Educational Impact and Evaluation

http://eduimpact.comm.nsdl.org/

Committee Charter

Ensure that participatory and stakeholder evaluation principles are integrated into the design, development and implementation of the NSDL.

2003 Focus on 4 Tasks

- Collections Assessment Working Group
- first NSDL Progress Report
- Workshop on Developing a Strategy for Evaluating the Educational Impact of NSDL
- Annual PI Survey
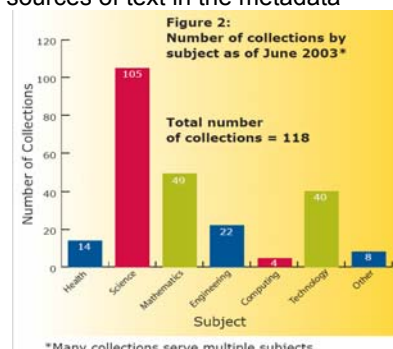
Collections Assessment Working Group

Members Judy Ridgway (chair), Mimi Recker, Lillian Cassel, Steven Bethard, Anita Coleman, Casey Jones

Objective Develop a methodology by which the breadth and depth of the NSDL metadata repository (MR) can be assessed. Specifically, to examine the number of items and collections in the MR by *subject, audience, resource type, format* in order to:

- – Trace growth
- – Perform Gap analysis
- – Develop recommendations that can inform collections development priorities and practices

Activities

1) **Controlled Vocabularies** for evaluation purposes were developed in each of the 4 areas.

2) Three **Possible Implementation Approaches** were Examined

- – *Cross-walking vocabularies* [Issues with scalability and maintenance]
- – *Lexical analyses* [Uses word level information (synonyms, hypernyms) in specific fields of the metadata record to automatically map records into categories]
- – *Machine Learning* [Supervised and unsupervised classifiers – uses multiple sources of text in the metadata record, including the brief description, to do the mapping]

3) Experiment 1: **Lexical Analyses**

- – Performed a preliminary analysis of collection-level metadata

4) Experiment 2: **Machine Learning**

- – Develop training data - 240 randomly selected NSDL metadata records were indexed by professional cataloguers
- – Apply trained classifier to item-level metadata records and evaluate results (in progress)

Figure 2: Number of collections by subject as of June 2003*

Total number of collections = 118

*Many collections serve multiple subjects.

Next Steps

Work with the Content Standing Committee to formulate policy and practice recommendations for collections growth and accessioning.

Work with CI to integrate collections assessment tools and work practices into their activities.

Annual Report

Evaluation committee activities contributed to four major areas

- *Assessing Community Needs* - 2003 PI Survey
- *Developing Collections* - activities of Collections Assessment Working Group
- *Measuring Library Use* section - 2002 EIESC Pilot Study and CI web metrics
- *Providing Leadership in Technology-Based Education* - 2003 PI Survey and other literature analyses

We recommend that the EIESC continue to participate in the production of future Progress Reports:

- Reporting needs can help to organize and focus ongoing committee activities
- The collaborative production process offers a positive example illustrating how a standing committee can work with CI on a larger community project

EIESC *Workshop on Developing a Strategy for Evaluating the Educational Impact of NSDL*

http://eduimpact.comm.nsdl.org/evalworkshop/

Objective
- Articulate a strategy that ensures that future design, development, and evaluation activities can effectively contribute to the larger NSDL educational mission.

Community Process
- Articulating the Need for a Strategy (December 2002)
- Pre-Workshop Planning and Setting the Stage (January – September 2003)
- Strategy Workshop (October 2 and 3 2003)
- Post-Workshop Synthesis, Community Feedback, Document Development (beginning October 2003)

Outcomes
The Annotated Bibliography – details related empirical and theoretical research
The User-Friendly Guide to Digital Library Evaluation – highlights research methodologies and techniques
The Evaluation Strategy document

Strategy Workshop
Attendees - NSF, NSDL projects, and invited members of the research community

During Workshop
- Brainstorm critical evaluation questions for six NSDL stakeholder constituencies:
    - K-12 students
    - K-12 teachers
    - College students (undergraduate & graduate)
    - College faculty
    - National & institutional
- Created rich descriptions of 9 of the most important evaluation questions and made recommendations for action at three levels
    - NSDL: Projects, CI, Community Building/Governance
    - NSF
    - Broader education and educational technology research community

Workshop Outcomes
- Premature to look for educational impact, particularly on student learning, for NSDL as a holistic entity
- Strategy should acknowledge that NSDL is inherently developmental, i.e., continually being designed and enhanced, and projects are at different stages of maturity
- Important to examine educational impact from two perspectives - Actual NSDL & Intended NSDL

Actual NSDL - Recommendations
- Engage in documentation activities to understand the current state of NSDL
- Collect baseline data, such as (1) the number of resources in NSDL aligned with educational standards, (2) who is accessing NSDL in terms of geography, audience, and diversity, (3) how many faculty use NSDL in course planning via syllabi analysis, etc.
- Use case studies to contribute to the overall documentation of NSDL and to examine classroom use of particular NSDL services and collections
- Develop shared methodologies and reporting instruments to facilitate developing cases
- Develop the organizational capacity to support and coordinate the distributed case study efforts

Intended NSDL - Recommendations
- NSDL leadership should develop an understanding of the *value* of 'intended NSDL' and the NSDL program to key stakeholders (NSF & Congress)
- NSDL program should continue to nurture and promote a strong research component on the possible roles of digital libraries in educational practice
- NSDL program solicitation and reviewing process should encourage projects to articulate the educational rationale for their activities
- Future projects are encouraged to consider how library infrastructure can be instrumented and leveraged to support new models of research in education and educational technology

EIESC **2003 PI Survey**

Timeline of the Evaluation Effort

- Dec. 2001: Evaluation Working Group Meeting articulated four questions to be addressed in a pilot study
- February 2002: Plan developed to answer the four questions. An online survey would be used to identify: *How are the distributed library building and community governance processes working?*
- Feb.-July 2002: Survey developed and delivered.
- Dec. 2002: EIESC meeting - Final 2002 survey data presented.
  Committee Decision: NSDL-wide implementation of the survey should be undertaken.
- Apr.-June 2003: Survey revised, tested for validity and usability
- June-July 2003: Survey delivered
- Oct. 2003: Survey analyzed and presented at NSDL Annual Meeting

NSDL program track	%	# of responses
Collections	60%	27
Core Integration	4%	2
Services	25%	11
Targeted Research	9%	4
Not funded through NSDL program	2%	1

Respondents by NSDL program funding track

Survey Details

Primary Question*: How are the distributed library building and community governance processes working?*

- Developed measures in four areas to answer this question:
  - NSDL communications infrastructure
  - Extent and success of NSDL projects' collaboration
  - Projects' participation level in NSDL organizational structures
  - Information needs and motivations factors for NSDL community
- Questions sought to identify:
  - Levels of use, effectiveness, and extent of participation
  - Information needs and motivations
  - Barriers to use, effectiveness, participation and suggestions for improvement
- Types of scales: Likert, multiple choice, open-ended
- Primary audience: NSDL PIs (all project members encouraged to contribute to survey completion)
- Distribution: survey available online four weeks during June-July 2003; notification and reminders sent to All-Projects and PI listservs
- Verification: one survey per project was included in final analysis; used NSF award number to verify results, then disassociated the award number from further analysis

	Yes	No	Don't Know
Collaborated with other NSDL projects since January 2003.	36 80%	7 16%	2 4%
Learned something from a collaborative partner that was incorporated into project design & use	26 58%	15 33%	4 9%

Extent of project collaboration across NSDL

Reasons for participating	%
Because I want to help establish a National Science Digital Library.	85%
So the results of my project (knowledge or products) can be used in NSDL.	71%
Because my project is funded by NSDL.	69%
To exchange knowledge with other projects.	67%

(Scores are combined percentage of moderately high and high scores)

Results & Recommendations

Individual projects are not aware of whose expectations they should meet, what level of participation is expected or what the outcomes of participation should be when using the NSDL communications infrastructure, pursing collaborative opportunities and participating in NSDL organizational structures.

Recommendations
- Establish a process for defining and communicating shared priorities and expectations.
- Provide targeted "entry points" for project or individual participation.

Respondents identified what type of support they would like from the Core Integration; however, this could be a moving target because projects are at different stages of development.

Recommendations
- Identify specifically what projects need in terms of technical support.
- Define and communicate what levels of support can be realistically expected from CI.
- Leverage the expertise of NSDL projects.

Respondents indicated that they were unsure about how collaboration was being defined and what were the expected results of collaborative efforts.

Recommendation
- Establish a process to define and measure collaboration in a distributed environment.

Questions
- How much emphasis should be placed on collaborative achievements as success factors?
- How can NSDL organizational structures provide project connections at a finer-grained level?

The current communications infrastructure is not meeting projects' information needs and the multitude of communications channels present too many choices when deciding what to read regularly and where to look for information to support project work.

Recommendation
- Establish one resource that is continually maintained and updated with basic technical information and other information relevant to project development.