

The Future of Distance Education

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Submitted to:
Eugene Kowch
EDER 677 – Telecommunications in Education
October 2, 2002

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Introduction to Distance Education

Distance education is still a growing phenomenon in this new millennium. Back in 1998 when distance education was still in its infancy, Cisco CEO, John Chambers had this to say, “The next big killer application for the Internet is going to be education. Education over the Internet is going to be so big it is going to make e-mail look like a rounding error” (Werry, 2001). Today, Cisco is a leader in computer hardware and distance education has exploded. The number of courses available online has increased from less than 100 in 1996 to close to 1,000 in 1998, to more than 8,000 in 1999, and will increase to more than 50,000 in 2000 (Stacey, 1999). Today, there are more than 66,000 courses available online (New Brunswick TeleCampus Distance Education Statistics, 2002). John Chamber’s vision has remarkably held true. What are the characteristics of this type of learning that has made it so attractive and what technological advances will continue to allow this type of learning to flourish? This paper will examine the literature on the key elements in distance education, the functions of these key elements, and what role these key elements play in the future of distance education.

Definition of Distance Education and Current Statistics

Distance education is not new. In fact, it has been around for over a hundred years. One of the earliest forms of distance education was done through correspondence courses started in Europe (Valentine, 1998). Commercial correspondence colleges provided distance education via the mail to students across the country (Burnett, 2001). The Open University (OU) of UK was one of the pioneers in this type of learning. The university has served over two million students since 1971 through OU’s virtual

education model that uses various multimedia methods (Burnett, 2001). The popularity of distance education can be seen in its label. The term distance education can, however, encompass many different types of learning. As Michael Moore, editor of the American Journal of Distance Education, and Professor of Education at the Pennsylvania State University, highlights, there is “contextual confusion” surrounding this term (Saba, 2002). The term e-learning or electronic learning, which we all imply, relate to Internet learning, does not include learning from the radio or the television. Desmond Keegan (Keegan, 1995) gives the most thorough definition in that “distance education and training result from the technological separation of a teacher and learner which frees the student from the necessity of traveling to a fixed place, fixed time, to meet a fixed person, in order to be trained.” The term distance implies that the learning can take place in any location whereas the term education is synonymous to fulfilling some requirements of sort for accreditation. In our society, time is money and no people relate to this more than working people. This is one of the biggest reasons that distance education caters to mature professionals who want to pursue learning, but not at the risk of missing a pay check.

A source of information on the growth of distance education can be found in online course directories. According to the New Brunswick TeleCampus directory, there are 1,952 institutions in 36 countries offering 66,107 courses in 17 languages. Not surprising is that Canada has 167 institutions offering 12,620 courses (New Brunswick TeleCampus Distance Education Statistics, 2002). In fact, Canada and the US lead the world in distance education, which is no wonder that English, is the predominant language of choice (Figure 1). Indiana University leads the world in offering 737 courses

online. Athabasca University and the British Columbia Institute of Technology (BCIT) are ranked 3rd and 7th respectively (Figure 2). Computing courses seem to be a predominantly favourite course offering while subjects of personal interest were not as popular. In the private sector, new, for profit, Education Marketing Institutions (EMI's), such as Apollo Group are filling in the gaps that traditional institutions' failure to respond to the needs of the market (Brogan, 2002). However, cost is still a major deterrent in that many courses still cost as much as \$1,000 and above.

Learning Theory – Online versus Traditional

There has been a shift in how online courses are designed. Online learners are products of a fast moving society that value time, productivity, and measurable results (Gibbon, 2001). It is no longer acceptable to transfer material used in a traditional classroom setting online, as it does not meet the needs of the online learner. Online learners demand only what is necessary to the learning process and shun traditional student life distractions (Gibbons, 2001). Tapscott (as cited in Reid, 2002) outlines eight shifts that he believes instructors and students need to make if they want a more powerful and effective learning paradigm. These shifts are from linear to hypermedia learning, from instruction to construction and discovery, from teacher-centered to learner-centered education, from absorbing material to learning how to navigate and how to learn, from school to lifelong learning, from one size fits all to customized learning, from learning as torture to learning as fun, and from teacher as a transmitter to a teacher as a facilitator. The traditional approach has always been teacher-centered where lessons taught by an instructor with the student methodically listening and taking notes. Distance learners do not do well using the traditional approach. Gardner found that there are many types of

intelligences and that curriculum must be designed so that it meets the learning style of those individuals (Brogan, 2001). Gardner also adds that nature has an important role in determining our biological preference of learning. The goal of distance education is towards a more flexible and customized type of learning. Future models of education will center on “re-useable learning objects in a customized modules with assessments for specific outcomes” (Werry, 2001). The constructivists’ theory also suggests that there should be a focus for structured activities, which are learner centered with students taking responsibility for the construction of their own learning (Brogan, 2001). Socialization is also important in the development of the student. Andragogy describes another approach based on the self-directed learning theory (Gibbons, 2001). In this approach, learners need to know why they are learning the material. The material should be learned experientially and problem solved. As well, the material should have something of immediate value. Malcolm Knowles, coined this term andragogy from the Greek work aner, meaning adult, and agogus, meaning guide or leader to describe the art of helping adults learn (Gibbons, 2001). In practical terms, andragogy means that instruction for adults need more focus on the process and less on the content being taught. This type of autonomous learning skill is essential for distance learners as there are limited face-to-face interactions. Distance learners have to take charge of their education in ways that traditional students aren’t required to. This type of empowerment works well for those who can show motivation and learn within a community. Empowerment also gives more meaning to what is learned and makes learning fun.

Teaching and learning should be aligned as a system. System thinking encourages the view that events happen in non-linear way (Brogan, 2001). It is important

to see the relationships as a whole rather than as a single unit. One analogy is the straw that broke the camel's back. All the events that led contributed to the breaking of the camel's back contributed to the break. The straw can't be attributed as the only cause (Brogan, 2001). Education must realign itself as a system that puts everyone that is involved as partners.

Learning Community in the Future

Instructor

The instructor as we know in a traditional classroom is a lecturer. However, in distance education, their primary role is a content specialist, "a person who provides instruction and guidance on the use of learning materials" (Downes, 1998). Downes identifies three key players in his triad model of distance learning: the student, the instructor, and the facilitator. The instructor must be a content specialist as much of the questions on the course material that are posed, he must respond to. The instructor must also track the student progress and receive student assignment and exams (Downe, 1998). The system or the instructor in turn must grade these with the results posted online and in the student's record. Because technology will make it easier to track and distributed grades, it will free up time for the instructor to concentrate on his role. The instructor does not lecture as much since most of the information is already contained in the course material. Most of the research suggests that quality instruction is the most important part distance education design. The attitude of the instructor as well as administration support determines success. Many times it seems that the administration believes that technology itself will improve a class. Pallof and Pratt (2000) clearly contradicts this belief, "technology does not teach students; effective teachers do." Effective instructors are prepared, understand the needs of their students, and have an understanding of their target

population (Valentine, 2002). More importantly, they are not chosen, but self selected (Gibbons, 2001). A strong commitment from both the instructor and administrator must be there in order for students to truly have a positive experience in distance education.

Facilitator

The facilitator is the new player in this triad model of learning. Because of the distance, the facilitator has the biggest role to play. The facilitator must be located near the student's home community, generally based in a community learning centre or school (Downes, 1998). Their primary role is to provide technical support in the use of computers, the Internet, online course material, multimedia materials, and other technology (Downes, 1998). More importantly, they act as tutors and provide coaching skills on studying and time management.

Student

Many people favour distance education because they believe in its flexibility. Many though are disappointed when they realize that it is much more work than they had expected. This medium of learning is not for everyone. Most successful distance education students are mature professionals with defined goals. They possess a number of characteristics such a tolerance for ambiguity, a need for autonomy, and an ability to be flexible (Valentine, 1998). As well, they have to be "more focused, better time managers, and able to work independently and with group members" (Valentine, 1998). Successful distance education courses give a strong sense of collaboration. Students who can conform to these values will be more involved and learn more from the experience. Because there is no visual cues in this type of learning, sometime written messages may be "misperceived as a verbal attack" and cause community problems (Valentine, 1998).

The profile of a distance learners in a study conducted by the Institute of Higher Education Policy (1999) revealed that many had many similar characteristics, which were strongly correlated with student success. The characteristics listed were:

- Married students
- Female students
- Students rated themselves highly on various measures of persistence related to taking on new projects
- Students who rated the consequences of not passing “serious”
- Students who rate their chances of success in their studies higher than non-competitors
- Students who did not need support from others to complete difficult tasks and did not find it important to discuss work with other students
- Students with high literacy levels
- Students who rated themselves as well organized in terms of time management skills and said they generally had the time to do what they intended to do
- Students who rated their formal and informal learning to be high in terms of preparing themselves for university studies

(Brogan, 2001)

As stated earlier, student must demonstrate initiative if they are to succeed in distance learning. Because each student is unique and have individual needs, the curriculum must be tailored to suit those needs.

Learning Host

The learning host is the institutional support for the triad model. In distance education today, the learning host is usually the same institution that gives the accreditation. As well, the course material is designed and taught by the same institution. This is also the same institution the students attend. The future in education will look a lot different with the institutions “brokering their courses” (Downes, 1998). Student will not be attending the same institution where the course is developed and taught. This educational brokering will allow for a “leaner, flatter, more flexible, and efficient

institution, one that closely resembles the structure of the modern company” (Werry, 2001). This acceleration of university to this business model will allow them to be more competitive in this changing educational landscape. There is much argument from the education community as this model will essentially lead them into “digital diploma mills” where their work is automated, reproduced, and commodified” (Werry, 2001).

Intellectual property and copyright issues will also be a big concern to all those involved. In times, when universities and colleges are competing for students, any kind of competitive edge now, will be a factor for future success. Universities and colleges that could have led the transition of a new business model and could have captured a larger piece of the marketplace for themselves will find that if they wait, they will become dangerously uncompetitive, like IBM’s mainframe business in the 1980’s” (Werry, 2001).

Technology

Technology without a doubt is the catalyst for the rise of distance education. However, technology should not drive the content nor should it be the sole factor in determining success. Bandwidth is major concern for distant learning hosts. Bandwidth is the amount of information being transferred from the host institution to the student’s computer. In some areas, even though a 56K modem is being used only 28K, which is roughly a page of text, a medium sized image, or a few frames of video, is being transferred (Downes, 2001). In the future, bandwidth will be essentially unlimited. Downes (2001) believes that there are already projects in place that uses a network of LEO (Low Earth Orbit) satellites that allows for better data compression technology, such as ADSL. Computers will no longer be function based. The trend sees the courses

being started up on the computer first followed automatically by the applications that are essential to the course (Downes, 2001).

We have seen computers over time decrease in price. These less expensive machines have also increased in power and storage capacity. The introduction of tablet PC's, desktop laptops, and PAD's will allow for better accessibility. These devices are a shrunken version of a laptop, but with more power. It is light, portable, and packed behind a high resolution LCD screen that you can write on with a specialized stylus. Handwriting and speech recognition software could be added to convert notes to electronic text allowing for people with disabilities to access this type of learning. According to PC World (2002), the future specifications for desktop computers in the year 2004 look something like this:

- 4 – 5 GHZ microprocessor with 512 MB of RAM
- 300 to 400 GB hard disk
- re-writeable DVD
- 3D graphics with 128 MB of video RAM
- 18 to 21 inch flat panel LCD screen capable of 1600X1200 resolution
- USB 2.0 and IEEE 1394 ports
- Window OS
- 802.11b wireless network
- price: \$1,500 to \$2,000

Needless to say, computers will be less expensive and more powerful which in turn will allow distance education to filter into gaps in our society that have not been able to access this type of learning.

Third generation wireless technology which uses broadband, packet based wireless technology will offer a high degree of commonality of design world wide and compatibility of services (FCC: Third Generation, 2002). Though, wireless networks are not secure, its prices have come down tremendously, and offers anyone with a little understanding of networks to install their own. This technology is very popular with bike couriers as they surf for free beside buildings that house wireless networks. This method of surfing is has its own subculture called “chalking”. This is where people use chalk to draw out a target on buildings to label them as places to access the Internet. People with a laptop and a wireless network card can then access it by directing their laptop towards the building. In effect, this continued trend will provide for greater access to people of all demographics.

Other technologies that are hot include IPv6, which is the latest Internet protocol. Microsoft explains it best when they say, “IPv6 is designed to solve many of the problems of the current version of IP (known as IPv4) with regard to address depletion, security, auto-configuration, extensibility, and more. Its use will also expand the capabilities of the Internet to enable a variety of valuable and exciting scenarios” (Microsoft, 2002). Another important technology that involves copyright is digital object identifiers (DOI) (DOI, 2002). This technology labels and tracks intellectual property online. Distance learning is becoming more of a “broker market” where people developing the material might not necessarily be teaching the content. With this in mind, copyright and legal issues will be on the rise. A DOI can apply to any form of intellectual property in any digital environment. On digital networks, all intellectual property is simply a string of bits. DOIs have been called "the bar code for intellectual

property": like the physical bar code, they are enabling tools for use all through the supply chain to add value and save cost (DOI, 2002). A DOI is different from an URL (Uniform Resource Locator), a numerical label used to refer to World Wide Web material because "it identifies an object as a first-class entity, not simply the place where the object is located" (DOI, 2002).

As distance education moves to a more collaborative framework, interactivity will be key to web based learning. Interactivity is cited as one of the most important elements of successful online learning (Burnett, 2001). The collaborative learning framework allows the students to be involved in the learning process and brings with it a new sense of group dynamics. The technology that will bring this all together will be video compression or real time communication. Video compression technology will eliminate the loneliness and the miscommunication that frequently occurs in asynchronous communication. It will offer the need for immediate feedback and develop a strong sense of community.

Modularity or learning in chunks will also be a factor in how distance education is delivered. Online courses will no longer be seen as a single unit, but rather, a collection of component parts, each of which may be replaced or upgraded as the need arises (Downes, 1998). This in effect will allow students to customize their courses to their individual needs and get credit for it. What was once a linear, static collection of text-driven content can be transformed into a well organize, dynamic, and engaging learning experience (Heins, 2002). Traditional education has always followed the linear format where students learn the curriculum in a structured way. It is not flexible to students who can absorb the material faster. Furthermore, it is not flexible to students who want to

learn other materials, which meet government guidelines, but is not what other students are learning at that particular time.

The concept of learning objects, which is becoming widely popular among distance education hosts, is a concept where material “objects” can be modified and reused for a particular individual or course. This allows developers and users to leverage databases, Internet, and other digital technologies to prepare learning content in small chunks that can be used alone or dynamically assembled to provide “just enough” or “just in time” learning (Heins, 2002). With this component approach in place, distant learning can be customized and individualized. This distributed design gives learning more meaning and empowers students to pick and choose, just like a menu, on what they want to learn and how they want to be evaluated. This allows for greater accountability, as the methods in which they learn and are evaluated are personal choices rather than fixed tasks.

Discussion

Education has taken a dramatic shift from the tradition to the non-traditional. This is happening due to budget constraints, public outcry, and more parental involvement. With the limited budget given to them, school boards are finding creative ways to generate profit. We are seeing different models of education springing up. There are outdoor schools, Montessori schools, mini-schools, year-round schools, fundamental schools, cadet programs, sports training academies, aboriginal schools, science foundation schools, demonstration schools, and career technical schools created yearly. Distance education is a result of these changes.

The public have always advocated change. They see more value for their money with the teaching of the fundamentals skills - reading, writing, and numeracy. A greater

outcry always results when foundation skills test scores are made public and show that students are not performing at the expected level. Teachers, on the other hand, feel constrained by the curriculum, which is skills based, and only ascribes to results that can be measured. This is similar to the real world where it is a competitive economy. The students are not taught narrow bands of knowledge without understanding the relationship between those narrow bands. As partner in the education process, parents are becoming more involved and are increasingly disenchanted with the system. With more knowledge over time, they begin to question how things are done similarly to a doctor – patient relationship. Their frustrations usually lead to change, but the change is usually for the good of their children and not to the whole community. With all these factors working against traditional education, distance education has taken shape. The biggest draw to distance education when planned and implemented to the tenets of distance learning is its use in promoting critical thinking. As a society, if we fill it with people who can critically think and have a balanced perspective on the world around them, then we have a society that thrives. On the other hand, if we fill it we people who have a limited scope then we create a society of drones (Smith, 2002).

Distance education has evolved from mail order correspondence courses to where it is today. Today, technology has taken over and all material is delivered to the student's computer. Economics has played a large part in its evolution as many universities have seen the financial potential of this type of learning. Their hope is that it will reduce the cost and increase the number of students an instructor can handle by using technology to reduce their marking load (Downes, 1998). The elimination of the need for expensive classrooms and infrastructure has also made distance education attractive. However,

research has suggested that distance education is more labour intensive and has a larger start-up cost (Downes, 1998). The greater share of the savings is actually realized by the students not the host institution.

The future holds bright for distance education. Merrill Lynch's publication "The Book of Knowledge" (1999) shows that we are embarking in a new economy (Brogan, 2001). Life long learning is becoming the norm. No longer do we pursue four-year degrees, but rather forty-year degrees. Training is becoming the number one source of competitive advantage. Distance learning will become more of an individualized distributed learning. There will more high tech multimedia centres instead of relying only on correspondence and video. One size fits all learning will not be acceptable as tailored programs will be the norm. We will seek out brand name universities and celebrity professors rather than choosing institutions based on geography. Course content will evolve from "just in case" to "just in time" (Brogan, 2001). Finally, distance education will no longer be isolated, as virtual learning communities will take its place. All these changes are exciting as we embark on this long journey to find a cost effective method to digitally deliver courses that meet the needs of the individual, but at the same time doing it as though it is a face-to-face encounter.

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Figure 1 – Courses Per Capita (World)

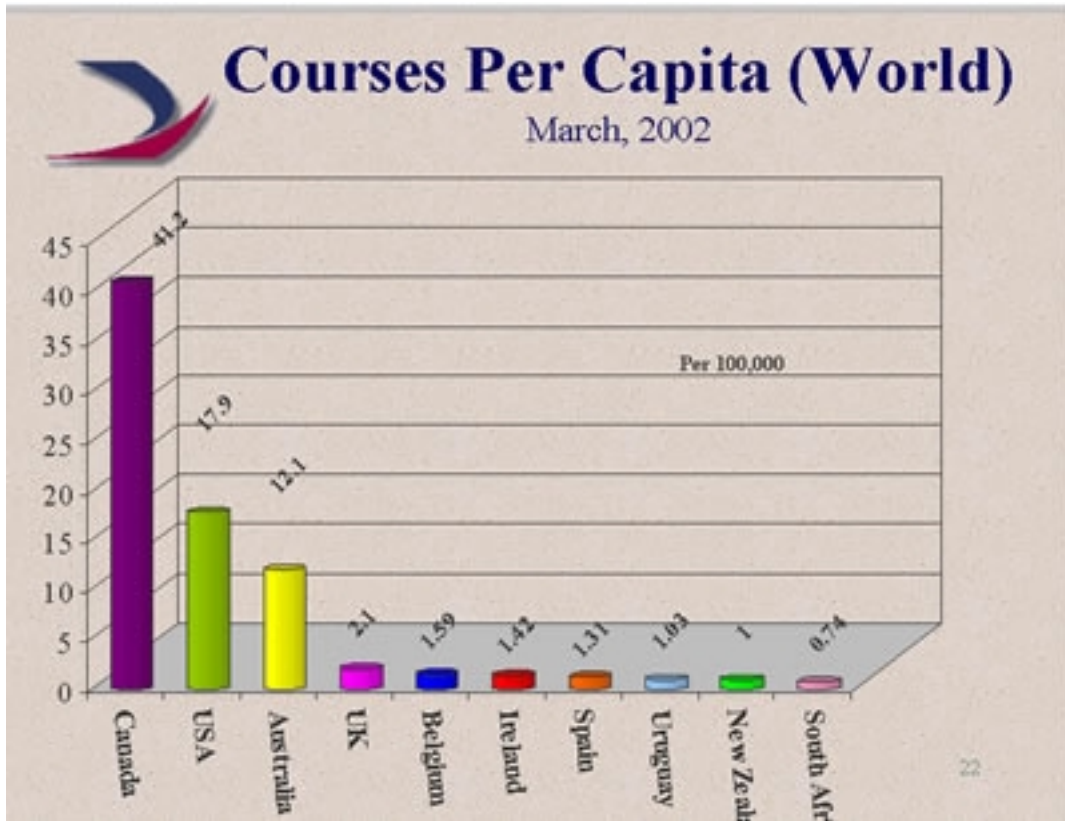


Figure 1 – Distance Education Courses per Capita (World). March 2002.

Figure 2 – Top Ten Universities

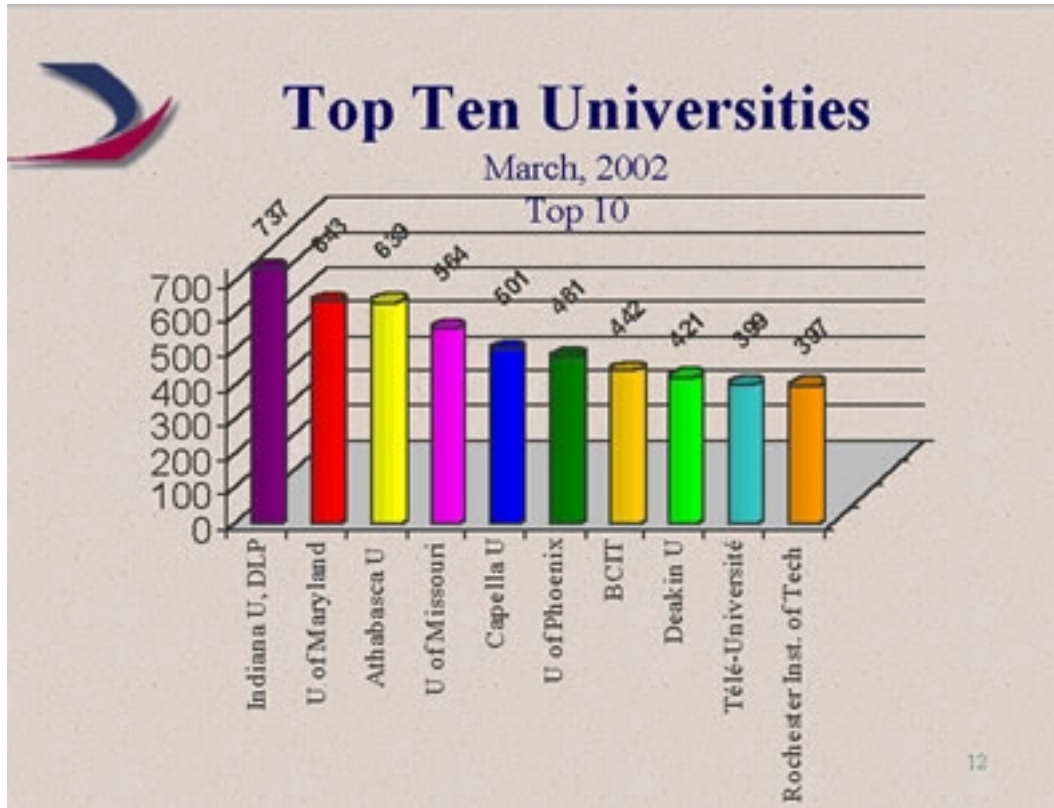


Figure 2 – Top Ten Universities for Distance Education. March 2002.