

Technology in Distance Learning

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INTRODUCTION

The origins of distance learning (DL), as an alternative way of learning, can be traced back to the 19th century (Rumble, 1988) although it was only with the foundation of the Open University (1969 United Kingdom) that it won its reputation, not only as an alternative way of learning with its individual pedagogic and didactic model, but also as an academic discipline (Holmberg 1989).

Since then, and although DL has developed in many ways, according to the different geographical, political, and social circumstances (Moore & Anderson, 2003), it converged into a common ground of practices, concepts, and theories that are widely accepted as its field of practice and theory.

Two of the most relevant vectors of that common ground are the technologies and the specialization or the division of work in DL. In fact, the physical separation between students, teachers, and institution provide a relevant role in DL to technology because it can shorten that gap and, at the same time, enrich quantitatively and qualitatively, the learning experience and the associated processes.

Technology's role in DL is so important that it was adopted as a criterion to establish the different development stages of DL in the widely accepted Nipper generation theory (Nipper, 1989).

Complementarily as an alternative to conventional education, DL along its evolution faced different challenges and needs; to accomplish these defies, it developed into a distinctive educational model. In this regard, Otto Peters, one of the most prominent DL theorists, puts forward the thesis that it becomes an industrialized way of providing education with a high degree of specialization, rationalism, labor division, and automation:

The structure of distance teaching is determined to a considerable degree by the principles of industrialisation, in particular by those of rationalisation, division of labor, and mass production (Peters, 1983, p. 110).

In practice terms, it means that in DL, administration, management, design and creation of learning materials, tutoring, teaching, and learning are independent tasks, performed by different people, which should be systematically programmed, assembled, and executed.

This is of a paramount methodological importance because it obligatory widens the object of analysis to these multiple processes and their interactions.

As a matter of fact, even erroneously, when analysing the use of technology in DL, there is a rooted tendency to circumscribe it to the learning process, but the evidence shows that the relation between technology and all the mentioned areas, is crucial to in-depth and clearly understand its importance for DL.

TECHNOLOGY PLANNING FOR DL

In the deployment of DL, technology planning and the correlative goals' definition can be seen as main issues.

The most important task to be completed before any technology and implementation issues is the establishment of the course goals. These goals determine the requirements for the course. Only after the goals are established can the appropriate technology, supplemental materials, syllabus, tests, evaluations criteria, student assistance, and computer requirements be determined (Conners & Green, 1999, p.5).

Technology planning is a very demanding process because it should take into account the distinctiveness of each organization. Thus, in order to set a good technological plan, it is necessary to know and understand the organization in several aspects such as governance, decision making, funding mechanisms, marketing strategies, and so forth:

- Gather and analyze preliminary information about technology, impacts, cost, and case studies; explore alternative delivery methods.
- Develop collaborations with departments and individuals who need to participate in decision making on distance learning.

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- Conduct needs assessment to determine the instructional and logistical needs of the staff and students and determine their willingness to adopt a telecommunication solution; provide recommendations on instructional and delivery strategies to be adopted.
- Articulate of goals for delivery of, and access to, instruction.
- Develop technical feasibility of delivering instruction through telecommunications; design technical systems and make plans for requisition and implementation.
- Establish governance, management, and policy systems for distance learning.
- Develop a funding mechanism for technology.
- Begin phased installation of technology.
- Develop program/course instruction plans for delivery via telecommunications.
- Train faculty in use of technology.
- Develop student support services to be delivered.
- Establish strategies for marketing distance education services.
- Establish a plan to evaluate efforts, effects, and cost of distance education.
- Pilot-test the system prior to full scale implementation (Hezel, 1999, p. 4-5)

On planning technology in DL, due to the mentioned high degree or specialization, several sub-systems should be taken in account, such as:

- Student needs:
 - ... Throughout the duration of the course/program, students should have access to technical assistance including detailed instructions regarding the electronic media used, practice sessions prior to the beginning of the course, and convenient access to technical support staff
 - ...Platform-independent systems should be used to guarantee learners the broadest possible access to resources.
 - It should be ensured that learners understand the equipment requirements upon enrollment and possess or are given the technical skills necessary to effectively participate in a technology-assisted distance learning program

- ... Institutions should provide laboratories, facilities, equipment, and software appropriate to the courses or programs and/or make clear to students the responsibilities they have to provide such resources themselves
- ... Institutions should provide an adequate means for resolving student complaints ... Questions directed to student services or network personnel should be answered accurately and quickly, with a structured system in place to address student complaints (Missouri Distance Learning Association, 2001, p. 7)

- Instructor needs:

- ... Institutions should provide appropriate technological and pedagogical training for instructors who teach via distance education.
- ... Technical assistance in course development should be available to instructors and they should be encouraged to use it.
- ... Adequate training should be provided for distance learning instructors. Such training should address issues in learning at a distance, optimizing use of the supporting technologies, and facilitating an effective distance education experience.
- ... Instructors should be assisted in the transition from classroom teaching or traditional instruction to teaching via distance learning and should be assessed during the process.
- ... Instructor training and assistance, including peer mentoring, should continue through the progression of the distance learning course. Access to experienced support staff and instructors willing to serve as resources for novice instructors should be provided (Missouri Distance Learning Association, 2001, p. 8).

- Learning material development:

- **4.1:** The selection and use of instructional media and tools should be based upon their ability to support the predetermined learn-

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