SMETE.ORG, NEEDS and MERLOT

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SMETE Open Federation Vision

A Digital Learning Community

- **The SMETE Open Federation is an e-learning partnership that:**
  - Offers a comprehensive collection of SMET education content and services to learners educators and academic policy-makers
  - Serves as the integrative organization and distribution mechanism for pedagogical material through a tightly coupled federation of digital libraries
  - Promotes educational reform through participatory communities of learners

Reach of the Open Federation

- Identifiable audience of **9.25 million** users
- About **250,000** directly accessible community members
- Collectively has **42,000** high-quality, web-accessible digital learning resources
  - 28% Math
  - 17% Physical Sciences (physics, chemistry)
  - 19% Life Sciences
  - 4% Engineering
  - 3% Computer Science
  - **29%** Non-STEM (History, World languages, etc.)
- K-12/Higher Education
  - Higher education resources 65%
  - K-12 education resources 35%

SMETE Open Federation

Access Excellence & National Assoc. Biology Teachers (www.accessexcellence.org and www.nabt.org)

American Association for the Advancement of Science (www.aaas.org)

Association of Women in Science (www.awis.org)

BioQUEST Curriculum Consortium (www.bioquest.org)

Biosci Ed Net (www.benproject.org)

Coalition for Networked Information (www.cni.org)

CITIDEL (www.citidel.org)

Computer Science Teaching Center (www.cstc.org)

Digital Library for Earth Systems Education (www.dlese.org)

Education Development Center (www.edc.org)

Eisenhower National Clearinghouse for Mathematics and Science Education (www.enc.org)

iLumina (www.ilumina-project.org)

Instructional Architect (ia.usu.edu)

Interactive University (iu.berkeley.edu)

Internet Scout (scout.cs.wisc.edu)

Learning Matrix (thelearningmatrix.enc.org)

Learning*Online* Network with CAPA (www.lon-capa.org)

Mathematics Association of America (www.maa.org)

MathDL (www.mathdl.org)

Math Forum (www.mathforum.com)

MERIT Network & Michigan Teacher Network (www.merit.edu)

MERLOT (www.merlot.org)

National Action Council for Minorities in Engineering (www.nacme.org)

National Center for Supercomputer Applications (www.ncsa.org)

NEEDS—A Digital Library for Engineering Education* (www.needs.org)

Project Kaleidoscope (www.pkal.org)

University of California Teaching and Learning with Technology Center (www.uctltc.org)

Industry

Autodesk* (www.autodesk.com)

Cisco Systems (www.cisco.com)

John Wiley & Sons* (www.wiley.com)

Collegis (www.collegis.com)

MathWorks* (www.mathworks.com)

Microsoft Research* (research.microsoft.com)

Sun Microsystems (www.sun.com)

*Involved with NEEDS

Key Features available at www.smete.org

- **Users can…**
  - Search and browse for learning resources
  - Access content from "federated" collections
  - Catalog (add) learning resources
    - Based upon emerging international IEEE standards
  - Evaluate the quality of learning resources
    - Using "user" reviews and "expert" reviews
  - Form a community
    - Through partner collections and activities
    - Building upon PKAL workshops and seminars
  - Get personalized recommendations

Federated Collections

- From Andi's JCDL Poster

Professional Societies

- **American Association for the Advancement of Science**
  - Biosci Ed Net Project (www.benproject.org)
  - Metadata, federated search, shared services
- **Mathematical Association of America**
  - MathDL Project (www.mathdl.org)
  - Controlled vocabulary of educational concepts in mathematics

MERLOT—www.merlot.org

MERLOT
Multimedia Educational Resource for Learning and Online Teaching

- **Collaborative to improve access to quantity and quality of teaching and learning resources and to help faculty identify and use those materials**
- **Institutional partnerships with 20+ systems of higher education in the U.S. and Canada**
  - Reaching 8 Million students
  - 350,000 faculty
- **Broad collection extending beyond STEM**
  - Search, browse, catalog, comments, assignments
  - Including: History, Music, World Lang., etc.
- **13 Disciplines doing peer review**
  - Including engineering in collaboration with NEEDS

Institutional Partners

- California Community College System
- California State University
- CAREO
- Council of Independent Colleges
- Illinois Board of Higher Education
- Indiana Commission for Higher Education
- Louisiana Board of Regents
- Oklahoma State Regents for Higher Education
- South Dakota Board of Regents
- State University of New York
- Tennessee Board of Regents
- Troy State University
- University of Michigan
- University of North Carolina
- University System of Georgia
- University of Wisconsin System
- Virginia Community College System
- Western Cooperative for Educational Telecommunications

MERLOT Home Page

MERLOT
Multimedia Educational Resource for Learning and Online Teaching

Search Materials: GO
advanced search | search tips

join now | log in

Home | Communities | Browse Materials | Contribute Material | Member Directory | Help

Welcome to MERLOT!

MERLOT is a free and open resource designed primarily for faculty and students of higher education. Links to online learning materials are collected here along with annotations such as peer reviews and assignments.

MERLOT is also a community of people who are involved in education. Community members help MERLOT grow by contributing materials and adding assignments and comments. Many community members make their professional information available in MERLOT's member directory.

You are welcome to browse the collection or search for materials. Members may add materials, comments and assignments to MERLOT. Membership is free.

What will I see when I look at a learning material?
What can I do with the materials I find in MERLOT?
Who contributes the materials to MERLOT?
Who oversees and maintains MERLOT?

Browse the Collection by Subject

- Arts
- Business
- Education
- Humanities
- Mathematics
- Science and Technology
- Social Sciences

MERLOT International Conference

Sept. 27-30, 2002 • Atlanta, Georgia

Highlights

Learn more about the MERLOT project by visiting the Tasting Room.

Read about the annual MERLOT International Conference.

See the calendar of recent events and announcements.

Read about the Peer Review process and find reviewed materials.

Read about assignments and find materials with assignments.

See the recent additions to the MERLOT collection.

home | communities | browse materials | contribute material | member directory | help

Browse Materials by Subject

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Browse Materials by Subject

Click on the ▶ symbol to see sub-categories. Click on the category name to see items in that category.

Browse Path: All > Science and Technology

Agriculture (14)
▶ Chemistry (177)
Geology (47)
▶ Information Technology (347)
Astronomy (121)
▶ Computer Science (360)
General Science (34)
▶ Physics (1422)
▶ Biology (432)
▶ Engineering (236)
▶ Health Science (156)

Results Path: All > Science and Technology

Your search found 3179 materials
Category: All/Science and Technology
Items 1 - 10 shown.

Default sort order by rating. Resort by: Rating Go

Title | Author | Date Entered | Rating | Item Type

Ideal Gas Law Simulation (Simulation)
Author: John Gelder, Kirk Haines & Mike Abraham
An effective tool to help students learn about all aspects of the ideal gas law. One of the best ...
Location: http://intro.chem.okstate.edu/1314F00/Laboratory/GLP.htm
Added: Feb 19, 2001

Peer Reviews (1) avg:★★★★★
Member Comments (1) avg:★★★★★
Assignments (none)

Microbiology Education Resources (Collection)
Author:
A collection of visual and curriculum resources that are submitted by professors/scientists from ...
Location: http://www.microbelibrary.org

Peer Reviews (1) avg:★★★★★
Member Comments (3) avg:★★★★★
Assignments (none)

Detail View: Physlets

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MERLOT Detail View

Detail View | Peer Reviews (1) | Member Comments (3) | Add | Assignments (3) | Add

Physlets , FEATURE

No Image Available

See larger photo

submitted: Mar 14, 1998
modified: Jul 25, 2002

Average Ratings: Peer Reviews : ★★★★★
Member Comments : ★★★★★

Type: Collection

Location: http://webphysics.davidson.edu/Applets/Applets.html

Primary Subject Category:
-Science and Technology/Physics/General/Collections
-Science and Technology/Physics/General/Curriculum

Author: Wolfgang Christian
Davidson College

Description: Educational physics applets designed to be scripted in JavaScript for use in quizzes, homework problems, and Just in Time Teaching activities. Includes applets that can be used in a wide range of classes and at different levels.

Submitted by: Bethany Gross

Primary Audience: High School, College

Technical Format: Java Applet

Technical Requirements: Requires a browser that allows communication between Javascript and Java applets. There are some difficulties with Macintosh computers running OS 9 and lower.

Version: 3 and 4

Language: English

Review of Physlets

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Peer Review Detail View

Detail View | Peer Reviews (1) | Member Comments (3) | Add | Assignments (3) | Add

Peer Review of Physlets by Wolfgang Christian , author.

Reviewed: Jul 25, 2002 by the MERLOT Physics Review Panel

Overall Rating:	5
Category Ratings:	Content Quality : 5
	Potential Effectiveness as a Teaching Tool : 5
	Ease of Use for Students and Faculty : 5

About the Evaluation Process, Criteria, and Ratings

Description

Overview:	**Physlets** is a collection of small, simple java applets that can be used to simulate or demonstrate a wide range of physical phenomena. Materials covered by these applets includes mechanics, electricity and magnetism, optics, waves, modern physics, and quantum mechanics. Because they can be scripted, they can be used in many different settings and for many different learning activities.
Learning Goal(s):	Varied, but Physlets are particularly suited for hands-on, interactive conceptual learning.
Target Student Population(s):	All
Prerequisite Knowledge or Skills:	Depends on the use of the material.
Type of Material:	Java applets suitable for tutorials, interactive quizzes and homework, online instruction, pre-labs or virtual lab exercises, demonstrations

MERLOT Peer Review

- **Convenes Discipline Community-based Workshop**
  - Adopt evaluation standards (based on common core)
    - Quality of content
    - Potential effectiveness for teaching and learning
    - Ease of Use
  - Develop and implement peer review process
  - Understand roles and responsibilities as MERLOT reviewers
- **Editorial Board**
  - Editors (usually from MERLOT Institutional Partners
  - Board members and Associate editors (new, being implemented over the next year)
  - "External" peer reviewers (new, being implemented over the next year)

Peer Review Process

MERLOT
Multimedia Educational Resource for Learning and Online Teaching

- **Materials in MERLOT are triaged**
  - Definitely Review, Possibly Review, Not worth reviewing
- **Selected materials get assigned to 2 members of discipline community**
- **Evaluate materials and if meets minimum criteria, MERLOT posts review**
- **Editorial Board members write a joint review posted at MERLOT**
  - Dialog with authors
  - Successful peer reviews acknowledged with letters to Deans, Department Chairs, etc.

Criteria (General)

- **Quality of Content**
  - Present valid (correct) and educationally significant concepts, models, skills?
- **Potential Effectiveness as a Teaching/Learning Tool**
  - What stages in the learning process/cycle can the materials be used?
  - What are the learning objectives?
  - What are the characteristics of the target learner?
- **Ease of use**
  - Navigation, flexibility, interface, etc.

Professional Societies

- **American Association of Physics Teachers***
  - COMPADRE
  - Metadata, federated search, shared services
- **Journal of Chemical Education***
  - Metadata, shared peer reviews and evaluation criteria

NEEDS—www.needs.org

- Established circa 1992 from NSF Synthesis Coalition (engineering education reform)
- Collection of digital learning resources for engineering education (search, browse, catalog)
- Served as technology platform for SMETE.ORG
- Recently re-launched to incorporate advances from SMETE.ORG
- Conducts *Premier Award for Excellence in Engineering Education Courseware*

http://alpha.needs.org/

Search for Learning Resources: GO

HELP | EDIT PROFILE

needs

Home

- About NEEDS
- Search
- Community
- My Portfolio
- Premier Award

You Are Logged In as: mura@bits.me.berkeley.edu

NEEDS — A Digital Library for Engineering Education

Welcome to the new home for NEEDS

NEEDS — The National Engineering Education Delivery System is a digital library of learning resources for engineering education. NEEDS provides web-based access to a database of learning resources where the user (whether they be learners or instructors) can search for, locate, download, and comment on resources to aid their learning or teaching process. In addition NEEDS supports a multi-tier evaluation system from our national award competition sponsored by John Wiley and Sons, Inc. to user-based reviews of individual learning resources.

More...

2002 Premier Award Competition Call for Submissions

Submission Deadline: Friday, July 12, 2002, 5 p.m. PT

We welcome your submissions for the 2002 Premier Award. The Premier Award competition is open to a wide range of submissions of "high-quality, non-commercial courseware designed to enhance engineering education." Please visit our 2002 Premier Award Submission page for more information.

http://alpha.needs.org/

Search for Learning Resources: GO

HELP | EDIT PROFILE

needs

Home > Search > The Virtual Disk Drive Design... > Summary

- About NEEDS
- Search
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  - Usage Tips
  - Download
  - Recommended Learning Resources
- Community
- My Portfolio
- Premier Award

Actions

- Log In / Register
- Save to Workspace

You Are Logged In as: mura@bits.me.berkeley.edu

Learning Resource: The Virtual Disk Drive Design Studio

Title:	The Virtual Disk Drive Design Studio
Authors:	David Y. Yu , Alice Merner Agogino
Publishers:	University of California at Berkeley
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. 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

http://alpha.needs.org/

Search for Learning Resources: GO

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needs

Home > My Portfolio > My Community

- About NEEDS
- Search
- Community
- My Portfolio
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  - My Profile
  - My Interests
  - > My Community
- Premier Award

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My Community: Recommended Members and Learning Resources

Based on your profile and the learning resources you have downloaded, we have found members of the NEEDS community who have interests similar to yours. Listed are some of the learning resources that they have downloaded:

Greg from UC Berkeley

- Chemist's Art Gallery
- Rapid Prototyping
- Applied Computer Visualization and Planning for Construction Engineers
- Math activities for K-12 teachers
- Mattel Color Spin: A Multimedia Case Study in Engineering Design

Jialong from Not Specified

- Visual Quantum Mechanics
- AC Power Analysis and Design
- Mattel Color Spin: A Multimedia Case Study in Engineering Design
- Department of Pharmacology and Experimental Therapeutics
- Usability: The New Dimension of Product Design

Alice from UC Berkeley

- The Engineering Design Process
- BGESS Home Base: Historic Contributions of Black Scientists and Engineers
- Usability: The New Dimension of Product Design
- Cracking Dams
- Visualizing Molecules

Rickard from Not Specified

Professional Societies

- **American Society for Engineering Education****
  - Communities of practice
- **Institute for Electrical and Electronics Engineers****
  - Peer review, controlled vocabulary development