Editorial

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Biographical notes: Lorna Uden is an Emeritus Professor of IT Systems in the Faculty of Computing, Engineering and Technology at the Staffordshire University. Her research interests include technology learning, HCI, activity theory, big data, knowledge management, web engineering, multimedia, e-business, service science and innovation, mobile computing, cloud computing, social media, internet of things and problem-based learning.

Welcome to *IJLT* V12 N4. This issue consists of four papers. The first paper 'Design trees: providing roots for revision in design-based research' is by Daniel L. Reinholz. In this paper, Reinholz introduces design trees as a methodological tool to facilitate design-based research. According to Reinhold, design-based research is traditionally conceptualised as a bridge between theory and practice. Yet, theory rarely specifies practice directly, so this makes documenting revision through design a challenge. In contrast, design trees consider theory and practice as two interwoven strands through five levels of specification:

1 frameworks

2 principles

3 conjectures

4 instruction

5 assessment.

Each general level constrains, but does not determine, the more-specific levels. As such, researchers need to be explicit about the decisions they make in prospect (i.e., the path they choose along the tree), so that they can follow the path in retrospect in analysis. This supports researchers to contribute to theory and practice systematically.

Two case studies, knowledge integration and complex instruction are used to illustrate design tree in this paper. These case studies show how design trees can be used to systematically describe the revision of theory and practice in a complex design-based research project, providing greater insight for researchers and practitioners. However, further research is needed to verify the work.

The second paper is 'Action-effect mappings in tangible interaction for children with intellectual disabilities' by Taciana Pontual Falcão. According to the author, children with intellectual disabilities have difficulties in responding effectively to the environment and present a strong dependence on physical materials. While the debate over the

effectiveness of these materials remains, tangible technologies introduce new interactional and representational possibilities for establishing mappings between physical actions and their effects, enhancing processes of exploration and laying the basis for learning through experience. However, the actual benefits of the educational opportunities created by these modes of interaction and feedback need further research.

This paper investigates how tangible technologies can support children with intellectual disabilities to productively engage in discovery learning. Based on qualitative analysis of empirical data from children using four tangible systems, the present work indicates temporal and spatial contiguity, and simple causality, as key design characteristics for supporting construction of action-effect mappings in tangible environments by children with intellectual disabilities. In conjunction with previous work, findings suggest that actions must lead to consistent effects, which have a clear and single cause, and should be given through visual representations immediately subsequent to action, co-located in space. Further empirical studies are needed to support the results.

The third paper is 'A new method to measure efficiency in learning by doing environment: a case study of assembly line simulation' by Sami Hachmoud, Anwar Meddaoui and Hakim Allali. According to these authors, lean is a set of techniques used to manage a work environment by eliminating waste, organising workplace, streamlining procedures and establishing visual standards.

This paper presents a lean laboratory learning experience based on physical parts assembling simulation, which could be used for both students and professionals. These authors argue that lean laboratory simulation simplifies understanding of practical lean advantages on manufacturing process. The purposes of this paper are to measure the difference between theoretical learning and learning-by-doing, and also to propose a new lean manufacturing teaching model. The case study is centred on three pillars, developing training efficiency, evolving trainee's ability to propose real time process improvements and proposing a new training efficiency measurement tool.

Further researches could experiment with other complicated products in different environments. The case study demonstrates that learning-by-doing methods in industrial learning are very important and useful. Feedback from the experiments is positive. The findings show that students were interested to this kind of learning and teachers have more visibility on student's skills and understanding. Further researches are required to develop other simulations using other industrial methods as single minute exchange of die known as SMED's tool or other manufacturing environment.

The last paper is 'Virtual learning environments: adoption without progression' by Jane Sinclair and Anne-Maria Ahoa. According to these authors, there is little known about instructors' actual use of virtual learning environments despite the number of technology adoption studies conducted. This study uses a qualitative approach to explore the topic in order to better understand staff perspectives and motivations and to generate new themes for further investigation. These authors conducted in-depth interviews with two Moodle support staff from different universities to gather rich data on platform use and staff attitude in their institutions. The data was analysed using a process of coding and categorisation.

Their findings indicate a lack of progression of use and reveal several conceptual and pedagogic challenges which may act as barriers to adoption or to deeper use of the environment's functionality. Exploiting further the affordances of the system is likely to necessitate reappraisal, not only of current pedagogy, but of one's conceptualisation of being a teacher.