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Online education and challenges of professional qualification in the Health area.

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Abstract

The dissemination of the web resources as cognitive tools at distance learning has been fostered a discussion about the aspects that support the educational proposals in virtual environments, the role of students and teachers as well as the pedagogical challenges faced by these actors in the new distance learning context on health. Taking as assumptions that the implementation and appropriation of the information and communication technologies depends on the interrelation between the individuals, social and organizational characteristics, the aim of this work is to discuss some pedagogical challenges underlying the conception of virtual learning environments as the specification of its actors immerse in an interactive and inter rational process, pointing out some factors that could influence the success of the experiences in on-line learning for health professionals.

Key words

on-line education; educational technologies; health professional qualification

Introduction

The extension of IT networks, spread of personal computers, Internet development, increased bandwidth for access to the global network and identification of education with transmission of knowledge throughout life, according to Otto Peters (2004), form the fourth period of evolution of Distance Education (DE), realizing education by correspondence, radio or Television and interactive CD-ROM. The availability of affordable technological resources, competition in occupying the market niches and expectation of gaining in a scale economy play the role of motivational

factors for the implementation of *online* courses in Institutions of Higher Education (Ma et al., 2000).

The Online education is realized through the combination of distance education devices with the intermediated communication devices (Peraya, 2002), supported by the Internet architecture and technological standards that promote compatibility, usability and interactivity. It is the kind of distance education that is realized via Internet only, without using any printed didactic material or face contact (Nichols, 2003) and its communication can occur in a both synchronous and asynchronous way (Almeida, 2003). According to Ally

(2004) it is about "using Internet for accessing learning materials, for interacting with the content, instructor and other students and for obtaining support during the process of learning in order to acquire knowledge, build personal meaning and grow with the educational experience" (p.5). The terms Online education and e-Learning are often used as synonyms, however *online* education differs from e-Learning, as the latter is a type of distance education with the help of Internet for continuous training in the business sector (Almeida, 2003) or the one that uses a network (*local area network, wide area network or internet*) and its technological tools for the purpose of professional training (Löfsted et al., 2001; Nichols, 2003). For Benigno & Trentin (2000) the social character of *online* education is a factor that distinguishes it from the previous generations of the distance education as it creates virtual environments that promote interpersonal communication and collaborative learning. The advantages of *online* education are the extension of access to education, reduced costs, adaptation of the educational activities to the most convenient time, rhythm and place of the students, accommodation of individualized learning styles and fostering collaborative operations. At the same time the lack of computational infrastructure, difficulties in access to the environment and content and the feeling of isolation are the barriers for the good performance of the students in the virtual learning environments.

The organization and access to *online* education require *learning management system* (LMS) that consist of control of access, content providing, communication tools, organization of user groups and activities management through a shared administrative interface. In turn, *virtual learning environment* (VLE) is a computational system (platform) in the Internet that gives support to the learning activities mediated by information and communication technologies. It is characterized by integration of multiple media and resources, information presentation in an organized way and availability of innovative tools for interaction/collaboration. It is important to highlight that the term virtual learning environment can be also used for nominating the Learning management system (LMS), though some definitions of VLE focus more on the conditions of learning and not the management, taking into consideration that in particular circumstances these functions can be realized by different Internet applications.

The spread of web resources as cognitive tools of distance education have raised discussions on the pedagogical aspects that sustain the educational proposals in virtual environments, the roles of students and professors, as well as the challenges to

the learning in the *online* education context (Oliver et al., 2002; Hill et al., 2003; Mckimm et al., 2003; Struchiner & Giannella, 2006). Taking as a premise that the implementation and adaptation of information and communication technologies in professional education depend on interrelationship between individual, social, organizational and political characteristics, this article aims at describing some pedagogical challenges faced by the realization of virtual learning environment in online specialization courses in the Health area. It also analyzes the specificities of VLE actors immersed into an interactive and interactional process, pointing to a set of factors that influenced the results of the experiences of *online* education in the Health area. This article aims at fostering a discussion in the Brazilian educational context about the possibilities and limits of the *online* education, especially taking into consideration that over the past years this type of education increased its share in the proposals of professional education in the Health area in the country (Struchiner & Giannella, 2001).

Pedagogical aspects and virtual learning environment

Both in presence and distance mode, the relation professor-student can be characterized by focusing on transmission of knowledge/content in the pedagogical process, established in a hierarchical relationship between professor and student. Nevertheless, one of the main aspects concerning the distance education in virtual learning environment is its potential to make changes in the most frequent concept of traditional presence studying. In the distance education the teacher generally assumes the role of supervisor and supporter of the students, which, on the other hand, requires their more autonomous attitude in the process of teaching-learning. Thus, depending on the implicit learning process in the course, the teacher needs to perceive the student as a self-directed learner while the educational content should be more responsive to updates and available in diverse formats instead of being homogeneous and stable (Quintana, 1996). In the virtual class space the emphasis is on the processes that the students establish with each other, the tutor, material and the environment itself in the continuous process of knowledge building. These changes demand a reflection on the educational practices and their relation with theoretical fundamentals of learning, technological conceptions of the virtual learning environment, as well as

communication and information activities and technological devices that support the underlying principles and theories of learning (Dalsgaard, 2005).

From the behaviorist perspective, education is perceived as information processing that provides an efficient communication of information and effective strategies for content recall. It is important for the student to interact with the professor and the content, while instructional strategies focus on pre-specified content and the result of the education is based on evaluation oriented by goals and objectives. The student passively receives the content transmitted by the professor who is present at all the stages of the process of teaching-learning and guarantees a better control on the students' action. The learning within the behavioral model is comprised primarily of modeling the desirable behavior through a cycle – the provision of an impulse in the form of a brief content presentation, the demand of an answer in the form of a question, a feedback on the accuracy of the answer, then the positive reinforcement for correct answers or the repetition of the original impulse or of its modified version for the wrong answers (Conole et alii, 2004). The behaviorist learning school sees the mind as a black box, meaning that the answer to the impulse can be observed quantitatively without taking into consideration the effect of the thinking processes happening in the mind (Ally, 2004). Within this perspective, the virtual learning environment aims at guarantying the content given to the student to be comprehensive and accurate respecting the most current knowledge, establishing a structure of knowledge for a given domain and orienting the corrective actions in order to achieve the results expected from the learning. The materials should be organized in a sequential way, from the simplest to the most complicated, from the known to unknown, from theoretical comprehension to application in practice and with the pre-determined units (curriculum). The relations in this learning environment are characterized by professor's instructions and the student's training, governed by the content of the course and evaluation of the student. This pedagogical proposal (approach) reminds us of the review of the banking education made by Paulo Freire (1970:1998): of the character of narration in the relation between the educator and students and the existence of a subject – educator-narrator – and his objects, students-listeners. In this relation "the educator appears as an indisputable agent, as a real subject whose indeclinable task is to "fill in" the students with his narration. The author still complements his review by pointing out that "the narration of the educator conducts the students to the mechanical memorization of the content narrated. Moreover, the narration

transforms them into "bowls" or "vessels" to be filled in by the educator (1998 1970:62). This characteristic can be observed in professional training courses of the distance education in whose virtual learning environment handouts, books and other materials are deposited in such a way that the students can download them and study the established content by using the virtual environment only for sending activities and evaluations.

In turn, the constructivist epistemology assumes that the knowledge is the result of the individual adaptive building and of the interaction with the environment, the comprehension is the result of an active engagement of the student and of the negotiations between what is external and what is internal to the student. There doesn't exist an objective and absolute knowledge, it is built individually and subjectively, based on previous experiences and on the metacognitive reflection. The truth in constructivism is replaced by viability of ideas relative to a context of goals and purposes that are not limited to the concrete, to the material or solution of specific problems, but it is the building of mental models used to explain, predict or imply phenomena in the real world (Lefoe, 1998; Jones & Brader-Araje, 2002). The constructivist pedagogical philosophy emphasizes the experience, intentions and metacognitive strategies of the student, the context and solution of concrete problems as crucial elements for the construction of meaning associated to the knowledge where the professor is the mediator or facilitator of this process. The learning is guided by the impulse to the knowledge building under multiple perspectives and representation modes and on the acquisition of assertions and viable strategies that meet individual goals. A constructivist approach in the design of a distance education course depends on the mode in which the learning goals are translated into activities, assuming that there are no clearly distinct phases as in the behaviorist model, because they are continuous and overlap each other. In content defining the professor can select a major area of the topic without limiting its scope by arbitrary boundaries, emphasizing on interaction between the individual cognitive structures and the environment through interactive resources of the information and communication technologies. The learning objectives are designed as an orientation for the use of learning objects without necessarily specifying what must be learned.

Since learning is considered to be the experience based development, it should focus on activities that could promote individual development of networks or most appropriate mental cognitive maps. The learning strategies (concept maps, questions) should be used in a way so that the student could

retrieve the existing information with a view of its application in the real life, contextualizing it and facilitating its processing in order to make it meaningful. The online materials should be presented in different formats (text, audio, and video) and the activities need to contemplate the different learning styles, enabling new discourse and presentation forms in communications that provide thinking.

There is a proposal that is characterized as a strategy between the teacher-centered approach and the student-centered one, it is the conversational theory (Laurillard, 2002) in which the learning process involves an interactive exchange in two distinct levels. At the first level the teacher presents the conceptual knowledge, ideas or theories and the student gets familiarized with the content with the help of questions and answers. At the second level, characterized by interactive activities, the student puts theory into practice through experiential tasks – exercises, laboratory experiments or field trips. The teacher follows the experiential progress of the students, provides feedback and helps in comprehension of the concepts at the same time when the students reflect on their experience, establishing a bridge between theory and practice. The interaction in this educational model and the conversations consist of not only verbal exchange, but also of other types of interaction that involve self-reflection and monitoring own learning activity. The teachers and students are expected to be responsive and reactive to ideas and practices of each other, as well as to their own ones, and the used media should facilitate the conversational exchange.

However if learning is conceived as a predominant socio-cultural dialogue, the teaching must provide opportunities for including it into authentic tasks which lead to participation in practice communities. The practice communities, according to Illera (2007), formed a change of education perspective by strengthening interconnection between the previously separated concepts – learning, identity, practice, meaning, community and context. For this author these communities may serve as a key element in the comprehension of the processes and mechanisms of educational influence that occur in educational informal contexts. They provide the union of personal experience to the cognitive, affective and social aspects, situating the notion of learning into a more general context, that of the life of the people who learn, regardless of their temporal presence in the educational institute. The virtual practice communities enable the development of educational activities fixed on socially situated learning, based on four assumptions: the learning is fixed on actions of the everyday situations; the knowledge is acquired in situations and transferred only in similar circumstances; the learning is

the result of a social process relative to the way of thinking, perceiving, solving problems and interacting, as well as to the explicit knowledge; the learning is not separate from the world of action, but inserted in a complex social environment that consists of actors, actions and situations. Likewise, the practice communities enable the cognition and knowledge to build up in the network of participative relations and activities. (OU) according to Dias (2007) “the cognition and the knowledge in the participation model are not situated in the individual, but in the network of relations and activities that form the community and promote the development of distributed representation. As a metaphor for participation, the cultural, social and contextual aspects of the learning are the support for the cognition situated and distributed, whose expression are the communities of practice.” The model of situated cognition, theoretic mark of the socially situated learning, is supported precisely by social interactions and by the language as a communicational and cultural tool for the development of the shared knowledge and as psychological tool for the organization of the individual thinking (Dabbagh, 2005). This model highlights the importance of the multiple forms of communication and requires rich learning environment in interacting and dialogue. The learning should be conceived as an active process with significant activities, of a collaborative and cooperative character, under control by the student and predominantly interactive, creating a meaning of presence and of community and promoting transformational learning. In this way the online education process must provide learning situations which encourage negotiation of the content meaning by the learner under multiple perspectives, develop activities that facilitate interaction between the participants, provide support materials and foster teacher’s actions as of a mediator and an adviser of the student.

Interaction and Interactivity in virtual learning environment.

There is an aspect of virtual learning environment that should be highlighted, that is its potential for collaboration and negotiation through interactive tools. Belloni (2003) defines interaction as interplay between two or more actors, whose intersubjectivity can be direct or indirect and mediated by communication tools. The interaction is different from interactivity because the latter can refer both to the technical capability offered by a certain device (CD-ROM, games and hypertexts) and to the user’s action on the machine and the retroaction of the machine on him. Nichols (2003) classifies

interactivity in two types – indicative that is typified by the use of navigation buttons and scroll and simulative, the one that empowers students to learn in a simulated situation, based on their own choice and providing them with some kind of feedback. These activities of mediated interaction and of interactivity created by the communication networks (e-mails, chats, discussion groups and lists, and websites) occur in real-time (immediate or synchronous – with fixed schedule and pre-established) or not (mediate or asynchronous – with a more flexible schedule) and mix characteristics of oral and written language (Testa, 2001).

Regarding the communication theory, Primo (2005) refers to four possible approaches in the study of the interaction mediated by information and communication technologies: The transmission approach refers to bi-directionality and considers the incoming and outgoing flows. In the informational focus the elements like action-reaction (frequency), selection between available alternatives (amplitude) and the impact of the choices (significance), however numerous the possible options are, stay under the developer's control. The technician focus measures the potential of the device by allowing the user to choose the information flow that he wants to receive (interactivity of transmission), requests information in a system with return channel (interactivity of consulting), produces and sends his own information (interactivity of conversation) and yet registers the information of the users and answers their needs and actions (interactivity of registration). This focus is characterized by emphasizing on the technical potential of the devices and not on the relation between the interactors. Finally the systemic-relational focus is characterized by chaining the communicative acts guided in the following aspects – content, relation and interdependence of the relationship in interaction for knowledge building. In this case the knowledge is not conceived as an object, but as an action, movement, network, connection. For this author, among the possibilities of mutual interaction there are highlighted problem solving, negotiation and reciprocal modifications of the inter-actors during the interactional process (recursion). On the other hand, among what is called reactive interaction, there are highlighted predictability and automatization of exchange (input/output).

The interaction in virtual learning environment, according to Vrasidas (2000), can happen between student and professor, student and content, student and another student and student and interface. The interaction student-content is a defining characteristic of education and corresponds to the beginning

of the process of knowledge building by the accommodation of information in pre-existing cognitive structures. The Internet provides new opportunities of interaction for student-content and student-interface relation by means of immersion in microenvironments, exercises in virtual laboratories and online tutorials with immediate feedback. The interaction student-professor is considered to be essential and highly stimulating the interest of the students in the content and motivating them to learn, with positive impacts on the completion rate of online courses. The interaction between the professor and the student in the virtual learning environment occurs in a simultaneous and deferred way, according to the technologies of interactivity (e-mails, messages and chat) used in the communication processes. The modern communication technologies available in the virtual learning environment can encourage diverse forms of interaction between students and professors: whether between student-student, a student and the rest, or in the group context, with or without presence of the professor in real-time. These diverse possibilities of interaction encourage collaborative learning and the students to compare their comprehension of the concepts under the study with their colleagues (Timms et al., 1999). There is also a professor-professor interaction that creates opportunities of support and professional development, as well as professor-content interaction that guarantees continuous updating and monitoring of content resources and of the developed activities for the student's learning (Anderson, 2004).

The virtual learning environment presents an advantage of combining individual and group interactions in an integrated, mutual, flexible and independent form in the time and space, enabling the exploration of new knowledge, virtual coexistence and constitution of communities of learners. In the constructivist socio-cultural perspective the electronic social interaction creates, uses and extends zones of proximal development to foster the abilities and capacities of the student that were originally active only in situations of collaborative or assisted learning, but that gradually become internalized as independent self-regulatory processes.

Besides the interaction, there are other positive aspects related to *online* education. They are the economy of time and costs due to the reuse of materials used in other courses and the absence of physical displacement of teachers and students for participation in classes, as well as a larger access to the qualified information, flexibility in the study (any time and place), anonymity and institutional recognition by adoption of innovative technologies.

The role of the tutor and the student in the virtual learning environment.

The main task of the tutor in virtual environment, according to Peters (2004), is to develop not linear systems of learning in hypertexts/hypermedia, expressing complexity of academic learning and giving support to it by exploration and discovering. The roles of a host, lector, facilitator, mediator, challenger and organizer of a community are also attributed to the tutor. Maudsley (1999) notes that the tutor is a guardian in the group processes and a guide for the discovery instead of being a perfect model of an information dispenser or an excited cheerleader. In the pedagogical mediation the professor-tutor stimulates the student to assume his condition of a subject of the learning process by challenging and motivating him for the search for adequate answers to the proposed activities (Losso, 2002). Among the requirements expected from these professionals there is the use of different educative methods, development of the questioning, research and writing abilities, the knowledge of the context where the work of the participants happens, the exposition of ideas in a clear way and the establishment of climate of appropriate interaction. The personal competencies of the tutor will be related to the will to teach, the respect for the student, and motivating him through an effective communication. He is a partner of his students who identifies their thinking representations, shares relevant information, encourages to search for different sources of study and research, causes reflection on the processes and their products, encourages the formalization of the concepts and leads to the establishment of multiple and mutual relations and recursions. In virtual learning environment it is required for tutors to develop abilities for generating interactions (King, 2002) that foster a feeling of engagement, competencies related to the appropriate use of the technological resources of communication and the orientation of the students to the solution of technical problems.

There are learning needs attributed to the grown up students bound to the changing social roles with immediate application of the knowledge acquired and appreciation of their experiences in life as a source of learning (Conlan et al., 2003). In the literature of *online* education the students are perceived as autonomous, self-directed, motivated by internal factors, disciplined, committed, capable of organizing their time for the performance of the educational activities and of expressing themselves in a clear and short way, as well as of having abilities for independent work. As Fiuza (2002) points, if the motivation is an individual and internal component with reflexes on performance of the student in the distance

courses, the only possible action for keeping them motivated is to know their socio-cultural characteristics, knowledge, experiences, demands and expectations and to offer learning activities which satisfy these necessities.

Assuming the majority of functions commonly referred to the professors, the students in the virtual learning environment are encouraged to develop the abilities of self-determination, orientation, selection, decision making capacity, of learning and organizing, creating a learning behavior structurally different from the one shown in the traditional higher education. The virtual environment allows a level of engagement and empowerment of students that is more difficult to find in a traditional class (Nulden, 2001). The use of virtual environment in a perspective of interaction and collaborative building of knowledge encourages individual exchanges, development of competencies of team work and abilities related to writing. The participation in a virtual and collaborative learning environment means dipping into the world where the communication happens essentially by reading and interpretation of didactic text and hypertext materials, and by expression of thinking through writing (Carvalho e Misoczky, 2001).

The challenges for learning in virtual environment

Learning in virtual environment requires consistency between the pedagogical proposal of the course, the characteristics of the student and the action of the tutor, requiring them to have capacity to explore the educational resources and available technologies. In a virtual environment the configuration of a course under the precepts of the behaviorist pedagogical proposal, a common characteristic of presence courses that migrate to the *online* mode, can limit the roles of the tutors and students to providing and receiving information, requiring that the last ones fulfill the tasks and attend the programmed activities. The demand for communication tools is generally restricted to the use of e-mail for sending works and solving doubts of the student by the tutor.

The option for interactional approach presupposes the constitution of virtual environment with relevant and significant content for the student, that facilitates the interaction between the participants of the course and whose tutors support the students by stimulating them for an active and collaborative participation in the processes of learning. It requires the use of resources that enable the interaction and the sharing of

knowledge within a proposal of collaborative learning, such as discussion forum, chat room, videoconference, blog, wiki, creation of virtual communities and simulators in three dimensions.

While for some students the anonymity and reduced status distinctions produced by the use of communications mediated by computer can provide an incentive for creativity, a more equal participation in decision making and for a more visible perception, the other students show lack of satisfaction, slow development of links related and loss of motivation (Valcke & Leeuw, 2004). This feeling of isolation caused by the experience of *online* education can be softened by the incorporation of technologies of synchronous communication, such as chat, whiteboard, audio and videoconference, apart from reducing the simultaneous use of the participants, the constitution of small groups by the difficulty in following different 'conversations' and the availability of equipments, applications and transmission band that can imply in higher operational costs and burden to the student in acquisition or adaptation of the available computational resources.

The writing that is a central element in the evaluation process of students in *online* courses, represents an important challenge for the tutors, from the differentiation between a student with low writing proficiency from the one with poor preparation or engagement in the course, to the requirement of writing skills and the necessity of the comments or indications to be understood in a clear way by the students (Liang & Creasy, 2004). As far as the students are concerned, besides the capacity of self expression in an objective and critical manner in the written evaluations and in the messages posted in the forums of discussion, there is also a question of authenticity of authorship of the works. The plagiarism, one of the components of the academic dishonesty, is characterized as the event where one person presents a work of another person, intentionally or not, as if being his own in order to gain some benefit (Hart & Friesner, 2004). The plagiarism can vary from the failure of not allocating the sources because of the lack of knowledge of conventions, copywriting to a fraud. Although not exclusively for the virtual learning environment, the characteristics of the distance education provided by the Internet seem to have advanced it. The pointed solutions, such as requirement of proof of the references cited in the work by requesting photocopies of the articles, the study of techniques of writing scientific papers, the strengthening of academic conventions, the orientation for the time management and the reducing of the number of tasks, although they alert the student on the preoccupation of the institution on this practice, they don't guarantee its decrease.

A more profound discussion on the definition of authorship is required since new experience of collaborative learning is implemented in the online education.

As far as the tutor is concerned, the acquisition of competencies for the management of communicational and technological resources is done by the combination of previous experiences, orientations formalized in manuals, formal and informal evaluation reports of the practices adopted during the course that suggest which strategies are more adequate in different situations of learning. However, such competencies can be limited by the characteristics of the tutors and the students, since equality in the range of skills and benefits coming from the innovative pedagogical proposals and from the new information and communication technologies is not something that could be assumed for all the participants. Within the same environment of online education there can be found different styles of tutoring and student identities, dependent on the way the tutor and the student manage the pedagogical and technological resources available for the learning objectives. Nevertheless, these roles are not necessarily conditioned by the pedagogical proposal of the course, and they can be both in interrelation between previous and current experiences or shaped by psychological characteristics. In the *online* environment, Hughes & Lewis (2002) identify three identities of students – the model, who is entrepreneur, takes risks, explores new ways and enjoys the benefits of the virtual learning environment; the disenchanting, who recognizes the benefits of the new technologies but is not satisfied with the results obtained with the use of them, and, therefore, resorts from the learning methods that are more familiar to him; and the maladaptive, who has a lack of a comprehension of the new online pedagogies and whose expectations of learning undertake its academic development, making them resistant to the new technologies. Despite the critics of the behaviorist vision underlying at the definition of these identities, it is easy to note that the attitude of the student in an *online* course may vary along a continuum and extend from the model type to the disenchanting/maladaptive ones, due to the changes in the work, family problems, technical difficulties or any other event that affects the available time or motivation about the course.

In the evaluation of the students' experience in an advancing *online* course Laguardia et al (2010) observed that a group of these students is characterized by working in partial or integral time, having limited availability of time for studying, difficulties for meeting the requirements of autonomous learning and having a habit of a passive learning. Moreover, the possibility of studying in the working environment itself

generally conflicted with the demands of work, shortage of adequate inputs for the access to the educational materials and with the lack of effective support of the managers, still tied to the traditional education model, which dissociates the place of studying from the working place. These authors still think that the liberty and flexibility present in the virtual environment, the autonomy of the student and the demand for a critical reflection of the knowledge presented in the course can be perceived as negative factors for the learning by students who got used to be oriented on which activities to do and how they should be done. From this mode, just like the tutor, the student needs to move from the technical empiricist focus on the knowledge to a pedagogical practice and epistemological critique of a constructivist nature. This movement is more relevant between the professionals in health area, whose education has traditionally been based on "reproductive teaching methods that stimulate passivity, adoption of strategies of superficial study and a-critical acceptance of the technical knowledge" (Araujo, Miranda & Brasil, 2007: 25).

The process of evaluation of the students in distance education, despite the constructivist beliefs being the base of many of them, is still based on the measurement by tests and exams on the transmitted knowledge. The forums of discussion and the portfolios, diaries and conceptual maps are characterized as cognitive tools that provide reflective and metacognitive learning of professors and students and that would be the alternatives to the traditional, normative and linear model of evaluation (Laguardia, 2007). However it implies all the students in effective participation, excluding from evaluation those students who only read the messages or who are not motivated for participating. The compulsory participation, defining the scope of discussion and the temporal restriction of the forums can lead to the physical or mental absence of the student, who posts not engaged messages in order to attend the requirements of the course only. There should not be put away the possibility that the absence of participation can be compensated by his involvement in other activities equally relevant for his learning in the course. Regarding the definition of the evaluation criteria of participation of the students in discussion forums, this one stays mostly dependent on the tutor, who can be supported in this task by more explicit rules, such as adoption of validated taxonomies, such as cognitive taxonomies of Bloom (Ferraz & Belhot, 2010) and the SOLO de Biggs (Laguardia et al. 2009). The use of these taxonomies can play

a role of evaluation by the tutors, from the previous definition of the cognitive objectives expected from the students of which cognitive processes were used by them during the learning and, consequently, which strategies are to be revised and modified in the future courses.

The attributes of the media and the control of the student, measured by the degree in which he is free to make choice within a pedagogical proposal, as well as the possession of skills and competencies for engaging in the educational experiences and the availability of resources of support that enable him to participate in an effective way influence the learning in the *online* environment. According to Bonk & Cunningham (1998), the technology affects the nature and the goals of the learning process by having educational collaborative tools that foster emotions and new knowledge. In this sense the option for open source applications for generating content and activities in the *online* education besides eliminating the costs of acquisition and updating software enables a more creative and proactive role of the participants in the collective construction of the content and of the interactive strategies.

Nevertheless, the virtual learning environment is not inherently interactional; it depends on the active participation of the students and tutors through frequency, on the timely contribution and on the nature of the messages that are posted, as well as on the pedagogical techniques used. Moreover, some of the factors of the success of the learning in *online* environment (Laguardia, Casanova e Machado, 2010) are the opportunity of the return of the comments of the tutor to the student about his activities, the implementation of self evaluation routines, the ability of linking didactic resources in different formats, the access to the materials in an efficient and fast way, and the encouragement for an active and independent learning.

Given the emergency of new technological instruments and of learning practices centered in the student, most professors still resent on the lack of support and direction in the use of collaborative technologies within the student centered perspective, as well as the underestimation of the workload generated by the individualized attention to the students' demands (Schrum & Hong, 2002; Barbosa & Resende, 2006). The tutors are expected to have specific knowledge on the topics covered in the learning and pedagogical resources that enable an adequate and effective performance in a virtual learning environment.

The distance education in the professional qualification in Health Care

Diverse experiences of distance professional qualification in Health Care are being developed in the country, favored by the federal government investment for extension of supply of courses of this type of studying with the prerogative of extension of the opportunities of access to professional education, aimed at strengthening the Unique Health System.

At the same time the consolidation of the distance education in the country had a big impulse from the investment coming from the Ministry of Education for creation of the Open University of Brazil in 2005. It is about a system composed of education institutions with the aim of offering higher education courses for population groups in situation of inequality in what concerns the access to the university education. Even if their priority is graduation of professors who act in the basic education, professional qualification courses in Health area have been offered by the Open University of Brazil both to the professionals of the education sector and to the ones of the Health sector. Among them there are bachelors, graduates, technologists and specializations (by graduation), along with the courses for the use of information and communication technologies (media) in Education and those for the public administration aimed at managers training. Regarding the health theme, management courses in health care, family care, indigenous health, environment education and informatics in health, as well as sanitary, permanent education in health care, project management in health investment, have been offered by distinct education institutions like universities (UFF, UNIFESP, UFMG) and institutions of education and research (Fiocruz). Another considerable investment contribution came from the creation of UnA-SUS (Open University of SUS), which was found in 2008 as a result of the joint actions of MS and OPAS-OMS, aiming at creation of a collaborative network of academic institutions and health care services for attending the needs of education and permanent education of SUS.

This scenario imposes the need of studies for evaluation of the impact and the effectiveness of these courses of professional education in Health area who will act in a diversity of situations. In turn, the access to appropriate equipment and infrastructure, familiarity with the new information and communication technologies, the pedagogical and content support to the tutors by qualified professionals, the integration and adaptation of the pedagogical proposal to the demands and working conditions of the students and the access to the educational materials after finishing the course are related to

the success in the professional education and need to be considered in the conception of distance courses in the health sector mediated by the technology (Graff, 2003; Ally, 2004).

One of the challenges faced by distance education for training of professionals in health area is related to its capacity to offer a dynamic and interactive virtual learning environment with possibilities of reproduction in CD room recognizing the diversity of access to the Internet still existing in our country. Another challenge is providing support to pedagogical orientation to the tutors in order to help them face the difficulties that the students present in the distance studies, as well as meetings with learning guides and with formulators of the course (content teachers) in order to guarantee the continuous qualification of these tutors in the content approached and to improve their performance together with the students. Other possibilities are to provide didactic printed material and in digital media in order to encourage interactivity of the student with the virtual environment at the same time not obliging him to be present online during all the time of the study. Another point is seeking to integrate the theoretic activities into the evaluation activities to the professional experience of the students encouraging significant learning.

An aspect that needs to be highlighted is that the implementation of *online* courses can present higher costs than the present courses due to: the adoption of focuses and pedagogical activities that need more elaborated computational requirements (games, simulation, hypermedia database) which can be available in the open source applications or not, demanding their separate acquisition; the hiring of professionals for the content development, design of the curricular activities and their adaptation to the virtual environment; the payment for supervision/orientation activities of learning, mentoring, monitoring and technical and administrative support, as well as the acquisition of equipment and changing in the physical infrastructure of the institutions that promote these courses. On the other hand, considering the regional inequalities from the socio-economical point of view, the local and regional differences in our country, regarding the profile of health – disease and providing population with health care, the type of distance education can be important device/strategy for the qualification of workers with a view to strengthening the health care system and the concretization of their doctrinal principles. In the case of the basic education professionals, for example, the distance education enables more elements to be incorporated into the curricula by expanding among the youth and adults the perspective of health as a citizen's right, extending the popular participation and the social control.

Conclusion

Nichols (2003) notes that it is not enough just to make the online education tools available, but it needs to be clear which are their real benefits and how to integrate them into pedagogical proposal of a course. The choice of the tools should reflect more than determine this proposal, being as a rule that the way of using is more important than the type of technology to be used in an *online* education program. Moreover, it is important to know the approaches and conditions of studying of the students, because an effective practice of *online* education depends on how the users will engage in the learning opportunities provided to them and the positive and negative effects that these experiences will have on the performance of the student all over the course. The success of the courses in virtual environment doesn't depend exclusively on the use of a more functional or advanced technology, although the latter offers opportunities for the development of innovative pedagogies. The success depends on the training and professional appreciation of the tutors, on the comprehension of the specifics of the students and of the particularities of the content in which the educational proposal is inserted.

In the discussion of the interface with the education, it needs to be clear that the role of the information and communication technologies is to create an environment that would facilitate the learning (Imel, 2001) and its influence depends on significant changes in the processes of learning and on the comprehension of the purposes, reasons and directions of its use in education. However this discussion should take into account the restructuring of the productive process and its consequences for the knowledge management in which the propagated flexibility of learning in virtual environment for building competencies is inserted in a more extended process of changes in the system of institutional power. The new communication and information technologies and their configurations in the context of the Internet cannot be taken for granted, in other words, it is not enough to provide these resources for the radical changes to be made in the society, education and health care. It is also necessary to make reflection on the society of information/knowledge within theoretic marks chosen to understand what we call cyber culture or cyber society and how the education is present in this new paradigm. Is the so celebrated flexibility of the education in virtual learning environment something that makes us the lords of the knowledge process or does it simply repeat the old behaviorist models clothed with new garments and enrolled in a conservative modernization? The answer to this question can be found in the evaluation of

the experiences of online education that will point to us the situational, institutional or individual limits to be overcome, both in the access and in the use of the new technologies and in their aggregation to innovative pedagogical strategies.

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