DISTANCE EDUCATION AND THE IMPACT OF TECHNOLOGY AROUND THE WORLD

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INTRODUCTION

Distance Education courses have been available since the beginning of the 19th century in the form of the correspondence course. These courses offered education and degrees to students who, for a variety of reasons, were not able to attend a school as a traditional student. However, these courses had a great number of drawbacks and were considered vastly inferior to those offered in the traditional classroom. For the most part, this was quite a valid belief. The long delays in communication, the lack of interaction, the inability to monitor the progress or veracity of those taking the courses and the lack of regulations concerning courses themselves, all added to the image of Distance Education as a second-rate alternative to a "real" education. However, with the advent of new technologies, distance education has overcome many of the problems and obstacles that once kept it on the fringes of respectability. Modern Distance Education makes use of Computers, the Internet, Television, 2-way Video, fiber optics, microwave, digital phone lines, satellites, radio, ham radio, video and audio tapes, as well as normal mail to deliver instruction. The emergence of satellite technology, video-conferencing and the Internet in particular has resolved many of the inconveniences caused by this non-traditional approach. Today's students are the first true Internet generation (Chiaramonte, 1997). Their expectations and style of learning are greatly influenced by the computer and other multimedia.

Given the variety of technologies available, it is important to understand the inherent strengths and limitations of each venue to optimize the learning environment.

SATELLITE

Satellite courses are among the most studied of the distance education technologies and is used for teaching groups of people at a remote location as Satellite can be broadcast to a great number of people at one time. Innovations in technology, which now allow for interactivity and multimedia enhancements, are taking satellite and telecourses beyond the traditional "tele-lecture" (Larson and Bruning, 1996). However, due to the high cost of satellite and transponder time (averaging between $200 - $800 /per hour) and the limited number of facilities with the necessary equipment and expertise, satellite teaching is only feasible if the number of students who can meet at each site is fairly large (U. of Texas, 1998).

COMPUTER MEDIATED LEARNING

The computer has been described as the most versatile and rapidly growing option in the field of distance education. Moore's law stated that computer power will double every 18 months into the foreseeable future. In addition, communications bandwidth (the lines connecting computers to the world) have become less expensive and more abundant almost every day. The affordability and flexibility of the computer as a teaching tool has made it a forerunner in the educational technology/distance education forum. The computer also has another advantage in the distance education race; it can be accessed from one's own home (Kinnaman, 1997). Schneider, Glass, and Henke (1997) commented that the computer puts virtually any information

or solution at your fingertips. This immediacy of response and variety of ways to access the material has changed the way that students learn and, for the first time, has made lifetime learning a real possibility.

Hypertext and hypermedia have become the primary modes of access and storage in the computer environment today. Text and media are displayed in the normal manner but hyperlinks on the page allow the user to move through the information in a non-linear fashion. These hyperlinks can connect users to additional information, new documents, or even quick-time movies and audio files. Hypertext can be used to travel around the World Wide Web (Webopedia, 1998). However, it can also stand alone using mediums such as Interactive CD-ROMs. The educational opportunities and uses for hypermedia and hypertext are virtually limitless. In addition, the ability to tailor the lesson to the individual student makes this technology extremely valuable as a teaching tool (Maddux and Johnson, 1997).

The Internet has quickly become the fastest growing delivery medium for distance education available today. Between November 1995 and March 1996, Internet access in the U.S and Canada increased over 50% (Maddux and Johnson, 1997). It has the capacity for both synchronous and asynchronous transmission and is able to access and download audio, video, graphics and text all at a comparatively low cost. In addition, the Internet has worldwide access with over 25 million computers connected in more than 90 countries. This instantaneous connection across all boundaries has created a true "virtual community" (Hirumi and Bermúdez, 1996).

It should be noted that the phrases "Internet" and "World Wide Web" are often used synonymously, however, this is incorrect. The Internet refers to the physical network of computers that are linked via smaller, regional networks to cover create a global network. The World Wide Web is the body of information that can be accessed via the Internet (Webopedia, 1998). The information on "the Web" is maintained and managed by a variety of sources. Anyone with server access can publish documents to the web. While this open access allows for a great degree of editorial freedom, it also means that the information accessed may or may not be accurate. When retrieving and using information using the World Wide Web, it is necessary to make sure sources are credible (Ferrell, 1997).

VIDEOCONFERENCING

Many of the complaints regarding distance education and computers are related to the isolation of distance students from both teachers and other students (Calvani et al., 1997; Hirumi et al., 1996). New developments in "streaming" technology has allowed "real time" communication between participants (Kinnaman, 1997). Videoconferencing technology can actually create a more interactive environment than the traditional classroom by bringing in experts and groups that would not otherwise be feasible (Gottschalk, 1996). Despite many advantages, videoconferencing has limitations. While the camera allows the participants to see each other, the quality is less than that of satellite or telecourse delivery. In addition, the display on the monitor does not pick up the subtle body language or unconscious signals that are used in face to face communication (NCET, 1996). Until recently, the equipment needed for videoconferencing was cost prohibitive for most colleges and universities. However, the

hardware is now available at a cost that will allow this medium be a major market segment through the millenium (Webopedia, 1998).

DISTANCE EDUCATION AROUND THE WORLD

Distance Education is a particular boon to students in countries where there have traditionally been few opportunities for advanced education. The largest Distance Education Student Body is part of UNISA at the University of South Africa with over 200,000 enrolled around the world (Laws, 2000). The development of "Mega-Universities" such as Korea's National Open University and India's Indria Gandhi National University, are helping to serve the growing interest and need for higher education on a global basis. In China alone, over 100,000 students a year receive degrees from the China TV University System. (Potashnik & Capper, 1998).

In this article, we hope to look at the impact of modern technology and distance education in different parts of the world.

OPEN UNIVERSITY

The Open University (OU) is Britain's Largest University. Since its inception, it has served over 2 million students. Today, it boasts an average of 125,000 Undergraduates and 40,000 Postgraduate students per year. In addition to official students, 44,000 "studypacks" were sold in 1999 to people who wished to study without formal enrollment. The average student is older than the typical undergraduate, most students are between 25 and 45 years old. However, the oldest recorded graduate was 94 (OU, 1999).

Established by Royal Charter in 1969, Open University was to offer equal access to education for all Britons. Because of the rigid academic system in place, many people in Great Britain were not able to qualify for the limited space in the traditional universities and Open University provided a much needed opportunity for people to advance their education. Almost one-third of first degree graduates since 1973 have held less than the minimum entry requirements for a traditional university. A dedicated student can earn their degree in around three years but most students take between six and seven. The average cost is around 3,500 pounds (OU, 1999) The Open University is based on a distance education model. Personal contact and support comes through locally-based tutors, a network of 300 regional study centers in the UK and overseas and annual residential schools. The courses use a variety of teaching media such as customized textbooks, television and radio programs, audio and video tapes and home experiment kits and, more recently, the computer. Currently, there are approximately 50 diverse programs of study and over 300 individual courses, everything from Art History through Technology. However these courses are available only to people in the European Union, Switzerland or Slovenia. Twelve courses are offered outside of the European Union.

"Open University courses are designed for students studying in their homes or workplaces, in their own time, anywhere in the UK, Ireland, throughout Europe and often further afield." Over 80% of undergraduates are in paid employment while enrolled, often their employers will assist with the tuition and fees (OU, 1999).

The Open University rates in the top third of all UK Universities in research and receives almost 18 million pounds per year in research funding. There are currently 700 students seeking graduate degrees and 480 researchers in 26 areas of research. This is an increase of 24% in only 4 years (KMi, 1999).

Traditionally, the technologies in use were Radio and Television. Then came audiocassettes and a bit later, videocassettes. In early days of video players, OU would loan them to students along with the lecture tapes. However, the current trend is toward Computers and Information Technology. Already, over 150 courses utilize Information Technology as an integral part of the curriculum. There are over 62,000 students taking courses which require the use of a computer and thousands more use computers for research, word processing and email. Over 170,000 emails and computer conference messages per day are read over the OU servers. Five courses are offered completely on-line and an "Internet Stadium" is available which can host up to 100,000 people. Additionally, OU boasts The Public Associate Lecturers, Alumni Customers, Enquirers, Students (PALACES), a project to develop an enterprise system for the University and FirstClass, an electronic conferencing system which allows threaded discussion and bulletin board communications for over 150 courses. It processes 20,000 mail and 150,000 discussion group messages per day (OU, 1999).

Because of this technology boom, a great deal of funding is being invested in developing technology and training people to use it. Ten million pounds over a five-year span has been promised for the program Integrating New Systems and Technologies into Lifelong Learning (INSTILL) this program will assist in the teaching and improvement of information technologies.

The Knowledge Media Institute (KMi) is just one of the organizations created under INSTILL. KMi alone boasts over 30 ongoing projects. "Knowledge Media refers to the process of generating, understanding, and sharing knowledge using several different as well as understanding how the use of different media shape these processes." "Knowledge Media encompasses a number of technologies, including Internet-enhanced collaboration media, multimedia environments for disabled learners, intelligent agents, organizational memories, digital documents, scientific visualization and simulation tools, and representations of knowledge of both a formal and informal variety." To date, KMi has 40 employees, 70% of which are funded by external monies (Kmi, 1999). Some of the Current Projects and programs developed through KMi include:

- Knowledge Management – ENRICH
- Knowledge Discovery – BKD
- Large Scale Telepresence – KMi Stadium
- Problem Solving Methods for Configuration Design – ENCODE
- Topic Accessed Video
- Alternative Media for Print Disabled Students
- Psychological Agents – Meet-O-Matic and Luigi
- KMi Planet – Intelligent News Server
- The Virtual Microscope
- The FirstFlight Project

- Mars Buggy
- Working with Schools and the Community – The Heronsgate Middle School Site
- Synthesized 3-Dimentional Audio
- Remote Experimentation – Remote access to comprehensive teaching laboratories
- Interactive Documents for Knowledge Communities – D3E (Digital Document Discourse Environment)
- JIME (Journal of Interactive Media in Education)
- Student Guidance Support Systems – A student advisor project
- Intelligent Brokering for Knowledge-Component Reuse – The IBROW-3 Project
- Heath Care Management – The HC-REMA Project
- Patient Management Workflow Systems – The PATMAN Project
- Software Visualization – ISVL (Internet Software Visualization Lab)
- End-User Programming Environments – HANK: A graphical cognitive modeling language for novices
- Digital Libraries – The Scholarly Ontologies Project
- Telephone Planet
- The Human Cognition Research Laboratory
- Knowledge Radio

EUROPEAN DISTANCE EDUCATION

Thanks in some part to the success of Britain's Open University, Distance Education has found acceptance and success in Europe. Well known European DE programs are found in Belgium, France, Germany, Italy, the Netherlands, Portugal, and the UK (Lintz & Tognotti, 1995). Furthermore, the dissolution of the former Soviet Bloc and the development of the European Commission has opened new avenues for expanding knowledge and collaboration among the European Countries. Add to this the development and availability of modern technologies such as computers and the Internet and the technological savvy of many Europeans and you have all of the necessary criterion for a strong Distance Learning Society. In the interests of encouraging the development of distance education, several pan-European societies have been created over the past few decades. While some of these institutions originally focused on the traditional "book and paper" mediums, the development and use of modern technologies has become a major part of these societies' networking. A brief description of some of the main Distance Education Organizations in Europe that have embraced the possibilities of the Internet are as follows:

The award winning International Centre for Distance Learning (ICDL) is "An International Centre for research, teaching, consultancy, information and publishing." Is part of Open University's Institute for Educational Technology has been a leader in library and database collaboration for over 15 years. It contains information regarding over 31,000 Commonwealth distance learning courses and another 1000 worldwide institutions. Additionally, there are over 11,000 distance learning related books, abstracts, journal articles and research reports and dissertations available in its database (iCDL, 1999).

The International Council for Open and Distance Education (ICDE), a global organization of educational institutions, authorities, corporations and other associations is

dedicated to the development of distance education, open learning, and flexible lifelong learning. Based in Oslo, Norway, has members from over 130 countries and works to facilitate cooperation and sharing in the distance education arena (ICDE, 2000).

The Observatory of Technology for Education in Europe (OTE), is devoted to the promotion of New Technology for Education and Training in Europe. It was established in 1988, to try to assess and study the impact of Educational Technology on European markets and to identify potential products for the modernization of existing Education and Training systems. OTE's members come from countries across Europe and are experts in the field of Information and Communication Technology for Education and Training (OTE, 1994).

The European Association of Distance Teaching Universities (EADTU) mission is "to promote and support the creation of the European Open University based on an existing Network of open and distance learning provisions." EADTU was established in 1987 to foster cooperation among the European Union Educational Organizations. It is comprised of 17 national members from 15 countries and provides DE programs to over 400,000 students. Most of the students are working adults between 30-40 and are served by over 5000 academic staff in 875 study centers including 150 conventional universities. Many of EADTU's programs receive funding and support by the Commission of the European Communities (Lintz & Tognotti, 1995).

The European Distance Education Network (EDEN) was established in 1991 following the first pan-European conference on distance education in Budapest in 1990. Its aim is "to foster developments in distance education through the provision of a platform for co-operation and collaboration between a wide range of institutions, networks and individuals concerned with distance education in Europe." The association is the only European organization which is open to anyone in Europe: individuals as well as institutions with an interest in distance learning are welcome (EDEN, 2000).

The European Regional Education Network (EREN) is funded through the European Union's Leonardo Program and the Scottish National Economic Development Agency, Scottish Enterprise. It focuses on including and bringing together some of the under-represented countries and practitioners in Europe (EREN, 2000).

The European Association for Distance Learning (EADL) is a European association of privately-owned and non-governmental colleges, institutions and individuals working in the field of distance learning. It represents nearly all member countries of the European Union as well as members from Iceland, Norway, Russia, Switzerland and Turkey. It also has associate members from in the US, South Africa and Asia. Altogether EADL members provide 4,000 different courses and work with more than one million students all over Europe (EADL, 2000).

In addition to these Pan-European and Global Associations, many countries have their own associations for the promotion and development of Distance Education. Among these are: The Finnish Association for Distance Education (FADE) (FADE, 1998); The Norwegian Association for Distance Education (NADE) (Atlas, 1999); The Swedish Association for Distance Education (FADE) (Atlas, 1999); The National Distance Education Centre (OSCAIL) in Ireland (OSCAIL, 1999); France's Centre National d'Enseignement a Distance (CNED)

(CNED, 2000); and Spain's Universidad Nacional de Education a Distancia (UNED) (UNED, 2000) and CCC Center, Distance Learning Institution (CCC, 2000).

The European community is doing more than just studying the possibilities of the World Wide Web, they are putting their plans into action. The Networking and Collaboration of European Libraries as an educational tool has been a major topic of interest to the European Union. In 1984, the European Parliament first recognized the political and social importance of libraries. In 1985 the Council of Ministers adopted a Resolution which called for action by the European Commission and investigation began into understanding the impact of the library sector and to identify areas where libraries needed assistance in the developing technological and information arenas. Looking for areas of collaboration and co-operation between European Countries in order to better use their resources was high on the list of priorities. To this end, three lines of action were adopted (Cordis, 2000).

- ***Action Line A*** is the application of network-oriented internal library systems and the use of tools and technologies for these individual local networks. The focus was on the development of systems that could store and manage a variety of electronic formats as the libraries needed to be able to acquire and handle materials in electronic form and to convert existing resources so that they are available through telematics systems.
- ***Action Line B*** is the development of a Telematics System for Inter-Library cooperation and networking so that information resources could be shared. The ability to access information from libraries across Europe would considerably enhance the resources and understanding of all participants.
- ***Action Line C*** focuses on providing access and services to the public. The European Union recognized that these changes were going to cause a shift in the role of libraries and librarians. Traditionally, the role of the library was to collect and maintain records and resources to be used by their clients. However, as the networking of multiple libraries would provide access to more than just the materials found within their walls, it would be necessary to provide access and assistance in using these remote resources as well. (Cordis, 2000)

Telematics for Libraries is an ongoing part of the Action Plan and promotes the development of different projects and resources. It also hosts a Research List of European initiatives to improve delivery of library services to distance learners (BUBL LINK, 2000). In order to promote and facilitate Telematics, the European Union contracted with the German Libraries Institute (DBI) to develop Project Exploit. Project Exploit offers presentations and workshops as well as publishes *Exploit Interactive*, a Pan-European magazine developed to promote and encourage use of new library information technologies and ideas (BUBL LINK, 2000; Exploit, 2000). As of March 2000, Telematics had over 100 libraries in its member countries, each with different projects that had were ready to test the results of their various programs in a collaborative manner (Cordis, 2000). Some of the projects that are already in use or are ready for delivery include:

The Information Society Programme – This program was developed under the Telematics to provide support and user friendly information regarding multimedia content and tools (Cordis, 2000).

Manuscripts And Letters Via Integrated Networks In Europe (MALVINE). MALVINE focuses on improving online access to a number of European manuscript holdings. The basic purpose of MALVINE is to build an electronic network of relevant institutions in Europe. This network will maintain the independent and individual technical solutions and cataloguing traditions locally used by the data providers and will be accessible from all over the world using the World Wide Web (Exploit, 2000).

Heritage and Culture through Libraries in Europe (HERCULE), a project which allows children to create and maintain web materials. The idea is to teach them skills such as multimedia creation and web design and at the same time help them learn about European Culture (Exploit, 2000).

Former Eastern Bloc Counties such as Estonia are also looking at Distance Education and the Internet as a way to assist them in bringing their libraries (and librarians) up to date. Shortly after Estonia gained its independence, the government developed a plan to modernize their library system and to develop an information technology system. The plan is to take place in the period between 1996-2005. In order to run and maintain this new system, the country's nearly 3,200 librarians will need additional professional development and training and to this end, The Centre for Information Work was established at Tallinn Pedagogical University (TPU) to provide this instruction. In addition to traditional courses, distance education courses are also offered. Due to the subject matter the Internet is the logical choice for offering these courses. Making the Internet an even more attractive medium is Project Tiger Leap, a Estonian program for school computerization. The goal of the project is to provide computers to every school, at a rate of 10-20 computers per student. This availability of computers will make on-line learning a feasible reality (Virkus, 2000).

There is also great deal of interest and development of a Virtual Education Environment (VEE) which combines the academic environment with the virtual environment of Multi-User Object Oriented Dimensions (MUDs and MOOs) (Lintz & Tognotti, 1995). Many European institutions such as Great Britain's Open University "Internet Stadium" are being developed to create viable virtual environments for learning and collaboration. The following are just a few examples:

Clyde Virtual University offers a "clickable campus" including a Lecture Theater, Library, Administration Office, Virtual Café, and Assessment Hall (CVU, 1997).

The University of Twente in the Netherlands also boasts, among other things, a European Learning Environment and a Virtual Campus. The University was founded in 1961 and offers 10 different programs mainly with technology, engineering and mathematics emphases. It also is the home for the Centre for Telematics and Information Technology (CTIT) which is a "multidisciplinary research institute within the area of telematics and information technology" (Lintz & Tognotti, 1995).

Fern Universität is a German Distance Learning University. It is an autonomous, stand-alone university which is recognized as a scholarly institution by the German University System

Founded in 1974, it offers over 1000 courses to almost 46,000 students. There are six main academic departments: Economics; Electrical Engineering; Computer Science; Mathematics; Education, Social Sciences and Humanities; and Law. In addition to the centers in Germany, it has study centers in Austria, Hungary and Switzerland. Over 2000 students have permanent residency abroad in more than 90 countries (Lintz & Tognotti, 1995).

While not technically European, The Globewide Network Academy (GNA) deserves recognition as an innovative international virtual concept. GNA is an international syndicate of educational and research organizations who work to improve education by creating a marketplace for on-line courses and to provide technical and organizational support to those offering courses using the World Wide Web. While the GNA server is based out of Texas, all administration is handled on-line. It has been called "The world's first virtual corporation." (Lintz & Tognotti, 1995).

Internet safety and quality is not just a concern of users in the United States. In 1997, the European Union Parliament passed a resolution known as the Internet Action Plan "To promote safer use of the Internet by combating illegal and harmful content on global networks." Projects accepted under the 1999 call for proposals include: three projects addressing the creation of a European network of hotlines; five working on the development of rating and filtering systems for Internet content; and 2 dealing with preparatory and awareness activities. The call for year 2000 proposals is underway and they have already received over 80 proposals from 28 different countries (Cordis, 2000).

JAPAN

In Japan distance education has been taking place for quite a number of years but under a different name. In fact, in a 1988 edition of a Japanese professional encyclopedia of education the word "enkaku kyoiku" or "distance education" did not appear. It is only in the past ten years or so that it has become a more common word in the educational vernacular of Japan. However, "toshin kyoiku" or "correspondence education" has been around and a regular practice since the late 19th century.

The first recorded account of correspondence education took place in May 1883 at a school called Hubunkan. They offered a class about Chinese literature to off campus individuals. Later that same year in September another school called Tokyo Gakkan offered correspondence courses to individuals in stenography and bookkeeping. From these and other accounts, it is safe to say that correspondence education began in Japan no later than 1883.

It is likely that the number of students who participated in these early attempts of distance education was very small. However, the numbers soon increased to an estimated 250,000 to 300,000 at the turn of the century (Hidetoshi, Kato, 1997). Although the number of students began to climb rapidly, they were continually faced with many challenges in attempting to gain additional students, recognition, popularity, respect, and especially accreditation. Additionally, the Japanese distance education system went through many challenges and changes due to advancements in various technologies.

The Japanese distance education program started by using the postal system that was available to them at the time. Professors and students would communicate and correspond with one another using written communication back and forth through the existing mail system. Then came the radio. "Radio broadcasting in Japan was inaugurated on March 22, 1924, and Shinpei Goto, the first president of NHK mentioned that one of the major missions of public broadcasting was "socialization of education" among other things (Hidetoshi, Kato, 1997). This allowed for a much greater number of people to participate in distance education with increased ease and speed. Additional radio channels and programs were soon created and the ball rolled on from there. There is an interesting side note to mention here. In 1933, an Osaka station of the NHK Company began broadcasting a new program entitled "radio taisou" or "radio exercise." The idea behind this program was to encourage students, mainly elementary school age, to take part in physical exercise for ten minutes every day before beginning their studies. This program is still in tact today for the students and interestingly enough it has spilled over into industry in Japan also! It is not uncommon to pass by a factory or plant early in the morning in Japan and see a large group of adult individuals outside listening to the radio while exercising in unison before beginning the days work!

Next came the advent of satellite communication. This was an exciting new possibility as it allowed students to talk back to the instructors, ask questions, and actually take part in live dialogue. Like many new technologies it was first grasped by businesses in industry who were looking to improve their corporate communications and training events. Eventually it did make it into the schools and became another stepping stone toward better methods of distance education. Soon after this came closed circuit television which was often used in communities to educate people about various topics of interest such as "child care, hygiene, social security" (Hidetoshi, Kato, 1997).

It has only been in recent years however that much research and respect has been granted to the topic of distance education. Throughout most of its history, students who were educated via distance education techniques were seen as second class citizens. Also, media such as television and radio often received nothing but criticism from experts as it related to education and children in general. Oftentimes it was seen as a distraction or even a vice rather than a tool with wonderful potential. Recently much more attention has been given to various forms of distance education in Japan. Most likely this is mainly due to the establishment of the National Institute of Multimedia Education in 1979. The NIME is an organization dedicated to the research and development of distance education and distance learning methods and techniques. "As a core institution promoting the use of multimedia in higher education, NIME focuses on research and development of educational methods implementing media, and disseminates its findings to higher education institutions" (National Institute of Multimedia Education, 1979). The NIME is currently working on a variety of research projects including the Space Collaboration System Project and the Database Project. Much of the current research being performed by NIME is focussed on how to use multimedia technologies such as the Internet, World Wide Web, and CD-ROM effectively in a distance education setting. Researchers at the NIME continue to make great headway in this area and pass along the results of their findings to various academic institutions. The academic institutions in turn take those findings and implement them into their course curriculum.

The future looks bright for distance education and learning in Japan. This is especially true when you consider the promising number of students that have taken part thus far in distance education opportunities. Also, Japan has been very successful in technological developments and innovations, many of which are part of the telecommunications industry. With proper management and use of these technologies Japan has the capability of becoming a world leader in distance education and learning.

LATIN AMERICA

Most Latin American countries use distance education to meet the basic educational needs. Distance education in Latin America provides education to adults and children of all levels of education, and increase the quality of teaching. One reason that distance education is so popular in Latin America, is that there is the possibility of educating a large portion of the population, while using fewer human resources to teach.

In Mexico, the past forms of media used for distance education has been print, radio, and television. In an effort to improve teachers' skills the Public Education Ministry created the Federal Teacher Training Institute, in 1947. The Teaching Institute offered correspondence and onsite courses that would allow the teacher to continue working. This was the first attempt at open and distance education in Latin America (Ortiz, 1999).

In 1934, the Ministry of Education launched an adult literacy program via the radio. This program was designed to promote adult literacy throughout Mexico. In 1965, they adopted the same adult literacy program to the television which consisted of eight televised lessons to increase adult literacy in Mexico.

Another productive televised course is called telesecundaria which was started in 1968. Telesecundaria teaches material geared for secondary level students, which will be used in schools that have less then 100 pupils. These secondary schools are found in rural areas and distant cities with smaller populations in Mexico. Telesecundaria now reaches more than one million students. The wide spread use of telesecundaria has increased by 38% since 1996 (Ortiz, 1999). Students who viewed the telesecundaria performed similarly to traditional students in an evaluation performed by Stanford University and the Ministry of Education in 1972 (Shrestha, 1997).

The Teacher Institute, Adult Literacy Program, and Telesecundaria are all examples that demonstrate the use of radio, television, and print for distance education for one country of Latin America. Most countries in Latin America are faced with a population that is less educated then in developed countries. For example, in Mexico in 1998 the average grade level completed for people over the age of 15 was 7.7, which is up from 2.6 in 1960 (Ortiz, 199). This provides an excellent opportunity for distance education to occur in Mexico.

Most countries in Latin America are thought of as less-developed countries (LDC) or low technology countries (LTC) (Eastmond, 2000). Meaning, that in LTC there may not be a sufficient infrastructure to use the technology which is being used now in high technology countries (HTC) (Eastmond, 2000). The new technology used in HTC, is too costly for the LTC to purchase and use at this time. The problems of cost and infrastructure will determine the use of technology in distant education throughout Latin America.

Eastmond (2000) states that, "Whether utilizing "high" or "low" technology distance education can be effective when it fits within the technological infrastructure and cultural context of the LTC." This suggests that all countries will need to evaluate and analyze their own situations, and design a program to meet their own culture and infrastructure for distance education.

MEXICO

Over the past couple of years Mexico has seen an increase in it's distance education. The National Institute for Adult Education, which provides education in literacy programs, job training courses, and basic education, saw a 14.4% increase for those who took part in the program in 1998. The courses in this program are given as texts, radio, and television programs. This growth is shown here as well as in the growth of secondary school program telesecundria.

In Mexico they have found that the teaching-learning process is substantially improved with the use of information technology (Ortiz 1999). To improve the teaching-learning process Mexico will combine computer science, telecommunications, and educational television. With the right mixture of these three information technologies learning will be enhanced.

The Educational Satellite Television Network (Edusat) is a satellite circuit system based on the most advanced digital technology available. It broadcast six television and 24 audio channels, which are broadcast in Mexico, southern United States, Central America, and parts of Latin America. Edusat provides 10,000 schools with educational information, support for teachers and parents, sports, and other school subjects. This will continue to provide more educational television for more schools with the use of Satmex 5, which will send signals across the continent.

Universidad Nacional Autonoma de Mexico (UNAM) contributes greatly to distance education for the nation of Mexico. At this time it is currently trying programs that will expand distance education. This is going to be done by using tele-campus viewed at campus centers throughout the country. UNAM will also provide on-line B.A. programs for nursing, accounting, international relations, law, and economics.

The Technological Institute of Monterrey offers a Virtual University, which offers postgraduate programs. The Virtual University offers 15 masters and a doctoral program in administration, education, and engineering and technology. The institute uses the most advanced telecommunications and electronic networks.

ARGENTINA

The citizens of Argentina have increased their demand for education, which has led to widespread use of distance education to meet the demand. In the Misiones province this demand is being met by the ESA Open Education Program.
This program is being broadcasted across SIPTED, which provides tele-courses for the province of Misiones. This education system is implemented by using printed material, audiocassette, radio, and video. Argentina is limited to the use of these media because of the topography of their country (Ortiz, 1999).

The University of Belgrano is also another contributor to the distance education that occurs in Argentina. The University of Belgrano has found that distance education thru television has been efficient in Argentina. For distance education the university provides printed text, televised programs, and CD-ROMs that contain course materials needed to complete the course. Students can receive help by tutors via telephone, fax, and e-mail. With this and other programs offered you may obtain degrees for basic education, secondary school, B.A., postgraduate degrees, and continuing education courses.

As seen by the information above, both countries have designed their programs to fit the capabilities and resources that exist in their countries. A problem that exists in Latin America with the use of the Internet for distance education is the availability of computers that are connected to the Internet. It was estimated that only 1% of the population of Latin America has access to the internet (Haymond, 1998). This creates a big problem in using the Internet for education. For Internet use to increase in education two things must occur: the first is to reduce the cost of computers, and then to have capable and available telephone lines (Ortiz, 1999).

One way to solve the cost of the computers is to involve private industries. In March of two thousand Lucent technologies announced that they would provide. $1.5 million over the next three years to help advance learning education in the Latin American region. Lucent's goal of the project, "...is to advance global education at every level using technology to enhance the learning experience" (Lucent, 2000). This project will involve the one university from the United States, one university from Mexico, and three Universities from Brazil. The program is named `Partnership in Global Learning,' which will allow teachers to design a web-based curriculum that can then be spread through different countries of Latin America. The company hopes that this pilot test will work and then they can expand it to other countries in the world. Not only would it be possible to bring down the cost of computers by involving private companies, but it could also help in providing telephone lines if a telephone company could see the profits that can made by providing new or more lines. By persuading private companies to invest in distance education programs cost could be reduced.

The use of the Internet for distance education may not fit into the national infrastructure or cultural context of countries in Latin America at this time. It is important that the right technology tools provide a learning environment that will be beneficial to the learner and increase their knowledge.

CONCLUSION

In conclusion we would like to invite you to think about and imagine the possibilities of distance education in our future, even the near future. New technologies are continually being developed that allow for more personal and immediate interaction between people at great distances. This is the essence of distance education, to be able to take part in an instructional activity as if you were really there in the flesh. The potential and possibilities of the Internet and the World Wide Web are impossible to imagine. Who would have guessed 20 years ago that we would be where we are today in the technology arena with the capabilities that we have? Indeed this is an exciting, exhilarating, and eventful time with much more to look forward to.

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Technology has impacted almost every aspect of life today, and of course, education is no exception in that. It has affected and impacted the way things are presented and taught in the classroom to the students.Â Whether we like it or not, the technology is all around us and in order for our students to survive in the post-secondary education and the business role, they must be aware of latest software technology and trends. The prevalence of technology had drastically affected many areas in society in a positive manner that includes education as well. In todayâ€™s modern era students not only have computers to help them with their schoolwork but also internet for research while teachers use technology to enhance their lessons. Effects of technology on education. Technology has improved education and learning process: Education is the backbone of every economy. People need well and organized educational infrastructures so that they can learn how to interpret information. Many schools have started integrating educational technologies in their schools with a great aim of improving the way students learn. Technologies like smart whiteboards, computers, mobile phones, iPads, projectors, and internet are being used in classrooms to boost students moral to learn.Â Also, programs like Long distance learning have opened boundaries too so many scholars around the world. Negative Impacts of Technology on Society. Resource Depletion.