

NEEDS—The National Engineering Education Delivery System is a digital library for engineering education. Our infrastructure supports the development, evaluation, use, and re-use of digital learning objects. Since 1994 NEEDS has provided a World Wide Web based interface for easy access to a variety of services that support technology enabled learning. As an innovation of Synthesis: A National Engineering Education Coalition, NEEDS supports a broad view of how a national digital library can be used to enhance learning. Our experiences with a wide variety of university partners, technologies, and content provide us with a strong background of how one can use this national resource, who can be its target audience, what instructional technologies can be made available, and what is needed to describe these resources.

WHAT ARE LEARNING OBJECTS?

NEEDS accepts a broad view of the learning objects that we make available through our digital library. According to IEEE's Learning Technology Standards Committee Working Group (P1484.12) on Learning Object Metadata, a learning object is "any entity, digital or non-digital, which can be used, re-used or referenced during technology supported learning." Resources in NEEDS include Java applets, full courses, case studies and CD-ROMs.

NEW SERVICES

NEEDS is expanding its services to serve as the foundation for a "digital learning community" for science, mathematics, engineering and technology education. Our new services are targeted at emphasizing interactivity and learning, with the goal of connecting like-minded users, thereby encouraging user-to-user communication and community building.

"A digital library has to be more than just content—it means developing a group of users. The users, depending on their expertise will want [different] support services."

— Digital Library User

Info

"Tabs" allow convenient access to the features available for each digital learning object. The Info tab provides standard information describing the learning object and allows easy access to other services including Download and Comments & Reviews.

Download

Users may download or link to learning objects in the digital library. The Download tab describes the available platforms, minimum hardware and software requirements and may provide installation notes.

Comments & Reviews

The Comments & Reviews tab connects users to a community-based feedback and support mechanism for each learning object. Users can contribute their experiences with using the learning object or attach related resources, such as a related website, a homework or lab assignment using the learning object. They can also describe other pedagogical practices they used with the learning object.

Info Download Pedagogy Comments & Reviews Add Comment Details

The Virtual Disk Drive Design Studio

 Premier Courseware of 1997

 Download  Pedagogy  Comments & Reviews

Title: The Virtual Disk Drive Design Studio
Contributors: David Y. Yu - Author
Alice M. Agogino - Author
University of California at Berkeley - Publisher
Courseware Series: Multimedia Case Studies of Design in Industry
Version: 1.0b5
Summary: The Multimedia Virtual Disk Drive Design Studio is an engineering design case study using interactive multimedia courseware for undergraduate engineering and science students. The purpose of this multimedia case is to introduce students to the world of mechatronics in the form of a disk drive. Students play the role of a project engineer for the ACME disk drive company and will have to mine out the necessary information from a multimedia archive in order to build a new disk drive model. Students will have to keep track of the development and production costs. They will also be asked to launch their new disk drives in a certain time frame, simulating the idea of time-to-market. This interactive disk drive case study is ideally complemented by hands-on mechanical dissection of an actual disk drive.

This entire project is put together using Macromedia Director. This cross-platform software will allow us to distribute CD-ROMs to a wide spectrum of students around the country with 2x CD-ROM drives. The author is currently collaborating with Western Digital Corporation and IBM Almaden Research Center in San Jose. Western Digital Corp. provided the mathematical model for performance calculations while IBM has contributed in the form of technical literature and expert opinions.

Keywords: None assigned.
Affiliations:    

For more information contact:

Brandon Muramatsu, Project Director, mura@needs.org
Alice M. Agogino, Principal Investigator, agogino@needs.org
3115 Etcheverry Hall, University of California
Berkeley, CA 94720-1750
tel: (510) 643-1817 fax: (510) 643-1822