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In-service teachers' self-perceptions of digital competence and OER use as determined by a xMOOC training course

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Abstract

Digital Competence (DC) is considered a driver for educational innovation since its immediate result is the production of new digital media resources for teaching such as Open Educational Resources (OER). This study aims to determine teachers' DC through their participation in a MOOC training course and establish the extent to which DC better enables the production of OER. A group of 863 in-service teachers participated in the study. A 26-item validated questionnaire on DC and the use of OER was delivered to participants, and course facilitators' weekly reports were collected. An ordinal logarithmic regression was conducted to verify whether teachers who hold positive self-perceptions of DC are more prone to using OER in their teaching. Mean differences between traditional teaching and online teaching were also tested. Reports were content analysed using a SWOT matrix. Our model predicts that only in-service teachers that perceive themselves as digital experts can reach an intermediate level in the production of OER. Furthermore, online teaching significantly favours teachers' DC but is highly significant in OER production. The main implication is that training teachers' DC is required to prepare teachers for the use of OER; however, teacher education should first address teachers' actual level of performance.

Keywords:

MOOC Teachers' digital competence, Open educational resources, Distance education and telelearning, Improving classroom teaching.

Introduction

The irruption of technical innovation tools in classroom (Rohatgi, Scherer, & Hatlevik, 2016) has led to an increase in new models of teaching in which teaching strategies and assessment are no longer based on individual interactions between the instructor and the learner (Caswell, Henson, Jensen, & Wiley, 2008). Massive Open Online Courses (MOOCs) are an example of this new model of online education, particularly in tertiary education, pushing teachers to be digitally competent in

the use and creation of digital media resources (Stewart, 2013). xMOOCs are courses based on traditional teaching theories where expert educators teach the students by using technological tools such as videos, quizzes or videogames (Oswal, 2017). On the other hand, cMOOCs are based on the learning theory of connectivism, where the users become both the teacher and the student. Learning occurs when content is distributed among users and knowledge is co-created in communities of practice (Downes, 2012; Hew & Cheung, 2014). Either xMOOCs or cMOOCs, stand as unique types of online courses compared to any other distance learning education model because they allow an unlimited number of participants to take courses at one time from different locations (Luo, Robinson, & Park, 2014). Therefore, 'massiveness' constitutes the key element of MOOCs which has no precedent in education (Knox, 2014). MOOCs' significance is acknowledged in an increasingly global society because knowledge is rapidly interchanged and processed. Other reasons include its low cost against the increasingly rising costs of face to face higher education (Pappano, 2012). However, the use of MOOCs still remains controversial because completion rates are low (less than 10%) compared to traditional teaching courses (Jordan, 2014), and the interactions between teachers and students are of weaker intensity (Emanuel, 2013). In this regard, contextual factors, social needs and personal attributes have to be taken into the account to reaffirm (or not) their * Corresponding author. E-mail addresses: solramirez@itesm.mx (M.-S. Ramírez-Montoya), juanjo_ mena@usal.es (J. Mena), joseantonio.rdz@itesm.mx (J.A. Rodríguez-Arroyo). Contents lists available at ScienceDirect Computers in Human Behavior journal homepage: www.elsevier.com/locate/comphumbeh http://dx.doi.org/10.1016/j.chb.2017.09.010 0747-5632/ Computers in Human Behavior 77 (2017) 356e364 effectiveness in the learning processes (Yuan & Powell, 2013). To date, while MOOCs have not impacted education as expected (Marcus, 2013), they constitute a different mode of teaching. Teacher education thus needs to determine what kind of knowledge (either content knowledge or pedagogical knowledge) teachers produce under such type of online teaching. In this sense, MOOCs literature is still under-theorised; therefore, research towards viability and sustainability of this mode of teaching is required in teacher education (Barnes, 2011). It can be argued that a visible output knowledge that teachers generate under this online teaching comes in the form of digital media resources for learning. More specifically, and increasingly growing in importance, Open Educational Resources (OER) positions, as didactical products that reside in the public domain, can be freely interchanged among course participants, facilitators and peers (Caswell et al., 2008). The scalable nature of the OER used in MOOCs (King et al., 2014) ultimately enables a personalised adaptive learning experience (Kaplan, 2014). However, the shift in the modes of teaching calls for new teachers' qualifications to be technically and didactically trained. New coming teachers' generations are increasingly more comfortable with online types of education and, above all, with the use of digital media resources and user-generated contents in classroom (Pucciarelli & Kaplan, 2016); nevertheless, teacher training programmes fail to sufficiently prepare teachers to efficiently use Information and Communication Technologies (ICT) in their classrooms (García-Valcarcel & Mena,

2016, ; Goktas, Yildirim, & Yildirim, 2009). In addition, many in-service teachers do not perceive or recognise themselves as digitally prepared to combine technological resources (i.e. OER) with regular teaching instruction. For instance, the ICILS 2013 technical report (Fraillon, Ainley, Schulz, Friedman, & Gebhardt, 2014) revealed that around 65% of teachers belonging to a random sample of 3300 schools from 20 OECD countries made use of the classroom computer for teaching purposes. Similar results were obtained in the TALIS report (OECD, 2014). The importance of this paper is therefore to inform how new online teacher training methodologies (i.e. MOOC) enable teachers to learn and produce OER for their teaching and the extent to which DC is necessary.

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