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Teaching and Learning Enhanced by Information and Communication Technologies

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Abstract

This article reflects on significant changes in teaching and learning enhanced by constantly emerging new information and communication technologies (ICT), which have altered common approaches to teaching and learning. The purpose of the article is to explore three striking phenomena such as learner centeredness, interactivity and mobility which underpin current non-traditional teaching and learning that is becoming a norm. In addition, blended learning as a new methodology exploiting all these phenomena is examined.

Keywords: ICT; learner centeredness; interactivity; mobility; cloud computing; blended learning

1. Introduction

Within the past 20 years any sphere of education has dramatically changed owing to constantly emerging information and communication technologies (ICT). They have altered common approaches to teaching and learning. As Bonk (2011) puts it: Anyone can now learn anything from anyone at anytime. In addition, he states that the Web is becoming our preferred learning platform and non-traditional learning is suddenly the norm. Siemens (2004) adds: We can no longer personally experience everything. There is too much. We create networks to learn more than we can as individuals.

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2. Changes in Teaching and Learning Enhanced by ICT

Teaching and learning is becoming more:

A. learner-centred;
B. interactive; and
C. mobile (cf. Sorden, 2012).

a) The teacher is not the authority in the class anymore. S/he is a kind of facilitator, advisor or mentor (cf. Frydrychova and Poulova, 2011). Moreover, Shneiderman (2003) claims that the teacher's role is to activate and develop creativity. The technology should not lead; the teacher should teach/ navigate his/ her learners how to process and form scientific knowledge and enquiry. This reflects the so-called concept of the Community of Inquiry (CoI, cf. Lipman, 2003) in which teacher is to stir students to think about the world when teachers reveal knowledge to be ambiguous, equivocal, and mysterious. This theory was in 1990's expanded to online learning contexts (cf. Garrison, Anderson and Archer, 2000; Garrison and Vaughan, 2008). The CoI framework was designed to define, describe and measure elements supporting the development of online learning communities. The three principle elements identified by the CoI model are social presence, cognitive presence and teaching presence. Social presence is defined as the degree to which participants in computer-mediated communication feel affectively connected one to another; cognitive presence is conceptualized as the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse; and teaching presence is defined as the design, facilitation and direction of cognitive and social processes to support learning (cf. Swan and Ice, 2010). See also Fig.1 for its demonstration.
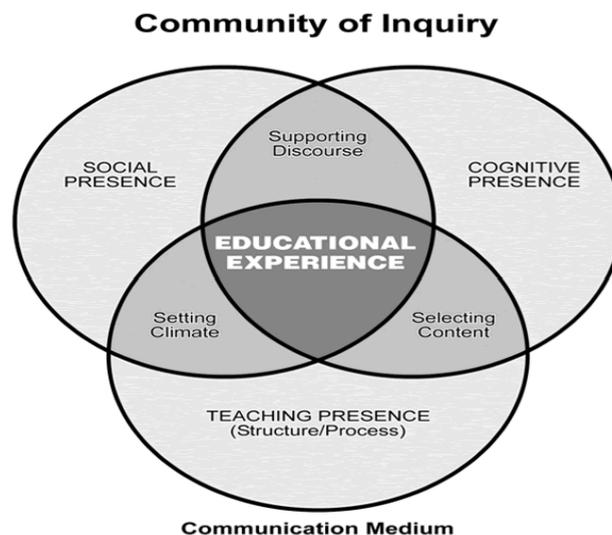

Fig. 1. A Model of Community of Inquiry

b) The 21st century learners cannot imagine their studies without being able to interact with the online materials or their peers. As Jung, Choi, Lim and Leem (2002) claim, interactivity is especially important in overcoming one of the shortcomings of traditional distance education, that is, a lack of interpersonal interaction. In addition, Bednarikova (2013) suggests implementing the so-called ACCEL model (Activity-Co-operation-Conformity-Entrance-life styles) when running online courses. ACCEL is an educational model for interactive online education with the ICT support and it has the following five pillars:

- activity, which requires an active and thinking approach from students;
- co-operation, which supposes that participants will be involved into discussions, joint assignments and projects;