

Guest Editorial: Advanced Learning Technologies

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The 11th IEEE International Conference on Advanced Learning Technologies was hosted at the University of Georgia in Athens, Georgia July 6-8, 2011. The Conference Co-Chairs were Prof. J. Michael Spector (who was at UGA-College of Education at the time) and Prof. Kinshuk (Athabasca University – School of Computing and Information Systems). The Program Chairs were Prof. Ignacio Aedo (Universidad Carlos III de Madrid), Prof. Nian-Shing Chen (National Sun Yat-sen University of Taiwan), and Prof. Demetrios Sampson (University of Piraeus, Greece). The conference theme was “Cloudy with a Slight Chance for Gain,” which was intended to capture the dual emphasis on cloud computing for education and advanced assessment technologies. Other topics of interest included digital gaming technology, intelligent learning systems, and much more. Paper submissions represented more than 25 countries around the world. ICALT 2011 received 244 submissions (211 full papers, 24 short papers and 9 posters) and 60 of them were accepted as full papers (24,59%). The best seven of those are presented in this special issue of *Educational Technology & Society*. It is our pleasure to briefly introduce these seven papers and conclude with our own reflections.

The first paper entitled “Are one-to-one computers necessary? An analysis of collaborative Web exploration activities supported by shared displays” is by Chia-Jung Chung, Chen-Chung Liu, and Yan-Jhin Shen, all of whom are from Taiwan. This paper is consistent with the dual theme of the conference emphasizing the role of cloud-based resources and assessment. The study these authors report involves the effect of having a shared computer with a small group exploring Web resources versus having one-to-one computers which shared displays. The findings suggest that the one-to-one computer treatment with shared displays was more effective in promoting collaboration and elaboration of the findings of Web explorations.

The second paper entitled “Curriculum-guided crowd sourcing of assessments in a developing country” is by Imran Zualkernan (UAE), Anjana Raza (Pakistan), and Asad Karim (Pakistan). As the title directly implies, this paper also addressed both themes of the conference. The authors report the findings of an exploratory study aimed at determining if teachers in a developing country were able to create high quality, multiple-choice questions for elementary school students. The notion of crowd sourcing assessments was introduced to explore the willingness of the teachers to share their assessment items. Not surprisingly, the findings suggest that those with a readiness for adoption of new assessments had better attitudes and enjoyed the activity. However, there was no clear indication of which factors contributed to high quality items, although most of the teachers willingly embraced the activity.

The paper entitled “PEDALE: A peer education diagnostic and learning environment” was contributed by Johannes Konert, Kristina Richter, Forian Mehm, Stefan Göbel, Regina Bruer, and Ralf Steinmetz, all from Germany. This paper focused primarily on the advanced assessment technology theme. The problem addressed involved dynamic formative assessment – specifically, how diagnosis and learning can be merged consistently and meaningfully so as to support both teachers and students in the context of an ongoing learning process. The authors present a model that integrates peer assessments into an adaptive diagnostic learning environment is presented. The focus of the research was on mathematics with the notion that the framework would generalize to other domains. The authors note that integrating a social network in the classroom environment is a vital element that warrants further investigation.

The article entitled “Teaching Web security using portable virtual labs: us by Li-Chiou Chen and Lixin Tao, both from the USA. The contribution is focused on security issues arising in the context of cloud-based activities. The authors created a tool called Secure Web Development Teaching (SWEET) that introduces basic security concepts and best practices for use in developing Web applications. SWEET includes tutorials, teaching modules with virtual activities, and projects aimed at ensuring secure application development and implementation. The paper describes the design of the tool and the resources it provides. The results of using SWEET are generally positive, including adopting by a number of institutions.

The contribution entitled “Semantic linking of learning object repositories to DBpedia” by Manuel Lama, Juan Vidal, Estefanía Otero-García, Alberto Bugarín, and Senén Barro, all of whom are from Spain, is focused primarily on a method to enhance cloud-based resources by making better use of large repositories of learning objects. The authors present a way to automate learning object classification in a repository containing more than 15 million learning objects represented according to the IEEE Learning Object Metadata (LOM) standard. As is typical in such large repositories, many objects were not correctly classified, which presents a challenge for automating search and access algorithms. The solution approach introduced in this paper involves the use of a linked data repository, DBpedia, to improve the graph-based filtering algorithm. Results are generally positive in that the approach found good solutions in more than 700,000 categories and is extensible to other repositories.

The paper entitled “Learning-by-teaching: Designing teachable agents with intrinsic motivation” by Geupeng Zhao, Ailiya, and Zhiqi Shen from Singapore explores the feasibility of pedagogical agents with regard to student motivation. While pedagogical agents have been found to have some promise with regard to supporting learning, this paper is aimed at support for motivation, which is an important and underexplored area of investigation. The authors implemented and tested a *motivated teachable agent* using a goal-oriented approach that explicitly accounted for teachability, practicability and affectivability. The authors present a use-case study to illustrate the approach, which was based in self-determination theory, and its effects with two groups of primary school students in Singapore.

The final paper entitled “Self-regulated workplace learning: A pedagogical framework and semantic environment” is by Melody Didaty (Canada), Dragan Gašević (Canada), Jelena Jovanović (Serbia), Kai Pata (Estonia), Nikola Milikić (Serbia), Teresa Holocher-Ertl (Austria), Zoran Jeremić (Serbia), Liaqat Ali (Canada), Aleksandar Giljanović (Canada), and Marek Hatala (Canada). This paper explores the role of self-regulated learning in the context of workplace-based learning. While there is much written about self-regulated learning in online learning environments, little has been reported that has focused specifically on workplace-based learning. The focus is on intentional workplace learning with an acknowledgment that incidental and informal learning also occurs in the workplace. The reason for focusing on intentional learning is that is an important aspect of the workplace and it is precisely where improving self-regulation skills is likely to have a significant and measureable effect. The solution is called Learn-B and consists of support for harmonizing individual and organizational goals, aligning individual learning goals, and supporting the social nature of workplace learning. Findings reported are generally positive, and additional research is suggested in specific areas (e.g., how the organization nurtures or fails to nurture trust among employees).

These seven papers reflect a wide variety of perspectives from around the globe on what cloud-based resources hold for the future of learning and how new technologies are needed and now possible to support learning in a cloud-intensive environment. We hope you enjoy this special issue and you explore more contributions to these research areas in next ICALT conferences.