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Educational Digital Libraries: The SMETE Open Federation

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- **What are educational digital libraries?**
- **Background on the NSF National STEME/ SMETE Digital Library program**
- **The SMETE Open Federation**
 - NEEDS—A Digital Library for Engineering Education
 - MERLOT—Multimedia Educational Resources for Learning and Online Teaching
 - SMETE.ORG: The Portal to the SMETE Open Federation

Educational Digital Libraries



- **What do you think I mean?**
 - Who's the user?
 - What services are available?

“Working” Description of Educational Digital Libraries



- **Traditional “brick and mortar” campus libraries**
 - Catalogs of resources
 - Repository of books, periodicals, etc.
- **Research digital libraries**
 - Provide convenient access to vast holdings, access to journals and databases

“Working” Description of Educational Digital Libraries



...or...how they go beyond traditional brick and mortar library on your campus or research digital libraries...

- **Directly supports teaching and learning activities**
- **Provides support (through comments of use, lesson plans, etc.) for adapting or adopting resources developed by others**
- **Uses technology to support collaboration, personalization, recommendation of resources**
- **Covers a wide range of disciplines and allows for connections between disciplines**
- **Supports communities of users**

**Background and History of
the National Science Foundation's
National SMETE Digital Library
Program**



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The SMETE Open Federation A Brief Introduction

- **To build a successful National SMETE Digital Library for deployment in Fall 2002...**
 - That focuses on science, mathematics, engineering and technology at all levels
 - And more importantly, it focuses on education
- **...we needed to develop a team...**
 - To overcome the challenges we face in developing a National SMETE Digital Library
 - To cover target audiences and disciplines
 - To share in the development efforts

- **The SMETE Open Federation is committed to providing a service**
 - to support learning
 - across disciplines in science, mathematics, engineering and technology
 - providing access to high-quality resources
 - in support of education reform and cross-disciplinary learning
 - from K-12 to higher education to professional development
 - by identifying and working with partners

SMETE Open Federation

Universities

Access Excellence @ the National Health Museum (www.accessexcellence.org)

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

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

Biology Education Online (www.accessexcellence.org/LC/BEOn/)

BioQUEST Curriculum Consortium (www.bioquest.org)

Biosci Ed Net (www.benproject.org)

CITIDEL (www.citidel.org)

Coalition for Networked Information (www.cni.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 Project (scout.cs.wisc.edu)

Learning Matrix (thelearningmatrix.enc.org)

LearningOnline Network with CAPA (www.lon-capa.org)

Mathematical Association of America (www.maa.org)

Mathematical Sciences Digital Library (www.mathdl.org)

Math Forum (www.mathforum.org)

MERIT Network (www.merit.edu)

Michigan Teacher Network (mtn.merit.edu)

MERLOT (www.merlot.org)

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

NEEDS—National Engineering Education Delivery System* (www.needs.org)

Project Kaleidoscope (www.pkal.org)

SRI International, Center for Technology in Learning (www.cilt.org & www.escot.org)

TeacherLIB (www.teacherlib.org)

California State University (www.calstate.edu)

California State University, Sacramento (www.csus.edu)

Eastern Michigan University (www.emich.edu)

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

University of California at Berkeley (www.berkeley.edu)

University of California Office of the President, Academic Initiatives (www.ucop.edu/acadinit/)

University of Florida (www.ufl.edu)

University of Maryland, Baltimore County (www.umbc.edu)

Utah State University (www.usu.edu)

Virginia Tech (www.vt.edu)

- **The difference is *learning*, not just bibliographic information retrieval**
 - Teaching and learning require something more
- **Guided by *user needs* and philosophy of education that is constructivist**
- **Link content to community and services**
- **Build integrative tools and incorporate “best of breed” tools from partners**

Strengths of Partners



- **Partners with existing collections each have a decade of experience providing digital SMETE resources to their target audiences and disciplines**
 - ENC, NEEDS, Math Forum, BioQUEST
- **Most partners each have more than ten years of experience as organizations promoting SMETE reform**
 - AAAS, Project Kaleidoscope, NACME, Mathematical Association of America, SRI International

NEEDS—A Digital Library for Engineering Education



- **A Collection Partner of the SMETE Open Federation**
 - In operation for over a decade
- **Provided proving ground and technology base for SMETE.ORG**
 - Lead to understanding of base services (search, catalog, download, results display)
 - Set stage for “community features” such as comments, personalization, recommender systems
 - Lead to understanding the need of the community and the similarities between disciplinary communities in science, technology, engineering and mathematics

- **A Collection Partner in the SMETE Open Federation**
- **Disciplinary Communities (~13)**
 - Engineering Community Under Development
 - See Joe Tront (jgtront@vt.edu)
- **Strong Peer Review Processes**
- **Ties to Institutions and University Systems**

Strengths of Partners (cont.)



- **Collections and service providers range from well established collections to incipient collections**
- **Organizations serve full spectrum of audiences**
 - K–12, pre-College, community colleges, liberal arts colleges and universities, public and private research universities, and professional societies
 - Extended affiliations include professional development organizations

Strengths of Partners (cont.)



- **Collections Cover Range of STE&M Disciplines**
 - Biology
 - Computer Science
 - Engineering
 - General Sciences
 - Geo/Earth-Sciences
 - Mathematics
 - Technology Education
 - Plus much more...

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- **Interoperability of collections on a number of different levels**
 - Federated search
 - Shared user profiles to enable personalization services
 - **Support for community building**
 - Recommender systems
 - Outreach and education efforts

- **What do we mean by interoperability?**
 - We want to provide “seamless access to collections and services”
 - Existing and new collections
 - Existing and new services
 - We recognize there are different types of agreements necessary to provide “seamless access”
 - Social
 - Technical

Portal at www.smete.org



The screenshot shows a Netscape browser window with the title "Netscape: www.smete.org: A National SMETE Digital Library". The address bar shows "http://beta.smete.org/". The website features a search bar with the text "Search for Learning Resource:" and a "GO" button. Below the search bar is a navigation menu with links: MY PORTFOLIO, COMMUNITY, ABOUT SMETE, ADMINISTRATION, and HELP. The main content area is divided into three columns. The left column is orange and contains "SEARCH TOOLS" with sections for "FIND", "RESEARCH", and "BROWSE", and a link to "Join the SMETE.ORG Community". The middle column is white and contains a "Welcome to the SMETE Digital Library." message, a "News" section about the Journal of Online Mathematics and its Applications (JOMA), and a "Community" section about the National SMETE Digital Library Community Center. The right column is orange and contains the navigation menu. The browser's status bar at the bottom shows various icons.

SEARCH TOOLS

FIND: Know what you want? Find your learning resource quickly.

RESEARCH: Not sure what you want? Start your search here.

BROWSE: Just looking? Browse through our extensive collection.

Come and **Join the SMETE.ORG Community**

Welcome to the SMETE Digital Library.
The most comprehensive collection of science, math, engineering and technology education content and services.

News
The [Mathematical Association of America](#), a SMETE.ORG Alliance Partner, recently launched the premier issue of the [Journal of Online Mathematics and its Applications](#) (JOMA). JOMA takes advantage of the Web to make modern tools, curricula, and active learning environments more accessible to students and teachers everywhere. Visit [JOMA](#) and find out more about the [MathDL](#) project, too.

Community
[The National SMETE Digital Library Community Center](#) formed to gather and share information from all concerning the present and future of SMETE digital libraries, tools and services, lessons learned, standards used, user studies and publications. Come share your ideas in our [forum](#).

Contact Info



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