What metadata (tags) are useful for describing teaching material? How much the rating system in a collaborative recommendation system should reflect the various learning dimensions (contents, levels, pedagogical).

In a collaborative learning environment, how do we ensure that learners have a common understanding of the topic?

How can we support a good balance between learning from past experiences and learning in contexts where the information and knowledge is constantly changing?

Alistair Mclean & Leila Alem
transformation of information sources into knowledge. This work also describes an evaluation of the material produced versus manually created material.

[Davis, Kay, Kummerfeld, Poon, Quigley, Saunders, Yacef] also use a kind of task model derived from organisation work practices (workflow) in order to deliver the appropriate training information at the right time. This system is active and monitors the user and his position in the workflow to determine what and when to deliver training material to the user.

Our next paper examines group interaction using a tool called Intertac-1 and analyses the interaction for the appearance or not of specific interaction patterns. These patterns give an indication of the level of understanding of the users of the domain and can be used to support group learning.

In the following paper [Alem, McLean] take a position that the learning that occurs in organisations is opportunistic and takes place where the learner is engaged in tasks/activities where there are no simple (closed) solutions and where the learning environment is dynamic: new information, processes, people are continuously appearing and disappearing. They propose that research from knowledge management and AIED need to be combined in order to support such learning. In particular they suggest a framework composed of a corporate memory centred around lessons learnt, a project memory including the documents and electronic discussions between members of the project and a people finder capability to provide people with a means for finding the right people based on concrete but changing evidence.

We finish with the paper by [Tang and McCalla] that describes an implemented system operating in an open environment where the source material is changing. Here a user receives recommendations as to what material to read based on his typical profile and the recommendation of similar users. A feedback mechanism is used to label documents by giving a document a “technical tag”, derived from the set of ratings entered by all users who read the paper. The system continuously queries the web to retrieve up-to-date documents related to the course topics.

There are clear synergies between research occurring in the fields of electronic document technologies and AIED. We hope this workshop will encourage discussion about the links and potential avenues for further work at the boundary between the two areas.

We have a good set of papers each of which raises a number of important issues that we hope to discuss at the workshop. These include:

Is it worth the extra effort? Search engines provide reasonable answers to most people’s opportunistic learning needs. Is there any need for our technologies?

Is it possible to derive useful learning material from raw content automatically?

How can learning systems be kept up-to-date with evolving domains and new pedagogical material (e.g. better tutorials)?

What is the respective role of the tutor and of peers in e-learning or collaborative learning?
FOREWORD

This workshop explores how to complement traditional e-learning techniques with technologies for electronic documents in order to assist e-learning. We use the phrase "technologies for electronic documents" to mean processes and algorithms that operate on unprocessed electronic content and, in general, the research undertaken in these areas assumes that the domain of application is open, changing and unstructured.

Techniques being developed in the information retrieval and knowledge management communities, for example, include mechanisms to describe the semantics of document fragments and relationships between documents, tools for automatically deriving and visualising the concepts within a document and between documents, authoring tools for adding metadata to documents, the use of task and user models to improve the relevance of documents retrieved by search engines.

In asking this question we received papers ranging from those that address core document modelling issues to papers that discuss how to use analysis of users’ interaction with electronic content in a collaborative environment.

The papers being presented at the workshop encompass the following themes: document reuse, concept and task modelling, collaboration between learners and dealing with dynamic open environments.

In more detail our papers are as follows. We start with a survey [Vercoustre, McLean] about reusing education material that describes current approaches and possible future directions. In order to be able to reuse educational material in different curriculum, this paper articulates the importance of a semantic description of educational document fragments both in terms of the content and the instructional intention of the fragment. A learning system then chooses an appropriate instructional strategy and assembles the relevant fragments. However, in order for these strategies to be related to the instructional intention of the authored information fragments, both the fragments and the instructional strategies need to be “ontology-aware”. The paper discusses some work in the area of the semantic web that may have some bearing on this problem.

Closely related to this proposition, our next paper [Falquet, Ziswiler] describes an implemented hyperbook system that reuses document fragments using a domain ontology and a “hyperbook ontology” that describes the relationship between the document fragments and the domain concepts. The hyperbook ontology can then be used to select different document fragments according to a learner’s “point of view” or learning objective.

Our next set of papers deal with the issues of concept and task modelling. [Mittal, Dixit, Kant and Sung] propose that a learner will have a more complete understanding of a subject if he can visualise the concepts of the educational material and how they are related. They propose a framework based on relational and conceptual graphs to help users learn and search concepts and relationships. These graphs are generated automatically from the source educational material.

Recognising that additional semantic markup is required for sophisticated selection and presentation of learning material, [Paris, Vander Linden, Colineau and Lu] describe several authoring tools in the context of their “Producing Instructions” system that supports the
# TABLE OF CONTENTS

Foreword .......................................................................................................................618

## FULL PAPERS
Reusing educational material for teaching and learning: current approaches and directions ....621
   Anne-Marie Vercoustre and Alistair McLean

A Virtual Hyperbooks Model to Support Collaborative Learning .................................631
   Gilles Falquet and Jean-Claude Ziswiler

Enhanced Understanding and Retrieval of E-learning Documents through Relational and
Conceptual Graphs .......................................................................................................645
   Ankush Mittal, Sandeep Dixit, Laxmi Kant Maheshwari and Wing-Kin Sung

Producing Instructions ..................................................................................................653
   Cécile Paris, Keith Vander Linden, Nathalie Colineau and Shijian Lu

Using Workflow, User Modeling and Tutoring Strategies for Just-in-time Document Delivery......664
   J. Davis, J. Kay, B. Kummerfeld, J. Poon, A. Quigley, G. Saunders, K. Yacef

Using intelligent agents for the analysis of students interaction and learning ..................674
   Cat Kutay and Peter Ho

Supporting Organisational learning with Technologies for Electronic Documents .............688
   Leila Alem and Alistair McLean

Smart Recommendation for an Evolving E-Learning System .........................................699
   Tiffany Y. Tang and Gordon McCalla
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