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New Trends in Massive Open Online Courses (MOOCs)

J.UCS Special Issue

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Massive Open Online Courses (MOOCs) are currently a popular phenomenon in the online learning world. Today many institutions offer MOOCs. This phenomenon has not only created a new trend in online education, it also has been adopted by a number of institutions around the world, allowing spaces for research in pedagogical, technological and organizational aspects. MOOCs have been able, on the one hand, to modernize higher education institutions, making them rethink their strategy on virtual and blended education, and, on the other hand, to enrich research in educational technology, allowing the collection and analysis of large amounts of data. In order to capture these innovations, this special issue focuses on new trends in MOOCs from a research perspective, including key topics, such as learning analytics, integration of cloud services, implementation of collaborative learning activities, or support to self-regulated learning, among others.

We would like to thank all the reviewers who contributed to selecting the accepted articles and improving their quality through their comments. We would also like to thank all the authors who submitted papers to this special issue, and whose work is of relevance to advancing research in the field of MOOCs. A total of 7 articles have been selected with authors from 7 countries: Spain, United Kingdom, Guatemala, Costa Rica, Chile, Ecuador, and Austria. This reflects the multiculturalism and global interest that research in the field of MOOCs is having in recent years.

It is worth noting that the seed of this special issue was the International Conference MOOC-Maker 2017, held in Antigua (Guatemala) in November 2017,

with the support and co-funding of the European Commission through the Erasmus+ programme. This special issue had an open call for anyone with interest in the field of MOOCs, but it is relevant to mention that a personal invitation was sent to encourage submissions from authors of the three best papers of the aforementioned conference.

The paper "*A Study of Learning-by-Doing in MOOCs through the Integration of Third-Party External Tools: Comparison of Synchronous and Asynchronous Running Modes*" by Carlos Alario-Hoyos, Iria Estévez-Ayres, Jesús M. Gallego-Romero, Carlos Delgado Kloos, Carmen Fernández-Panadero, Raquel M. Crespo-García, Florina Almenares, María Blanca Ibáñez, Julio Villena-Román, Jorge Ruiz-Magaña and Jorge Blasco presents an example of the integration of a software development tool, called Codeboard, in three MOOCs which serve as an introduction to programming with Java, analyzing the effect this tool has on learners' interaction and engagement when running the MOOCs in synchronous (instructor-paced) or asynchronous (self-paced) modes.

The paper "*Sustaining Continuous Collaborative Learning Flows in MOOCs: Orchestration Agent Approach*" by Ishari Amarasinghe, Davinia Hernández-Leo, Kalpani Manathunga and Anders Jonsson provides a classification of MOOC participants based on their behavior in a structured collaborative learning space, proposing also the design of an intelligent agent to address a set of requirements for new technological interventions to orchestrate collaborative learning flows in MOOCs, and a study of its use.

The paper "*An Approach to Build in situ Models for the Prediction of the Decrease of Academic Engagement Indicators in Massive Open Online Courses*" by Miguel L. Bote-Lorenzo and Eduardo Gómez-Sánchez proposes an approach to build in situ prediction models using information available in an ongoing MOOC, deriving models to predict the decrease of three indicators that quantify the engagement of learners with the main tasks typically proposed in a MOOC: watching lectures, solving exercises, and submitting assignments.

The paper "*Analysis of Behavioral Intention to Use Cloud-Based Tools in a MOOC: A Technology Acceptance Model Approach*" by Miguel Morales Chan, Roberto Barchino Plata, Jose Amelio Medina, Carlos Alario-Hoyos, Rocael Hernández Rizzardini and Mónica de la Roca evaluates the behavioral intention to use cloud-based tools in MOOC context, exploring the factors that influence this intention based on extended technology of acceptance model (TAM), and reporting the findings of a case study conducted on the edX platform with data collected from 133 learners.

The paper "*Design of a Tool to Support Self-regulated Learning Strategies in MOOCs*" by Ronald Pérez-Álvarez, Jorge Maldonado-Mahauad and Mar Pérez-Sanagustín presents the process for designing and evaluating NoteMyProgress, a web application that complements MOOC platforms and supports self-regulated learning strategies; NoteMyProgress was used in three MOOCs offered in Coursera to collect data for the evaluation of the web application.

The paper "*Supporting Teachers in the Design and Implementation of Group Formation Policies in MOOCs: A Case Study*" by Luisa Sanz-Martínez, Erkan Er, Yannis Dimitriadis, Alejandra Martínez-Monés and Miguel L. Bote-Lorenzo focuses on supporting MOOC teachers in the design and implementation of group formation policies when implementing collaborative strategies in MOOCs, and presents a study

where two instruments were used to explore solutions to this problem: a guide to support teachers during the planning of the group formation, and a technological tool to help them implement the collaborative groups designed and to monitor them.

Finally, the paper "*User Behavioral Patterns and Early Dropouts Detection: Improved Users Profiling through Analysis of Successive offering of MOOCs*" by Massimo Vitiello, Simon Walk, Denis Helic, Vanessa Chang and Christian Gütl addresses the important problem of dropouts in MOOCs, using information from the first run of a MOOC to predict the behavior of the learners on a successive offering of the same course, with the to identify learners at risk of not finishing the MOOC.

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