Editorial

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Biographical notes: Dr. Lorna Uden teaches computing in the Faculty of Computing, Engineering and Technology at Staffordshire University. Her research interests include Technology Learning, HCI, Activity Theory, Knowledge management, Web Engineering, Multimedia, E-business and Problem-Based Learning. She has published widely in conferences, journals and chapters of books.

Welcome to this new issue of IJLT. There are five papers in this issue. The first paper is, 'eUreka: an institutional tool for knowledge discovery, project work and management of intellectual property' by Tan and Wong. The authors of this paper describe an online project management system known as eUreka. eUreka is developed to provide a platform for knowledge creation, discovery documentation and management. It serves to facilitate an avenue for learning beyond the confines of a subject syllabus and classroom via knowledge derivation and knowledge sharing.

According to Tan and Wong, eUreka was developed to create an automated web-based system to manage, document and monitor the project work processes. It provides a centralised knowledge management system with tools to facilitate the planning of activities and tasks as well as encourage knowledge sharing, exchange and collaboration among the project members and their supervisors. eUreka also allows staff and students to manage their collaboration with external organisations. Although the concept of eUreka is a good one, there has been little empirical evaluation carried out for its uses. Further studies are needed to validate its effectiveness.

From online project work management systems we move to a virtual learning environment in support of teaching and learning for design and technology education by Lehtonen *et al*. The paper describes the development of a pedagogical model and its application for teaching, studying and learning with 3D virtual reality technologies. The model, known as Innovation Education (IE) was a three-year instructional research and curriculum development project sponsored by the European Union Socrates/Minerva fund. The InnoEd project is concerned with educational use of information and communication technologies. The overall aim of the pedagogical model is to develop and establish how ICT can be used to encourage creativity, practical use of knowledge and understanding through communication and collaboration at school in design and technology education. According to the authors, the VR environment can be used to reinforce the process of identification and it is necessary to develop pedagogy in the context of using the virtual learning environment. The use of the virtual learning environment obviously opens up potential for the learning of innovative education, further research would be needed to validate the use of such a tool.

Paper three of this issue is ‘Combining social-based and information-based approaches for personalised recommendation on sequencing learning activities’, by Hummel *et al*. Learners need to know which learning activities are suitable and in what sequence they should be performed for effective learning. Although costly face-to-face advice is an option, this paper focuses on a personalised recommender system as a solution. A personalised recommender system has been developed by the authors to recommend learners regarding the next best learning activities to take. The approach is based on collaborative filtering of information from other learners (known as indirect social navigation) in combination with information about learning activities and learners (*e.g.*, needs and preferences). These systems provide learners with an individualised way of finding advice on suitable learning activities and paths towards certain learning goals, like the attainment of competencies.

According to these authors, collaborative filtering works fine for informal learning, where discrete measures and exact matching are not needed. For formal learning, a more formalised description (using learning technology specification) of activities, competencies and learner profiles, metadata in the form of ontologies (semantic web) and folksonomies (social software) might bring both worlds together. Like the previous two papers, the proposed model of a personalised recommender system offers many benefits for recommending the best next learning activity to be completed, further research is needed to empirically validate its benefits.

Following from recommending the best next learning activity to be completed by learners in the previous paper, we move on to differential e-learning, a paper by Scalise. Her paper, ‘Differentiated e-learning: five approaches through instructed technology’ discusses what tools of e-learning contributed to differentiated instruction, and shows a framework for five common approaches to adaptive courseware. Scalise believes that different tools are available to help students learn and provide information in ways most appropriate to them in e-learning.

According to Scalise, differentiated instruction is an approach to teaching that acknowledges people have multiple paths for learning and making sense of ideas. It is based on the premise that students come to learning with different backgrounds, preferences and needs, and how instructional approaches that take this into account may make a difference in learning outcomes.

According to this author, there are five common approaches to differentiated e-learning: diffuse; self-directed; naïve; Boolean and model-based. She proposes a framework that considers how these various approaches can be categorised, based on what types of decision-making and evidence are used to establish the differentiation choices. Scalise believes that if instructional decisions are being made based on a differentiation approach, this can have substantial consequences for the learners. The author has no doubt conducted a good survey of the differentiated approaches for e-learning. An empirical evaluation of these differentiated methods would be useful.

The final paper is by Tracy *et al*. Their paper, ‘A test of the efficiency of the MC Square device for improving verbal memory, learning and attention’ focuses on the testing of the MC Square that uses audio-visual stimulation (synchronised pulsed tones and flickering lights set at an alpha or theta frequency) to entrain neural activity.

There is a growing demand for learning tools that will aid and enhance performance on standardised achievement or ability tests, employment/civil service tests, or for those seeking admission to advanced schools. Although many of these cognitive enhancement devices have positive anecdotal reports about them, there is little evidence of empirical testing on their actual benefit. The authors of this paper set out to evaluate the MC Square for its ability to improve key cognitive functions (verbal learning, memory and attention) following substantive training and practice with the device. A double-blind, placebo-controlled (sham device) and crossover design was utilised with pre and post testing on the cognitive measures occurring during each phase of the crossover. The primary hypothesis was that after training with the MC Square there would be improvement in verbal memory, associated learning, working memory and attention/concentration. Results showed a statistically reliable improvement on the measure of attention/concentration, and the digit-span forwards test, following MC Square training. According to these authors, the MC Square device provides modest enhancement in the ability to focus, attend and report information over the short term.