

DentaLAV: A virtual platform for dental multidisciplinary learning.

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Abstract—The current deployment of information and communication technologies (ICTs), coupled with the growing development of mobile communications and miniaturized electronic devices, allows that more people access to a large amount of information. For this reason, a new social model known as the knowledge society is being developed. It is based on the capacity of each individual to transform the information they have into useful knowledge. Due this, the economy is based in technical qualities of each individual and him/her knowledge to develop several services. So, the education model must improve offering a better learning quality. With the develop of new virtual tools based in ICTs, such as virtual platforms, this goals will be achieved in any educational field. Dentistry is not indifferent to this reality, since several virtual platforms have been proposed that offer diverse multimedia resources to reinforce the contents reviewed in the classroom. However, they suggest individualized educational models that do not take into consideration the multidisciplinary work that needs to be developed in this field. For this reason, this paper proposes the development of DentaLAV, a virtual learning platform whose objective is to create multidisciplinary collaborative learning groups, giving higher education students the opportunity to train to face real dental cases.

I. INTRODUCTION

During the last years, the constant development of information and communication technologies (ICTs) allowed the growing of Internet, giving way to the information globalization [1]. Because of this, human social models underwent a series of changes, converting an industrial society into a knowledge society, passing through an information society [2], [3]. The knowledge society is based on the information society and is characterized by transforming the information obtained through Internet access in useful knowledge, which translates into benefits for humanity. It is oriented towards technological progress and the creation of intellectual technology, for what it is based in the knowledge multiplication without time-space restrictions, breaking geographical barriers [4].

Different aspects from the life of each individual are influenced by this new social paradigm. There is an new economic structure, in which knowledge has replaced work, raw materials and capital as the most important source of

productivity [5]. This new economy is based on services, marked by the preference of technically qualified professionals and theoretical knowledge as main source of innovation [6]. So, this reality has serious implications for the nature and purpose of educational institutions. On one hand, education context evolves, including an informal learning model that is not limited to a classroom. On the other hand, the concept of "learn to learn" is managed, in which it seeks to promote in each student skills that will help him/her to have the capacity to learn throughout his/her life [7]. Thus, new educational models such as self-learning [8], tutoring learning [9] and collaborative learning [10], are born.

From several decades ago, Vigostky and Piaget expressed in their theories that the main goal of education should be to train men to be capable of innovating and creating new things, not just repeating what others have done [11]. For this reason, the current pedagogy should give students greater freedom to expand their way of thinking outside conventional. Building knowledge and sharing information are the pillars of current education [12]. So, the use of ICTs and collaborative learning became the basis for curriculum development and student training. Through techniques such as dialogical discussion, people that make up learning groups can transform collective thinking into knowledge, and in this way, accomplish common goals. In addition to this, ICTs offer new possibilities for social mediation, creating virtual communities of collaborative learning that facilitate students to develop activities together [13], [14]. In this type of educational structure the importance of coworking or multidisciplinary work is emphasized, since the students indirectly reach a superior collective intelligence, product of the sum of their individual talents [15].

From this point of view, virtual collaborative learning is based on the creation of tools or platforms that allow the socialization of knowledge among a group of students who share common preferences [10]. Presence of a teacher or expert in each subject is necessary, because there may arise concerns that require special help [16]. These technologies can take place in any field, including dentistry, because, with the use of multimedia tools and the socialization between different