VIRTUAL LEARNING ENVIRONMENTS:
AN OVERVIEW OF BRAZILIAN PRODUCTION

Belo Horizonte, Maio/2010.

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ABSTRACT: With the development of the Internet and the popularization of computer use, several tools were created to assist the organization of courses mediated by these technologies such as virtual learning environments (VLE). Faced with growing supply of distance learning courses and the use of VLE, this article aims to conceptualize the key terminologies related to the subject and identify what has been produced in Brazil in terms of scientific knowledge related to the term virtual learning environments through books, articles, thesis and dissertations. Among the research results, we verified the existence of 6 books, 47 papers, 373 masters dissertations and 88 doctoral thesis.

KEYWORDS: Virtual learning environments, distance education, new technologies.

1. Introduction

Major technological changes occurred in recent decades, called by Castells (1999) as the revolution in information technology, have influenced all spheres of human activity, particularly education. In this context, systems of distance education are highlighted with the use of tools offered by new technologies to mediate the process of teaching and learning.

Faced with growing supply of distance learning courses and the use of virtual learning environments (VLE), this paper aims to conceptualize the key terminologies related to the subject and identify what has been produced in Brazil in terms of scientific knowledge related to the expression virtual learning environments.

From the research conducted in early 2010, we identified the existing publications in books, articles, thesis and dissertations. It was found that due to the dedication to research in this area be recent, it is still a small number of books published and there are an increasing number of articles, thesis and dissertations, mostly from 2006. For the identification of the books was

performed a literature search, consisting of a survey of books published nationally and directly related to the term virtual learning environments, from research via the Internet in search sites, libraries and booksellers. The other publications were identified from research carried out periodically and database of thesis and dissertations of the Portal CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Coordination of Improvement of Higher Education Personnel). It is noteworthy that the study considered only publications that are related directly to the term VLE, thus excluding publications on similar terminology or dealing with distance education in general.

2. Theoretical framework

Distance education can be understood as the planned process of teaching and learning mediated by technology, in which teachers and students are not physically present in one place, but spatially and temporally separated (BELLONI, 2008; MOORE; KEARSLEY, 2007). Historically, distance education used different technologies, according to available resources in each generation: correspondence, radio/television, teleconferencing and interactive environment.

With the development of the Internet and the popularization of computer use, several tools were created to assist the organization of courses mediated by these technologies such as Virtual Learning Environments (VLEs). According to Santos (2003), although the term virtual learning environment is currently widely used, its concept is not so clear and deserves attention. In general, a VLE refers to the use of digital resources for communication, mainly through educational software via the web that include several interactive tools (OLIVEIRA et al., 2004; VALENTINI, SOARES, 2005).

According to Oliveira et al. (2004), a learning environment can be conceptualized as spaces of relations with knowledge, which is the largest object in the learning process. Such spaces are understood by the authors as settings that favor the construction of knowledge that occurs from the interaction between students and content, with other students and teachers (Oliveira et al. 2004, p. 118). Therefore, the classroom is the main and traditional learning

environment, built specifically for the purpose of being the place where the educational process occurs.

It is important to clarify the difference between a virtual learning environment and a computerized learning environment (CLE). When occurs the insertion of computer technology, especially computer as a teaching resource within the classroom, whereas the conduct of teaching-learning process is not technology but the teacher, there is a computerized learning environment (OLIVEIRA et al. 2004, p. 120). According to Oliveira et al. (2004) different strategies can be used in the construction this kind of environment in which the computer is used to facilitate interactions, presentations of works, development of research and academic work, study contents and activities for classroom and distance learning. A CLE is the traditional environment characterized by the insertion of technology and a VLE is the virtual environment used to replace the traditional one.

For Santos (2003), every virtual environment can be considered a learning environment where the latter is understood "*as a socio-technical process where subjects interact in and through culture and this is a field of struggle, power, difference and meaning, a space to the construction of knowledge*" (Santos, 2003, p. 2). According to the author what characterizes a VLE is the process of network communication between human beings, from digital interfaces, where any sign can be produced and socialized in and through cyberspace (SANTOS, 2003, p. 3). From this concept, websites, blogs, forums, as well as interactive 3D environments and virtual communities, are considered VLEs.

As for Valentini and Soares (2005), a VLE is a social space, consisting of cognitive and social interactions on, or around, an object of knowledge, in which people interact mediated by the language of hypermedia aimed at teaching-learning. According to this concept, the focus is not in the way is the process of teaching and learning (via the Internet and hypermedia resources), but the object of knowledge attained by this form.

According to the authors, a VLE is related to the development of conditions, strategies and interventions for learning in a virtual space on the web, organized in such a way that fosters the construction of concepts through

interaction between students, teachers and knowledge objects (VALENTINI; SOARES, 2005, p. 19).

In the same direction, according to Dillenbourg (2000), is not any site or 3D environment that can be called VLE. There are some important features, which the author, need to be observed, such as the space in which information is available shall be designed for such, there must be interactions in the educational environment, information, or social space, must be explicitly represented either by text or 3D images, there must be participation by students who become co-builders of the environment, and the environment must integrate multiple technologies and pedagogical approaches. To Okada (2004 apud Nascimento et al., 2008, p. 6), the VLEs can be divided into three types of environments: instructional, interactive and cooperative. The environment is instructional when is focused on content, which can also be printed, and the support offered by a tutor that usually is not the author. The interaction is minimal and online participation is nearly individual student. According to these authors, this environment is the most common and represents the traditional instructional course where information is transmitted as in a lecture attendance.

Participation in the interactive environment is essential. The materials are developed along the course from the opinions and reflections of the participants. Business activities can be organized according to topics of interest and outside professionals may be invited to conferences. But the cooperative environment is characterized by the goal of collaborative work and online participation, there is much interaction among participants, building research, discovery of new challenges and solutions (OKADA, 2004 apud NASCIMENTO et al., 2008, p. 6).

So a VLE would be the main instrument of mediation in a distance education system that combines unprecedented opportunities for mediated interaction teacher/student and student/student) and interactivity with materials of good quality and variety, using various tools such as: mail, mailing lists and discussion groups, conferences, websites and blogs, in which text, hypertext, video, sound and images are present, combining the flexibility of human interaction with the independence in time and space (BELLONI, 2007, p. 59). Despite the frequent association of VLE to the distance education, it can also be

used as a support for classroom teaching. The term 'digital learning environments' can be found as a synonym of 'virtual learning environments'.

3. An overview of the Brazilian production about VLE

3.1 Books

The literature review, held in January 2010, focused on books directly related to VLEs, excluding those about distance education in general, and thus identified six books in Brazil. In general, they are compilations of articles organized from conferences and academic productions. Among them, two directly address the issue, bringing new ideas, experiences and characteristics of the teaching and learning, focusing on the use of VLE: Soares and Valentini (2005) and Pereira (2007). The other two focus on the development of the practice of distance education in VLE: Palloff and Pratt (2002 and 2004). Another book, Barbosa (2005), has several articles on the subject, focusing on experiences, but without conceptualizing VLE. Finally, Silva et al. (2009) present a discussion of the thematic of VLE, focusing on public policy in education.

3.2 Articles

Through research in the portal CAPES periodical, in January 2010, using the keyword "environment", "virtual" and "learning" were obtained 47 articles related to the term VLE. Most articles, 43%, presented the research findings in order to verify the applicability of an VLE in a process of teaching and learning of different areas. Of the remaining 28% presented case studies and 19% bibliographic studies related to the topic. Among all articles, only 6, equivalent to 13%, defined VLE or offered a clarification on the meaning of the expression.

The authors used to base the definitions of VLE presented in three articles were Dillenbourg (2000), Almeida (2003) and Estabel et al. (2006), the other three articles had their own definitions, without recourse to other authors. It is noteworthy that the definitions found in these articles had differences, while

some related to VLE as a software online, others considered broader aspects, gathering additional tools to the software and focusing on teaching and learning.

Regarding the content of articles, it was noted that studies on the VLE are related to the following subjects: 51% to the applicability of an VLE, usually MOODLE in a course attendance and 15% the use of tools or media technology, such as forum, podcast, youtube, hypertext and virtual communities in education, 9% the role of the teacher, 6% accessibility and the others were related to distance education, collaborative environments, cyberspace and information management.

3.3 Thesis and dissertations

The research at the CAPES portal of thesis and dissertations, in January 2010, resulted in the identification of the works that had connection with the key words "environment", "virtual" and "learning." The search result was the identification of 461 publications, 17 essays Professional Masters, 356 Academic Masters dissertations and 88 PhD thesis in the period of 1997 to 2008.

The analysis of these publications demonstrated that they result from a variety of twenty different postgraduate courses, covering the areas of humanities, social sciences, applied sciences and engineering, health sciences, linguistic and arts. The largest number of publications, 185 thesis and dissertations were from the Education course, whose contribution to the research is related to the impact of the new technologies in teaching and learning, teacher training, assessment methods and distance education. In second was the course of Computer Science, with 58 thesis and dissertations, focusing on the creation and evaluation of intelligent systems and application of virtual reality and computer education. The course of Educational Technology was in third place with 48 thesis and dissertations, and includes research on education and science, computer education and use of technologies in educational processes. In general, the research investigated the use of a VLE for educational purposes for the area in question, for example, the teaching of geometry in an extension course (Course in Mathematics Education) or of gymnast in an undergraduate course (Physical Education Course). Most VLEs

surveyed were used as a resource to support school attendance by providing simulation tools, images and practical exercises to complement the traditional teaching of content.

4. Final considerations

It is not possible ignore the influence of new information and communication technologies in the teaching and learning. The last ten years have seen an increase in the provision of technological resources and its integration into the educational environment, both transforming the classroom learning and developing distance learning, in Brazil. Such growth was also accompanied by the growing of Brazilian interest in research related to that topic, which resulted in the development of knowledge through the production of books, articles, thesis and dissertations.

According to data presented in the survey, it was found that in Brazil, the production of knowledge about virtual learning environments appeared in the late 90s, it won by 2006 and growing every year. It is still small the production of books on the subject that, in general, appear as the collections of papers with results of research carried out with VLE in academic environments. However, there is an interest in the issue due to the increasing number of articles, theses and dissertations developed on the subject.

According to this research, the use of VLEs in education has led various researchers to verify its applicability, as well as investigate ways of evaluation, methodology and use of its tools for the teaching and learning enrichment. There is also a large number of research devoted to understanding the role of the teacher, ways to improve its skills and contribute to its formation.

However, an aspect apparently of little consideration in Brazilian publications, but that deserves attention, is the definition of the term VLE. There was a lack of definition of the term and the little importance given to clarify its meaning, the articles and books discuss the use of VLE as if the reader already knew what the term means. A hypothesis for understanding this situation is the fact that the resource use of new information and communication technologies, especially internet and VLEs, is still recent and, therefore, it is in the initial process of producing knowledge about it.

The lack of knowledge about the meaning of terminology, or by the development of a concept as a standard, may result in an inadequate understanding of various technological resources that are automatically identified by some authors as VLE, such as games, 3D simulation environments, virtual communities and blogs, among others.

Some authors concerned about it, as Dillenbourg (2000), discuss about the definition of criteria for classifying a VLE as such, pointing out that researchers develop a better understanding of the functional relationship between, on one hand, how information is represented and structured and, secondly, how it can be used in learning activities and interactions.

Another aspect identified is that most existing research refers to the insertion of VLE as a support to the subjects face of higher education, followed by its use in distance education. Has been little studied its application to teaching elementary and high school, especially in technical education and professional training.

Thus, we find the wealth of Brazilian surveys on VLE, dealing with different contexts of its application, especially considering the limitations of accessibility and infrastructure of the Brazilian reality, and the vast field of research still to be made. The picture presented in this article, to identify what has been researched about VLE, points to gaps in order to encourage the development of research that may contribute to the development of Brazilian education, at all levels and spheres of action.

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