Editorial

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Welcome to the V13N2 issue of *IJLT*. There are four papers in this issue. The first paper is 'Using pervasive games as learning tools in educational contexts: a systematic review' by Jeferson Arango-López, Cesar A. Collazos, Francisco Luis Gutiérrez Velas and Fernando Moreira.

Pervasive games have established a new trend and present a new way for people to interact with each other in a real environment by means of virtual worlds and the elements they bring to the table. The authors in this paper present pervasive games to be a ludic form of mixed reality (i.e., real and virtual reality) entertainment with goals, rules, competition and attacks, based on the use of mobile computing and/or pervasive computing technologies.

Their paper investigates if pervasive games can empower students to change their thinking about different subjects, and also, if the application of these games can increase the students' motivation to learn. According to these authors, the main objective of this article was to research the applicability of pervasive games in an educational context and identify the type of game used to improve the student learning process. Another objective was to examine the application of these games both in and outside the class as well as to identify student interaction with the game, either on their own or with others. Although it is useful to have a systematic review, it is far better to conduct empirical studies to carry out the research, rather than a survey.

The second paper is 'Maintaining Sofia – or how to reach the intended learning outcomes during a medical simulation training' by Song-ee Ahn and Sanna Rimpiläinen. The study aims to understand what makes a 'successful simulation', one that follows the planned sequence of events embedded in the simulated scenario, thus producing the intended learning path and learning outcomes for the participating students.

According to the authors, the study was based on observations of 15 full-scale simulation sessions of acute trauma handling during inter-professional training of medical and nursing students. The study shows that the briefing preceding the simulation frames the students' emergent actions during the scenario by demarcating 'possibilities' and 'impossibilities' for actions during the exercise. This in turn defines what actions are 'appropriate' and 'inappropriate' when the scenario is enacted. The simulation exercises are emergent and co-constituted by the diverse participating, socio-material actors. The extent to which this socio-material assemblage manages to produce and maintain the

enactment of the patient during the simulation signifies the success or failure of the intended learning path of the exercise. More studies are needed to verify its effectiveness.

The third paper is 'Social annotation tools in higher education: a preliminary systematic review' by Hajar Ghadirian, Keyvan Salehi and Ahmad Fauzi Mohd Ayub. This paper reviews the use of social annotation (SA) tools in higher education settings. The studies included in this review were scrutinised based on a detailed inclusion/exclusion procedure, which resulted in the inclusion of 71 studies. A large number of reviewed studies were centered on system design issues and the evaluation of designed tools within education and computer technology classes, with blended learning modality among undergraduates. Findings suggested there was a gradual increase in the frequency of SA-based publications, with *ScienceDirect*, *Taylor & Francis* and *IEEE* as the three databases with the most SA publication experiences. Findings were mostly derived from quasi-experiments. Of the four major topics recognised, 'system design and implementation issues' was categorised as the first topic, followed by 'the effectiveness of SA tools on process-oriented measures', 'the effectiveness of SA tools on outcome-oriented measures', and 'the improvement of SA tools and learning design'. The quantity and quality of annotations were the process-oriented measures most often used. Outcome-oriented measure dominating the studies was reading performance.

The authors argue that evidence suggested that SA tools, particularly when used in collaborative learning environments, can be more beneficial for enhancing both outcome-oriented and process-oriented measures. Since, SA tools are used to direct attention of learners to specific information, examining the effects of different functionalities on the process of learning is worthy of investigation. However, the study fails to capture students' experiences while participating in SA activities. Future researchers need to broaden their findings, incorporating more qualitative approaches. Further research is needed to examine whether or which aspects of instructor support are non-negotiable for enabling SA technologies to effectively promote students' reading comprehension and outcome achievement.

The final paper is 'The hologram as a teaching medium for the acquisition of STEM contents' by L. Orcos and Á.A. Magreñán. The study in this paper is to assess whether the use of a hologram enhances the meaningful learning of cellular division contents. A pilot phase was carried out with a sample of students of 4th course of high school education in the town of Logroño, Spain, working with a control group in a traditional way and an experimental group with the use of the hologram.

An evaluation on cell division contents was carried out to see if there were differences between the results obtained by the two groups. The statistic use of Mann-Whitney of the non-parametric mean comparison test showed that there is a significant difference of 2.55 points, at 0.05 level, between results obtained in both groups. Motivation and satisfaction when using the tool were also assessed. The results obtained show that hologram can be used as a potential teaching medium as well as a highly motivational tool. Further empirical studies are required to verify this tool.