

## Guest Editorial Preface

# International Journal of Technology and Human Interaction (IJTHI)

## Special Issue Submission: New Pedagogical Approaches with Technologies

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### GUEST EDITORIAL

Society is facing a paradigm shift concerning day-to-day technologies due to the exponential growth of smart devices (mobile and portable) in recent years as well as the combination of computing technologies with connectivity such as the Internet, which migrated from workplaces and residences to “*our pockets*” and even, in the near future, to “*our body*.” Thus, it is necessary to identify the main changes that can be expected in the next 5-10 years, in order to prepare and reflect on these changes in the teaching-learning processes.

An education that is accessible to all, minimizing constraints of time and space, an education that is aware and takes care of personal differences is the biggest challenge of the XXI century. Therefore, in the coming decades, education and training systems in organizations (educational institutions and enterprises) will necessarily include new technologies. Besides this, the need to develop competencies in order to promote lifelong learning, learn to learn and digital inclusion are forcing the development and introduction of new pedagogical approaches in education, some of them using technologies, such as education games, flipped classroom, creative situations, Personal Learning Environments, just to name a few.

In this context, we are seeing the use of devices that can be used in the body or even inside the body to make activities (work, training, leisure, etc.) more inclusive and even ubiquitous as an integral part of our ecosystem.

Organizations have evolved in relation to the approaches used in the teaching-learning process. There has been a growing demand for low-cost but high quality solutions for education and training, where they are used in e-learning, m-learning, u-learning, social learning, MOOCs, among others. Thus, it is necessary first to examine whether such approaches are pedagogically viable – this implies learning strategies that will change to include techniques such as serious games, simulated learning, real-time chat, and so on – and, on the other hand, to determine which content types are most appropriate for particular approaches, and how they should be made available to students and / or trainees.

New technologies will enable organizations to embrace an approach to education and training that anticipates future trends. As new technologies for education and training facilitate access to information and the communication process, teaching and learning can become more reliable. However, ethical, privacy and security issues need to be addressed.

This special issue covers areas discussed during the 11th Iberian Conference on Information Systems and Technologies (CISTI 2016). The following research papers were selected from the

conference proceedings as the best papers in the area of Information Technologies in Education. The papers were reviewed and extended specifically for this special issue of the International Journal of Technology and Human Interaction.

This special issue comprises six research papers.

The first entitled “Information Management Through a Multidimensional Information Systems Architecture: A University of Trás-os-Montes e Alto Douro Case Study” presents a case study, where it is proposed a generic ISA that enables a transversal vision of its IS, allowing the validation of the existence/need of IS focused on Information Management and decision-making under a multidimensional perspective, i.e., geared towards the various organizational levels, since the Operational level to the Strategic level, taking into account the information needs associated with each player.

The second paper “Simulator for Teaching Robotics, ROS and Autonomous Driving in a Competitive Mindset” intends to take advantage of a competitive mindset to overcome some obstacles that appear to students when designing a real system. The proposed simulator focus on the autonomous driving competition task, such as semaphore recognition, localization, and motion control.

The third one entitled “Teaching and Learning Modelling and Specification based on Mobile Devices and Cloud: A Case Study” presents the context of a degree in Informatics, and following the guidelines of the Information Systems courses provided by ACM/AIS. Authors explore the Modeling and Specification (MS) of requirements using Usnified Modelling Language (UML) integrated into the TLP (TLP-MS) activity of the BML Context Oriented (BML-CO) model. These activities (modelling and specification of requirements) are supported by the use of the Lucidchart tool in a collaborative environment.

The forth research paper “Virtual reality using smart-devices in educational frameworks: Case Study: Museum Casa Batlló” improves the understanding of historical buildings through the use of advanced visual technologies. The main innovative features of the project are focused on the use of mobile and wearable technologies, the indoor location, and their mixed assessment of an educational project. This proposal seeks to complement, the real experience of visiting an emblematic space (Casa Batlló Museum, 1904-1906, Antonio Gaudí, Barcelona, Spain), in order to improve the spatial skills of architecture students and general visitors of this type of architectural landmarks.

The fifth paper “New Pedagogical Approaches with Technologies” analyzes the availability and uses of teaching techniques and computing technologies in Grades 10, 11, and 12 Computer Applications Technology classes in a remote town in South Africa. The technologies and techniques show promises of usefulness in being more engaging to student interest than the prior method. Human factors issues focus on ease of use and intuitiveness of technologies for both teachers and students. Students need support, encouragement, and, occasionally, prodding to use new technology. Thus, ITCs in the classroom require a technologically and pedagogically knowledgeable teacher.

The six and last paper “Using mobile technologies in education. A New Pedagogical Approach to promote reading literacy” presents a digital repository of teaching and learning materials and a multiplatform application that runs on mobile devices: Letrinhas. This information system was designed to promote the development of reading and to provide tools for monitoring and assessing reading skills against the curricular targets set by the Ministry of Education.