
Editorial

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The incidence of the information and communication technologies (ICT) in the shift to a new production paradigm has been affecting the pedagogical world, both in its teaching and learning variants. Recently, among teachers, there is an increased interest in the potential pedagogical uses of computer supported collaborative learning (CSCL) and

teaching. In fact, CSCL environments provide educators with a potentially significant tool that enhances the opportunities for creating socially-engaged tasks that require active student participation and knowledge construction. However, the academic study of CSCL approaches to learning is still in its infancy. The initial studies are still based on very preliminary analysis of teaching experiences. Some papers addressing this issue are a clear example of this, and form a basis for future studies in the field. Since the approaches of past study have been case study analysis in the classroom, it is very difficult to draw general conclusions about their pedagogical use. Nonetheless, the papers based on CSCL approaches highlight that there are a number of technological and pedagogical issues that need to be addressed, in order to promote CSCL as a constructivist and collaborative learning tool.

In this special issue of the *International Journal of Innovation and Learning (IJIL)*, a sample of seven papers has been selected out of the papers presented at the *IASK 2010 Teaching and Learning International Conference*, held in Seville, Spain, in November 2010. The papers' mainstream arguments are the use of new technologies in the teaching of engineering and scientific courses. In fact, the first four papers analyse the incidence of CSCL either in the form of computer platforms, wiki, websites or Web 2.0 experiences; while the remaining three papers focus on more traditional approaches to succeed in the teaching of science and technology courses, by identifying failure rates, increasing the practical interaction of engineering students with firms or developing new teaching skills for professors.

The first paper, entitled 'Wiki-based collaborative learning in higher education: a pedagogical evaluation' by Said Hadjerrouit focuses on the importance of new technologies as a way to foster collaborative learning and peer evaluation. This paper highlights much of the interests of CSCL learning approaches by addressing first a thorough analysis of the characteristics of constructivist and collaborative learning theories with new information technologies. Hadjerrouit identifies the pedagogical values that influence learning processes in a wiki-based learning environment: learning, motivation, collaboration, and technology. Apart from its theoretical revision contribution, this paper still remains a case study, where the analysis is made on Media Wiki, which is a collaborative web-based technology that allows multiple users to easily and quickly contribute to upload, build, and develop content on the web. The case study describes the pedagogical value of wiki applications and Wiki Media tool after eight weeks of project work of three groups of students by means of peer review, self-evaluation, survey questionnaires, and supplementary data collection and analysis methods. The main conclusions drawn lie in the domains of collaborative learning, teachers' role and motivation of students. In fact, the author highlights that wiki technology offers important possibilities for knowledge construction, collaborative learning, critical reflection and discussion, but the study material available online should be adapted to the capabilities of this technology. This is so, because wikis' potential capabilities lie in supporting a constructivist and collaborative approach to learning. Teachers' role should change from a mere transmitter of knowledge, to a facilitator and counsellor of learning. Regarding the motivational value of wikis that must be considered in relation to wiki applications themselves, multimedia possibilities afforded by the wiki applications can increase student motivation, but these approaches to motivation will not automatically work unless the teacher's and students' goals are closely aligned. Regarding the exploitation of a true collaborative environment being built within the

wiki, his findings reveal that there are few activities of true collaborative knowledge construction, and, often they are just the addition of content to existing pages.

The second paper, entitled 'Analysing knowledge building: usages, achievements and limits of forums at university' by Noemí Verdú and Jaume Sanuy explore asynchronous communication. The paper highlights the potential of CSCL for high-quality collaborative virtual learning processes, which have been possible through ICT, collaboration, e-learning or blended learning. The main advantage of these technologies applied to pedagogy are that each student participates actively in his or her learning process, and the teacher takes a second place, guiding and helping, but always considering that students must have an active role. In their paper, Surroca and Burgués analyse 30 diverse virtual forums in both a quantitative and a qualitative way, in order to contrast to what extent the exchange of information and a collaborative work takes place in them. In the data, three forums do not have instructions and students have started them freely; nine forums have a specific topic, but they do not have a research question; and, 18 forums have both instructions and a specific topic. Their main finding is that key issues for effectiveness of CSCL are successful networking, and giving scaffolding throughout the activity. However, and as it occurred in the previous paper by Hadjerrouit, the analysis of message content shows that categories from first levels (*explanation* and *clarification*) are the most used, while *discussion*, *negotiation* and *conclusion* are less used, and on occasion, they do not even appear in the forum. Something similar happens in the knowledge forum categories. In spite of the fact that there are a lot of messages referred to in opinion and clarification categories or scaffolds, it is observed that there are very few messages with different opinions, asking for help, negotiating or concluding. In this way, they discover that what is done in virtual forums mainly is to transmit information, whereas the actual construction of knowledge is superficial. In order to optimise the use of virtual forums, a key element seems to be the disposition of tools which enhance familiarity and motivation, in order to exchange information with other participants and improve the level of discussion. This needs increased participation, interactivity and a more proactive role of the tutor.

Based on a qualitative perspective, the third paper entitled 'Peer support: enhancing the online learning experience' by Raylene J. Galvin analyses the positive effects of peer support to reduce online learners' feelings of isolation from other class members, the instructor, their learning community, and the wider university environment. This paper goes deeper in the analysis of the uses made by students of the new technologies applied to education. She analyses the use of the Moodle platform in peer support partnerships. These partnerships allow learners to provide or receive informal support or guidance from other learners enrolled in the same course. The study reported in her paper is based on a year-long online postgraduate course involving 100 learners. Among their most important findings, it is worth highlighting that there are similarities in participants' experiences of peer support such as: benefits of providing motivation, giving and receiving feedback, answering questions, and having the opportunity to construct knowledge together. The differences between partnerships were most noticeable in the ways partners contributed to the building of their relationship, their attempts to maintain communication links, and the support that they provided each other. In addition, effective peer support partnerships are achieved if there is voluntary involvement, commitment to the partnership, effective communication, a willingness to solve problems together, and take full advantage of opportunities to provide and receive support, guidance and

feedback. As a conclusion, Galvin suggests that in an ideal peer support partnership there would be regular communication, a commitment to building the partnership, and a desire to provide and/or receive support.

The fourth paper, co-authored by Raquel Viciano-Abad, José Enrique Muñoz-Expósito, José Manuel Pérez-Lorenzo, Sebastián García-Galán and Fernando Parra-Rodríguez focus on the wiki as a pedagogical tool for the engineering field. The paper is entitled 'A wiki as a common framework for promoting autonomous learning among university students', and describes the use made of a wiki developed using the WAMP platform, with the goal of being a basic creation frame of a common portfolio, where students can incorporate their own technical guides to help in the learning process of other students. That is to say, to become peer supporters. Their study is related to three different courses of Telematics Engineering, and they discovered that the students' learning was more related to practical skills than with specific aspects of the course, and, therefore, using Web 2.0 technologies allowed students to develop one of the main competencies of these engineering studies: knowledge management and interaction with users. However, a drawback was that little peer support existed, because, despite students' participation creating inputs in the different courses had been positive, they had not followed the philosophy of Web 2.0 technology regarding collaboration. In this sense, they supported the findings of the first paper.

The second set of papers presented, analyse the role of students and teachers in the learning process. Richard White's paper, entitled 'Predicting likely student performance in a first year Science, Technology, Society course', aims to analyse the main factors affecting the reduction of failure rates of students during their first year of studies. It focuses again on the importance of traditional teaching methods, and uncovers those students' performance correlates with prior educational performance in secondary school, and attendance at tutorials during the first weeks of the term. These parameters act as a trigger for initiating early intervention and student support mechanisms, because both predictors of poor performance are available within the first three weeks of a semester. Therefore, there is no need to wait for the results of the first assessment task before identifying students who are struggling in their studies.

The sixth paper of this special issue, by Mikko Ylitalo, Matti Jääskeläinen, Jussi Horelli and Matti Väänänen, is entitled 'R&D with PBL in engineering education at HAMK Valkeakoski Unit', and analyses the effects of adding real business cases into the learning process. After describing the theoretical and practical procedure to effectively engage students in active learning through real business projects, they present three different real case studies. In their paper, they conclude that in order to exploit the full potential of the project, there are four main actors: SMEs, project activators, teachers, and students. Projects are received from SMEs with the help of university activators who know the possibilities from funding to implementing a project. This close connection to SMEs rewards students with the understanding of various R&D needs of different types of companies. Finally, teachers should adopt a different role than in conventional class teaching. They should have the responsibility for students to reach their learning goals, acting more as mentors or consultants for the students.

Finally, the paper entitled 'Perceived instrumentality value and engagement in 3D training, animation and modelling for university lecturers' by Francisco M. Gómez-Campos, Efu Irene Amenyah, Salvador Rodríguez-Bolívar, Juan E. Carceller, Mariane Frenay and Etienne Bourgeois, present the authors' experience in promoting, among teachers, a pilot training course on 3D animation and modelling based on the free

and open-source software animation Blender. The course is intended for teachers who want to implement this software and its possibilities in their learning and their teaching activities, which implies a novel approach to their traditional lecturing methodology. Expected results are based on the fact that lecturers will be able to develop their own teaching material to be used on their subject areas, taking advantage of the huge potential of 3D visualisation. The possibility of progressing towards future personal and professional goals is considered a high motivation factor. However, it is stressed that personal and professional goals combined with instrumental value, and expectations from the course should be the most important determinants to facilitate lecturers' persistence and achievement during the course.

We would like to thank the editors of the *IJIL* for the opportunity to disseminate the research presented at the *IASK 2010 Teaching and Learning International Conference*, and we hope that you will appreciate the variety of papers presented in this special edition of the *IJIL*.