

# **NEEDS—The National Engineering Education Delivery System**

**[www.needs.org](http://www.needs.org)**

**Brandon Muramatsu**

**Flora McMartin**

**Alice Agogino**

**University of California at Berkeley**



Originally Published 1999. Republished 2013. This work is licensed under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 United States License (<http://creativecommons.org/licenses/by-nc-sa/3.0/us/>)

# Ongoing User Studies

---

## For the *Premier Award*...

- Is this courseware adopted “as-is” by users, or do they adapt it to meet their particular course and teaching needs?
- What are the most effective ways of disseminating this courseware?
- What are the views of quality courseware and how do they change over time, if at all?
- What has been the impact of Premier Courseware on student learning?

# NEEDS—The National Engineering Education Delivery System

---

- **An Established Dissemination Tool**
  - National program developed within the Engineering Coalitions program (1990-1998)
  - Courseware readily searchable and accessible
  - Expanding to include Science, Mathematics, Engineering and Technology Education (SMETE)
- **Established Quality Review Programs**
  - Criteria for evaluating courseware
  - *The Premier Award for Excellence in Engineering Education Courseware*
  - User comments



**NATIONAL ENGINEERING EDUCATION DELIVERY SYSTEM**

**Berkeley  
Stanford**

**Northern  
Arizona**

**UMBC  
Virginia  
Tech**

## **Goals (1998-2001)**

- **Provide a service to the engineering education community**
- **Grow and evolve NEEDS as the foundation for an on-line engineering education community**
- **Expand courseware review and evaluation efforts**
- **Serve as a bridge to the development of a SMET Digital National Library**

# *The Premier Award for Excellence in Engineering Education Courseware*

---

- **A national competition to identify and reward the authors of high-quality, non-commercial courseware designed to enhance engineering education**
  - The *Premier Award* is about the entire experience of using the courseware by learners, not just the courseware itself
- **A dissemination system to distribute the Premier Courseware (via CD's, ASEE Prism ads, presentations at FIE and ASEE)**

The logo for 'needs' is written in a stylized, lowercase, italicized font with a slight shadow effect.

# *Premier Award Criteria*

---

- **Instructional Design**
  - Will students learn from the courseware?
- **Software Design**
  - Is it well designed and usable?
- **Engineering Content**
  - Is the content error free?

# Premier Courseware of 1997 and 1998

- Virtual Disk Drive Design Studio
- Drill Dissection and Bicycle Dissection
- Mars Navigator
- Della Steam Plant
- MDSolids
- Structural Engineering Visual Encyclopedia - UNH



3600 CD-ROMs Distributed



1800 CD-ROMs Distributed



For more info or to receive copies go to <http://www.needs.org/premier/>

# Use of Premier Courseware

---

- **Surveys**

Users want...

- information on how to use the courseware (e.g., user's guides, comments, instructor's manuals, peer/expert reviews, etc.)
- to be able to “try” or “test” the courseware

- ***Premier Award Author Interviews***

Faculty report...

- a positive impact on career
- an increase in interest and use of their materials

The logo for 'needs' is written in a stylized, lowercase, italicized font with a white outline and a dark shadow, set against a dark rectangular background.



# Use of Premier Courseware (cont.)

---

- **Focus groups about digital libraries**

Adapters and Adopters want...

- adaptable materials
- expert reviews
- info on how to use the materials

Community is the “glue” that allows for adaptation and adoption of courseware

The logo for 'needs' is written in a stylized, lowercase, italicized font with a slight shadow effect.The logo for the Premier Award features a large, bold, serif capital letter 'P' in a dark brown color. Below the 'P', the words 'Premier Award' are written in a smaller, italicized serif font.

# Sample Record



A Digital Library for Engineering Education

Search for Learning Resources



[Help](#) [Add](#) [Advanced](#)

[Engineering](#) | [Search Results](#) | [The Virtual Disk Drive...](#)

[HELP WITH INFO](#)

[Info](#)

[Download](#)

[Pedagogy](#)

[Comments & Reviews](#)

[Add Comment](#)

[Details](#)

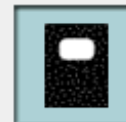
## The Virtual Disk Drive...



Premier  
Courseware of  
1997



[Download](#)



[Pedagogy](#)



[Comments &  
Reviews](#)

**Title:** [The Virtual Disk Drive Design Studio](#)

**Authors:** [David Y. Yu](#)  
[Alice M. Agogino](#)

**Publisher:** [University of California at Berkeley \(03/1997\)](#)

**Courseware Series:** [Multimedia Case Studies of Design in Industry](#)

**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.

# Sample Comments and Reviews



A Digital Library for Engineering Education

Search for Learning Resources

[Help](#) [Add](#) [Advanced](#)

[Engineering](#) | [Search Results](#) | [The Virtual Disk Drive...](#)

[HELP WITH COMMENTS](#)

[Info](#)

[Download](#)

[Pedagogy](#)

[Comments & Reviews](#)

[Add Comment](#)

[Details](#)

## The Virtual Disk Drive...

### Comments

**Alice Agogino @ Berkeley, CA, USA, June 17, 1999**

**Supplementary Information about the Virtual Disk Drive Design Studio**

I've attached our Instructor's Guide to help everyone understand just some of the ways the Virtual Disk Drive Design Studio can be used.

**See Also:** Multidisciplinary, Multimedia Case Studies in Engineering Design: Instructor's Guide

This guide provides suggestions for using the courseware in several instructional settings, as well as problems with solution strategies that can be used in a number of existing courses in the engineering curriculum at the university or pre-college level.

### Reviews

**NEEDS Editor @ Berkeley, CA, USA, May 1, 1999**

**Premier Courseware of 1997**

The Virtual Disk Drive Design studio provides an immersive, virtual design environment in which the learner designs ACME Engineering's newest disk drive. Designing the disk drive according to the specifications provided, the user first learns the key features and functionality of hard disk drives and then learns about the design trade-offs required to meet the specifications.

# Ongoing User Studies

---

- Adaptation and Adoption
  - **Interviews with users**
- Effective dissemination
  - **On-line survey**
- Views of quality courseware
  - **Focus groups**
- Impact on student learning
  - **Student surveys/focus groups**

# For More Information

**Brandon Muramatsu**

**Project Director**

mura@needs.org

www.needs.org

3115 Etcheverry Hall

University of California

Berkeley, CA 94720-1750

(510) 643-1817

**Copies of this presentation will be available at:**

**<http://www.needs.org/engineering/info/presentations/>**