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Advances in Web-Based Learning

J.UCS Special Issue

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This special issue is edited in cooperation with the International Conference on Web-Based Learning (ICWL). ICWL is an annual international conference, founded by the Hong Kong Web Society and established as renowned event covering the newest trends in distance education and electronic learning technologies. A central aspect that has made this conference series so successful is its diversity. On the one hand side, the contributions do not only cover aspects from computer science, but also pedagogy or any other discipline where Web-based learning is being applied. Hence, events of this series are a melting pot of interdisciplinary research and experience sharing, leading to novel insights and collaborations among researchers from various disciplines. On the other hand side, the tradition of ICWL represents also the cooperation of European and Asian researchers to advance the field of Web-based learning. Numerous joint research papers and joint projects have emerged from the successful track record of ICWL events. This special issue considers selected papers from ICWL 2018, Chiang Mai, Thailand and original submissions. To this end, we invited the authors of the best conference papers for an extended and published a general call for papers at the same time. Altogether, we received fifteen high-quality submissions out of which we accepted seven papers after a rigorous reviewing process. Every accepted paper was reviewed in two rounds by at least three reviewers recruited from the original ICWL 2018 program committee. We like to express our gratefulness towards the reviewers. With the constructive support of our reviewers, the papers have been substantially improved in the review process. We would also like to thank the editorial team from J.UCS for giving us the opportunity to publish this special issue and for all the support they provided to us. The following papers have been selected for publication.

Antonio Calvo-Morata, Cristina Alonso-Fernández, Iván J. Pérez-Colado, Manuel Freire, Iván Martínez-Ortiz and Baltasar Fernández-Manjón. *Improving Teacher Game Learning Analytics Dashboards.*

Using games for education can increase the motivation and engagement of students and provide a more authentic learning environment. To increase game adoption, the integration of Game Learning Analytics (GLA) can provide teachers a thorough insight into the knowledge acquired by their students. Moreover, analytic insights are usually presented through a visual dashboard. The authors have identified a methodological process to create ad-hoc GLA dashboards and extracted some lessons learned for dashboard development.

Mahnane Lamia, Hafidi Mohamed, André Tricot and Benmesbah Ouissem. *Implementing Flipped Classroom that Used a Context Aware Mobile Learning System into Learning Process.*

While some studies indicate that flipped classrooms offer many positive educational outcomes, little research has focused on students' learning outcomes. The Context-Aware mobile learning system (FC-CAMLS) aims to provide learners with an adapted course content format based on their feedback and context. A quantitative analysis shows that the system has positive effects on students' knowledge, skills, and motivation and the use of the context dimensions and learner's feedback in adaptive mobile learning is more beneficial for learners especially in the flipped classroom.

Olga Fragou, Christos Goumopoulos and Christos Tsompanos. *STEM Oriented On Line Platforms Embracing the Community of Practice Model: A Comparative Study and Design Guidelines.*

Science, Technology, Engineering and Mathematics (STEM) education is a strong case of a multidisciplinary teaching and learning process. In this context, the adoption of the Community of Practice (CoP) model can enhance the learning process. The paper identifies the common features required to build CoP enabled online platforms to support STEM education and classifies them in seven axes to form an evaluation framework for this domain. A comparative analysis of fifteen STEM oriented web based platforms is conducted. Findings presented in form a generic framework of design guidelines for building STEM oriented online platforms that embrace the CoP model.

Zuzana Kubincová, Dana Šuníková and Martin Homola. *Badges for Peer Assessment of Teamwork in Organized Education.*

The paper presents an approach to peer assessment of a team-based project exploiting badges that represent individual contributions to the task and teamwork related traits. This approach has positive influence on engagement in peer assessment compared to free-text open questions. The question if feedback obtained in this way is informative and to which extent it can serve as replacement for open free-text questions is another focus of the authors.

Peter de Lange, Petru Nicolaescu, Jan Benscheid and Ralf Klamma. *Integrating 3D Objects in Collaborative Non-Linear Storytelling on the Web.*

Storytelling is a mean towards acquiring and sharing knowledge. Currently, a bridge between digital storytelling on the Web and 3D objects is missing. The paper presents an approach for the collaborative creation of non-linear stories in near real-time, centred on 3D objects. Stories are directly linked to 3D objects. The evaluation proves the feasibility of the approach and promises good results in applying collaborative storytelling for 3D object browsing in order to scaffold learning.

Carlos Vaz de Carvalho, Pedro Cano, José María Roa, Anna Wanka and Franz Kolland. *Overcoming the Silver Generation Digital Gap.*

The effective use of online tools has become a fundamental competence in our society. Like everyone else, older adults, senior citizens or the silver generation, must be equipped with the necessary skills to be able to be connected and integrated in the online world to prevent their social isolation and to foster their inclusion. As a contribution to that effort, a European-wide digital literacy development initiative for senior citizens was setup and this article presents the analysis of the achieved results which shows a very positive perception of the seniors on the developed digital abilities.

Benedikt Hensen, István Koren and Ralf Klamma. *Gamification Support for Learning in Spatial Computing Environments.*

With the rise of mixed reality hardware and software, new opportunities in formal higher education arise, but motivation is still key element for successful learning and for progressing over a longer period of time. GaMR is a gamified framework for learning in mixed reality, where 3D models can be experienced on the Microsoft HoloLens and the HTC Vive. This open source gamification framework for mixed reality was evaluated with students and doctors from a medical university. It showed that it can be employed in many academic and industrial use cases.

We wish you a fruitful reading of the special issue and hope you will find some motivations to further explore the more than ever relevant field of Web-based learning. Feel free to ask questions to us or the authors.

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