



The Gender & Science Digital Library

Education Development Center, Inc.

Presented by
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Today's Presentation

- The Gender and Science Digital Library (GSDL)
- Project Director of the GSDL, a project from
Gender & Diversities Institute @ Education Development Center, Inc.
- To be launched in Fall 2002
- Funded by the National Science Foundation
- Part of its National Science, Technology, Engineering,
Mathematics Digital Library (NSDL) Program



Agenda

- What is a Digital Library (DL)?
- The NSDL: NSF's vision & direction
- The GSDL: A new & unique vision
- Building the GSDL
 - Process, content, & relevance
- Future Development
- Questions & Comments - Your feedback!



Education Development Center

- History of EDC, Inc. (1958)
 - Newton, MA, 600 employees, 300+ projects, 20 countries
 - International research and development organization
 - Mission
 - To improve quality, effectiveness, and equity of education; in turn improve quality of life globally for people of all ages
- Projects span preschool to professional education
- Funding
 - States local, state, and federal agencies
 - International agencies and foreign governments
 - Private foundations, endowments, universities, corporations



Gender & Diversities Institute

- Mission

Improving the well-being of individuals and communities, especially women and girls, through innovative, gender-healthy approaches to life-long learning

- Objectives

- Developing gender-healthy education and schools
- Leveraging technology in the pursuit of equitable education
- Improving economic self-sufficiency of both women and men

- <http://www.edc.org/GDI>



What is a Digital Library?

“An informal definition of a digital library is a managed collection of information, with associated services, where the information is stored in digital formats and is accessible over a network. A crucial part of this definition is that the information is managed. A stream of data sent to earth from a satellite is not a library. The same data, when organized systematically, becomes a digital library collection. ”

William Arms, Cornell University



What is a Digital Library?

“A managed environment of multimedia materials in digital form, designed for the benefit of its user population, structured to facilitate access to its contents, and equipped with aids to navigate the global network ... with users and holdings totally distributed, but managed as a coherent whole.”

Mel Collier, International Symposium on Research,
Development, and Practice in Digital Libraries



DL vs. Traditional Library

- Traditional libraries for the digital age
- Instant access to digital information
- Automated processes for organization, searching, reference desk services
- High level of information granularity
- Access control, security, copyright issues
- Fragility of electronic items – information persistence, h/w and s/w obsolescence



Digital Library vs. Search Engine

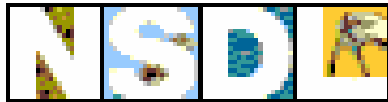
- Highly refined and focused collection of items
- Increased accuracy of ‘hits’
- Cataloging/management of items
- High level of granularity
- Time-saving and effective



The NSDL



From the National Science Foundation



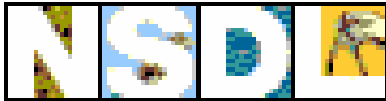
The National Science, Technology,
Engineering & Mathematics Education
Digital Library (NSDL)



The NSDL



Coming soon to a computer near you!



Targeted launch in the fall of 2002



The NSDL

- Began in 1996 as study on use of IT in higher education
- Instructional technology vs. learning technology
- Challenge – how to use technology to:
 - Enhance student-instructor communication, interaction, and collaboration
 - Improve the practice of teaching
 - Improve the experience of learning



The NSDL

- Vast educational portal comprised of digital libraries
- Mechanism for disseminating "best practices"
- Transparently engage student with material
- Enable immersion in the learning process



A Broad Vision

“This program aims to establish a national digital library that will constitute an online network of learning environments and resources for science, technology, engineering, and mathematics (STEM) education at all levels.”

National Science Foundation



A Broad Vision

- A STEM education portal
- K-12, undergraduate, graduate, life-long learning
- Formal and informal learning environments
- High quality materials supporting the best models of STEM learning and teaching
- Seamless access to a wealth of interactive materials
- Building a global community of learners



Integrated Resources & Services

- 40 individual collections
- 100+ other funded projects
- FY 2002 - \$25 million
- Criteria for inclusion in the NSDL
 - STEM Content
 - Metadata standards (Dublin Core)
 - Interoperability
 - Sustainability
 - Non-digitization projects (“born digital” resources)



NSDL Management

- Policy Committee
- NSDL working groups & standing committees
 - Core Integration
 - Content
 - Services
 - IP/Sustainability
 - Evaluation



Addressing Varied Interests

- Faculty and professionals
 - DLNET: Digital Library Network for Engineering and Technology
 - ALSOS Digital Library



Addressing Varied Interests

- Graduate and Undergraduate
 - MERLOT (California State University)
 - CITADEL (Virginia Polytechnic Institute)
 - MATHDL (Mathematical Assoc. of America)
 - Learning Matrix (Ohio State University)



Addressing Varied Interests

- K to 12
 - MathForum (Drexel University)
 - MERIT (University of Michigan)
 - TeacherLIB (Eastern Michigan University)



Addressing Varied Interests

- K to 16 and the Life Span...

The Gender & Science Digital Library



Addressing Challenges

- Gender issues often ignored or marginalized
- Gender issues seen as “women-only”
- Girls and women still avoid the sciences
- Boys and men often do not see women as active collaborators in STEM
- K-12 teachers do not know how to address the issues
- Undergraduate and graduate courses do not have resources



Moving to a New Vision

- GSDL is multi-disciplinary
- GSDL is global
- GSDL links gender, race, ethnicity, disability concerns
- GSDL is a value-add as the lens to other collections
- GSDL integrates education with careers
- GSDL supports gender-healthy education and work
- GSDL is a community building system



The GSDL

- Building a new kind of collection for the NSDL
- Role of gender and diversity in teaching/learning
- K-12 & Higher Education
- Teacher preparation programs
- Women's studies programs
- Formal and informal learning environments
- Researchers, experts, families, communities



Building the GSDL

- Focus groups, feedback and research
- Site design and development
- Content - selection criteria, sources & cataloging
- Review process & guidelines
- Intellectual property rights
- Sustainability
- Evaluation



Focus Groups Questions

- Role of gender equity in a STEM digital library
- Content needs
 - Types and format of materials
 - Frame search questions and queries
- Comparisons to usage of traditional libraries
- Gaps in available information
- Design needs and issues



Site Design

- **Accessibility and diversity considerations**
Users in all their diversities including - gender, race, ethnicity, language, geographic location, learning style and disabilities
- **Universal design**
Ensuring that as many people as possible can use whatever information technology is being made available on the Internet
- **Human computer interaction (HCI)**
 - Design, evaluation and implementation of interactive computing systems for human use
 - Computer science, psychology, sociology and anthropology



Content

- Content
 - Selection criteria, material sources and metadata
- Some of what the GSDL will contain
 - Curriculum, lesson plans and classroom activities
 - Teacher guides for equitable science instruction
 - Professional development and pre-service resources
 - Global research on gender issues in science
 - Evaluation and assessment tools
 - Software applets, video and audio segments
 - ...and much more!



Review Process

- Review criteria
 - Science accuracy
 - Gender equity
 - Instructional design
 - Media design
- Reviewer credentials
 - K-12 educators
 - Higher Ed. faculty
 - Gender equity experts and researchers
 - STEM professionals



Intellectual Property Rights

- NSDL policy in development
- Will need to address:
 - Technical and policy issues
 - Rights management of content
 - Authenticating documents
 - Regulating access to, and licensing of, materials
 - Compensating authors and publishers for use of digital resources
 - Who should provide this compensation – user, content provider?



Sustainability

- Beyond NSF funding
- Services:
 - On-line courses
 - Career/professional development pipeline
 - Selected subscription fees
- Investors forum – working with stakeholders:
 - For-profit corporations
 - Universities & community colleges
 - Publishing companies
 - Authors



Evaluation

- Formative and summative evaluation
- Outcomes based
- Sampling of evaluation criteria
 - Development process
 - Site usage and statistics
 - Depth and usability of content
 - Ease of use
 - Satisfaction surveys (impact on teaching and learning)



How can the GSDL help you?

- Assist in the promotion and implementation of gender-fair and gender-inclusive science education
 - Comprehensive source of exemplary gender and science resources
 - New knowledge creation
 - Professional development
 - Relevant research from around the world
 - Connect with other community members



Future Development

- Content expansion
 - Technology, engineering & mathematics
 - Global focus & outreach
- New services that foster community building and new knowledge creation
 - On-line discussion forums
 - Annotations and user comments
 - Recommender systems
- Full-scale sustainability



Your Feedback

- Applicability & impact
 - How would you use the GSDL?
- Additions or enhancements
 - Content
 - Services
 - Design
- Participation in the project



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Or **<http://www.gsdl.org>**