Adaptive or Collaborative Learning?

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Abstracts: Adaptive Learning Technologies and Collaborative Learning have both been explored and argued for repeatedly. While the two approaches are not in opposition to each other, they include a number concepts and aims that are potentially conflict such as optimising the individual learning pace or the quality of collaboration. This panel will explore where these conflicts are, where the limits of technological support for collaborative on-line learning are and how these conflicts might be resolved.

Introduction

Adaptive Learning Technologies aim to individualise the learning process by tailoring content and teaching strategies to the learner’s specific needs, preferences, knowledge or learning goals (e.g., Brusilovsky & Pevylo, 2003; Carro, Ortigosa, Schlichter, 2003). Collaborative on-line learning has been shown to provide learners with a rich and engaging environment that overcomes many of the issues experienced with self-paced learning (e.g., Borthick, Jones, & Wakul, 2003; Sid-Ahmed, I.J., Moghimi, Lanteigne & Roy, 2008; Tunto & Klein, 2008). While both approaches seem to have significant advantages, there is a potential conflict between the two: Optimising the individual learning process may or may not be in line with the group learning processes, communication patterns and interaction requirements promoted in a collaborative environment. Moreover, collaborative activities are inherently more difficult to track and adapt.

The aim of this panel discussion is NOT to just agree that adaptation and collaboration have their merits and should thus be deployed where appropriate, but rather:

- to explore when and for which learners collaboration can be of particular benefit for learning
- to outline the technological and conceptual limits of adaptive learning technologies in supporting collaborative learning
- to explore a roadmap for adaptive learning technologies from a pedagogical perspective: how can adaptive technologies implement or address educational theories on collaborative on-line learning

The panel has been selected to facilitate a lively discussion, bringing together experts with potentially contrary opinions from different perspectives on the topic educational vs. technical, adaptive vs. collaborative, knowledge assessment vs. learning process, learning communities vs. knowledge acquisition. This is reflected in the following statements by the panelists.

Panelists

The following people will be part of the panel, facilitating discussion with the audience:

Paul De Bra (Chair/Moderator)
Paul De Bra initiated the development of the AHA! system (De Bra et al, 2000), and recently formed a consortium for a project to integrate adaptive learning environments (ALEs) with learning management systems (LMSs). This project, called GRAPPLE, is funded by the EU FP7 IST program (as a STREP project). These initiatives already show that he is a strong proponent of adaptive learning. Although the adaptive presentation of learning material suggests that each learner sees different information and is recommended to visit different links, this study has not learned much or adapted very much. Adaptation can however be used to benefit collaboration by using the available information about users to find potential collaborators with a specific knowledge (or knowledge gap) or with a specific learning or collaboration style. It will be interesting to see whether adaptation can really be used in this way. The TU/e has no experience in adaptive collaboration yet.

Alexandros Papamichalis
Alexandros Papamichalis has long-standing experience in the design and development of adaptive systems, gained through participation in several international research projects in the field. His current work consists on adaptive eLearning, evaluation of adaptive systems and meta-adaptation. The focus of two ongoing research projects at the FIM Institute is on the employment of adaptivity techniques to go beyond individualised learning towards actively supporting collaborative learning. More specifically, the controversial question that these projects seek to address is whether we can provide adaptive support throughout the collaborative learning process, placing the emphasis not on learning material tailored to the individual, but on learning activities tailored to groups of learners.

Peg Ertmer
Collaboration, in its many forms, is a hallmark of Peg Ertmer’s work. As the editor of the Interdisciplinary Journal of Problem-based Learning (IJPBL) and co-author of the ID CaseBook: Care Studies in Instructional Design (1999, 2003, 2007), she advocates the importance of student-student and student-teacher collaborations within problem- and case-based learning environments. Additionally, as the co-director of a large 3-year federal (IPSE) grant, she has promoted the effective use of peer feedback to increase the quality of student postings in online learning environments. However, despite the demonstrated advantages of collaboration, students are not equally prepared to contribute to and benefit from these learning opportunities. This has led educators, including Ertmer, to propose specific strategies for scaffolding students’ work in PBL, case-based, and online learning environments. Scaffolds, by definition, serve as adaptive mechanisms for supporting individual learning needs yet do not require students to work individually. Thus, these tools have the potential to support adaptive collaboration and should be investigated more fully.

François Desjardins

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Although the benefits of collaboration in learning are being widely recognized by the academic community, institutionalization and implementation are still often resisted. François Desjardins has been using and promoting strategies such as problem-based learning in e-learning contexts, firmly anchored in a social-constructivist perspective, as a fundamental direction in which to guide and prepare the next generation of teachers. Further, in accordance with Flager’s view that knowledge is constructed by the learner and Vygotsky’s perspective on the role of social interaction, it was concluded that online learning environments need to follow a model that would be both learner-driven and process-centered. Following this, the design and implementation of a Collaborative Online Learning Environment (COLE), initiated by professor Desjardins, has been the research focus of a group at the Faculty of Education of the University of Ontario Institute of Technology (UOIT). The development of this environment follows the perspective that the Web offers possibilities for beyond mere accessibility of information in a seemingly interactive manner and is a much more powerful tool when used by learners to co-construct knowledge. As the prototype of this COLE (Desjardins, van Ooijen, 2007) is run through trial uses, it is hoped indications of the potential of using collaborative social software concepts will emerge to help guide further developments in online education in spite of the resistance offered by the traditions of teaching.

Stephan Weibelzahl

With his background in psychology and computer science, Stephan has long-standing research expertise in developing and evaluating Adaptive e-Learning Systems. Most of his research has been driven by the questions whether adaptivity is of any value and how systems may be improved. Collaborative learning presents a particular challenge in this respect because evaluation study designs are inherently more complex than in single learner research and collaboration can be difficult to control and facilitate. The evidence for advantages and disadvantages of adaptive collaborative systems so far is sparse. Moreover, criteria for successful collaboration are not obvious.

Organisation

We plan to apply a format that facilitates goal-oriented group discussions (among the panelists and participants). The panel will have start with opening statements from the panelists being followed by discussions and a summary. For the opening statements, each panelist will be asked to introduce and briefly defend a thesis (5min max).

A second session will then be explicitly dedicated to challenging the panelists on their thesis by collecting questions and controversial statements from the floor. Both opening statements and challenges will be recorded and visualised. Chair and audience will then decide which of the points raised shall be addressed in the discussion and in which order.

The session closes in a summary where each panelist may vocalise any final conclusions.

<table>
<thead>
<tr>
<th>Duration</th>
<th>Activity</th>
<th>People</th>
</tr>
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<tbody>
<tr>
<td>20 min</td>
<td>Opening statements</td>
<td>panelists</td>
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<tr>
<td>15 min</td>
<td>Collecting questions and challenging statements from audience</td>
<td>audience, chair</td>
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<tr>
<td>20 min</td>
<td>Discussion</td>
<td>all</td>
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<tr>
<td>5 min</td>
<td>Summary</td>
<td>chair, panelists</td>
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Table 1: Panel schedule

References


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