Integrating courseware into collaborative learning environments
(demonstration)

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This project has several facets, including issues of integration, standards for open courseware, and courseware inter-operability. These courseware engineering issues are relevant in many contexts but this project seeks to investigate the relevance of these issues specifically to collaborative learning environments. The courseware engineering issues are generic and therefore apply to courseware in any subject area. However, while working within one of the projects under the UK's Teaching and Learning Technology Programme [5] the author has developed substantial CAL material in the area of Information Systems Analysis and Design. It is this CAL material that is mainly used for all the author's experimental investigations into courseware inter-operability and integration into collaborative learning environments.

This project is investigating the possibilities for combining aspects of existing research and development efforts that are already making contributions towards achieving courseware inter-operability. Hence, the sources currently being investigated include the work on HyperCourseware Management Systems [3, 4], the work of the TLTP working group EPOC (Enabling the Provision of Open Courseware) [2], and "metadata" work being carried out within the Electronic Libraries Programme [1]. Each of these has recognized the need for suitable frameworks that enable digital educational resources to be modeled in ways that enable flexible manipulation of those resources.

The "integrating courseware" aspect of the ICICLEs project is mainly concerned with pursuing the quality of flexible manipulation, that Open Courseware may enable. The EPOC working group, for example, would assert that

> ... for courseware to be widely exploited within universities it will need to be simple to implement, simple to manage, simple to adapt, and simple to use; it will need to offer flexible use in ways that are taken for granted with older technology like text books, photocopiers and overhead projectors; and it will need to be "open courseware" in order to be technically capable of providing the above qualities. [2]

The ICICLEs project is hence facing the same legacy situation as identified in [4] and by EPOC, i.e.,

> ... that the currently emerging courseware products in UK Higher Education are very diverse, non-integrated, and may prove to be technically incompatible with each other; there are no standards or systems currently available that achieve genuine inter-mixing, or even just inter-operability, of all courseware; and most importantly, that the current lack of openness will compromise the desired widespread exploitation of courseware. [2]

Practical demonstrations will be provided of CAL material for Information Systems Analysis and Design. The demonstrations will also illustrate typical re-engineering problems and solutions that many courseware development projects now face, e.g., how to cost-effectively re-engineer courseware for distributed operation over World Wide Web when it was originally designed for distribution on CDs and operation on stand-alone machines.

References

1   Electronic Libraries Programme. Information from the UK Office for Library and Information Networking. URL: http://ukoln.ac.uk/elib

2   EPOC — Enabling the Provision of Open Courseware, A Report of the TLTP Working Group on Open Courseware. (November 1995). See also [5]. URL: http://www.amtp.cam.ac.uk/icrd/EPOC.

3   Siviter, D. and Siviter, P. HyperCourseware Developments in ToolBook. *Proceedings of the ToolBook User Group Conference*, University of Bristol, England, (September 1994), pp. 77–89.

4   Siviter, D. and Siviter. P. Issues in Making Courseware Exploitable and Issues in Making Exploitable Courseware. *Association for Learning Technology Journal 3*, 1 (1995), 22–28.

5   TLTP — Teaching and Learning Technology Programme. address: HEFCE, Northavon House, Coldharbour Lane, Bristol BS16 1QD. URL: http://www.tltp.ac.uk/tltp.

LINK: a software package for discrete mathematics and algorithms
(demonstration)

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I will demonstrate the LINK system described in the paper "Improving Discrete Mathematics and Algorithms Curricula with LINK", which appears on p. 14 of the ITiCSE'97 Conference Proceedings (*SIGCSE Bulletin 29*, 3). The LINK system is an educational tool that can be used to visualize and experiment with discrete algorithms.