Editorial

Lorna Uden

Faculty of Computing, Engineering and Technology,
Staffordshire University,
The Octagon, Beaconside,
Stafford, ST18 0AD, UK
E-mail: L.uden@staffs.ac.uk

Biographical notes: Lorna Uden is Emeritus Professor of IT Systems 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, service science and innovation, mobile computing, cloud computing and problem-based learning.

Welcome to V7N3 issue of *IJLT*. There are six papers in this issue. The first paper is, 'FYI (online): supporting the student learning journey from near and far', by Karen Noble, Robyn Henderson and Ron Pauley. According to these authors, in higher education, with increased demands for widening participation, universities are looking for new ways of engaging and supporting students who are entering university for the first time.

Many of the efforts to provide support for 'new' students in higher education have been aimed at helping students 'fit the system' of the university. There is considerable evidence that 'add-on' or 'top up' academic skills courses, which aim to improve the academic abilities of first year students, have remained a popular way of dealing with the perceived problems of students who might be at risk of failing. This paper describes a particular approach, the FYI programme, which operates in the faculty of education of an Australian university. The programme is based on a design and implementation strategy that sees learning circle inform pedagogy and practice.

The learning circle approach uses the notion of a community of practice, whereby academics and students join together to enhance critically reflective skills, incorporate tacit knowledge and engage in dialogue to enhance their learning experiences. Using a four-step model of critical reflection, the pedagogical approach involves deconstructing, confronting, theorising and thinking otherwise in relation to the issues raised. All participants in the learning circle are given a voice.

Importantly, this programme operates in the space between courses and brings first year students together, regardless of the courses they are enrolled in. The on-campus programme offers evidence of tangible impacts upon the quality of participants' interactions, relationships and friendships and their commitment to complete their undergraduate student learning journey. Following three years of on-campus delivery, the programme is now being piloted in the online environment to support students enrolled in blended and fully-online study modes. The initial perspectives of academic and support staff as well as students inform initial critical reflection on the programme's design and delivery.

The article concludes that, regardless of access and mode of study, high quality interactions with peers and academic staff in an informal context is vital to the building of enhanced capacity for higher education students. Further empirical studies are needed to validate the effectiveness of this approach.

The second paper is by Mc Donald van der Merwe, entitled, 'Applying the community of inquiry framework: a novel tool for systematic and economic coding and analysis of forum discourse *in situ* and in context'. van der Merwe argues that online discussion forum (ODF) is one of the most widely used e-learning tools in open distance learning (ODL) environments. A popular line of research focuses on producing instruments that can be used to assess the level and amount of learning that takes place via transcript analysis of ODF-discourse. The current interest is the influential community of inquiry (CoI) theoretical framework. This paper describes and documents the author's approach and experience in using the framework to assess the status of the CoI in an ODF-driven course. In particular, it describes the motivation for, design, application and analysis results achieved with a novel tool that allows systematic and economical coding and analysis of ODF discourse *in situ* and in context.

The main purpose of the current paper was to describe and document the author's experiences in applying the CoI framework in assessing an ODF-driven course. Having argued a case for a coding tool that allows an active instructor to analyse ODF discourse systematically, economically, *in situ* and in context, the CCM tool was developed, introduced and applied. The DAR's generated by the CCM returned a conclusion of a well-balanced, well-managed and effective CoI. The CoI survey instrument results appeared to confirm the instructor-driven conclusion, suggesting that the CCM is, at minimum, an effective, accurate and reliable tool for instructor-driven coding *in situ* and in context. Further research is needed to formally validate the CCM tool, the methodology followed, and the results achieved.

The third paper is 'Evaluating automatic group formation mechanisms to promote collaborative learning – a case study' by Carine G. Webber and Maria de Fátima Webber do Prado Lima. The authors of this paper argue that whereas computer-mediated interactions are have been conceived and tested, automatic group formation is still an important challenge. In this paper, they propose an analysis of group formation approaches aiming at a computer-based learning environment. Artificial intelligence techniques were used in the study.

According to these authors, group work is an important resource that educators have in order to promote collaborative learning situations. In several domains it has been exploited as a valuable teaching strategy. In technical domains, such as logic programming, results on the effect of collaborative activities on learning still remains uncertain. This paper intends to contribute with one main research question: can an automatic group formation mechanism be able to form consistent and successful groups for learning activities? In order to answer this question, these authors have conducted an experiment with students from a computer programming undergraduate course. Students were asked to work individually and in automatically formed pairs. Their conclusion is that group work can help and bring benefits to most learners. The authors in this paper have demonstrated that automatic techniques can produce coherent results regarding group formation.

However, according to this study, learners having low levels of proficiency encounter more difficulties by working on collaboratively problem solving tasks. These learners need a more specific orientation to learn the concepts related to logic programming. But

even for these students, automatic group formation tools have produced good results pointing out which students had unexpected behaviours and need special attention (outliers). For all these reasons, the overall analysis of the application of clustering techniques to automatic group formation indicates that it is a promising field of research and development.

The fourth paper is, 'Observe and react: interactive indicators for monitoring pedagogical sessions', by Jean-Charles Marty, Thibault Carron and Philippe Pernelle. According to Marty, Carron, and Pernelle, learning games can be seen as an attractive evolution of these computer-based learning environments taking into account the new hobbies of the so-called digital natives. This new way of learning changes habits and offers new opportunities to let the students organise their learning activities by applying their own strategies according to what they know from their academic strengths and weaknesses.

Moreover, when these game-based learning environments are multi-player, another central issue concerns the collaborative learning aspects. The use of collaborative tools is increasing, allowing the students to co-construct knowledge efficiently. From the teacher's perspective, the monitoring of the ongoing activity is difficult. In educational platforms, and especially in game-based learning environments, the teacher would like to have the same possibility as in a teacher-directed environment, to able aware of what is going on in the classroom, in order to react in an appropriate way.

The teacher here cannot have the same feedback from the students, since s/he lacks human contact. The monitoring of the activity is a central task for teachers that can be carried out only if key elements related to an ongoing pedagogical activity are reported. In this paper, the authors proposed a solution based on the users' traces that are transformed and displayed for the teacher through indicators. They also discuss how the monitoring actions are in a sense connected with these indicators. The approach is illustrated through three use cases, paying particular attention to the teachers' needs and to collaborative aspects.

The authors conducted semi-directed interviews with the teachers after the experiments. Basically, the teachers all agree to state that they recovered awareness with the proposed tools. They feel that they were immersed in the learning activity (and not simply observers of how the students used the environment). However, one major criticism that was mentioned is that the teachers must decide what to observe when designing their learning session, in order to have a set of indicators (developed by a pedagogical engineer) available. There is no way to introduce new indicators during the session. This is a problem because some observation needs only appear during the session, especially when an expected event occurs. This problem will have to be taken into account in the future for acceptability reasons.

The fifth paper is, 'The use of visual semantic web for designing virtual expeditions', by Miri Barak, Sergey Kozyrev and Dov Dori. According to these authors, although web-based technologies are considered to be commonly used for educational purposes; many of them focus merely on knowledge transfer. In contrast, the virtual expedition (VE) platform is designed to enhance higher-order thinking in the form of critical reading and thinking while integrating semantically-based cultural objects of varying complexity. In this context, the semantic web technologies provide the technological basis for the design and development of the VE platform and the conceptualisation of its architecture. In order to provide a technological design for the VE platform, there is a need to define VE processes and relevant entities with an appropriate modelling tool. In the current

study, the object-process methodology (OPM) was used to build the VE platform conceptual and technological model.

OPM is a holistic approach for the development of systems that integrate the object-oriented and process-oriented paradigms into a single frame of reference.

The VE methodology is a framework for the design of an interactive platform for the preservation of cultural heritage. The VE platform is envisioned as a thematically-organised succession of cultural heritage items in the form of web-based resources. Since stories can affect readers both emotionally and intellectually, the VE methodology was conceptualised as an educational instrument, designed not only for cultural heritage preservation, but also for long term educational impact. The current paper demonstrates the application of visual semantic web for designing VEs in the framework of cultural heritage preservation. The objective of the project was two-fold:

a   to design an interactive platform based on the VE methodology

b   to assess its usability and impact on users' critical thinking and open-mindedness.

Based on the VE methodology, a flash mockup on the life story of two women scientists and their cultural heritage was developed and tested among 107 university students. Findings indicated increase in students' disposition towards open-mindedness, especially related to gender equity. Findings also indicated positive views related to operative, cognitive, and affective aspects of the platform's usability. Students were highly motivated to explore the VE platform and were inclined to discuss issues related to the preservation of their own cultural heritage.

While the study shows positive results related to the design and the usability of the VE platform, it has several limitations. One limitation is that the VE exploration was performed using flash mockup and not the actual platform. Further research is needed to address the limitations.

The sixth paper is, 'The design of TaCS: applying social tagging to enhance learning', by Elise Lavoué. Social tagging refers to the practice of labelling or categorising resources in a shared online environment. In this paper, the author describes a web-based educational platform relying on the use of tags as learning resources in a social context. Her platform, named tag-based collaborative system (TaCS), is a first attempt at implementing a recent theoretical framework specific to social tagging that defines learning and knowledge building as a co-evolution of cognitive and social systems. Within this framework, design choices have been made to support individual, social and collaborative learning processes. For the design of TaCS, she was mainly interested in two aspects of social tagging systems:

- *visualisation:* the most prevalent visualisation of tags used is the tag cloud, a visualisation of the tags represented in a system with tags weighted, based on frequency of occurrence

- *ranking:* the availability of tag data linked to a particular user enables ranking of users, based on the characteristics of their tagging.

TaCS is meant to support the collaborative activity of information seeking for learners involved in a common course to learn the concepts of the same domain. Three types of actors are supported on TaCS: the individual learner, the group who carry out collaborative activities and the class composed of all the learners who use TaCS in a course. A virtual space with its own functionalities is offered to each actor.

The paper distinguishes three types of learning processes:

- Individual learning
  1 by an externalisation process when users create tags and associate them with documents
  2 by a reflexive process when learners visualise their own tag clouds.

- Social learning
  1 by an assimilation process when users visually compare their own tag clouds with the collective tag clouds of their group or the class
  2 by accommodation and internalisation processes when users discover tag-document and tag-user relationships.

- Collaborative learning when learners negotiate within their learning group by using the forums
  1 to reach agreement on the set of documents and the tag clouds of the group
  2 to define a common definition of tags.

The author integrated TaCS using an educational scenario in a course about 'collaborative information systems' of a fifth year in university, from 11 November 2010 to 16 December 2010. The students were gathered by groups of four or five to study the case of a French company that organises events in France and abroad. The students had to design a collaborative information system to facilitate the collaborative work of the employees of this company. They were asked to search for information upon which they could base their study. They were assessed based on their final set of documents and tag clouds. The students had access to the TaCS functionalities according to five phases to carry out individual and collaborative activities.

The paper shows that that the observed uses are consistent with the expected uses. Furthermore, the opinions expressed by students were in agreement with the expected learning processes. These first results were positive and show the interest of TaCS as an educational platform. However, the case study reported is an exploratory study, further studies with more students to experimentally validate the approach and to study the effect of using each of the functionalities on specific learning processes will be required.