

Editorial: A Message from the Editorial Team and an Introduction to the April-June 2016 Issue

Peter Brusilovsky and Mike Sharples

◆

WELCOME to the second 2016 issue of the *IEEE Transactions on Learning Technologies*. We start this issue by remembering two of our Associate Editors, Eric Duval and Martin Wolpers, who died this year. They both made major contributions to research in learning with technology, including offering their time and expertise to this journal. This issue introduces six full and three short papers on a mix of topics in Learning Technology. Finally, we end the issue with a special issue Call for Papers.

In their paper “Novel Approach to Facilitating Tradeoff Multi-Objective Grouping Optimization”, Yu-Shih Lin, Yi-Chun Chang, and Chih-Ping Chu address the problem of how to allocate students to groups for optimal learning performance. They describe a modification of a Genetic Algorithm method with the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS). This allocates the students so as to provide a heterogeneous mix of ability within the group yet similar characteristics across groups – i.e., intra-group heterogeneity and inter-group homogeneity. A study with 90 freshmen Computer Science students compared the effects of this grouping algorithm to self-organized study groups. It found significantly higher post-test exam scores for the experimental group.

Previous attempts to train people in cultural awareness have mostly focused on specific cultures and settings. A paper by Nick Degens, Gert Jan Hofstede, Adrie Beulens, Eva Krumhuber, and Arvid Kappas reports a project to develop a more generalized approach to promoting intercultural sensitivity. Their paper entitled “Don’t Be a Stranger – Designing a Digital Intercultural Sensitivity Training Tool that is Culture General” describes the testing of a computer system that puts people into situations typical of a trip to another country and assesses their responses to critical incidents such as having the wrong ticket on a train. The incidents are designed to encapsulate dimensions of culture previously developed by Hofstede and colleagues. The study reported here compared 74 international students and 63 Dutch students, some of whom used the software and some did not. It found significant differences in some aspects of cultural sensitivity between those Dutch and international students who had not used the software, with no differences between the groups who had used the tool. In addition, the study showed a need for a full debriefing that would help users to bridge the gap between what they saw in the computer-generated situation and what it meant.

The paper “VirTUAL remoTe labORatories Management System (TUTORES): Using Cloud Computing to Acquire University Practical Skills by Agustín C. Caminero, Salvador Ros, Roberto Hernández, Antonio Robles-Gómez, Llanos Tobarra, and Pedro J. Tolbaños Granjo presents an interesting innovation in the field of virtual and remote labs. Focusing on the needs of distance education, the authors developed a system to create and manage virtual remote laboratories (VRLabs). Unlike traditional virtual labs based on simulation, VRLabs provide a remote access to virtual machines running real operating systems and offering real services over a local area network.

Two papers in this issue focus on the topic of assessment. Tzu Chi Yang, Sherry Y. Chen, and Meng Chang Chen in their paper “An Investigation of a Two-Tier Test Strategy in a University Calculus Course: Causes versus Consequences” advance a more traditional topic of test-based assessment. Two-tier tests explored in this paper not only consider students’ answers, but also take into account reasons for their answers. While the use of two-tier testing is increasing, few studies examined why the two-tier test approach was effective. The authors are trying to bridge this gap in a comparative study of traditional and two-tier testing using behavior pattern analysis and questionnaires. The results indicate that two-tier test can facilitate students to develop deep thinking skills.

In the next paper “Item Response Theory for Peer Assessment,” Masaki Uto and Maomi Ueno is focused on peer assessment, a different assessment technology that skyrocketed in its popularity after the rise of MOOCs. One of the problems of the peer assessment approach is reliability that depends on the rater characteristics. The article presents an innovative approach to address the reliability problem by applying item response theory. It introduces and evaluates a new item response model for peer assessment that maintains as few rater parameters as possible.

The final full paper in the issue “Creating Engaging Online Learning Material with the JSAV JavaScript Algorithm Visualization Library” by Ville Karavirta and Clifford A. Shaffer is focused on interactive learning content for computer science education. Highly interactive content is very important in this domain for presenting complex topics such as data

structures and algorithms. In the past, Java applets were used as the preferred approach to develop interactive content. Due to increased security concerns, the use of Java applets became difficult. The paper presents authors' experience in using HTML5 and Javascript as an alternative platform for developing interactive content. The authors introduce JSAV JavaScript Algorithm Visualization Library, reviews their experience in developing and using online content based on JSAV and reports the results of classroom studies of this new content.

The issue also includes three short papers. A paper "*ToothPIC: An Interactive Application for Teaching Oral Anatomy*" by Maria Javaid, Seema Ashrafi, Miloš Žefran, and Arnold D. Steinberg brings the topic of dental education to the agenda of our journal. The authors present a novel teaching tool that combines 3D visualization and game-based learning to introduce dental students to the topic of oral anatomy.

Iván Claros, Ruth Cobos, and César A. Collazos describe "*An Approach Based on Social Network Analysis Applied to a Collaborative Learning Experience*". They bring in a temporal dimension to Social Network Analysis (SNA) based on variation in seven SNA metrics over time. A case study of 18 undergraduate students undertaking an online peer assessment task showed that useful information is provided through temporal analysis, such as improvement in Reciprocity over time indicating that students develop pairwise collaborations.

A central theme of research in mobile learning has been to develop context-aware systems that enable people to learn by interacting with physical objects and settings, providing teaching materials appropriate to the location, object, and student profile. The paper by Jorge E. Gómez, Juan F. Huete, and Velssy L. Hernandez extends this work to "*A Contextualized System for Supporting Active Learning*". Their rule-based contextual model also incorporates information about student activity and contextual time (e.g., deadline, expected duration) as well as roles and properties of student teams. The authors report on trials of the system on three university courses where students carried out practical learning activities. A comparison with learning from lectures showed significantly better post-test scores for the experimental groups in all three conditions.

The *TLT* Editorial Board would also like to thank all of those who have devoted time and expertise to reviewing papers for the journal. We especially acknowledge the best performers of 2015 who have reviewed at least three papers, returned their reviews on average within a month, and have received high average scores from associate editors for the quality of their submissions. They are Tom Boyle, John Cook, Mojisola Erdt, David Farrell, Davinia Hernández-Leo, Bradford Mott, Pedro Muñoz-Merino, Abelardo Pardo, Birgit Schmitz, Stefaan Ternier, and Edgar Weippl. Our special thanks also go to Sergey Sosnovsky for reviewing seven papers. A total of 377 reviewers assisted the journal during 2015, with a mean submission time of 26.5 days.

Peter Brusilovsky, *Editor-in-Chief*
Mike Sharples, *Associate Editor-in-Chief*