

LEARNING ONLINE

a guide to success in the
virtual classroom



MAGGIE MCVAY LYNCH

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For Michele and Patricia who continue to demonstrate that a commitment to life-long learning and embracing technology is necessary at every age

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Chapter I

The future is now

The proper artistic response to digital technology is to embrace it as a new window on everything that's eternally human and to use it with passion, wisdom, fearlessness, and joy.

(Ralph Lombreglia, 'The right mix', *The Atlantic Unbound*,
4 June 1998)

Shaping our world – living and learning with technology

Technology is a tool that is affecting the way we work, play and communicate. From simple tools like can openers and magnifying glasses to complex machines like computers and jet airliners, technology can help in our work and give us more ways to keep in touch with friends and family. Technology is changing our lives; it's up to us to decide how to use it, how to make it work for – rather than against – us.

Tools that use technology, useful gadgets, and disposable items surround us, entertain us, provide useful services, and make our lives easier. We can do things every day that would have been considered impossible (or perhaps magical) not so long ago. The modern woman is able to awake precisely at 5:45 am to an electronic buzzer, a favorite radio station, a CD, or even recorded sounds of birds, the ocean, or a rainforest. Her home, cool during sleep hours, is warm and coffee is already brewing in the electronically programmed coffeepot. A quick flick of the remote control tunes the television to the local morning news where she can get a weather report while deciding what to wear for the day. After getting dressed, she may login to her personal computer, connect to the Internet, and check her email, review a calendar of appointments and projects planned for the day, and check her stock portfolio. All of these Internet resources have been configured

just for her needs. She then leaves the house, gets in the car, stops at an automatic teller machine (ATM) on the way to deposit a birthday check. Just before getting to the office, she visits the local florist to send flowers to her sister who just had a baby. She pays for the flowers with a credit or debit card, not needing to carry cash with her. Finally, she calls her administrative assistant from a cell phone to get some copies made for her first meeting of the day. This all happens before 8:00 am.

Society is expecting more and more of these things, and these same expectations cross into the realm of education and learning. Furthermore, employers now expect that new hires will have the ability to use technology to learn faster, produce more products, and network with people around the globe to solve problems.

The next 50 years will see a learning revolution unlike anything witnessed since the beginning of the printing press. Adults want and need to be able to learn things on-demand – whether it is at 3:00 am or 10:00 pm. Students are more mobile now and thus desire to learn in their homes, in their cars, in their offices, on the manufacturing floor, and while traveling. In particular, people want to obtain the required knowledge just before or right at the time they have the need for it.

Education and training's response to technological change

Traditionally, mainstream education and training has embraced technology at a slower pace than business. The belief that face-to-face instruction or tutoring is the most effective way to teach is still the accepted tenet of quality education at most institutions. Certainly, most learners would love to have the luxury of personalized instruction in a one-on-one setting – in effect a private instructor. However, that is possible only for a very few special or particularly wealthy learners. The typical college course ranges from a seminar with as few as 12–15 students to a large lecture with 500 or more students. Furthermore, a traditional college education in many parts of the world is very teacher-centered. In other words, the teacher provides the expertise and the knowledge to the student who then repeats it – in a recitation of some type – to commit it to memory. In some instances the students are asked to synthesize information and reformulate the material for their own needs – but this is rare in most courses. In this traditional education system, the application of knowledge occurs in lab sections that are separate from the lecture class. In many instances the application of knowledge is not tracked within the educational environment but

instead left to each student to struggle on his or her own after completing the course.

In a very few universities the opposite approach is taken. For example, at Cambridge in the UK, the student does attend limited class sessions (lectures); but the larger part of the student's time is spent independently in study and reflection around a self-selected group of topics. In this environment, the student must choose what to study from multiple resources given by the instructor as well as additional resources found by the student. Students then meet regularly (4 to 5 times per week) in a "supervision" group with up to six other class members and an instructor to discuss their progress and to hand in work accomplished in their individualized study pursuits. The supervision session may include additional questions asked by the instructor to help expand the student's knowledge. This is what is often referred to as a "student-centered" approach to learning.

A good online learning environment is much more like the Cambridge experience than the typical learning environment of other institutions around the world. It relies on a student-centered methodology that requires students to be responsible for their own learning and to be motivated to study in a continuous and consistent manner without the structure or requirement of attending physical class sessions.

As budgets decrease and student populations increase, the need for serving larger classes and more diverse people becomes an absolute necessity in the struggle to provide equal access to education around the globe. Online learning has become one of the responses to this need. Consequently, more and more training options are being developed using online learning as a part of, or the whole of, the education experience.

Though many people believe online learning is a new phenomenon brought about the spread of the Internet, the fact is that computer-based learning goes back about four decades, when large mainframe computers began to become a mainstay of government and business. In the 1960s extensive programs were written for a variety of training or research purposes, with an emphasis on development of simulations and thinking tools.

The overall philosophy of computer-assisted education through the 1960s and 1970s focused on electronic curriculum materials – self-study programs that students could use to learn specific content. Computers were used to provide a series of interactions consisting of content followed by a problem or question. The student would respond

and some type of feedback would be presented. This instructional design was based on a sound theoretical basis of behavioral and early cognitive learning theory. Furthermore, there was ample empirical evidence to show that students studying in this manner did achieve the objectives or learning outcomes. However, as computer technology became more sophisticated and personal computers (PCs) became more the norm both for business and for individual home use, it became clear that the previous computer-assisted approach was too limited and did not provide sufficient learning beyond memory and recall. In order for educators to truly embrace the use of computers, there was a need to provide more complex problem-solving and critical thinking opportunities.

With the advent of the Internet in the early 1990s, computers became accepted as superb devices for communication and information sharing. What really impressed students and teachers was the capability to interact electronically, search through databases, and work together to solve problems. So, interactivity remained of utmost importance. However, it was no longer the student-to-computer interaction that was prized. Instead, it was the person-to-person interaction with the computer serving only as an intermediary.

In higher education and corporate training, quality online education is now shaped by exploration and discovery, collaboration, connectivity, community, multi-sensory experiences, and authenticity related to student-centered needs. Let's look at a few examples of how online education is being used today and how these initiatives are characterized in online courses.

Initial physician training via online courses

A worldwide group of medical schools is collaborating to build an "International Virtual Medical School," allowing students to begin work toward a medical degree thousands of miles from a classroom. The virtual medical school project, known by the acronym IVIMEDS, is based at the University of Dundee in Scotland, but is actually an international collaborative comprised of over 50 institutions in 16 countries. Many of the participating institutions are in the United Kingdom; other contributing universities are located in Portugal, Italy, Singapore, Israel, and Saudi Arabia.

The goal of the program is to replace the conventional lecture-and-textbook approach of medical school, which some believe is "dehuman-

izing.” The new curriculum emphasizes the value of problem-solving over memorization, and, because it will rely heavily on computers, it can be used both on campus and off-site.

Supporters of this approach also see broader potential in long-distance medical education. Doctors from poor communities would be more likely to practice medicine at home, where they are needed, if they haven’t been forced to relocate for four years. Even in more developed areas, some medical educators worry that there won’t be enough doctors in 20 years to serve an aging and growing population.

The program is based on the concept of a “virtual practice,” where the computer presents students with patients to treat. For example, a video patient may appear in the course complaining that his leg hurts. He believes it started when he was jabbed in the leg with a rusty nail while mending his fence. First he just needs a tetanus shot and antibiotics, but he comes back the next week complaining about the deteriorating state of his farm and wondering if his family would be better off without him. The students then must examine him for depression. When students present their diagnoses, the computer will provide some automated feedback and direct the students to background reading. Faculty will also closely monitor students’ performance. Students and teachers will interact over email or on discussion boards, and at some point in the program students may be required to volunteer in local clinics or hospitals.

The plan is for students to be able to finish their first two years of medical school by completing a series of computer-based assignments as well as some hands-on work at local institutions. Then, like all medical students, they would finish their degrees by spending two years doing hands-on clinical work in a teaching hospital.

Science Learning Network for K-12 schools

In online education for children the major value of the Internet is to provide a link to many resources. This is done through special projects such as the Science Learning Network or through individual, instructor-developed WebQuests – inquiry-oriented activities in which most or all of the information used by learners is drawn from the Web – that lead the students through a series of Web site explorations along with questions or study points.

The Science Learning Network (<http://www.sln.org>) is an online community of educators, students, schools, science museums and other

institutions that demonstrate a new model for inquiry science education. The project provides an opportunity for young students to explore science on their own, through inquiry-based teaching approaches, or as part of their classroom experience. The site allows for collaboration among geographically dispersed teachers and classrooms, and a large variety of Internet content resources.

For example, the museum section allows students to visit museums in Finland, the United Kingdom, Japan, Singapore, and the United States. The “Exploratorium” keeps students updated on the top ten “cool sites” that cover topics as diverse as hunting crabs, exploring race and prejudice, and understanding engineering challenges (see Figure 1.1).

Virtual foreign exchange program to provide global student experience

In an attempt to improve students’ understanding of global issues, schools are seeking new ways to incorporate international education into their curriculum. In the United States, the University System of

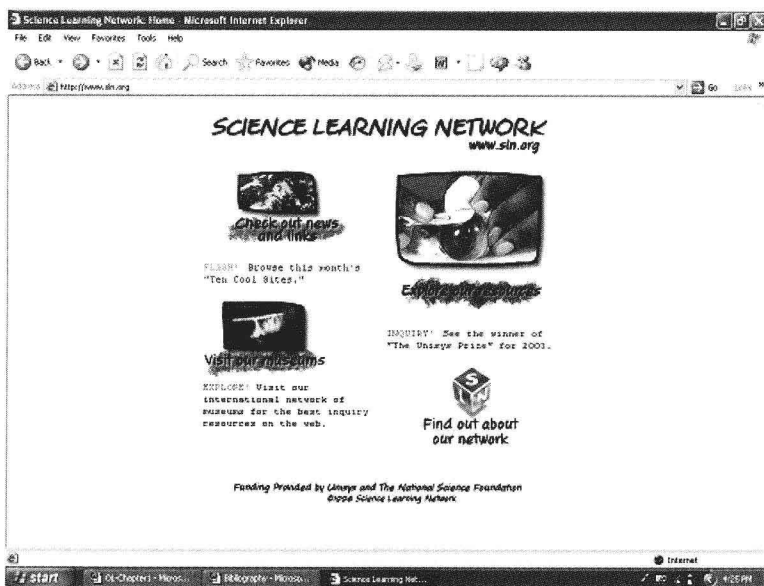


Figure 1.1 **Science Learning Network** (courtesy of The Science Learning Network, www.sln.org).

Georgia (USG) and the University of Munich in Germany have developed and implemented a unique collaborative approach that provides students with a global education experience, while giving them the opportunity to participate in a “virtual” foreign exchange program. During the fall 2001 semester, the institutions jointly offered their first two interdisciplinary, intercultural online courses. Over the next 18 months, a total of nine online courses – all focused on some aspect of the European Union – were offered to students from both universities. All nine courses were developed and team-taught in English by faculty members from a USG institution and the University of Munich.

The courses are part of a European Union Studies Certificate program, which provides undergraduate students from USG campuses and the University of Munich with the opportunity to earn a combined certification from both institutions (see Figure 1.2). The certificate is a collaborative program of USG and its European Union Center (www.inta.gatech.edu/eucenter), as well as the European Council. By taking part in the program, students learn about the European Union, gain knowledge of European history and culture, exchange ideas about business practices, and communicate electronically.



Figure 1.2 European Union Center University System of Georgia

Britain's e-University

UK e-Universities Worldwide (UKeU), which opened its doors in April 2003, is a joint initiative between the UK Government, 12 universities and private industry. UkeU was given £62m of funding from the government and has created a set of online courses for students around the globe. Undergraduate, post-graduate and life-long learning courses will be offered in subjects such as English language, science and technology and business. There is also an ongoing project with three Chinese universities to offer teacher training resources online.

Initially, the courses will be offered by Cambridge University, the University of York and Sheffield Hallam University. Students can complete some of the courses wholly online while others require them to take a traditional exam in a location near to their homes. Study seminars are held as online chats with instructors monitoring individual input to such discussions.

Online corporate training for all types of employees

The business world is also a prime candidate for online learning opportunities. In a global knowledge economy, businesses are under pressure to get new products and services to the marketplace ever more quickly, and to respond to increasingly demanding customers. To remain competitive businesses need to improve every aspect of their performance and ensure that they are benefiting from the economies of scale available through online training.

Many commentators have acknowledged that the speed at which an organization learns is its only sustainable source of competitive advantage. This has made the knowledge of how individuals and organizations learn a key business issue. Thus, corporations are taking a more critical view of how they develop their people.

In some areas traditional sources of education – colleges, universities and training organizations – continue to provide what is required. But just as the needs of corporations are rapidly changing, so are the ways that learning opportunities are delivered; mobile-telephony, electronic simulation, interactive and modular delivery of instructional tutorials, the Web, and digital television are some of the more obvious examples. Learning centers and corporate universities are just two instances of how online learning impacts the business world. In addition, online learners can enroll in Internet-based learning programs with commercial providers thousands of miles away (sometimes even in a different