Implementation of a multi-environment learning/teaching platform to improve the dental education quality

Jack F. Bravo-Torres[1], Paúl E. Vintimilla-Tapia[1]
and Pablo L. Gallegos-Segovia[2]
[1]Grupo de Investigación en Telemática y Telecomunicaciones
[2]Grupo de Investigación GIH4PC
Universidad Politécnica Salesiana
Calle Vieja 12-30 y Elia Liut, Cuenca, Ecuador
Email: {jbravo, pvintimilla, pgallegos}@ups.edu.ec

Wilson D. Bravo-Torres[3], Jaime L. Astudillo-Ortiz[3]
and Cinthya M. Cevallos-Ludeña[4],
[3]Facultad de Odontología
[4]Facultad de Artes
Universidad de Cuenca
Av. 12 de Abril, Cuenca, Ecuador
Email: {wilson.bravo, jaime.astudillo,
cinthya.cevallos}@ucuenca.edu.ec

***Abstract*—Nowadays, due to the constant advance of information and communication technologies (ICTs), a new society, whose main characteristic is to globalize access to information, is being deployed. Thus, ICTs are present in all aspects of everyday life, allowing anyone to obtain content of interest at any time. In this sense, education is not alien to this reality, so new paradigms of learning/teaching are unfolding. On the one hand, students are motivated to become knowledge producers, offering learning environments equipped with tools and resources according to their preferences. On the other hand, teachers are encouraged to improve the quality of their teaching, giving work environments provided with statistical analysis tools that allow to measure student progress. For these reasons, this paper proposes the development of a multi-environment learning/teaching platform based on ICTs, aimed at improving the educational experience of students and teachers.**

I. Introduction

The constant development of information and communication technologies (ICTs) is globalizing access to information over Internet [1]. Industrialized social thought, instituted in last century, is being set aside to give way to a society characterized by transforming information into useful knowledge, promoting the development of humanity [2]. In this situation, there is no area of everyday life that has not been influenced by this new society, in which knowledge is distributed much faster and more effectively, reaching anywhere in the world. Thus, new educational practices are deployed, both for students and teachers, which contribute to the development of more equitable learning and quality teaching [3].

The integration of ICTs with traditional learning/teaching processes is giving way to the birth of a new educational paradigm [4]. On the one hand, learning becomes a flexible and informal process, in which each student is responsible for the knowledge that needs to acquire. However, due to unlimited access to content, the custom of learn to learn should be fomented in students, avoiding to fall into over-information processes [5]. On the other hand, ICTs offer teachers the possibility of improving their teaching practices, by monitoring the activities carried out by their students, detecting any problems or learning needs. In this way, the teacher role goes from focusing on transmitting the contents of a course, to stimulating the personal search for knowledge [6]. In this context, ICTs offer several advantages [7]:

1) Removal of space-time barriers: Learning needs of students can be satisfied at any time, without limiting to a classroom. In this way, they can reinforce their knowledge or start studying new subjects without depending of an educative institution.
2) Empowering social interaction: Thanks to the informal environment of ICTs, students can socialize with their peers and teachers through the use of different communication tools (videocalls, insta-messaging, VoIP), leaving aside any type of shame or shyness.
3) Deployment of different forms of learning: According to students preferences, different types of study can be deployed such as self-directed learning [8], peer learning [9], peer tutoring [10], collaborative learning [11] and sporadic network learning [12].
4) Access to personalized learning resources: Depending on the preferences of each student, he/she can find various resources (video tutorials, readings, animations, serious games), whose purpose is to improve the learning experience.
5) Providing continuous academic training: Students can continue to learn throughout their lives due to unlimited access both to contents of their interest and to several learning resources (courses, tutorials, readings, among others).

Based on all the advantages presented by ICTs, this paper proposes the development of a multi-environment learning/teaching platform, which is focused on providing the services required by students and teachers. In this sense, the platform keeps several applications whose purpose is to help both students to meet their learning objectives and teachers

978-1-5386-2363-3/18/$31.00 ©2018 IEEE