

DISTANCE EDUCATION AND NEW TEACHING TOOLS

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Abstract: *This report presents findings of a review of the current research on distance education and new teaching tools. As technology has evolved, the methods used to deliver the curriculum have evolved as well. Many higher education institutions are offering distance learning, mostly for economic reasons. This paper will be focused on exploring the benefits and weaknesses of distance learning, as well as exploring the new available tools and methods used in distance learning, available through the new technologies.*

Key words: *distance learning, teaching tools, technology and education.*

1. Introduction

The pedagogical theory of distance learning starts from the attempts to define distance education. Historically, distance education meant correspondence study, but current concepts tend to be closer to methods of transmitting audio, video, and (more often than not) opportunities through the Internet.

As technology has evolved, the methods used to deliver the curriculum have evolved as well. Many higher education institutions are offering distance learning, mostly for economic reasons (Merisotis & Phipps, 1999). Boettcher (1996) notes that if students would not spend as much time on campus there would be significant cost savings on both the construction of new facilities and the maintenance of the current ones. He also observes that there would be savings if employees did not have to leave their jobs to attend school, thereby minimizing travel expenses (Boettcher, 1996).

According to recent literature (Bozkurt et al, 2015), 90% of two-year and four-year public institutions of higher education offer distance education. This percentage is even more striking given that just five years earlier Lucas (1998) reported that about one-half of all higher education institutes offered distance education. Both of these studies support the contention that distance education within higher education is not a passing trend; rather it is an increasingly popular delivery format that warrants as much scholarly attention as it can get.

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Distance education is also a broad approach characterized by a high degree of variation, such as the types of media or technology used (print, radio, computer); the nature of the learning (workshop, seminar, degree program, supplement to traditional classroom, levels of support); institutional settings; topics addressed; and levels of interactivity support (face-to-face, online, blended, none) (Scanlon, McAndrew, & O'Shea, 2015).

This paper will focus upon distance education and the new teaching tools available through the use of new technologies.

2. Distance Learning

A very good definition of the operational value of distance education is given by the Education and Training Council:

“Distance learning involves enrolment and study at one training institution that provides the didactic materials prepared in a sequential and logical order for the students to study on their own. At the end of each stage, the student sends by fax, mail, or computer to the qualified instructors, the product of his work for correction, ranking and tutorial orientation on the issues of the subject. The corrected tasks are given back to the student, this exchange assuring a student-teacher relationship.” (DEAC, 2015, pp. 3-4).

It is highly characterised, as being part of a constructivist approach, by the control of learning by the student, rather than the instructor which is more a facilitator providing a learning experience (Jonassen, 1995), it implies a separation of teacher and learner in space and/or time and it emphasises communication between student and teacher, mediated by different types of technology (Keegan, 1986; Garrison & Shale, 1987).

The main countries exporting Internet training services are the USA, New Zealand, Australia and Canada. In the United States, achievements are numerous and diversified. It can be said that distance training grows in a vertiginous way. An original feature is the strong involvement of economic agents investing in distance learning.

At the university level, Virtual University Campus, VUC (Virtual University Campus) is the most important portal of Internet education. This university has produced over 500 quality courses at a low price. Besides, there are dozens of virtual universities offering a variety of on-line courses.

In Australia, the Australian National Flexible Education and Training Program is a five year strategic plan for which millions of euros a year are allocated, plus the contributions of the various provinces that have their own funding in this area. Of all students enrolled in Australian universities, 14% receive distance education. The accreditation and qualification of these educational edifices are established by a national body.

In New Zealand, the government has set up an e-learning pilot committee. This committee, composed of nine experts, endorses the actions of developing and coordinating distance learning.

New Zealand's educational services exports are estimated between 380 and 560 million euros per year. Quality assurance is indispensable for receiving government funds through a national agreement.

In Canada, education, including e-learning, is a provincial competence. Most of the ten provinces and three territories have identified e-learning as a priority. A recent study shows that 57% of the 134 Canadian colleges and universities offer on-line courses (between 1 and 340 classes per unit), that is, a total of 3,000 courses.

In Japan, Parliament passed an organic law on training in a networking society thanks to advanced telecommunications technologies, which entered into force on January 6, 2001.

In the last decades, the electronic communication in the educational environment has become a constant of the last decades. The communication model has created an alternative learning support which marks a transfer of competences from an unidirectional, exclusivist learning model to a multidirectional model of educational communication, in the context of which the teachers has become the facilitator of the learning process for the students and the students has become more involved, no longer being just a passive observer (Al-Dulaimi & Vrasmas, 2017).

The new technologies have put a greater emphasis on the needs and choices of the individual benefiting from the education, it has changed the entire educational system, the teaching methods, and the tools, offering greater opportunities for students and for teachers as well to develop professionally, to acquire new competences which have a great importance in our contemporary informational society.

Despite the fact that technology is an integral part of distance education, distance learning programs also focus on the instructional needs of the students, rather than on the technology itself. It is essential to consider their ages, cultural and socioeconomic backgrounds, interests and experiences, educational levels, and familiarity with distance education methods and delivery systems (Schamber, 1988). Successful distance education systems involve interactivity between teacher and students and also between students and the learning environment Millbank (1994).

Researchers have found that the most appreciated strengths of the distance learning education is flexibility, convenience, given by the fact that they do not have to physically be in a classroom in order to work on their project. Group work is also considered to be improved since students can communicate with teachers at any time via electronic mail or chat rooms, being able to get in contact anywhere, anytime, not limited by a space-time work frame (Song et al., 2004).

According to Conrad and Donaldson (2004), students in an online learning environment can develop much easier critical thinking skills and well as reflection skills since the collaborative activities in online learning environments involve idea sharing which triggers a deeper processing of content.

Weaknesses reported in the literature include difficulty with communication caused by delayed responses and unfamiliarity with classmates, also a sense of lack of community (Vonderwell & Turner, 2003). Among the encountered weakness there was also a lack of connection with faculty and other learners, stating that this reduced sense of connection had a negative impact on their overall class experience.

3. New Teaching Tools

Distance education is highly linked to the mode of delivery (Britain & Liber, 2004). Because of the rapid evolution of delivery modes, distance education researchers (Britain & Liber, 2004; Taylor, 1995) often speak of “generations” of distance education models, such as print, multimedia, and Web-based delivery systems. Technology has always been used in education, starting from carving figures on rock walls to technological devices, such as laptops, mobile phones, electronic blackboards, e-books and many others. The importance of technology in education has remained constant in spite of the changes of the materials and the evolution of technology, so it would be interesting to understand how the educational tools and techniques have evolved.

In 1870, technology started to advance, developing the Magic Lantern- a primitive version of a slide projector that projected images printed on glass plates, and the overhead projector, a more modern version, appeared in 1930.

Around 1890 the chalkboard emerged, followed by the pencil in 1900 and the ballpoint pen in 1940. In the 1920s the radio emerged, and on-air classes became a much-known trend, followed by videotapes in 1951, creating a new method of instruction. The photocopier and the handheld calculator entered the educational environment in 1959, respectively 1972, allowing quick mathematical calculation.

Although the first computers were developed in 1930, they entered the educational environment in the '80s. The number of students in college in 1930 was around 1 million, but by 2012 had grown to a record 21.6 million, therefore teachers needed and developed new methods of instruction and testing, and students were looking for new ways to communicate, study, and learn.

In 1990, the Hyper Text Markup Language, or HTML, was developed and the National Science Foundation (NSF) removed restrictions on the commercial use of the Internet in 1993. This was a very important development, since it represents the foundations of distance learning and online learning platforms.

The first Personal Digital Assistants (PDAs) was released by Apple Computer in 1993, and in 2009, in the US, 97% of classrooms had one or more computers, and 93% of classroom computers had Internet access (<http://elearninginfographics.com>). Instructors stated that 40% of students used computers often in their educational methods, in addition to interactive whiteboards and digital cameras (<http://elearninginfographics.com>).

The term “teaching aid” was first used by Van der Stoep and his colleagues (1973) to summarize instructional and learning aids, and they represent materials or tools that the teacher uses in presenting a lesson, or which they generally use in different lessons in order to deliver the information to the students: chalkboard, PowerPoint presentation, syllabus, etc.

The “learning aids” are the materials or tools used by students, in order to assimilate and understand information: notebooks, manuals, books, laptops, internet, etc.

Researchers have suggested that technology can enhance learning, since technology can improve some skills of the students, such as communication skills, by using word processing programs and communicating via e-mail, or organizational skills and the

capacity to better understand science concepts by using modelling software (such as Matlab), database programs, animations, graphs, spreadsheet programs or by using design and multimedia tools such as presentation software, editing software for digital images and videos (Honey & Spielvogel, 2005; Johnston, 2000; Means, 2001).

According to recent literature, the use of technology has a positive impact on students' academic results (Anderson, 2016; Gulek & Demirtas, 2005). Stratham and Torell (1999) concluded that, when integrated appropriately, the introduction of technology in the education program resulted into an interactive relationship based on feedback between the teachers and students and showed enhanced skills of problem solving and inquiry, therefore higher engagement of the students in the educational program, which led to lower dropout rates.

There are two groups of available technology which are highly used at the moment in distance learning and these are divided into two groups: synchronous and asynchronous. Synchronous technology is based on online delivery where all the participants are "present" at the same time and are organised by a timetable, whereas asynchronous technology is a type of online delivery where participants access course materials on their own schedule. Synchronous technologies are Web based VoIP, Telephone, Videoconferencing, Web Conferencing and asynchronous technologies are for example an Audiocassette, E-mail, Message Board Forums, Voice Mail/fax, and Videocassette/DVD Systems. There is also a framework for instructors/teachers called Learning Content Management Systems which can be used for both Synchronous and Asynchronous learning.

Among the modern teaching tools available there are also podcasts, interactive tables and eBooks (Selwyn & Stirling, 2016). Smart Boards are also a modern technological teaching aid which is rapidly being integrated into classrooms around the world and are essentially enhanced whiteboards that are used in conjunction with projectors and laptops, allowing access to a wide variety of computer-based multi-media content on the board in front of the class.

Podcasts are a series of digital media files, usually digital, audio, or video, that is made available for download via web. They are useful as teaching aids because via internet it allows instant access to resourceful materials and it can even make lessons available online for the students, making the learning process easier since the students can re-listens to important information that they make have skipped or not understood during the class (Bates, 2015).

An eBook is a form of publishing in a digital medium and since reading is the basic component of most educational activities, it is necessary to reach all students, especially special need students and distance learning classes (webopedia.com). It is considered the biggest change in the editing field, since Gutenberg, and it was introduced on the market as a digital document accessible on a computer in 1998.

Digital or electronic text offers options such as Text-to-Speech that provide users additional modalities for receiving the information, such as allowing readers to interact with the text by taking notes, marking, highlighting, searching, and even interacting with associated dictionaries. By using e-books as tools, instructors can expand the accessibility and ease of use both for themselves and their students.

4. Conclusions

It appears that distance education has many benefits: students in an online learning environment can develop much easier critical thinking skills and well as reflection skills since the collaborative activities in online learning environments involve idea sharing which triggers a deeper processing of content. There are also weaknesses, such as difficulty with communication caused by delayed responses and unfamiliarity with classmates, also a sense of lack of community, a lack of connection with faculty and other learners, stating that this reduced sense of connection had a negative impact on their overall class experience.

Also, in many countries, distance-learning systems have proved that they can provide quality education and training to a large number of students at lower costs than traditional education and in the long term it is considered that e-learning will be more cost-effective due to the fact that it can replace high labour costs with low-cost technology (Bates, 2005, pp.33-41).

The teaching tools appear to have innovated and once with them teaching has also taken an innovative transformation, given these changes it is important for teachers to learn to change with the times since these changes will ultimately benefit the students and the education system.

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