education without disrupting a regular work schedule. Similarly, rural and remote schools are now using Web-based education to allow students to take courses -- for credit -- that they would not otherwise have access to.

In the past, distance-education students and teachers relied on print-based correspondence courses (with maybe a video or audio cassette thrown in). Telephone tutors were available at restricted hours, and many times if the tutor had a large "class" load, he or she was difficult to reach. Feedback to questions and grading of assignments could take weeks or months. There was little synchronous contact or immediacy.

In contrast, learning on the Web can be immediate. Mary, fortunately, was able to contact her tutor right away. If Trevor hadn't been available, then perhaps another tutor would have been. If not, then Mary would have been able to leave an e-mail message, either writing out her questions, or leaving the message that she needed to talk to a real live tutor at one's earliest convenience. The Web can be used either as a teaching tool all on its own, as in Mary's case, or used as a supplement to other forms of instruction.

Recommended Links:

The Canadian Internet Handbook Home  
<http://handbook.com/>

Tutors.com: Real Tutors, Real Results  
<http://www.tutor.com/>

## Elements of the Web

What makes the Internet the ultimate teaching and learning tool? The Internet possesses several key characteristics that together lend themselves to an environment that is conducive to education. While traditional classroom education will never be phased out, the advantages that computer-based training and the dynamic aspect of the Internet make non-traditional learning a very attractive prospect.

Employers today are increasingly demanding that their workers possess a new skillset, not so much the ability to memorize facts, but rather the ability to learn new methods, new programs, and new skills. The new kind of self-learning fostered on the Web can support and supplement a student's ability to learn.

What makes the Web such an exciting learning environment? It is an:

- open;
- distributed;
- dynamic;
- globally accessible;
- filtered;
- interactive;
- archival environment.

## The Web is Open

No one owns the Web. Based on globally accepted-protocols and standards, it is open to anyone who has the tools. Ten years ago, the Web was supported on only a few operation systems or platforms. Today, virtually all operating systems and computer platforms are Web-compatible, and some of the newer and most exciting developments, such as wireless access and palm-top computing, have been born out of the sharing, multi-user environment that the Web fosters.

With this global acceptance and adherence to common standards, it is easy for the educator to write material and Web pages, which can be accessed throughout the world on all kinds of computers with similar results. The Web is also flexible. The Web is also open to integration with other media. Video and audio clips are available on the Web, though the time it takes to download some of these images has, until recently, been a hindrance to their widespread use. As bandwidth becomes wider (i.e., as faster connections can be made more easily and from more locations) and modems become faster this will improve.

However, the very openness of the Web itself can be intimidating. Which course do you take? There are over 50,000 online courses currently available, and many hundreds of thousands more that are a combination of online, correspondence and classroom-based training. How do you know that the one you've signed up for is any good? With the Web as unregulated as it is at present, it can be difficult to gauge the quality of an online course or online school.

Our own database of online course listings is a great place to start. You can find it here:

<http://courses.telecampus.edu/>



## The Web is Distributed

No single computer could possibly hold all of the material now available on the Web. The **net** in Internet or **web** in World Wide Web suggests a widespread, distributed system; graphics, text files, articles, archives and documents are spread over network servers all over the planet. This is what distributed means-- no central point of control. Data is regularly duplicated on servers and networks in different continents to allow local users faster access to popular software, news articles, etc.

The open architecture of the Web lends itself to learning in that collaboration can take place among students who suffer from geographical separation.

It doesn't matter where you are; you have access to the same information that anyone else has. So, although thousands of kilometres, culture and country separated Marie-France and Kim, they could collaborate on a project together by accessing the plethora of online information sources and, from two geographically distant positions, work together on one shared project.

To some, the absence of centralized control means that the Web may seem out of control. Some instructors react negatively to an environment they can't control. Students accustomed to the dominant role of the teacher will also have to adjust their thinking to taking a more active part in their own learning.

## The Web Is Dynamic

The Web is changing all the time. It is the most fluid medium in the history of recorded information. Thousands of new Web sites come online daily; at the same time, other Web sites move locations, change Internet addresses, and change their "look and feel." News reports, weather and sports are updated to the second... the Web is a constant state of change.

The implications for educators wishing to begin to put their work online are clear: the constant desire or necessity to change and update sites can erode much of the time dedicated for ongoing development of new ideas and resources. Classroom instruction preparation can interfere with the design, maintenance or facilitation of an online course. A system of checks and balances is necessary to not only foster further development, but also update and maintain what has been created.

How can educators keep on top of new information? Many web sites offer email bulletins of new stories, articles, products and services. These newsletters take much of the work out of tracking updates to favourite sites, columns or authors. Free online services are also available to users who wish to track changes and updates to one or a number of web sites.

Recommended Links:

News, News and More News

<http://www.cnn.com>

<http://www.cbc.ca/news/>

<http://www.msn.com>

<http://news.bbc.co.uk/>

<http://www.theweathernetwork.com>

## The Web Is Globally Accessible

A few years ago, the Web was only accessible by power users at home and folks lucky enough to have a network at their school or office. Those who could access the Web had to contend with clunky graphics and roughly formatted text. The first generation of Web pages was not what one would call a Renaissance - HTML pages in the infancy of the Web were not pretty...

Furthermore, access to the Internet did not necessarily automatically grant access to the World Wide Web. Some countries simply did not have the infrastructure or cabling networks to support and sustain the kind of increased traffic (additional strain on existing phone lines and data transmissions) that the explosion of the Web caused in North America and Western Europe. Schools and businesses often installed firewalls to block certain kinds of data from being received on computers in their networks.

However, these issues are, for the most part, a part of our past. Entrepreneurs and governments in countries and regions of all sizes are coming to the same conclusions about the power and effectiveness of the Web to teach. As a global medium, the Internet and Web are now available virtually everywhere... from a cybercafe in Northern Norway to hospital waiting rooms to our homes and classrooms.

Former New Brunswick Premier Frank McKenna, in an open letter to McGill University, shared his view of how technology was opening up the world:

**"Some years ago, we recognized how technology could help a small province like ours, in so many different ways. For example, the beauty of technology is that it helps you conduct business no matter where you live -- McLuhan's global village is truly here. So, thanks to our ability to provide high-speed telecommunications links, we have been successful, in a modest way ...**

**The point is, you don't have to turn villages into towns -- or towns into big cities -- in order to be part of the high-tech age. You can continue to enjoy the quality of life of rural Canada, and yet still have the world -- literally -- at your fingertips. Thanks to technology, people in rural areas of Canada can also share in the wonderful resources to be found in urban centres. But it's a two-way street. Coming from one of the most rural provinces in all of Canada, I feel very strongly that rural Canadians have a lot to offer -- and to share with -- their urban friends. And technology allows us to do that."**

Recommended Links:

Connectivity By Country

[http://cyberatlas.internet.com/big\\_picture/geographics/article/0,,5911\\_558061,00.html#table](http://cyberatlas.internet.com/big_picture/geographics/article/0,,5911_558061,00.html#table)

Find Frank

[http://www.findarticles.com/cf\\_dls/m0CGC/12\\_26/62689178/p1/article.jhtml](http://www.findarticles.com/cf_dls/m0CGC/12_26/62689178/p1/article.jhtml)

## The Web Is Filtered

Studying, communication, and interaction of all kinds over the Web is filtered by the medium. Socio-economic, gender and geographical barriers do not pass through this filter - anonymous, direct communication does. Online students are hidden behind electronic "screens" and can remain somewhat anonymous. Students are judged solely by their submitted work and their participation in online discussion forums, not by how they look, what they wear, or which god they pray to.

This "anonymity filter" has proven to have a positive effect on shy students, who are more likely to respond in class discussions and debates when they have the time to think beforehand. Also, students whose first language is not the language of the class have the time to compose answers they feel good about. The filter is especially beneficial for rural students and for the disabled.

Humans are social creatures, and for some, a faceless, computer-mediated form of learning experience can be difficult. Something is definitely missing when written communication is the only communication one has. Much of how we know people is by the subtle nuances of body language, vocal inflection and expression. Sometimes this incomplete communication can lead to flaming that is an angry retort to something that a user considered offensive. It is quite easy to interpret online messages the wrong way and become confused, misled or offended. Usually no offence is meant and this would be evident if the other bodily expression and verbal clues were there. Many people insert smileys or in the text to alleviate some of the ambiguity of text-only communications. Smileys, or "Emoticons" are combinations of ASCII characters that represent a facial expression: e.g. :-) indicates a happy thought or joke, :-( is often used to portray displeasure or sadness, while :-o could indicate surprise or shock. Individuals have also created a language of acronyms to aid in speeding up electronic communications by reducing the amount of typing necessary to convey a point.

Smileys, flames, FYI, IMHO, TTYL.... These terms and acronyms have emerged from the day-to-day conversations of Internet users, hidden behind their screens and keyboards, living and conversing in a filtered environment.

Recommended Link:

Smileys and Emoticons  
<http://www.emoticon.com/>

## **The Web Is Interactive**

The hypermedia environment of the World Wide Web also supports interactivity. Navigating through the screens of an interesting, colorful Web site maintains students' interest and can keep their brains active. Constructive learning environments can be created in which the students actively collaborate with the teacher and other students in the building of Web pages and shaping of their online environment. Students can see other students' work and profit from their inspiration and understanding. Using conferencing, e-mail and other Internet features, students can also comment on each other's creations and discuss variations and other possibilities. They can also participate in group discussions, and have ongoing conversations with the teacher and individual students.

Software tools are available which allow teachers to scribble, point, annotate and make brief notes on student compositions (as in an essay marked on paper), where otherwise long wordy explanations would be needed for each point. These tools are being incorporated into audio and video conferencing software even today, and will be commonplace within the year. Interactive, constructive criticism in context is a valuable tool in overcoming distance delivery issues.

## The Web is Archival

The World Wide Web is a giant library of facts and knowledge. Every day, it gets larger as more data is recorded, stored and archived for future use. The media used to store data electronically makes the Web both cost-and time-effective. Permanent records of Web course materials and online interactive sessions are stored and then made available for scholarly research or for online use in future classes. Program evaluators to show the extent of student and teacher participation can use these records. Student discussion records, groups and project work and commentaries can be used to add to the content of the course.

With the increasing number of computer users "going online" and the obvious increase in storage and archival capacity associated with these new additions, information and stored data which might not otherwise have been made available to users is now as easy to retrieve as any other document.

Mailing list archives, online conference notes, lecture summaries, qualitative and quantitative study analyses and research on innumerable topics is being saved for the world to use. This trend will undoubtedly continue and grow in scope as the cost of large storage devices and handy consumer devices such as recordable CD-ROM, re-writable CD-ROM and recordable DVD drives increase in popularity.

### Recommended Links:

Archived: Student Records  
<http://www.records.ume.maine.edu/>

Archived Mailing Lists  
<http://tile.net/lists/>

National Geographic Society  
<http://www.nationalgeographic.com/siteindex/index.html#magazines>

History.org  
<http://www.history.org/History/index.cfm>

## **Module 2 - Summary**

The Face of Education as we know it is changing, and rapidly. The Internet has made learning -- and teaching -- something barely reminiscent of our parents', or our own, learning experiences. Is the Internet as a passing fancy, a trend bound to disappear, or is it here to stay? Online resources abound, and each can contribute to a teaching or learning environment in its own way. Mailing lists, Usenet newsgroups, conferencing systems, teleconferencing, databases, electronic journals, and other tools, with new ones appearing almost daily, add to the recipe.

The distributed nature of the Web makes ownership and control of knowledge virtually impossible, allowing the masses to master their own destiny, in a sense. Like shiny stones in the surf, elements of the Web are constantly changing, moving, being relocated. If nothing else, the Web is and will continue to be dynamic. While it archives the past, it also gives us a glimpse into the future, as beta-tests, try-outs and experimental elements allow us to experience tomorrow's technology today.

## Module 3: Effective Online Teaching<sup>1</sup>

As mentioned in the guide's Introduction, you may wish to take this module online. Since this version was developed using a licenced platform, a password is required to access it. If you are interested please contact us at <[question@teleeducation.nb.ca](mailto:question@teleeducation.nb.ca)>.

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In Module 3 we will examine how to teach effectively in an online format. We will discuss the basic principles for effective online teaching, how to build an online community, how to encourage collaborative learning, and lastly discuss the two types of evaluations and assessments.

You will also be asked to create your own mock online course syllabus. Using this syllabus you will apply the principles presented in this module.

### Objectives

After successfully completing this module you will be able to:

- Explain the importance of establishing clear outcomes and objectives.
- Explain the importance of creating an effective online course and identify what materials and information should be included in an excellent site.
- Describe at least five learner characteristics that online students should cultivate in order to increase their chances of success and explain how these characteristics contribute to success.
- Be able to identify the seven principles of effective online teaching.
- Define community and discuss the essential elements needed to create a successful online community.
- Identify ethical and privacy issues that should be considered in order to create a safe learning environment.
- Identify some differences between an instructor and facilitator.
- Describe what the instructor's responsibilities should be to ensure the building of an online community.
- Describe what the facilitator's responsibilities should be to ensure the building of an online community.
- Describe how the learners are responsible for ensuring a successful online community.
- Summarize the different discussion formats and their uses.

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<sup>1</sup> This module was developed in partnership by TeleEducation NB and University of New Brunswick's College of Extended Learning.



- Identify at least five discussion strategies that help build learner confidence.
- Define collaborative learning and assess its importance in a successful online course.
- Define transformative learning and assess its importance in a successful online course.
- Define the two types of evaluations, formative and summative, and give examples of their use in an online course.
- Describe possible strategies for evaluating collaborative projects.

## An Overview of Online Teaching

Online courses, like traditional courses, require planning and forethought. As the instructor, you must have a clear goal as to what you want your students to achieve as they proceed through your course. However, when creating your syllabus, you will want to allow some flexibility so your students will be able to pursue ideas and questions as they emerge through the online discussions and interactions with the material. As a result, keep your goals and objectives broad enough to allow for student exploration, but clear enough to prevent straying too far off topic.

There are several questions you need to ask yourself when building an effective online course:

- What are the learning outcomes you wish to accomplish?
- Is there any external criterion that must be met, as dictated by your school (disclaimers, office hours, contact number, etc.)?
- What guidelines, roles or rules do you wish to establish for your discussions?
- How will you address such things as attendance, participation, completion of assignments, etc?
- How will you organize the course site? What will you include online, and what will be assigned as additional readings?
- How will you assess your students?



**Source:** Palloff, R. and Pratt, R. (1999). *Building Learning Communities in Cyberspace*, p.109

Students need to be aware of exactly what is expected from them in an online course. If your expectations are clearly outlined at the beginning of the course, students are much more likely to succeed.

When building your site for the course, there are several things that you may wish to add to ensure successful student interaction:

- A welcome area where important announcements or questions can be displayed. This section will also provide links to the other sections of the online classroom.
- The content area, where the learner can access the actual course material.
- A schedule of the course, with important dates and deadlines. This could be a modified version of the course syllabus.

- A section where students can post online discussions related to the learning assignments and materials. You may also wish to consider an additional section for the posting of assignments.

While there may be other sections you wish to add, try not to clutter your site with too many links and sections. A simple layout will prevent student confusion. In addition to simplicity, there are many other principles that will assist you in creating an effective online course.

## Seven Principles of Effective Online Teaching

Based on the seven principles of effective teaching established in 1987, the online community has established its own seven principles of effective teaching for an online course. If you apply these principles, you will have a better chance of facilitating a successful online course.

### **Principle 1: Good Practice Encourages Student-Faculty Contact**

Communication between instructor and students is essential for a successful online course. However, it is easy to become overwhelmed with the various emails and phone calls that can result. First, clearly establish your preferred means of communication with your students. If there is a separate contact person for technical questions (computer issues), make sure that the students have that information and use it appropriately. Second, set a clear timeline for responses and stick to it. For example, "I will make every effort to respond to emails within two days of receiving them", or "I will answer your questions every Tuesday through email".

### **Principle 2: Good Practice Encourages Cooperation Among Students**

Students should be required to participate in online discussions. A portion of their final mark should be based on this participation. As a result, students should receive feedback from you on their discussions within the course. Try to limit the size of the discussion groups that you establish, and keep the discussions focused with clear goals. Any tasks and assignments must engage the learners with the content, and result in a product.

### **Principle 3: Good Practice Encourages Active Learning**

Students should present their assignments online. This will allow for discussion and development of their thoughts and ideas with other students in the course, as well as with the instructor.

### **Principle 4: Good Practice Gives Prompt Feedback**

There are two types of feedback, information feedback and acknowledgement feedback. Information feedback provides answers to questions, evaluations, assignment grades and comments. Acknowledgement feedback confirms that an event has occurred. For example, you send an email stating that you have received an assignment or question. Any feedback, however, should be prompt. This can become increasingly difficult as the course progresses and you become busier. You can still give prompt feedback by addressing the class as whole, rather than individual students. This lets the students know that you are still active, but prevents you from becoming overwhelmed by responses.

### **Principle 5: Good Practice Emphasizes Time on Task**

Providing students with several set deadlines encourages regular interaction between students and instructors, and helps students to remain focused on the goals of the course.

### **Principle 6: Good Practice Communicates High Expectations**

High expectations of student performance are essential for the success of students in online courses. One way of communicating these high expectations is to provide examples or models for students to follow. In addition, it can be helpful to provide students with examples of what not to do. It is also helpful to publicly praise those

students who have achieved your high expectations. This will assist the other students by calling attention to well thought out postings or assignments.

**Principle 7: Good Practice Respects Diverse Talents and Ways of Learning**

By allowing students some flexibility within an assignment, it will encourage their own unique point of view to emerge. This will help enrich the learning experience of all students.

**Source:** Graham, C., Cagiltay, K., Lim, B., Craner, J., and Duffy, T. (2001). *Seven Principles of Effective Teaching: A Practical Lens for Evaluating Online Courses*.

**Assessment 1**

Create a syllabus for a course of your own, keeping in mind the principles for effective teaching. The course could be anything of interest, and does not need to be of great length. Reflect upon your own experience with online courses, and consider the following when creating your syllabus:

1. How would you begin to set up your own online course?
2. What would your welcome area look like?
3. What principles for effective teaching are the most important and how would you incorporate them into your own course?
4. How would you encourage active learning in your course?

## **Building an Online Learning Community**

Having a well laid out and carefully planned web site is only the first step to an effective online course. If your students feel that they are a part of a learning community, they are more likely to succeed in your course. Online communities are relatively new phenomena in the education field. Online students develop their own personalities and voices when participating in their course. There are several factors that must be present in order for an online community to develop:

- The ability to carry on a dialogue with others to generate ideas and responses.
- The ability for the community to have a certain degree of privacy.
- The ability for emotional issues to be dealt with in an online format.
- The ability to create an online presence through online communications

Successful online courses are those that create a feeling of community. These communities allow students to feel at ease, and give them voice to explore their thoughts with others online. When a person feels at ease, it becomes easier to communicate, and in turn to learn.

### **Ethics**

Part of feeling safe in an online environment deals with the sharing of personal thoughts, feelings, and ideas. With such revelations come questions of ethics and ethical behavior online. Students should have the reasonable expectation of "safety" from sexual harassment, threats, or any other inappropriate use of the medium. If any inappropriate behavior arises, the instructor must deal with it quickly or else risk losing the trust of the students.

### **Privacy**

While passwords and user identifications give us the illusion of privacy, this is not always the case. It is easy for outsiders or "peeping Toms" to gain access to the online discussions. Both students and instructors alike should be aware of this possibility, and establish what is acceptable information to share with the class online.

### **Instructor's Role Online**

In an online classroom, the traditional role of the instructor shifts to one of facilitator. A facilitator acts as a guide within the construct of the course material. This is not done through lectures, but by the facilitator providing topics of discussion, stimulating materials and engaging assignments. It is also important for the facilitator to make constructive comments and pose open-ended questions to generate online discussions.

### **Student's Role Online**

While the role of the facilitator is to act as a guide, the role of the student becomes one of an active seeker of knowledge. Students become responsible for generating questions, critiques, and insights based upon the provided materials, as well as from other students' comments. Students are not expected to work alone in an online

course, but rather to collaborate with other students by working together in groups, sharing articles, links or interesting web sites.

In addition, students are required to participate with minimal guidelines, be able to meet deadlines, and act as their own motivator. Students need to encourage each other to participate in discussions and collaborative projects.

### Assessment 2

Consider the following questions regarding the course syllabus that you created in Assessment 1 of this module and write a one-page response:

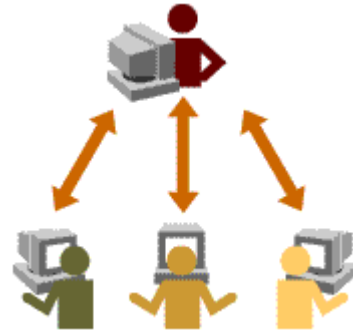
1. What do you think your responsibilities should be as the facilitator?
2. What do you think should be the responsibilities of the learners?
3. As the instructor/facilitator of your online course, how would you go about negotiating norms, ethical issues and conflicts?

## Discussions and Collaborative Learning

Now that you have a clear idea of the different roles that you and your students will play in your course, you can decide on your methods of instruction.

### Discussions

To be an effective online educator, you need to be an effective online facilitator of asynchronous discussions. Successful discussions are an important component in creating a learning community in which all participants feel that they have a stake. Learning becomes collaborative as the learners work together to understand and explore readings, assignments, their own ideas and perspectives, and other research materials. With the learners taking on much of the work of the discussion, your own corresponding workload is lightened as the discussion circulates around the group, rather than flowing only in narrow stream directly to you and back.



Asynchronous, text-based threaded discussions are the focus for most courses as they provide greater flexibility in regard to time than audio and video conferencing, or even chat rooms. Two of the strengths of online learning that are often touted are its flexibility and "anytime, anywhere" nature. Video and audio conferences, while allowing participants across geographical distances to communicate with each other, are time bound in the same way a face-to-face course is. The second important reason for making asynchronous discussions the focus is that they are great for exploring open-ended questions and course objectives that require the learner to master higher order cognitive skills.

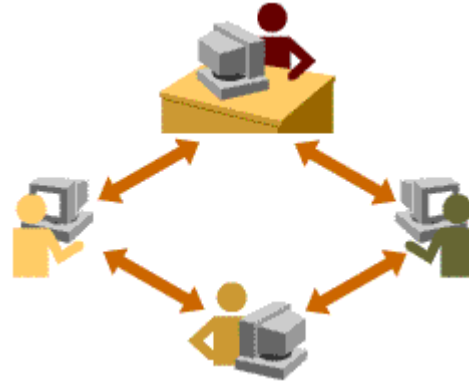
An asynchronous discussion environment allows both learners and facilitators the luxury of reading over others' postings and drafting (and redrafting) their own responses. For learners this extended time frame allows them to reflect carefully on their own and others' reactions to the course content and their reasons for asserting their own ideas about the subject under discussion. As a facilitator, you need to develop an instinct for the appropriate time for your own interventions in the discussions. You don't want to post too often or too aggressively. You also don't want to interject constantly your own ideas, experiences, and viewpoints into the discussion. This can cause discussion participants to direct all their postings to you and not to each other.

Your postings should contain carefully selected passages from learners' messages that highlight themes and ideas that should be explored in the discussion. As a facilitator, your duty is to ensure that discussion moves forward and challenges the participants to grapple with the issues in a meaningful way. Directionless discussions or those that do not have someone challenging unexamined assumptions, all too often break down into social chats or opposing positions stalemates. You want to encourage your learners to progress from social chatter and superficial information exchange to active critical reflection and engaged knowledge building.



## Collaborative Learning

Collaborative learning allows a group of students to work together to develop shared goals for their learning experience in the classroom. This form of learning must be designed into the online course and encouraged through to the end. As the instructor, it is your responsibility to move students in the direction of wanting to collaborate towards a common goal. There are several questions that you can ask yourself to aid you with promoting collaborative learning in your online course:



- What aspects of my course content encourage collaborative learning?
- What are the goals that I have established for the discussion groups?
- Have I structured activities to ensure participation from all group members?
- How will the students be accountable for their work?
- Will there be rewards for participation?

In addition, students can be encouraged to share resources and information that they have discovered during the course. Having an area that allows students to post such information will encourage a collaboration of ideas.

Finally students collaborate online in the writing of various assignments. Having small groups work together to brainstorm, generate a document, or other piece of writing will help students collaborate online.

## Transformative Learning

Transformative learning occurs when a student reflects upon the material in a course, and comes to a realization of why they view something in a particular way. We begin to question who we are through self-reflection. This is unanticipated learning, and sometimes students have not realized that they have come to a greater understanding of who they are as a person. Transformative learning is encouraged through self-reflection, and the revealing of self in a discussion format. There are several questions you need to ask yourself as a facilitator of an online course:

- How do discussions generally go in my courses? Are all students participating?
- How comfortable am I when students disagree with my point of view?
- How do I define learning?
- How comfortable am I receiving material that is not "perfect" but is none the less an expression of learning?

## Assessments and Evaluations

An essential part of any course is the method of evaluation. You must have a clear idea of what and how you want to assess the students at the onset of your course. You must clearly communicate your expectations to the students early in the course.

Assessment is not just about having some method to assign marks to learners. Assessment materials can also serve as diagnostic, instructional, and evaluative aids. They can help you, the instructor, and/or the learner determine whether the learner has the necessary entry-level skills and knowledge needed for the course. This is an especially important consideration in online courses, where basic computer proficiency and strong time management skills are critical components for learner success. You can also use assessment instruments to determine at what level of instruction a learner should be placed or which modules can be safely skipped by a learner, thereby allowing instructional resources to be more efficiently allocated and reducing learner fatigue and frustration.

The three key concerns when designing your assignments, essays, quizzes or other assessment instruments are that these instruments be:

### Valid

- Making the individual assessment items congruent with their matching objectives.
- Creating instruments that are as complete as possible.

### Reliable

- Developing assessment instruments that consistently measure what they claim to measure.
- Developing instruments of an adequate length.
- Creating clear assessment items and directions.
- Taking into consideration environmental factors that might influence learner results including:
  - Timing of the assessment.
  - Technological glitches.
  - Stress.

### Practical

- Evaluating the consequences of mistakenly assessing a learner competency.
- Taking into account the context of the instruction.
- Weighing the time and resources consumed in creating the assessment versus the "importance" of the instructional materials.

## Online Assessment Considerations

Assessment for an online course requires careful planning. Make sure your assignments are clearly explained. Clarity and thoroughness are constant considerations when designing and developing an online learning environment. Misunderstandings and confusion in an asynchronous environment can take days to resolve and can lead to learner frustration. Rubrics, marks guidelines, and assignment checklists can also be helpful as they set out clearly what is the acceptable level of performance on various assignments.

You can also set up a "best practices" page in your course where you could put examples of excellent projects, threaded discussion sections, etc. You must of course get permission from the students whose work you wish to use and you should strip the assignments of all identifying features.

Building learner-centered assessment that encourages peer-review and self-assessment will:

- Reduce your marking load as learners now take on some of this load as they compare their assignments to the stated standards and offer each other suggestions about possible places for improvement.
- Encourage learners to critique their own and others' work and support each other's efforts to increase their skills and knowledge.
- Direct learners to build their cognitive abilities as they reflect on the strengths and weaknesses of their own work and the work of their peers.
- Allow learners to rehearse various approaches to a problem and discuss with their peers which work and why. Learners learn not just by succeeding, but also by failing. Self and peer assessment can create an environment that allows a learner to fail and learn from the failure without a fear of penalty.
- Reduce concerns over cheating.

## Evaluation

### Formative Evaluations

You can think of formative evaluations as a type of drafting and revision process. They are performed both during the course's design and development stages and also while you are teaching your course. They are a way of determining how well the course is going and can provide you with needed feedback about where the course might need some adjustments.

Some simple in-course formative evaluations are:

- Having your learners keep journals reflecting on the course, the content, the technology, and the process.
- Having your learners respond to one-minute assessment checks at regular intervals during the course.
- Asking other online instructors to come in and observe a course module. But don't forget to let your learners know that someone will be there!
- Keeping a log about how you feel the course is progressing.

### Summative Evaluations

Summative evaluations are performed near or after the finish of the course. The focus is on evaluating the course's short- and long-term results. While a summative evaluation report can contain suggested revisions to the course, it may have an accountability element to it as it is often produced not just for you, but also for other interested stakeholders (such as administrators, learners, instructional design teams, or granting agencies).

You may design your own summative evaluation, but often your institution will provide one that they expect you to administer to your students. More rarely, the institution may also ask instructors, teaching assistants, or other instructional staff also to fill out summative evaluations on a course.

If you want to design your own summative evaluation for your online course, you should probably consider some of the following issues:

- For whom is this summative evaluation intended?
- What are the reasons for this summative evaluation?
- What are its goals (what do you want to measure)?
  - Learner satisfaction.
  - Unexpected outcomes.
  - Your own satisfaction.

- What are possible indicators of success?
  - Percentage of learners who achieved the objectives.
  - Comparison of the return on investment when compared to other courses.
  - Indications of long-term changes in learners' behaviour and/or skills.
  - Increase in the number of learners enrolling in the course.
  - Percentage of learners who would recommend this course to others.

### Assessment 3

Using the principles you have just read about, create one formative and one summative assignment for your online course.

## **Module 3 – Summary**

Online courses have the potential to reach a diverse student population. In order to meet the demands of these students, you must carefully plan not only the design of a course web site, but also the specifics of the course material, assignments and assessments. Unlike a traditional classroom that allows for a certain amount of flexibility in timing and last minute changes, the online class must communicate exactly what will be expected from students at the onset.

As an instructor, you should be in touch with your students. You will have to get a feel for the different personalities, provide feedback throughout the course, and communicate your expectations on a regular basis. For your students, you will need to encourage them to take control of their own learning and to share knowledge and ideas. By having students work together, not only will they have ownership of their own learning, but a sense of community will develop, enriching the learning experience for all.

## Module 4: Designing an Online Course<sup>2</sup>

As mentioned in the guide's Introduction, you may wish to take this module online. Since this version was developed using a licenced platform, a password is required to access it. If you are interested please contact us at [<question@teleeducation.nb.ca>](mailto:question@teleeducation.nb.ca).

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In this module, we will address some of the basic concepts of Web-based course design. If you want your Web-based course to be a success, you must follow the main phases in the instructional design process.

### Objectives

After completing this module, you will be able to:

- name the phases of online course design;
- describe the types of questions you should ask yourself in the *Analysis* phase;
- describe the approach used to divide up the learning content in the *Modularization* phase;
- distinguish between a general objective and a specific objective;
- understand the importance of formulating clear learning objectives in the initial phases of instructional design;
- describe the procedure used to develop a teaching strategy;
- explain the importance of developing a learner support strategy;
- name the four possible types of learner support activities;
- explain how human interaction can be built into an online course;
- describe the procedure used to develop an evaluation strategy;
- distinguish between formative and summative evaluation;
- develop practical activities and classify them in the different strategies;
- understand the importance of the *Continuous Improvement* phase.

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<sup>2</sup> This module was developed in partnership by TeleEducation NB and l'Université de Moncton.

## Let's start at the very beginning...

So now you're convinced that the Web is not just a passing fad, but a place where real learning can take place. You know how to navigate on the Web and create a Web page with simple links. And above all, you can see the possibilities for learning on the Web.

The Web environment is too new for anyone to start insisting on too many *Do's* and *Don'ts* when it comes to online teaching. The "veterans" in the field have been involved in Web-based distance education for ten years at most. Many Web course designers are adapting instructional approaches and techniques from other media, such as traditional classroom instruction, computer-based training, teleconferencing, and computer conferencing. In this section, we make some suggestions based on those experiences, but we certainly do not pretend that this is THE way to teach on the Web, or even that there is any one "right" way to do it. Nor do we maintain that the Web has to be used on its own, independently of other media. Web-based instructional techniques can be integrated with many different media, not just for simple content delivery, but also as tools for communicating and accessing information from a variety of sources. They can also be used for facilitating learning, constructing meaning, and encouraging creativity.



## Phases of Online Course Design

There are certain phases that must be followed in designing an online course. The phases described in this module are part of a method adopted, published, and used by the Université de Moncton to design courses and produce learning activities and media resources for Web-based instruction.

This instructional design method consists of 6 phases:

1. Analysis (What do you want to teach?)
2. Modularization (How will your course content be divided up?)
3. Teaching (How will your course content be taught?)
4. Learner support (How will educational support be provided for the students?)
5. Evaluation (How will the students' learning be evaluated?)
6. Continuous improvement (All right! Your course is finished. Are you finished? No!)

In the following sections, you will examine the methods used to design an online course. You will also be introduced to the different phases in the process, which will give you a better understanding of online course design.



## Analysis

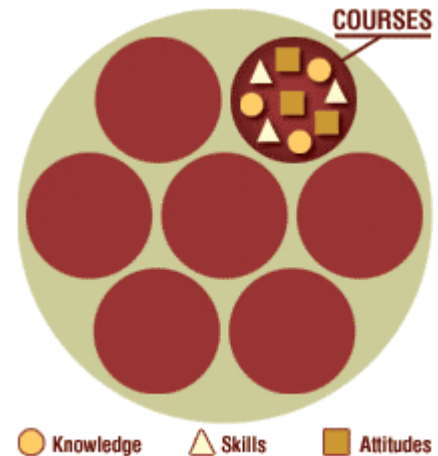


The first step in instructional design is to analyze the course you want to make available on the Web. In other words, you must identify the course, the reasons for putting it on the Web, the clientele, and the duration of the training.

### Course and Reasons

Before you roll up your sleeves and start designing learning activities for your online course, you will have to do a needs analysis and determine the usefulness of such a course. Here are some questions you should ask yourself.

- Is this a new course or an existing one?
- Are the course parameters (learning objectives and content blocks) already defined?
- What knowledge, skills, and attitudes are to be taught in this course?
- What are the reasons for developing an educational Web site?
- Will the course be delivered in asynchronous mode only or in hybrid mode (real and non-real time)?



Is the purpose of this course to:

- individualize learning by varying the strategies?
- do interactive educational activities?
- develop simulations or multimedia presentations?
- do research or information processing?
- provide learner support?
- offer a distance education program?
- do team activities?
- offer a cooperative learning environment?



## Clientele

First of all, you must identify the clientele for your course.

- Do you have a specific clientele in mind, or are you targeting the general public?
- Will your students be children or adults?
- Will they be distance education students? On-campus students?
- Does the course have a fixed duration, or can the students take it at their own pace?
- Will your students be adults in professional careers?
- Will they be adult upgrading students? Literacy students? Or will they be taking your course just for fun?
- Will they be taking the course alone or in groups with a teacher?
- How many students do you expect to have? A dozen? A hundred?
- What technology do the students use?
- What is their level of technological know-how?



**N.B.:** Your course should be designed to reflect your students' needs and differences as much as it represents the teaching style of the teacher.

### Assessment 1

Suppose you want to offer the same course for full-time students and for working adults (part-time students). What are the differences between the needs of those two types of clients?

## Modularization



Modularization is the process of planning instruction in the form of modules or units, which include a sequence of instructional resources that enable the student to work independently or semi-independently.

### Learning Objectives

The purpose of any teaching experience is to transmit knowledge, and the purpose of any learning experience is to gain new knowledge. It is very important to be able to gauge what is taught. Learning objectives can be applied to online instruction to measure learning when

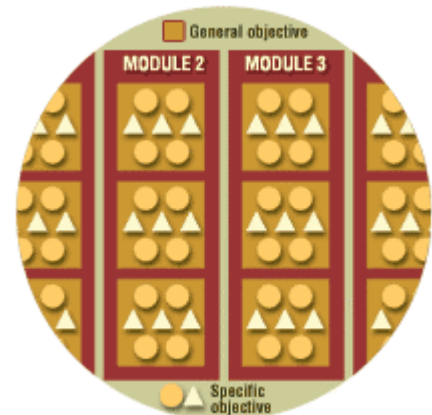
face-to-face interaction cannot.

The first step in the modularization process is to identify the knowledge your course is intended to transmit. The next step is to formulate the general objectives.

Once you have finished writing the general objectives, you can go on to the specific objectives, which will correspond to sub-modules. There are several different types of specific objectives, reflecting the various types of knowledge.

**General objective:** A broad objective, i.e., one that corresponds to the educational goals. (Example: Know the steps in gathering information from clients about their personal financial situation.)

**Specific objective:** An objective that links a content with a skill by stating as clearly as possible what the learner is expected to be able to do during or after a learning situation. (Example: Distinguish between relevant and irrelevant information about personal finances when gathering data.)



### Clear objectives, please!

Learning objectives are short, measurable goals that you want your students to achieve. They should be clearly defined. When you are writing the content for a course, either traditional or mediated, try to state the learning objectives in concrete language. If you can't get a learning objective down on paper, the concept may be too abstract. If an objective can't be clearly measured and evaluated, it may not be "teachable" in its present form.

Objectives for mediated learning need to be very clearly stated. Online students often have to learn everything from the Web page--what to do, what texts to read, and where to look for information. Don't leave them in the dark.

### **Modules**

When you are building a mediated course, it is wise to lay it out in such a way that updates and additions can be inserted easily. Building your course in small learning units or modules allows for easy modification. Modules are either self-contained, manageable sections that can stand-alone and are often interchangeable, or individual pieces of a larger lesson or unit.

A large module can be further subdivided into sections, each with its own objectives, activities, and tests.

**Example :** A university course in Canadian Literature might have modules based on literary periods (prewar, wartime, etc.), regions (writers of Alberta, writers of New Brunswick, etc.), literary genres (Canadian mystery novels, Aboriginal literature, etc.), or course periods (week 1, 2, etc.).

Laying out a course is much like outlining an essay or report. Each module, unit, lesson, and topic should be outlined, as an essayist would outline the introduction, presentation of argument, supporting facts, antithesis, and conclusion. There should be a clear flow through the content.

### **Assessment 2**

List some different classifications that could be used to divide up a Canadian Social Studies course.

## Teaching



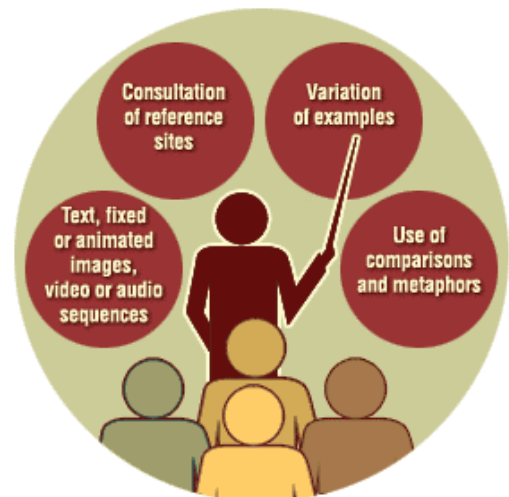
Teaching is defined as the information, explanations, and ideas that teachers share with their students through unidirectional communication, either verbal or written. In order to teach, you will need to develop a teaching strategy.

**Strategy:** A series of instructional operations and resources planned by an educator for the purpose of teaching others. Every teaching module is built according to a strategy, and a strategy is developed from a general objective.

A teaching strategy includes a number of activities related to one or more specific objectives. You must decide which activities are intended for individuals and which ones are intended for teams. Each activity requires certain resources (documents, media, visual aids, etc.).

### Examples of Teaching Strategies

- Presentation of text, fixed or animated images, video or audio sequences, etc.
- Consultation of reference sites identified by the teacher
- Variation of examples to stimulate learning
- Use of comparisons and metaphors to facilitate learning



The learning activities in a Web-based course should not be regarded as add-ons; they should be an integral part of the lessons. To make sure that the exercises and assignments are relevant to the content and not just make-work projects for the sake of generating grades, choose only those activities that actually promote learning and move your students toward a specific objective.

Learning by way of Web-based content occurs in small steps. Activities should encourage students to make connections with what they have already learned and help them see how that knowledge relates to the learning objectives and the overall goals of the course. Some of the most effective online courses include lots of practice tests and quizzes. These allow students to gauge their understanding of the concepts taught.

**N.B.:** When developing teaching strategies, take different learning styles into account.

According to an old adage, communication should be as long as necessary, but as short as possible. When creating an online course, follow that advice. You've got to get your information across, and you can't skimp on that. However, you couldn't meander on and on, or else your students will start yawning at their computer terminals. Additional content or peripheral information should be made optional for the students.

**N.B.:** People read text on a computer screen 28.5% more slowly than they read traditional printed matter. That's one good reason to summarize! *Source: Québec Ministry of Education*

### Assessment 3

What different teaching strategies should be used in the Canadian Social Studies course? Give some concrete examples to support your ideas.



## Learner Support



Learner support is defined here as something separate from teaching. Students usually feel a need for some form of interaction with the teacher, and the purpose of learner support is to meet that need. It consists in dialogue, conversation, and feedback between the teacher and the students, in a true spirit of exchange for the sake of learning.

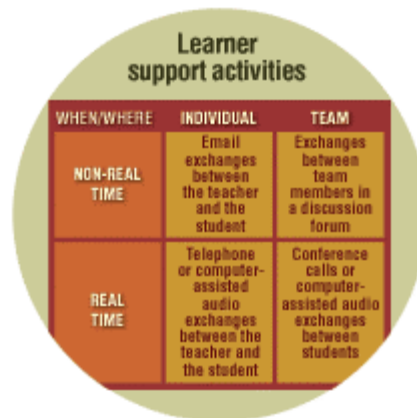
In order to remain faithful to the objectives we have set, you should develop learner support activities that complement the learning activities in the course.

It's all right to offer some learner support activities in non-real time, or asynchronously. However, in order to give your students superior feedback, you should offer a few learner support activities in real time, or synchronously.



The following table provides examples of the four possible types of learner support activities.

When/Who	Individual	Team
<b>Non-real time</b>	Email exchanges between the teacher and the student	Exchanges between team members in a discussion forum
<b>Real time</b>	Telephone or computer-assisted audio exchanges between the teacher and the student	Conference calls or computer-assisted audio exchanges between students





## **A Word About Human Interaction on the Web**

In order for any kind of online instruction to be successful, there must be a basic level of interaction. Although teaching and learning on the Web do not allow any interpersonal or face-to-face communication, sound instructional design can help to offset that lack of interaction by adding an online interactive element.

The different forms of human interaction that can be built into an online course are described below, with examples.

### **One to Many**

This is the traditional lecture approach, where the teacher presents the course and the students ask questions. Web pages can be used as "lectures," with learning objectives, static information, and interaction taking place in the form of email or message board communication to the teacher.



### **Many to Many**

This is the discussion group approach, whereby the students, led by a teacher, can discuss and debate class topics. This may take place in informal discussion groups, formal meetings, workshops, or seminars. Students can be encouraged to work together on projects. The Web can be used as a bulletin board, with messages being conveyed through newsgroups, conferences, and email lists. These may be open to the entire class or to specific groups.

### **One to One**

Teachers can communicate confidentially with individual students by email, living them help and private counselling. Students can also use email to collaborate on projects or exchange questions or messages of support with other students. One-on-one human interaction between teachers and students is common on the Web. It may involve asynchronous or real-time communication, such as a shared browser or a collaboration project.

### **Many to One**

One special feature of the Web is that it gives students the opportunity to communicate directly or indirectly with numerous experts on a given topic around the world. This can be done either formally, by inviting subject matter experts to participate in the class, or informally, by accessing related Web sites, reading online articles, or subscribing to mailing lists. Groups of teachers from different classes or different locations of the same class could collaborate, enabling all their students to gain access to their particular expertise.

## **Assessment 4**

Suppose you decide to organize a synchronous session (i.e., a real-time exchange) with your virtual class in one module of your online course. Should you do it at the beginning of the module, in the middle, at the end, or at some other time? Explain.

## Evaluation



Evaluation is defined here as verification by the teacher of the degree to which the students have acquired certain knowledge, skills, or attitudes, so that they will know how well they have performed in the course.

It is important to indicate at the outset what kind of evaluation will be done in the course.

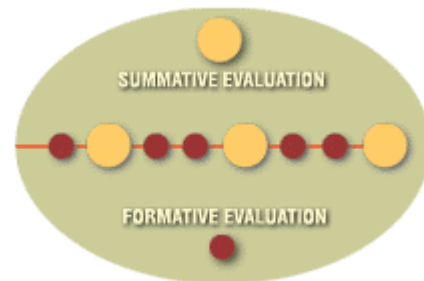
- Will it be *summative* evaluation, which takes the form of periodic tests designed to ascertain each student's level of performance throughout the course?
- Will it be *formative* evaluation, which is

designed to help each student progress toward the targeted goals? (One example of formative evaluation is a quiz that is not marked, but that helps students prepare for a test.)

**Formative evaluation:** A diagnostic evaluation for the purpose of helping, improving, and correcting if necessary.

**Summative evaluation:** An evaluation done at the end of a unit or course for the purpose of determining the degree to which a student has acquired certain knowledge or skills. It tells the teacher and the student whether the latter has attained a given set of objectives.

Formative evaluation should be regarded not only as a means of measurement, but also as a teaching tool. Administered at regular intervals, formative evaluations enable students to measure their own progress and their mastery of the course components. In order for these evaluations to be effective, they must measure the student's attainment of the learning objectives identified in the modules. Also, be sure to indicate at the outset and on each evaluation whether the results are to be included in the final grade (summative evaluation) or used for personal reinforcement only (formative evaluation).



Tasks and assignments must be appropriate to the students' level of knowledge and experience. Many classroom teachers experience difficulty in redesigning their courses for online instruction, especially when it comes to evaluation and assignments.

Don't overwhelm students with too many tasks at once. Design the tasks so that students can be successful early on. This will give them the confidence to continue. However, in many online courses, all the assignments and coursework are assigned at the beginning of the course, leaving no surprises for the students. If you use this

model, you may find it effective to remind the students often about due dates and pacing.

**N.B.:** A number of smaller projects can be used to determine students' marks. These may be more effective and more reliable than one large term paper, as well as being less stressful for the students. Once completed, the small projects could be combined to form a major work. If learning hypertext were one of the course objectives, you could require that assignments and projects be published in that format.

### Assessment 5

Give two examples of major projects that could be subdivided into several small assignments spread over the duration of the course.

## Practical Applications and Activities

The following applications and activities have been tried in online instruction scenarios with success.

### **Assign students the task of constructing Web pages with a specific theme.**

Reports and assignments can be delivered either privately through email or online in a Web page for the benefit of the whole class. Students can be assigned "hyper-reports," which are Web sites with links to various subject areas. This allows the students to become active participants in the constructive creation of the learning environment. The end results can be added to the next semester's course materials, thereby creating a richer course.

**Create hyperlinks for a guided tour of other Web sites** relevant to the course and include them in the content materials and the Web environment. This can be combined with online searches for specific information.

**Recruit subject matter experts,** technical advisors, and interesting personalities for presentations and discussions with the class. Guest lecturers can be recruited for real-time or asynchronous presentations. Teachers can even take advantage of the online environment to team-teach and share their courses with other classes. The value of relevant, up-to-date information in any course is immeasurable.



**Assign specific research tasks to students,** either individually or in groups, and then have them report to the class. Students can present their reports online or publish them in a Web page.

**Form online discussion groups.** Assign students to lead off the discussion on a rotating basis. Students can use their research and assignments as a basis for discussion.

Encourage brainstorming. **Open a special conference and invite students to come up with two or three ideas** on a specific problem or proposal. Message boards are a great forum for this kind of exercise.

**Prepare case studies** and make a Web page for each of them. Divide the students into groups and have them discuss the case studies and then report to the class. Group assignments encourage interactivity and help students form online social relationships.

**Integrate conventional media** such as textbook readings, workbook activities, video and audio tapes, TV, radio, telephone, mail, face-to-face meetings, seminars, teleconferences, faxes, CBT, and other courseware. Use various combinations. Don't confine yourself to any one medium. Push the limits of a medium by having your students use it to its *full potential and even beyond*.

**Target specific groups of students with suggested readings.** In classes with a mix of online and classroom-based instruction, students have varied interests. Technically oriented individuals could be teamed up to examine technical home pages, whereas business students could do searches of business databases, and so on. The Web is vast enough to provide you with educationally sound material that meets the needs and tastes of every student on your roster.

**Use many examples from a variety of Web sites.** Choose readings and resources from a wide variety of sites. Use points of view taken from journals, professional sites, and personal pages.

**Archive and edit course materials.** Save archives of discussion group conversations, old tests or quizzes, and student assignments, and then make them available to future classes. Place examination study hints on line with hypertext links to important course materials. This gives students an opportunity for active study and also reinforces the direct correlation between the examination and the actual course material.

**Put your lecture notes online** at the beginning of the course and add to them as the course progresses, making sure you keep well ahead of even the most advanced student.

### Assessment 6

Can you tell which of the above applications and activities are teaching strategies, which are learner support strategies, and which are evaluation strategies?

## Continuous Improvement



Continuous improvement of a course means refinement of existing components and ongoing development and addition of new components based on recent advances or discoveries in the field in question.

The continuous improvement process begins when the first version of a course is made available on the Web.

The course contents and media are constantly examined and improved. The process of refining, updating, and adapting the material to meet the students' needs continues for as long as the course is offered.

### Assessment 7

Let's say you are the designer of an online course in a field you know very well. Starting with a general objective and three specific objectives, choose teaching strategies, learner support strategies, and evaluation strategies that will enable your students to attain those learning objectives.

## **Module 4 – Summary**

When a teacher sits down to write a lesson plan or develop a curriculum, he or she knows the target audience (students of a given age), the material to be covered (the curriculum at hand or provided by the Department of Education), and the environment (a classroom, lecture theatre, etc.). When a teacher sets out to design learning materials for the Web, the situation is very different indeed. Online learning environments take much of the apprehension and guesswork out of putting learning materials on the Web.

Many of our traditional teaching strategies and approaches can be used on the Web. One-to-one and one-to-many teaching on the Web may appear as online chat peer tutoring and email-list lessons, for example. When you are constructing an online course, many of the traditional rules still apply. Examples are recommended for abstract concepts, clear goals and objectives are essential, and brevity and clarity are always paramount aspects of any course design.

Online testing is still a fuzzy area for many of us. If the course is only offered during certain times, then scheduled and regular quizzes can be used. If the course is open-ended, other forms of evaluation, such as projects that test a student's mastery of a given subject, may be in order.

## Module 5: Course Design Principles and Practices

In Module 5, we examine some of the current approaches and methods used in designing Web-based courses and programs for distance education and Internet-based instruction.

### Feeling Right at Home on the Web

One of the major stumbling blocks for online and distance education is the lack of "belonging." Traditional students belong to a class, to a campus, or a sorority. Online and distance education students have historically complained about feelings of isolation and frustration at the lack of camaraderie that online learning environments offer. How can we keep the human behind the computer screen visible? Is there a danger that instructors and course designers will begin to fade further and further into the background as the technology rises to the forefront? How can we keep that from happening? (Or, is it even desirable that we keep that from happening?)

When writing an online course, tutoring an online student, or participating in a shared online collaboration project, consider these well-tested ideas:

#### Organized Online Student Activities

On the Web, mailing lists, newsgroups and chat rooms take the place of the "student lounge." Students can be invited to contribute to a student Web site with their names, photos and a little bit about themselves. This creates an open atmosphere more conducive to sharing and experimentation with technology. To give students more control and ownership over their online actions, there should be areas with little or no "administration" contact or presence, to let students be themselves.

#### Faculty Availability

Students should always have access to a real, live human instructor or tutor, not just a list of instructions. Teachers should welcome each new student with a friendly e-mail letter, or assign a group introduction as the first assignment in the class.

#### Live Chat Areas and Times

Students, mentors, facilitators and instructors can "meet" at a given time and place on the Internet, using a chat server or instant messaging client to discuss class-related issues in real time. Advancements to audio and video delivery over the Web is also ushering in new approaches - audio chat and multi-point video conferencing. All of these tools give the isolated distance learner the opportunity to feel more like part of the group. While the idea of employing a full time, 24 hour online support person may be cost-prohibitive (not to mention hard to staff), consistent day and night-time online tutoring or chat times can help students develop regular study habits and become familiar and comfortable with the learning system.

Recommended Links:

Algebra Online – Matching Parents with Tutors  
<http://www.cat.cc.md.us/owl/tutorchat.html>

The Learning Lighthouse: Online Tutor Chat  
<http://www.thelearninglighthouse.com/>



CCBC Tutor Chat  
<http://www.cat.cc.md.us/owl/tutorchat.html>

## Your Web Site: Things to Consider

### **Is the material teachable online?**

Although the temptation and draw to online instruction is a strong one, each instructor or facilitator tasked with bridging traditional education courses to a Web-enabled scenario must examine each course or program and decide whether the content is **suitable** for an online course which will be taught in an asynchronous environment. Content-driven courses, such as a history course, are traditionally based on readings and submitted written assignments, and lend themselves well to online presentation. Other courses, like introductory airline mechanics, or hotel and restaurant hospitality, may not be as well suited to this kind of environment due to the nature of the curriculum or the manner in which it must be taught. When in doubt, a good practice is to scan the Net for existing courses in the same field. Which leads to our next point...

### **Duplication: A costly practice?**

There are thousands of online courses available on the Internet at this moment, and hundreds more appearing each year. Would it cost your school or organization more to develop its own course than to adopt or lease one already being offered by another institution? One must think of both the financial **and** **time resources** that would be involved. As a student, the duplication of courses at different institutions provides options not otherwise available.

### **The (Re-) Invention of the Wheel**

When it comes to creating some sort of online environment for your students and peers, how should you go about it? Should you invest financial and human resources to create a functional "virtual classroom," or should you take advantage of the dozens of online instructional environments already created for just such a purpose. The choice of whether to adopt one of these products or forge on ahead without will often depend on how much material is to be put online, how much time and (ultimately) how much money is available. In a later module, we will look at several of these online instructional environments.

### **Minimum Requirements**

While many new Web developers catch the "bug" and want to create the best Web site they can, complete with all of the latest sound, animations and gadgets. These features, although exciting to experiment with, rarely add to the pedagogical value of a site. In fact, in many cases, these peripheral attractions actually detract from the teaching effectiveness of a site if the user does not have all the necessary plug-ins or advanced features enabled on his or her computer.

When creating an educational Web site or online course, designers should focus on the minimum requirements necessary, rather than the latest features. An effectively designed site can be used as an effective teaching tool without unnecessary features.

Recommended Link:

Putting Your Course Online: Is it worth the Time?

<http://www.webct.com/service/ViewContent?contentID=2809481>

## Your Web site Layout

Ultimately, how the information is received and interpreted by the student depends on how it looks on the screen. And how it looks on the screen depends on how the Web pages are built and the content arranged.

In this topic we will address what the instructor or page designer should consider before beginning to create an online course or teaching environment. There are several issues related to the display of content on the screen and its effectiveness in presenting material in a pedagogical manner.

The Web is built upon a collection of programming languages like HTML, XML, SHTML, PHP and JavaScript. These programming languages range from the simple-to-master to the very complex. The most widely-known – and easiest to use for everyday users – is the *HyperText Markup Language, or HTML*. While at its root, HTML code is nothing more than plain text, the performance of the programming language is something of an enigma. Although different operating systems and different Web browsers interpret the code in the same way (in theory), the end result does not always look identical on the screen. Therefore, one point to remember when creating a Web environment for teaching or learning is....

### Test the Web site extensively

The site, while still under development, should be examined in a wide variety of browsers and operating systems. If the site looks acceptably similar in the majority of those tested, then the HTML code has been well-written, with due consideration paid to the innate differences between browsers and operating systems. Consider designing a template page, populate it with some content (whether real or fake) and test the page in both Netscape and Internet Explorer, on a Macintosh as well as a PC, etc.

### Simplicity is the Key

Simple, well-designed pages created with the concept of "letting the pages do the work" are encouraged. Keep the displays simple and consistent. Headers, footers, paging menus and all displays should conform to a simple consistent design. Use standard buttons, commands and abbreviations throughout.

### The Use of Graphics

Before the graphical interface of the World Wide Web appeared, the Internet was a rather dull place. Graphics, color and font attributes transformed the text-only Internet in an amazing way. Much can be said about the effective usage of graphics, but experienced Web designers know that graphics should be balanced with the content, used when needed and not just inserted for the sake of having graphics. Web images slow down the display of a page, and not all Web users have the capacity to see all graphics. (Some cannot see graphics at all, due to hardware and connectivity limitations.) Keep these issues in mind when building a teaching Web site.

With the increasingly popular use of Learning Management Systems (See Module 6) and Course creator tools, knowledge of basic HTML code is becoming less important to scholars. HTML has long been seen as a temporary fix when it came to Web-based instruction; temporary as it may have been, Web-page based online learning has laid

the groundwork for the new methods of instruction we are beginning to see emerging today.

Recommended Links:

HTML for Educators

<http://www.learningspace.org/tech/HTML/HTML.html>

The ABC's of Web Site Evaluation

<http://school.discovery.com/schrockguide/pdf/weval.pdf>

HTML Crash Course for Educators

<http://www.ibiblio.org/edweb/htmlintro.html>

## Your Web Site: Content Issues

### **Add new material often**

To keep a student's interest high, keep on adding new material and new pages throughout the course. Regular updates give all of the students a reason to keep using the Web site. Daily journals and reminders, Javascripts and other free online tools can be added to a Web site to give it a dynamic nature and appearance, often adding new content depending on the day of the week. The students themselves can also be involved in the process of updating course web sites by recommending new readings and links. Remember to date the pages of the most recent revision.

### **Use Templates**

Whenever you create a page keep the design on a standard format that can be reused. You'll save yourself lots of time. After a while you will have developed a bank of different templates for various types of pages. An online course designed using a consistent template will begin to become familiar to the online student.

### **Make Documents Easy to Print**

A good idea is to have pages available in standard print formats for quick downloading and offline use. While the Internet is ushering in a new way of learning and teaching, many users are still grounded in traditional "paper and pen" methods, and the opportunity to rest one's eyes from the screen by reading good old fashioned paper is always welcomed.

Making the learning content printable may mean creating two copies of each page of information, based on the design of the page. Test different templates and design ideas by printing off a page and work towards a page design that is acceptable both on-screen and on paper.

### **Make sure necessary information is always available**

Some students will forge ahead and may become frustrated when the information they need is not yet there. Other students fall behind or like to review, so be sure that the course archive is accessible in its entirety. Course assignment descriptions, due dates, assigned readings for *next month's* content... all assets to an online course.

### **Let your personality shine through**

We have mentioned earlier that the Internet can be a cold, faceless place for new and experienced learners alike. Avoid making your online course feel "institutional." Use humour and other personal techniques to make the course warm and friendly. Scientific texts need to be objective, but that does not mean that you cannot add your comments, introductions and words of wisdom in a down to earth manner. Intersperse personal reflection, anecdotes and segues in the content as you would in a classroom lecture or presentation.

## **Your Web Site: Authoring and Editing (NEW)**

### **Keep it simple**

By clicking on the hypertext links provided to them within an online course, students can soon find themselves all over the map and hopelessly entangled in the web you have woven for them. Make sure that hypertext links are not overdone. Use them only when essential to the learning, and consider providing links at the end of a lesson, as additional references, rather than in context.

Students should be able to reach any page, file or resource in an online course or program in less than five mouse clicks. Do not overload students with too much information at once. Remember that on a page, space is important. A good, clean layout can greatly increase understanding. A cluttered page can leave students confused.

### **Edit carefully**

The pages should look professional; they are a reflection of you and your institution. All content, especially assignment due dates, grades and percentages and classroom locations and numbers, should be as accurate as possible. For English as a Second Language speakers in particular, incorrect spelling and grammar, euphemisms and colloquial language can be confusing; if they are necessary, they should be clearly defined.

### **Don't overuse audio and video**

Audio and video clips usually add little to the course materials. Still images are often more effective, less costly to produce and easier to integrate into an online course. Video can be effective when used to demonstrate a technique where motion is essential. An example would be online instruction on dance techniques, but even then an occasional still-frame could often be more useful to focus attention on specific points.

Audio should consist of soft tones, interspersed with quick attention grabbers.

## Your Web Site: A Checklist

Here's a simple checklist of options and elements that any online class or course Web site would benefit from:

- A personalized letter of welcome for each new student who enrolls in the course
- An index of Faculty Web pages, with pictures and profiles of all staff who will be in contact with students, including instructor's e-mail address, telephone, fax number, and regular mailing address including office hours
- A clear statement of the roles, responsibilities and expectations of the instructor and students
- A course description and table of contents
- A complete course overview including course goals and objectives and tutorial modules for any additional or peripheral skills that may be required (FTP, e-mail attachments, etc.)
- A list of all exercises, assignments and other course tasks; additional activities can be added for students who need remedial or advanced work
- Explicit information on how students will be graded on assignments, tests, participation
- A list of required texts, reading materials and other learning resources
- A course schedule giving clear deadlines for assignments due; each assignment should be linked to relevant course documents. Another separate schedule should list the tests dates and examination dates.
- Specialized information on the technology used and how to manipulate the online environment, course software or hardware
- A student course evaluation form and a general student feedback page to take comments while the course is in progress
- A clear statement on relevant institutional policies (late assignment policies, plagiarism policies, storm delay policies, etc.)

This is by no means a complete list; however, research has shown that many or most of these elements are important parts of most quality online courses.

## **Module 5 – Summary**

The Internet, as a learning environment, can be a cold and barren place. When designing courses and learning information for the Internet, or when teaching or studying online, it is important to remember to add a human touch.

This module covered many modes of delivering content and addressed some of the important aspects of web page design and screen layout. The module concluded with a "shopping list" of items that should not be forgotten when preparing a course for online delivery.



## Module 6: A Look at Learning Environments

*Learning Management Systems* have emerged with the Internet and the World Wide Web as the changing face of education. They are primarily based on a collaborative learning instructional paradigm rather than the self-instructional model of multimedia authoring systems. As such, they make extensive use of the asynchronous and synchronous collaborative tools available via the Internet.

While the idea of "managing" learning may sound institutional and mechanical in nature, learning management systems are often nothing more than the digital, 21<sup>st</sup> century version of a school board accountant, college registrar, reference librarian and secretary rolled into one program. Managing learning, MORE

### **An Introduction to Learning Environments and Learning Management Systems**

**Distributed Learning Environments** are designed specifically for educational applications. They take the stand-alone synchronous and asynchronous collaboration capabilities of the Internet and integrate them within tools that mirror the instructional process. These tools are primarily being used for the delivery of entire courses to remote learners (distance education); however, a surging recent trend has seen traditional classroom delivery supplemented with additional or remedial information presented through an online learning environment.

**Learning Management Applications** - LMA's - can be part of an IDLE, or a standalone application used to track online students and grades without actually being integrated into an online course. Many online education "portals" -- Web sites that link to and/or re-sell online courses from a variety of other sources -- use LMA's to track students enrolled in the courses they sell. Current trends have seen LMA's, or Learning Management Systems, move to the forefront of online education.

An Integrated Distance Learning Environment is used for most, if not all aspects of online delivery, from registration to communications to testing. Learning Management Systems, on the other hand, may not necessarily include all the elements and features of an IDLE, while allowing instructors and administrators to maximize the potential of an online database for student management and guidance. For the most part, however, the two are becoming one, and terms IDLE and LMS are now used interchangeably. See also Groupware, Collaborative Learning Environment.

## Key Features of an LMS (NEW)

A Learning Management System can act as a focus for learning, allowing the tutor to create a learning environment which makes the relationship between assessment and learning activity explicit, enables the learner to view resources in the context of learning activity

A Learning Management system can change the process of learning from a passive one to an active one, encouraging regular communication between learners and with teaching staff or administration. Active learning can be continued as students explore the breadth and depth of information and course content made available to them, regardless of the suggested pace of the course.

With a Learning Management System, learning can be collaborative and distributed. Assignments and works-in-progress can be exchanged between students and their instructors or tutors, in real time or delayed time. Since most LMS products use standard internet technologies (email, web, ftp, chat, audio/video), learning can take place on a wide array of computer systems and with a mix of learning materials and resources.

What does an LMS do? That depends on how each institution wishes to use it. The basic forms of Learning Management Systems are tracking systems that require that students enter a username and password in order to access shared school resources. The LMS can then monitor student access to certain resources or gauge Web and email access. Even schools with few online courses can take advantage of the services offered by a Learning Management System. Schools may wish to publish their calendars, school events, or exam schedules on an Internet or Intranet site, and allow students to access this information through an LMS.

Learning Management Systems can perform the following functions for online, distance education and hybrid courses:

- Count individual student log ons
- Allow students to bookmark content within a course
- Provide notices and alerts to online students
- Administer and evaluate online quizzes and tests and provide immediate feedback.
- Offer students an academic calendar
- Offer students a dynamic, individualized class and exam schedule
- Provide a centralized "location" for collaborative work
- Administer and serve server-based learning applications

## **A Short List of Learning Management Systems (NEW)**

Learning Management systems, just like the different courses, programs, subjects and disciplines that they facilitate, come in all shapes and sizes. We have selected a cross-cut of LMS examples that span entry-level systems, mid-range corporate or institution versions, and larger, globally-scaled systems.

Blackboard - a total "e-Education Infrastructure"  
<http://www.blackboard.com>

ESocrates - Expertises in online learning and professional development  
<http://www.esocrates.com/>

First Class - Collaborative groupware and Unified Communications technology  
<http://www.softarc.com/wwwcustomersolutions/>

GeoLearning - streamlined learning management system and eLearning delivery platform  
<http://www.geolearning.com/>

Intralearn - Software for eLearning  
[http://www.intralearn.com/1000\\_products.asp](http://www.intralearn.com/1000_products.asp)

The Learning Manager - Support traditional and enterprise level functionality required for significant distributed learning operation  
<http://www.thelearningmanager.com/>

MentorWare - providing e-learning Initiatives with a 'Complete Lifecycle' Solution.  
<http://www.mentorware.com/>

SmartForce - the world's largest and most experienced e-Learning company  
<http://www.smartforce.com/>

WebCT - the leading provider of e-learning solutions to the global higher education market  
<http://www.webct.com/>

A very detailed and well-researched side-by-side comparison of over 75 leading Learning Management Systems can be found at Site Trainer:  
<http://www.sitetrainer.com/platformcomparison-easyindex.htm>

The growth of the Internet and the World Wide Web is transforming teaching and learning at all levels of education, in the workplace, and at home. As we move towards a more unified, common online experience, we are also moving towards the concept of a global learning experience. Online learning standards are one area in which much work is being done.

IMS Global Learning Consortium, Inc. (IMS) is one group that is developing and promoting open specifications for facilitating online distributed learning activities such as locating and using educational content, tracking learner progress, reporting learner performance, and exchanging student records between administrative systems. IMS has two key goals:

1. Defining the technical specifications for interoperability of applications and services in distributed learning, and
2. Supporting the incorporation of the IMS specifications into products and services worldwide. IMS endeavours to promote the widespread adoption of specifications that will allow distributed learning environments and content from multiple authors to work together (in technical parlance, "interoperate").

## Learning Standards (NEW)

IMS is a global consortium with members from educational, commercial, and government organizations. Funding comes from membership fees, with organizations choosing to join as either Contributing or Developers Network members.

Building upon these standards, learning agencies, content and courseware authors and even learning management systems engineers are creating a whole new way of learning... one which transcends geographical, cultural and ability barriers.

Developers currently supporting the IMS standards and the goals that the IMS Global Learning Consortium support can be found below. Clearly, this is a global endeavour and one that is gaining widespread acceptance.

Recommended Links:

IMS Standards Home  
<http://www.imsproject.org/>

IMS Mailing List Subscription area  
<http://www.imsproject.org/specifications.html#mailist>

Products Directory - IMS Supporters  
<http://www.imsproject.org/direct/getproducts.cfm>

Barrier Free - Supports educators in creating and repurposing learning content that is accessible to all learners.  
<http://www.barrierfree.ca/>

## Knowledge Objects

An element of Web-based education that is likely to grow in popularity and exposure as larger companies and corporations look to cut training costs and “do more with less” is the concept of **Learning Objects**. But what are they? Here’s a scenario that helps to explain the concept:

In the year 1999, you might have paid \$100 to gain access to one course dealing with Networking Essentials, to which you had access for three months. This course may have offered information on three major topics in the area of Networks. Several of the major topic areas were of interest to you, and of those, a few of the lessons and topics were new to you. This course was part of a 12-part curriculum on Network Engineering that you just could not afford in its entirety at your current salary.

This course, albeit generic, gave you some insight into the world of Networking and provided some new knowledge. However, it also contained information you were already familiar with, not interested in, or applicable to a different kind of Network system from that which you currently work with.

Fast-Forward to 2003. By paying the same amount of money, you gain access to 25 courses on networking for an entire year. While your course in 1999 allowed you access to --and insight into-- several aspects of networking, it also taught you information you already knew, and repeated some introductory information. With your new instructional system, you will never see the same content twice, and the content you view will be completely unique to you, based on your pre-assessment exam.

This scenario sounds almost too good to be true, but it is the new reality of online education. Learning systems are currently being developed in conjunction with educational organizations from around the world to incorporate IMS standards that will treat each piece of educational content -- as small as a single sentence -- as a *Knowledge Object*. These individual components, when disassembled, form individual objects, but when re-assembled and combined with other relevant content, can be intelligently re-assembled into smaller modules, or entirely new courses.

*In Everything you wanted to know about Learning Standards but were afraid to ask*, Wayne Hodgins and Marcia Conner sum up Object Technology: “A simple example of valuable standards that I came to appreciate in life, and my children still enjoy, comes in the LEGO™ product-line. All LEGO blocks adhere to one absolute standard for pin size. Every LEGO piece, no matter what shape, color, size, age, or purpose can always be snapped together with any other piece because of their uniformly shaped pins. This allows children of all ages to create, deconstruct, and reconstruct LEGO structures easily and into most any form they can imagine. ”

### Why Develop Educational Content as Learning Objects?

Most electronic learning content is currently developed for a specific purpose such as a course or a situational performance intervention, and not for the sake of populating an objectbase (a collection of learning objects, typically contained or referenced in a relational database). However, as object content increasingly becomes a valuable commodity, we will see more content developed specifically to be deployed as learning objects in multiple settings. Why would designers wish to add a layer of

complexity to their work by including object capability in their design? The reason is that their content gains a "value-add" that in most cases will pay off many times over (in terms of costs, development time, and learning effectiveness).

Warren Longmire, *A Primer on Learning Objects*  
<http://www.learningcircuits.com/mar2000/primer.html>

The intelligence behind this system is built into databases which are programmed to understand the connections between different thoughts and learning streams within a course or module. Further, pre-tests and user surveys assist the application in determining the best learning path for each individual student.

Knowledge Object-based courseware is still in the future, but the groundwork is being laid now; as more and more course designers adopt the IMS standards and tag their new educational content, the implementation of database-driven and unique courses will be a reality.

Recommended Links:

IEEE Standards Group  
<http://ltsc.ieee.org/>

IMS Global Learning Consortium  
<http://www.imsproject.org/>

A Primer on Learning Objects  
<http://www.learningcircuits.com/mar2000/primer.html>

## **Module 6 - Summary**

The widespread proliferation of Integrated distributed learning environments, or IDLE's, have made porting course content and learning information to the World Wide Web both easy and practical. Further, Learning Management Systems are being incorporated into more and more college and university Web sites to track student progress and involvement.

Taking it one step further, learning objects and learning metatagging standards are emerging that will make creating, evaluating or studying an online course an unparalleled experience, and take computer-mediated to an entirely new level.



## Module 7: Technology and Online Learning

Module 7 is an examination of some of the most exciting technologies and features used in online instruction today, and those we may use tomorrow. With education becoming one of the fastest-growing sectors in the world, it is no wonder that the use of new technologies is a part of that growth. In this module, we will examine just a few of the technologies that will shape education as we enter the new millennium.

Rather than continue to focus on how technology has helped or can help the instructor, teacher or tutor, we will conclude this online guide with a look at how technologies – existing and emerging – can aid the student, one of the first of the eLearning generation.

### Multimedia On the Internet

**mul·ti·me·di·a** (mŭl'tē-mē'dē-ə, -tī-)  
*pl.n. (used with a sing. verb)*

1. The combined use of several media, such as movies, slides, music, and lighting, especially for the purpose of education or entertainment.
2. The use of several mass media, such as television, radio, and print, especially for the purpose of advertising or publicity. Also called **mixed media**.
3. The combined use of media such as text, graphics, video, and sound, as on a computer system.

*n. attributive.*

Often used to modify another noun: *a multimedia presentation; a multimedia advertising campaign.*

Search for more definitions: <http://www.dictionary.com/>

Multimedia on the Internet is still not an everyday reality in the same sense as a multimedia CD-ROM or game may be commonplace in the home or classroom. Internet connection speeds limit the quality quantity of what can be transmitted. Even with wired/wireless and high speed advances, the transmission of large sound, animation and video files can be time-consuming and frustrating. The transmission of **complete files**, that is. With the introduction of streaming multimedia in the past 5 or 6 years, multimedia files of larger sizes could be delivered even over modem connections.

The key to this breakthrough is the format in which the files are distributed, or *served*, over the Internet. Large audio or video files are converted into a format that can be sent as a continuous stream of small pieces to a user's computer. At the user's end of the connection, special software interprets the "stream" of data and begins to play the sample. While the first part of the sample is being played, the next is being downloaded. The second begins seamlessly, the first is deleted, and the third is downloaded. Using this format, hours of audio and video content can be received over a slow modem connection.

Next, we will examine how both audio and video content are being distributed over the Internet using streaming technology.

## Internet Audio

Audio was the first type of multimedia to be delivered over the Internet in a streaming format. Concerts and "live" radio broadcasts were among the first examples of streamed audio to appear on the Internet.

There is a wide range of streaming audio formats in use on the Web today. While each is different in name, the technology remains the same. When a sound file is to be prepared for *streaming* it is often stripped of some of its quality and "flattened" to greatly reduce the overall size of the file. In some cases this also means that the quality of the file is affected. A news broadcast, for example, consisting only of a recorded voice, would be a smaller file in general than an orchestral sample.

Different programs are available for receiving streaming audio, each with its own proprietary sound/media format. Recently, these programs have become more generic, which is good news for the end user. Instead of the hassle of installing 3 different programs in order to listen to three different sound formats, the newer, more powerful media players can decode, decompresses and play its proprietary sound sample as well as those of the "competitors." Quality varies from format to format, but all are compatible with modem connections.

Many of the Internet's most widely-publicized "firsts" have happened as a result of streaming media events. The longest continuous Internet-broadcast in history was in the form of a "jam session" held during the **East Coast Music Awards** in Moncton, New Brunswick, in 1997; the record was bettered during the following year's Awards. A live, continuous stream of music (and in subsequent years, video) for over 80 hours was truly an impressive feat.

Another first, more widely known than the former, was Paul McCartney's 1999 return to The Cavern, the bar in Liverpool where the Beatles first played. This live broadcast over the Internet was the most listened-to Internet sound byte in Internet history.



### Educational Uses

Streaming audio is currently being used as a supplement to classroom-based and online course delivery, usually in the form of pre-recorded lectures or sound bytes. For music or English composition courses, it could be used by teachers or students to record samples or their work and have it available on a Web site. Look for streaming, on-demand, and "live" sound to become a permanent aspect of Web-based education in the near future, as synchronous or real-time Web-based instruction is used to supplement distance education.

Recommended Links:

East Coast Music Awards – Home  
<http://www.ecma.ca/>

The Cavern  
<http://www.liverpool.com/cavern.htm>

Streaming Media World  
<http://www.streamingmediaworld.com/>

Antennaradio  
<http://www.antennaradio.com/>

All about MP  
<http://help.mp3.com/help/category/aboutmp3s.html>

## Streaming Video

First came radio, and then came television. And on the Web, first came streaming audio, and then streaming video. When a video sample is converted to electronic format, there are many more "layers" of data to be converted and compressed than when one is working simple with audio. As a result, when this multimedia format is delivered from the Internet in a streaming delivery system, more issues need to be taken into consideration.

Size is the first issue. Video files are much larger than audio files, and video with audio is larger still. Video samples also demand more processing power on the part of the receiving computer. It is relatively simple to record sound - music, voice, or both- even on a home computer. *Recording* video and saving it in electronic format is more demanding on hardware and requires additional software. As a result of these and other issues, video has taken longer to become an industry standard for streaming on the Web.

*Receiving* streaming video feeds on a home computer requires that a streaming video program be installed. As with streaming audio, different formats require different applications. However, most multimedia applications now available for the home market have been designed to receive both audio and video streams.

The 35th Superbowl, in January 2001, saw the recreational AND commercial use of streaming multimedia go to new heights. Long known for its glamorous half-time shows and extremely expensive commercials, this event was different than in past years due to the method in which the commercials were broadcast. For those unable or unwilling to sit through hours of football in order to see a few commercials, several online video streaming sites encoded and broadcast the commercials within minutes of their "traditional" broadcast. By noon of the next day, hundreds of thousands of people had a chance to see what they missed the night before.

### Educational Uses

The stiff, unemotional "talking head" of an instructor or tutor in a corner of an eLearning Web page is the image that most quickly comes to mind when one considers how to use video clips in an online educational situation. In this example, a professor or tutor reads a prepared lecture or shows an example of a hands-on activity. However, virtually any video sample that can be converted to a streaming format is an excellent additional resource on a Web page. Video, when used professionally, can alleviate the "page-turning" boredom that many online courses suffer from.

### Recommended Links:

Yahoo! Broadcast – One of the largest collections of steaming video broadcasts  
<http://broadcast.yahoo.com/home.html>

University of Washington Distance Education Streaming Video  
<http://www.engr.washington.edu/edge/streaming.html>

CyberTech Media – A Streaming Video Specialist  
<http://www.cybertechmedia.com/intranet.html>

## Push Technologies and Data Channels

It was inevitable that the existing forms of media -- Television, radio and print -- would attempt to take advantage of the Web's exponential growth and audience. There are innumerable examples of new technologies sprouting up which try to address the marriage between existing media and the synchronous broadcast of news, weather and sports, and the asynchronous nature of Web publishing.

One such example is the "push technology" service. "Push" refers to synchronous live-to-desktop applications that gather and deliver a blend of real-time news, sports, entertainment news, etc, with a Web Interface. By using the Internet as source of information, these services can offer up-to-minute or time-delayed information to individual desktops or entire organizations. The Interface and the sorts of information that are downloaded -- even the times and frequency - are customizable by the end user or network administrator.



*Channels* are another source or dynamic and often media-rich content available online with little or no extra setup or configuration required on the part of the end user. Channels are comparable to bookmarks, or "Favourites" within a browser, but with added features and interactivity. *NeoPlanet* a pseudo-browser that uses Microsoft's Internet Explorer technology, has this to say about channels:

**How many times have you wanted to program your TV so you could watch what you want, when you want? NeoPlanet "content channels" are pre-programmed to keep you entertained while you're getting to know us, but can be completely customized. Read on to find out how. Careful, now, creating your own channels can be very addictive!**

### Educational Uses

Push technology applications can be used to provide inexpensive and timely news, weather and sports to a classroom for such uses as reports, essays or current events classes. The growing number of channels that can be subscribed to can offer supplementary information of an even wider variety. It is conceivable that as these technologies evolve, classrooms and schools can even create dynamic "channels" of their own.

Recommended Links:

NeoPlanet

<http://www.neoplanet.com/site/products/browser.html>

Channels.com – The largest collection of channel links on the Internet

<http://www.channels.com/>

## Audio Chat and Voice Over IP

Text chat has long been a popular feature of the Internet. More recently, audio has been introduced to the Internet. Point-to-point audio connections can be made between virtually any two computers on the Internet and some Internet Service Providers (ISP's) and Online Services are now offering free Internet-based long distance calling through a PC.



Although the quality of phone calls or voice over IP (Internet Protocol connection) over the Internet is imperfect, consumers are increasingly attracted to Internet telephony because of the lure of free or extremely cheap calls. About 25 million Americans now use Internet-based voice communication, up from 5 million in 1999. As the market grows, about two dozen companies have begun offering online voice communication.

Internet telephony is relatively simple, requiring an Internet hookup, headphones or speakers and a microphone. After signing up with an Internet telephony provider, users can make local or long-distance calls to people with any type of phone. However, since voice transmissions are carried over the Internet in small packets in the same manner as data transmissions, conversations are often subject to delays. Without a high-speed Internet connection, the quality of an Internet call can be very poor.

However, companies are working to improve the quality of Internet telephony. Within five years Internet telephony will represent at least 15 percent of long-distance traffic in the U.S., compared with about 1 percent currently.

### Educational Uses

Classroom e-mail penpals have been used for a long time as a way of making connections between schools. Adding the opportunity for students to speak to their penpals - virtually anywhere in the world - is one that should be take advantage of, at least once.

Further, Tutor-to-Student communications could be greatly enhanced with the opportunity to "speak" to one another to discuss an assignment or a difficult concept.

### Recommended Links:

FunPhone – Internet Phone and Communicator  
<http://www.funphone.net/>

ICUII (I See You Too) – Audio and Video Phone  
<http://www.icuii.com/>

PC-Telephone – *"Enabling people and businesses to communicate and collaborate as never before"*  
<http://www.pc-telephone.com/>

## Instant Messaging

Picture one of the top 10 downloads in the history of the Internet. This application is known to children and adults, students and business people. Over 130 million people worldwide have downloaded it.

Is it a game? A virus program?

No, the program is ICQ (pronounced Eye-Seek-You), and its popularity and proliferations is nothing less than amazing. But what is it?

ICQ has been heralded as the "killer app" of the instant messenger genre. The easiest way to describe ICQ is to call it an Internet Paging device. It has some similarities to other tools that already carry out this function, like email or Internet Relay Chat. It allows for short messages to be sent electronically from computer to computer. Like email, the messages are stored on a central server until the recipient collects them. Like email, attachments and URL's can also be sent. Unlike email, however, group chat sessions can be opened and voice chats can be established. Also unlike most email systems, ICQ is highly transportable, meaning a user could have ICQ on a computer at work, at home, and on a laptop, and receive "pages" only on the active computer.



ICQ is only one of a growing number of *Instant Messenger* services that have appeared online in the last three years. Other than ICQ, users can choose from MSN Messenger (from Microsoft), AIM - AOL Instant Messenger, and a bevy of other similar applications.

ICQ is at the moment still used mainly by the younger Internet generation. However, its reliance on a central server, its immediate and delayed message delivery and its increased functionality have made it a staggeringly popular choice for millions.

### Educational Uses

It is not much for a teaching tool, although it could be used for students wishing to contact the online facilitator of a course they were taking, or a tutor who is supervising evening chat sessions with students.

Recommended Links:

ICQ Home  
<http://www.icq.com/>

MSN Messenger Home  
<http://messenger.microsoft.com/>

AIM - AOL Instant Messenger  
[http://www.aol.ca/aim/index\\_eng.adp](http://www.aol.ca/aim/index_eng.adp)



## Handheld and Wireless Technologies

Imagine the power of the Internet in the palm of your hand.. or perhaps Palm Pilot *IN* your hand. Wireless technologies, cellular modems and hand-held devices are moving from elite gadgetry into the mainstream.

How will this cord-free revolution change how we work and learn? *Fortune Magazine* had this to say:

**"Your next computer probably won't be a computer. It'll be a phone, an organizer, or a pager. You'll use it for communications: to read e-mail on the go, to find the nearest gas station, to check your bank balance, to buy groceries. And it will connect to the Internet wirelessly. "**

**At last, mobile data communications products are about to become mainstream. Over the next few years, as more of us spend more time online, portable digital devices will supplant stationary desktop systems as our preferred routes to the Internet, outside business and entertainment, which require too much bandwidth. Our most personal computers won't be PCs. I know this as a trend spotter, professional optimist, and buyer of countless electronic gadgets (now abandoned)--and because so many companies large and small are trying to make it happen."**

Cordless devices, pocket PCs or PDA's (Personal Data Assistants) are the wallets, checkbooks, calculators and Rolodexes of the 21st century. The size of a calculator, or smaller, these devices are capable of basic computing tasks, such as handwriting recognition text processing, and contact management. More complex and higher-end hand-helds have multimedia capabilities, wired or wireless Internet access, and the ability to send and receive data and text alike. With the advent of infrared networking, these hand-held computer devices can offer students and teachers a previously unknown amount of freedom.



Dr. Bess Sullivan Scott, a 5th year principal at Goodrich Middle School in Lincoln, Nebraska, has this to say about her handheld device:

Effective principals affect student achievement by frequent formal and informal observations of teachers. In educational jargon, informal observations are often called "walk throughs." As I visit classrooms, I enter the last name of the teacher on my Palm IIIc in my Date Book at the exact time that I am in the classroom. I also note after the last name the letters WT to indicate that the time spent was in an informal walk through. While in the classroom, I tap the "Details" button and then the "Note" button. At this time, I type in short notes regarding my visit. For example I may write "lab; active participation; multiple teacher-student interactions." Before I leave the classroom, I again tap the "Details" and then enter the finishing time of my visit.

The basic construction set for much of the wireless traffic and applications to come stems from WAP - the Wireless Applications Protocol. Microsoft, among others, have joined a forum that will help shape the programming languages, protocols and processes for the next generation of the Internet - one that transcends the very

infrastructure - cables, servers and phone lines - that the Web is founded upon. You can read more about the WAP forum [here](#).

### **How popular is Wireless?**

By 2002 the total of Internet users is predicted to increase to 673 million people, and 225 million of them--about a third of all users--will have wireless access. By 2005, there should be a total of 1.2 billion people on the Internet, with 730 million wireless users accounting for **62.1% of the total**.

### **Educational Benefits and Uses**

Almost endless. It may mean the end of paper-based teaching and learning, lost homework, missing tests, and costly textbooks.

Recommended Links:

PDAEd - A comprehensive source for educational **PDA** products and information  
<http://www.pdaed.com>

Palm Products  
<http://www.palm.com/>

Casio Handheld Devices  
<http://www.casio.com/personalpcs/>

Handspring Handheld Devices  
<http://www.handspring.com/>

PDA and Handheld Device Software  
<http://pda.tucows.com/>

Goodrich Middle School  
<http://goodrich.lps.org/>

## Peer to Peer File Sharing (NEW)

Perhaps the most publicized Internet event in the past couple of years has been the controversy surrounding Peer-to-peer, or File-Sharing applications. Peer-to-Peer applications allow users, regardless of location or connection speed, to share practically any kind of file with an innumerable population of other Internet users. In contrast to the currently predominant client-to-server model, where users go to a centralized server for information, the peer-to-peer model allows users in its "community" to share files, transferring them directly between users, not to and from a centralized server.

Of all the P2P (Peer-to-Peer) applications, Napster became the most infamous, due both to its popularity and its ultimate demise in the courtrooms. Napster rose to the forefront as a result of its focus on facilitating the distribution and sharing of copyright-protected media, mainly music files encoded in the MP3 format.

While P2P software and services have been considered mainly as a means of downloading "free music," the technology and goals behind the Peer-to-Peer concept are more encouraging.

Adam Oran, Editor of *Peer-to-Peer: Harnessing the Power of Disruptive Technologies* writes: "Communities have been forming on the Internet for a long time, but they have been limited by the flat interactive qualities of email and Network newsgroups. People can exchange recommendations and ideas over these media, but have great difficulty commenting on each other's postings, structuring information, performing searches, or creating summaries. If tools provided ways to organize information intelligently, and if each person could serve up his or her own data and retrieve others' data, the possibilities for collaboration would take off. Peer-to-peer technologies along with metadata could enhance almost any group of people who share an interest--technical, cultural, political, medical, you name it..."

### Educational Uses

It is easy to make connections between Learning Objects, Intelligent Educational systems and the Peer-to-Peer model. Data bits and learning elements, media fragments, white papers and research materials could easily be offered online and "harvested" by a well-designed P2P program, offering the student or teacher a plethora of knowledge that might not otherwise be available.

Two early pioneers of the P2P concept are SETI@Home and The Intel® Philanthropic Peer-to-Peer Program. **SETI@home** is a scientific experiment that uses Internet-connected computers in the Search for Extraterrestrial Intelligence (SETI). You can participate by running a free program that downloads and analyzes radio telescope data. Closer to Earth, the Intel Philanthropic Peer-to-Peer Program combats life-threatening illnesses by linking millions of PCs like yours into one of the most powerful computing resources in the world.

Recommended Links:

The Intel Philanthropic Peer-to-Peer Program  
<http://www.intel.com/cure/index.htm>

SETI@home  
<http://setiathome.ssl.berkeley.edu/>

Napster – The Infamous P2P application  
<http://www.napster.com>

AUdioGalaxy – the next generation of P2P  
<http://www.audiogalaxy.com/satellite/about.php?>

## The Bookbag of the 21<sup>st</sup> century

Sick of spending hundreds of dollars on new textbooks and getting pennies when you try to sell them back? Sore from dragging 40 pounds of books to and from class? Sorry you wasted three hours looking for the right titles and standing in a never-ending line? Ever wish there was something that could help you study more efficiently?

Consider a device that could contain all the material from *all* of your classes, had search capabilities, the ability to make notes and marginalia, and store the equivalent of 500 textbooks, or all the reading required for a 4-year university degree.

The next chapter in learning is here and it's powered by [goReader](#). goReader was designed with students in mind - it offers the functionality of traditional textbooks but its electronic content offers added features to improve studying. And with goReader e-textbook titles discounted for purchase and immediate download online, it's a cost- and time-effective solution.

This product, like many other on the horizon and on the market, may not be the solution, but it is definitely a step in the right – and light – direction. The future of textbook publishing is electronic; of that there is no doubt. Which format or technology will take e-books into the classroom and dorm room is still up in the air, but this product, and those like it, make those of us who hauled heavy books from class to class and stuffed our lockers with paper and binders feel older and older every day.

## **Module 7 – Summary**

Does the Web offer us the potential to expand our classrooms and study halls beyond the school grounds, beyond provincial and territorial boundaries? That may remain to be seen. Certainly, distance education and traditional correspondence courses will never be the same thanks to the World Wide Web. All levels of education stand to benefit from what the World Wide Web and Internet have to offer.

For educators, Internet participation could range from putting class notes and lecture materials online for absent students, to integrating dynamic online quizzing systems to prepare classes for upcoming tests and exams. One need not be a coding expert to have one's class evolve into the Internet age. Many schools are giving teachers, instructors and professors both time and resources in hopes that "traditional" classroom courses can be bridged to hybrid delivery models, complete with an Internet component.

The Internet offers many avenues of communication that will inevitably break down the concept of "office hours," both in academic and professional settings. Just as a Web site puts a school or company on the global marketplace, email and collaboration tools make synchronous, time-dependent communication of limited importance. The office and classroom of the future will rely on lines of communication and exchanges of information that stretch far beyond nine to five.

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(Note: The authors cannot guarantee stability of any links referenced herein.)