

Editorial - Crafting Learning in Context

This special issue features the best papers presented at the International Conference on Advanced Learning Technologies (ICALT 2004) held on Joensuu in September 2004. The theme of the conference was “Crafting Learning in Context” which focuses on the crafting of learning experiences enabled or mediated by technology that enacts authentic contexts for the learning and doing to take place. Various theoretical frameworks for learning have posited that learning happening in contexts such as those embodying problem-based, scenario-based, cognitive, meta-cognitive, social, linguistic, cultural, artefact, and authentic task elements, is most likely to lead to transfer, being, doing, application and adaptation to new situations. The challenge for the designers of learning environments is to conceive and use technology as providing or simulating the richness and authenticity of real-life contexts. An important strand in this direction is the creation or manipulation of concrete artefacts by the learners, making the learning experience motivating, engaged and immersive.

The word “crafting” connotes the need to carefully design the tasks, activities and processes enabled by technology, so that learning is most likely to emerge from the interaction between the learner(s) and the environment. We need skill and dexterity in creating learning scenarios using advanced technologies such as those which are presented in this issue. We also need to design new technologies with affordances which support new kinds of contextualized learning activities and experiences.

In the area of concretizing learning, we have 2 papers. Sempere (this issue) presents the design of CTRL_Space, a software environment with companion hardware, which helps pre-literate children to learn basic computational concepts using an animatronic face. Lyons, Kluender & Tetsutani (this issue) presents a system for the real-time visual display of affective signals which help learners to estimate one another’s level of arousal, stress, or boredom.

There are 5 papers in the area of learning design that respects the context in which learning is happening, or tries to provide an effective context for learning. Two such papers that tries to personalize the learning based on the context, relate to reflective dialogue systems. Grigoriadou, Tsaganou & Cavoura (this issue) discusses a system for learning modelling historical text comprehension through effective dialogue. The system plans and generates reflective tutorial dialogue based on the learner model in order to promote the learner to reflect. Pon-Barry, Clark, Schultz, Bratt, Peters & Haley (this issue) make a case for using multimodal task modelling, carried out by a flexible and adaptive planning agent, to effectively contextualize learning in reflective dialogues.

Pemberton, Fallahkhair & Masthoff (this issue) does a focus group study of learners towards interactive TV (iTV), and presents design implications which involve the use of mobile phones in conjunction with iTV. The paper by Lu, Wu, Wu, Chiou & Hsu (this issue) presents a model for providing ontological support in modelling learners’ problem-solving process. The paper by Hernandez-Leo, Asensio-Perez & Dimitriadis (this issue) proposes using flow patterns to represent best practices in CSCL, and specifies these patterns using IMS Learning Design.

We have 2 papers in the area of analytic frameworks and methods for studying learning in context. Aviv, Erlich & Ravid (this issue) presents a methodology for online monitoring and evaluation of online networks, using Social Network Analysis, with the objective of providing the instructor with an intuitive understanding of the student’s interactions within the network. Liu (this issue) is a theoretical contribution for comparing the effectiveness of test items based on mutual information. The work relies on Bayesian networks for capturing uncertainty in students’ responses to test items.

The last 2 papers are in the area of learning resource management which concerns the capacity of systems to provide the learner with learning resources in the appropriate sequence suited to her context of learning. Milrad, Rossmannith & Scholz (this issue) discuss the design and implementation of an educational digital video library using MPEG-4 and the Synchronized Multimedia Integration Language (SMIL). Karampiperis & Sampson (this issue) present algorithms for the adaptive sequencing of learning resources. The learning path is generated not by populating a concept sequence with available learning resources based on adaptation rules but by first generating all possible sequences that match the learning goal, and then adaptively selecting the desired sequence, based on a decision model that estimates the suitability of learning resources for a learner.

With such a range of diversity on all the papers featured in this special issue, crafting learning in context is indeed a rich area for research, and we hope these papers will spur more work and innovations in this area.

We acknowledge the invaluable assistance of colleagues who helped review the papers in this issue.

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Guest Editors