

CREATING ONLINE FACULTY COLLABORATION TO DEVELOP ENGINEERING EDUCATION COMPUTER LEARNING MATERIALS

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Abstract $\frac{3}{4}$ The expansion of the Internet has introduced new options for developing science, math and engineering classes. Digital libraries such as NEEDS.org provide attractive options for courseware authors to widely distribute their work. NEEDS has implemented mechanisms to link multidisciplinary experts in an online community focused on improving the quality of engineering courseware. These collaborative mechanisms are based on interview results from the winners of the annual Premier Award for Excellence in Engineering Education Courseware, presented annually. This project focuses on identifying and describing the needs of courseware authors and evaluating how the NEEDS developments in the faculty community support collaboration.

Index Terms $\frac{3}{4}$ Collaboration, courseware design, digital libraries, Internet courseware.

OVERVIEW:

NEEDS—The National Engineering Education Delivery System—is a web-based digital library (www.needs.org) designed to support the use of innovative educational technology (e.g., computers, the WWW, and CD-based courseware) for learning. NEEDS is a digital library where both instructors and learners can search, access, and download educational materials.

The Premier Award for Excellence in Engineering Education Courseware developed by NEEDS, John Wiley & Sons, Inc., and the Synthesis Coalition was created to recognize and promote high-quality, non-commercial courseware designed to enhance engineering education. Another purpose of the award is to provide a highly visible venue for rewarding faculty who are taking on leadership roles in developing excellent computer learning experiences. Ten Premier Awards have been made to individual faculty authors or teams of authors since 1997.

METHODS AND CURRENT DATA:

The purpose of this research is to identify how NEEDS might better support collaborative courseware development. Several of the questions driving this research include:

- What kinds of digital library services do courseware authors feel would help them in their development efforts?
- How might NEEDS improve the ability of faculty to re-use courseware?
- How should NEEDS support on-line collaboration among authors?

Building on the results, from interviews with Premier Award Winners, a survey was developed and administered to a random sample of all authors cataloged in NEEDS. Other authors will be invited to participate in on-line focus groups regarding the types of services NEEDS could develop to support faculty who wish to develop new courseware.

PROTOTYPE COLLABORATIVE TOOLS:

The interviews and surveys are yielding a thorough set of requirements that are driving the design of collaborative tools for NEEDS. Based upon the preliminary results from our studies, several key features are required, the most important being a mechanism for generating and gathering feedback regarding courseware. Feedback can come from peer reviewers or through student learner discussions about the courseware. Also requested have been a place to share documents and a place to learn about best practices in courseware design.

Together, these features make up *MyCommunity*. *MyCommunity* is a place where registered users build their own collaborative workspace. These collaborators can share documents and discuss their design work. It will also recommend to the user, other users who express similar interests. *MyCommunity* also supports a moderated discussion that focuses issues such as design best practices and pedagogical goals of online courseware. These discussions will be indexed and be available for further reference.

NEXT STEPS:

Once completed and released, the *MyCommunity* toolset will be evaluated by faculty and instructors, and refined based on user feedback.

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