Distance Education in the Era of Internet

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DISTANCE EDUCATION: A BRIEF HISTORY

Let us start with a definition: distance education can be called an educational learning process or system where teachers or instructors are separated in space from students.

More specifically, using a definition developed by Desmond Keegan (1986), we can summarize the fundamental characteristics of distance education, as follows:

- The quasi-permanent separation of teacher and learner throughout the duration of the learning process.
- The influence of an educational organization both in planning and preparation of learning materials and in the provision of student support services.
- The use of technical media to connect teachers with students and transmit the content of the course;
- The provision of two-way communication so that the student may benefit from or even initiate a dialogue.
- The quasi-permanent absence of the learning group throughout the duration of the learning process so that people are usually taught as individuals and not in groups, with the possibility of occasional meetings for both didactic and socialization purposes.

Research studies and practical experiences have demonstrated how education is considered "Essential for civic order and citizenship and for sustainable economic growth and the reduction of poverty" (World Bank, 1995), especially in developing societies. If we take then this fact into account, it is clear that many countries have started to employ distance education also as a mean to address serious and multiple challenges facing sustainable human development, especially in those countries where access to traditional education is limited by the infrastructure, resources, economy or geography. One of the major objectives of distance education is, in fact, to help widen the access to education in general and to raise the quality of education by training more educators and teachers and making more resources available to the largest groups of people.

From the first correspondence studies in shorthand initiated in England by Pitman in 1840's and the establishment of the first University Correspondence Teaching at the University of Chicago in 1890's to the present day where we have seen an explosion of online education on the Internet, we have crossed many gates of "Evolution." The use of modern ICT has dramatically change the way distance education is developed and delivered and opens the way to interesting developments. Literature normally divides the history of the development of distance education into "Generations," with the massive use of ICT we can say we have reached the Third Generation of distance education. In Table 1 we can see how these "Generations" are affected by the use of communication technology:

ICT AND MODERN DISTANCE EDUCATION

We would now like to focus more on the revolutions in distance education that have been triggered by the use of modern ICT.

Let us start with a more recent definition of distance dducation developed by the U.S. Department of Education (1989): "Distance education is the application of telecommunications and electronic devices which enable students and learners to receive instruction which originates from some distant location."

In this definition we can already notice the use of two keywords that define our third generation distance education: Use of telecommunications (today's Internet-enabled networks) and electronic devices (the Personal Computers).

Impact of Communication via the Internet on Distance Education

Since its introduction to the public, the Internet has always been seen as a revolutionary way to share digital content and also to enable easy synchronous and asynchronous communication among peers or communities of people (e-mails, chat, forums, threaded discussions, etc.).

The increasing availability of communication bandwidth (DSL, Powerline, Wireless communication, etc.) have opened a variety of possibilities, including the online transmission and reception of rich multimedia content, use of Voice over Internet Protocol (VoIP) and Desktop Videoconferencing. The trend clearly shows a

Table 1. Evolution of the generations of distance education in relationship with the developments of communication technology

Generation Level	Time	Communication Technology	Description
First Generation	1840 – 1920	Communication in Presence, Mail	Correspondence Teaching, using textbooks and occasionally written communication between student and Tutor
Second Generation	1920 - 1980	Communication in Presence, Mail, Telephone, Radio and Television	The base is still Correspondence Teaching but the use of the telephony allows more frequent and direct remote contact between student and Tutor. Contact with the student population provided by radio and television broadcasts grows substantially. The content of the course, thanks also to the use of audio and video tapes, is delivered in more engaging and interactive ways
Third Generation	1980 -	Communication in Presence, Mail, Telephone, Radio and Television, the INTERNET	The real "Quantum leap" from the second generation is the use of PC and connection to the Internet. The development of engaging and multimedia-rich CD-ROMs gradually substitutes traditional textbooks and videotapes. Access to an almost unlimited repository of content is provided through the World Wide Web and the use of e-mails and synchronous (real-time) chatting enable an easy, fast and reliable communication with Tutors and also among Students (Online Communities).

readiness to utilize real-time collaboration and communication between peers or groups. This naturally enhances the possibility of communicating anywhere and anytime with anybody (globalization, the connected village, etc.).

The impact on distance education is really significant as distance students can now have access to enormous amount of content and information. They can work in groups whilst still being physically separated and perform a lot of rich interactive activities that before were only possible through classroom training.

The Evolution of Personal Computers

An advanced laptop computer today has a computing power and memory capability 1,000 times greater than to the first PCs, which appeared on our desks in the mid-'80's.

This evolution in technology, i.e., the possibility of reducing the size and increasing the power of computing devices, has also had a cultural impact. We are used to working and using devices which have an embedded intelligence and computing capability that offers the possibility to connect and be connected to content, information and data. This "Cultural Revolution" is silently embracing all level of human activities, from the way we manage our homes to the way we drive a car.

The quantity of digital information that we process or transfer during a working day, without being aware of doing so, is unbelievably high.

In this new cultural context we are starting to use our PCs as integrated computing, communication and multimedia devices. These machines are the natural terminal for distance education related activities ranging from the delivery or access to content, to communication with fellow students and Tutors.

The Brainware: Software Applications to Support Educational Processes

The use of communication bandwidth and the computing power of modern PCs is not sufficient to exploit the possibilities opened by modern ICT. In parallel with the evolution of PCs we have seen a vigorous development of the PC "Brainware," the software which has allowed the management of multimedia content development, the integration of real-time communication into collaborative environments and the support of the complex educational processes.

A series of applications have been created to help educational institutions to develop, organize and deliver learning content, to track student activities and performances and to evaluate learning outcomes. These soft-

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