Languages for Modelling of Collaborative Learning Process - Formalization, Practical Uses and Tools

Workshop at CSCL 2005 conference, May 30th, Taipei, Taiwan

Workshop Track: CSCL Technology
Problem Area: Designing Activity Structures in CSCL settings

INTRODUCTION

Models for Learning Processes and especially for collaborative processes are a focus of attention from different research areas recently: instructional designers and practitioners, like teachers, look for a notation to represent their learning designs both for communication among each other and that can be implemented in computer-based scenarios (Dillenbourg, 2002); psychologists explore the possibilities of facilitating learning and understand the learning process better by the use of learning scripts, that support the learner in their collaborative and cognitive processes (Kollar et al, 2003; Mäkitalo et al, 2004); implementers of learning management systems strive to enable the users to follow specific learning flows (similar to workflows) within the computer system (Caeiro et al, 2004), while the implementers of collaborative systems are interested in the use of process models for providing learner's awareness of their current situation within the process, for stimulating self-regulation using this awareness and for computer-initiated regulation of the learning process, similar to the tradition of tutoring systems.

All these research interests gravitate towards a common understanding of learning processes and how to utilize these for (computer-supported) learning scenarios. A major challenge for all these different disciplines is that in most of today's systems, these processes are implicitly embedded and thus can not be isolated easily for re-use in different contexts and for comparison of different processes. Making these processes explicit is thus an important step towards facilitating learning processes and has already been tackled by several initiatives, such as the Educational Modelling Language EML designed by the Open University of the Netherlands and adopted by the IMS Consortium as the Learning Design Specification IMS-LD (IMS-LD, 2004; Koper, Olivier 2004). This work was meant to be completely neutral in respect to pedagogical approaches and contains means which are generic and powerful, but does also not address specifically the aspects of collaborative learning (Hernández et al, 2004), such as complex and dynamic change of roles within learning groups.

The goal of this workshop is to discuss and explore the aspects of collaborative learning processes related to the contribution that computer science can provide to this interdisciplinary research area. Among these are the formalization of learning processes in a formal language, the tools needed to support non-technical users and the potential of process representations for computer supported collaborative learning.

WORKSHOP TOPICS

Among the topics of the workshop (for submitted position papers and interactive demos) will be:

Formalization of Learning Processes

- Relevant concepts in the domain of Learning Processes
  - which elements are needed for expressiveness in collaborative learning?
  - how to address formalization at various detail levels, e.g. coarse-grained process level vs. fine-grained level of detailed learning actions
  - how are these elements related to each other? E.g. which roles can be taken by which persons/subgroups, what are these roles' obligations and rights, and are roles (resp. assignments to roles) changing dynamically during the process?
- Representational Issues
  - how does a notation look like that can be used by practitioners?
    (i.e. teachers and researchers that are not computer scientists)
  - how can we provide design techniques and integrated authoring tools for collaborative learning processes usable by non-technical people?
  - how can this be mapped to computer-interpretable notations, such as IMS/LD?
  - what are the strengths and weaknesses of existing notations and standards?

Practical Uses of Learning Process Models

- Communication between Practitioners: can there be a lingua franca for the field?
- Formalization of (Collaborative) Learning Patterns and Re-Use of these Structures: how can we capture the essence of process models to be usable in different scenarios and contexts?

- Automated Play/Execution of a Model or Learning Design: how to scaffold, guide or script a learning activity for and with the learners?
- Are there further possibilities to make use of the models, such as simulation before it is implemented in the concrete learning scenario?

Typically when discussing the uses of learning designs, the communication between designers and the automatic execution within a computer system are the two extreme poles of interest. We also want to explore the wide variety of uses possible between the communication function with little or no computer-interpretable information and the completely computer-dependant learning flow management systems imagined on the other side of the spectrum.

Tools and Platforms

- what are desired properties of user-level editors and execution components?
- to which degree are state-of-the-art tools, like IMS/LD-players, incorporating these properties?
- challenges for future research and practice, such as
  - service-oriented solutions with learning process models for service orchestration
  - making explicit learning process models: can it be a scaffold for the learner in the activity structure in the form of "process awareness"?

FORMAT AND ORGANIZATION:

Mixture of position statements, interactive system demonstration, and discussion groups. Based on the submissions' topics the workshop committee will pre-structure a general discussion session to conclude the workshop.

Participants of this workshop are invited to submit either
- position papers of up to 4 pages, stating a position to topics of the workshop that stimulate discussion
- technical contributions of 4-8 pages, e.g. presenting a concrete proposed modelling technique
- interactive demo proposals of up to 4 pages, including a short system description and explanation of the demo format

In any case please state your interest in participating by sending a mail to cscl-workshop@collide.info

Submission Deadline: March 31st 2005
Notification: April 25th 2005

Please send your submissions to cscl-workshop@collide.info.
Please use the CSCL 2005 paper format and provide a PDF version of your document.

Workshop Organization and Committee:
Andreas Harrer, University Duisburg-Essen
Davinia Hernández-Leo, University of Valladolid
Yannis Dimitriadis, University of Valladolid
Additional Members of the Scientific Committee:
Juan Ignacio Asensio Perez, University of Valladolid
Dai Griffiths, Universitat Pompeu Fabra
Ulrich Hoppe, University Duisburg-Essen
Kinshuk, Massey University
Demetrios Sampson, University of Piraeus
Colin Tattersall, Open University of the Netherlands

Note: Related to this proposal a complementary workshop named "Computer-Supported Scripting of Interaction in Collaborative Learning Environments" is organized in the theoretical track. The other workshop aims to discuss a framework of computer-supported scripts that facilitates the integration of the diverse computer-supported script studies. Each workshop has a specific orientation (according to the track; this one mainly a computer science focus, the other mainly a psychological foccs) and main target audience, but both might be interesting for the same audience working in this interdisciplinary area.

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