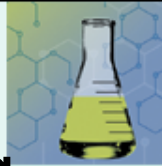


THE NATIONAL SCIENCE DIGITAL LIBRARY

Collections Assessment: What's In NSDL???

2010 Annual Meeting



Collections Assessment: 2009 Results

- Information on library size, # of collections
- Showed impact of deaccessioning 2 million items in 4 months on search results:
 - Learning resources doubled.
 - K-12 resources tripled, general & informal doubled and undergrad rose slightly while graduate decreased threefold.
 - Number of inaccessible resources dropped and resources that just go to a metadata record decreased by half.

Guiding Questions for 2010 Assessment

- What is in the NSDL collection? Are there gaps? What is the distribution of resources?
- Which individual collections are providing which metadata information? Does this affect access and use?
- What is the nature of growth of the NSDL collection as a whole and in the individual collections?

NSDL: Supporting Teaching & Learning

- Which collections are ready to embed in learning applications?



Library Scope and Goals

Library scope: support teaching and learning of STEM concepts, and research on STEM learning

Goal: provide access to materials that foster demonstrable educational impact on:

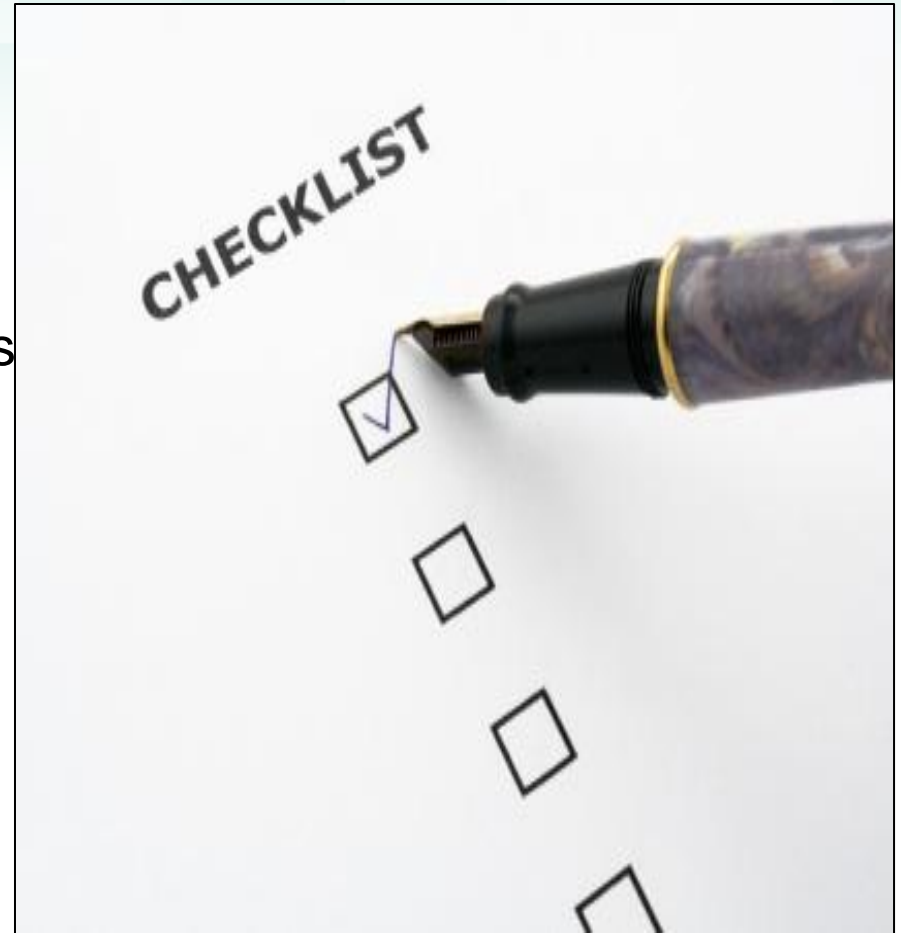
- Learning called for in educational standards and initiatives
- Learning on a topic of societal importance
- Mastering of foundational STEM skills and concepts
- Understanding of linkages and interactions among or within STEM disciplines, or between STEM and other disciplines



Bioethics Classroom Debate
©2010 WGBH Educational Foundation

Presentation Contents

1. NSDL Collection Policy Activity
2. Collections Assessment Process
3. **Result**: Collection Size Snapshots
4. **Result**: Metadata Field Analysis
5. **Result**: NSDL Collections for Learning Applications



NSDL Collection Policy Activity

- **NSDL Collection Policy updated**
- **NSDL Accessioning Board (NAB) established**
- **NSDL Resource Quality Guidelines updated**



NSDL Collection Policy
February 15, 2010

NSDL Collection Policy

- 1.0 Mission of the NSDL
- 2.0 Communities Served
- 3.0 Policy Coverage
- 4.0 Collection Scope
- 5.0 Selection
- 6.0 Accessioning
- 7.0 Deaccessioning
- 8.0 Responsibilities

Note: 2009 completed de-accessioning about 2.1 million items (impacts shown at 2009 meeting)

NSDL Resource Quality Guidelines

1. The Resource is scientifically accurate
2. The origin of the resource is attributed
3. The resource is robust, functional and accessible
4. The resource has complete documentation, including:
 - 4.1. Reference documentation,
 - 4.2. Educational documentation,
 - 4.3. Rights and use documentation,
 - 4.4. Technical documentation,
 - 4.5. Data documentation
 - 4.6 Model and simulation documentation.
5. The resource is pedagogically effective
6. The resource is easy to use for educators and learners
7. The resource is free of distracting or off-topic advertising



NSDL Resource Quality Guidelines
February 15, 2010

NSDL Resource Quality Guidelines

The National Science Digital Library (NSDL) has resource quality guidelines to assist in resource identification and selection, define a level of expectation/performance, and provide best practices for resource and collection development. The expectation is that NSDL resources, in keeping with their specific natures, will reflect as many as possible of the quality characteristics described below. Contributors to NSDL should consider these guidelines when initially creating resources and accessioning them into digital repositories.

Collections Assessment Process

- Examined individual metadata records to get:
 - Collection size, growth & metadata format
 - Collection use of educational metadata fields
 - Readiness to embed collection in learning app
- Analyzed educational metadata (fields in next slide)
- Combined existing NSDL vocabularies & actual metadata values to create benchmark term set for assessment/categorization.

142,600 Records; 131,342 Resources; 121 Collections

Metadata Info	Maximum # of unique terms analyzed	% of records with any value	% of records categorized & not
Access Rights	36	9.4%	100%
Audience	157	41.3%	99.1% (562 not)
Education Level	82,951	55.7%	99.2% (2,798 not)
Educational Stds	1,078	3.78%	94.5% (304 not)
Language	60	75.4%	99.9% (34 not)
Mime Type	1,345	48.7%	94.0% (4,410 not)
Resource Type	565	78.3%	99.7% (397 not)
Subject	82,722	81.0%	91.9% (10,133 not)
Total	168,915		

Sample of Education Level Terms Analyzed

"11-14 year olds", "12 year old", "14-18 year olds", "18 years and older individuals", "4-6 year olds", "5-8", "6-
class='vocabprefix'>Elementary School :Early Elementary", "Elementary S
"Administrators", "Adult", "Advanced placement Students", "All", "College", "College (13 - 14)", "College (15 -
"Early Elementary", "Education and Training Resources -- Texts, Manuals, Other Media -- Automotive technol
"Elementary / Middle School", "Elementary Education", "Elementary School", "Elementary School :Early Elem
College", "First-Year Undergraduate / General", "Fourth Grade", "Fourth grade", "Fourth-Year College", "Gen
Undergraduate_Freshman Undergraduate_Sophomore Undergraduate_Junior Undergraduate_Senior", "Gra
Undergraduate_Sophomore Undergraduate_Junior Undergraduate_Senior Technical_Education_Lower_Div
Graduate_Professional Elementary_School_Programming Middle_School_Programming High_School_Progr
5-8", "Grades 6-12", "Grades 6-8", "Grades 6-9", "Grades 7 - 9", "Grades 7-10", "Grades 7-12", "Grades 7-9",
"Graduate_Professional", "Grandparents", "Higer Education", "High School", "High School (9-12)", "High Sch
:Graduate/Professional", "Higher Education :Undergraduate (Lower Division)", "Higher Education :Undergrad
"Librarians", "Lifelong learners", "Middle (6-8)", "Middle School", "Middle School (6-8)", "Middle School Progra
Professionals", "Other educational professionals", "P-16 STEM educators", "Parent", "Parent/Guardian", "Par
Development", "Professional Education", "Professional Teaching and Learning Cycle (PTLC)", "Professional
"Secondary School Science", "Secondary School Students", "Secondary School Teachers", "Secondary scho
"Technical Education (Lower Division)", "Technical Education (Upper Division)", "Technical School First Cyc
"Undergraduate (Lower Division)", "Undergraduate (Upper Division)", "Undergraduate Students", "Undergrad
"University Second Cycle", "University instructors", "Upper Elementary", "Upper-Division Undergraduate", "Vo
women", "educator", "educators", "elementary", "elementary education", "gradschool", "graduate education", "

Benchmark Term Set: Audience

- Administrator
- Educator
- General Public
- Learner
- Parent/Guardian
- Professional/ Practitioner
- Researcher

Collections Assessment: 2010 Result Trends

- Period: Oct 1, 2009 to Sept 2010 (unless otherwise noted)
- General results:
 - Educational metadata: 25% of library collections have none but actually even more don't have it
 - Number of items: grew by 10.52% (12,507 items)
 - Number of collections & growth: 6 deaccessioned; 9 new, 66 static, 38 growing, 8 decreasing – 121 active
 - Learning App Ready: several NSDL collections are ready

Collection Contributors:

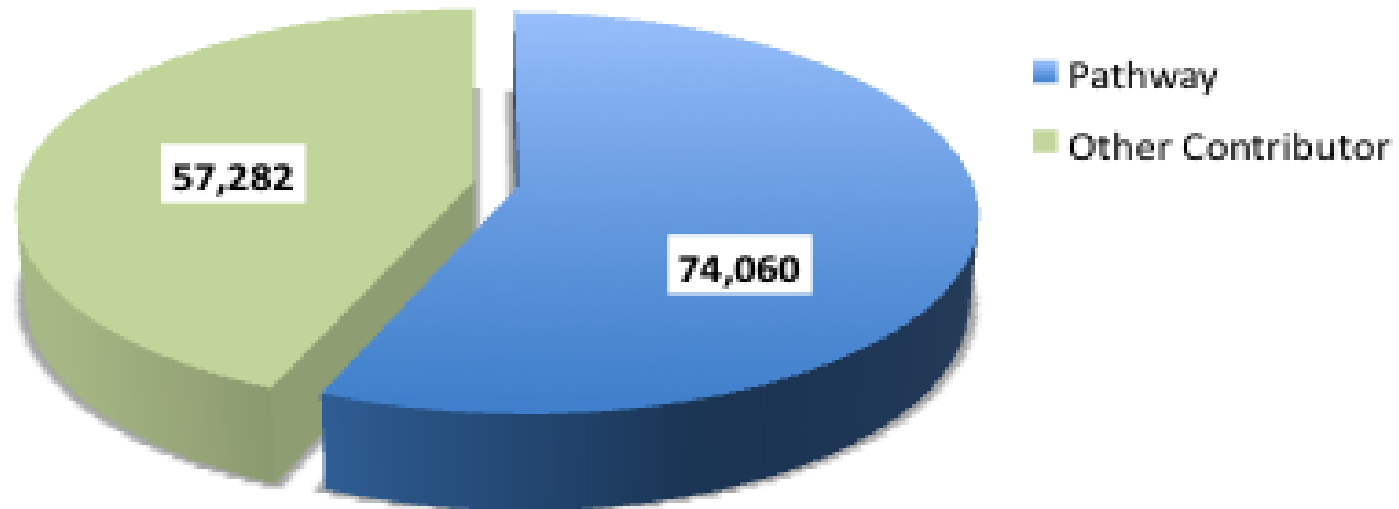
Pathways: 56% of collection

Non-pathways: 44% of collection

Early 2009: 2.75% of library

Late 2009: 56% of library

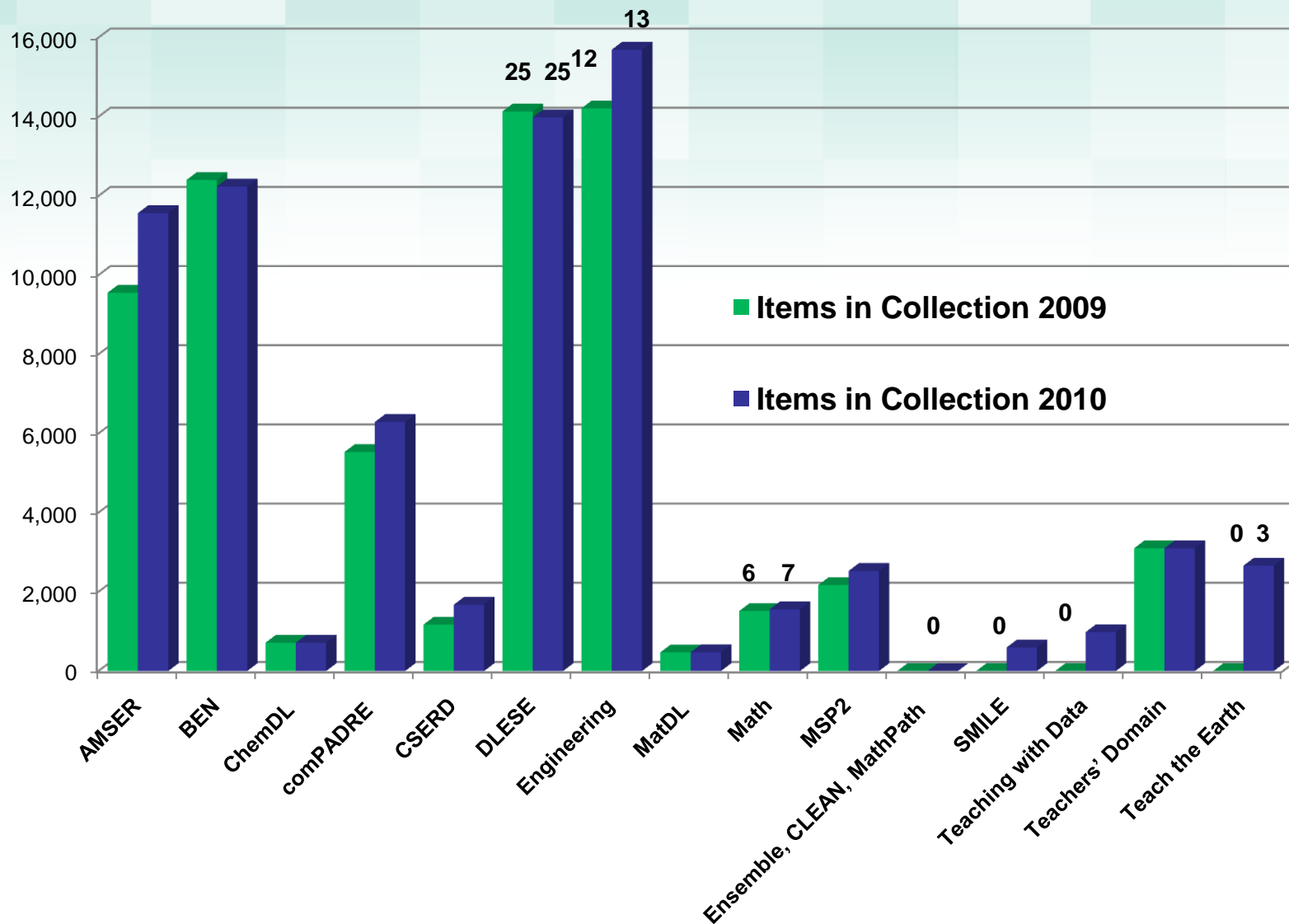
Sept 2010: 56% of library



**131,342 Resources in NSDL;
Grew by 12,507 resources**

September 2010

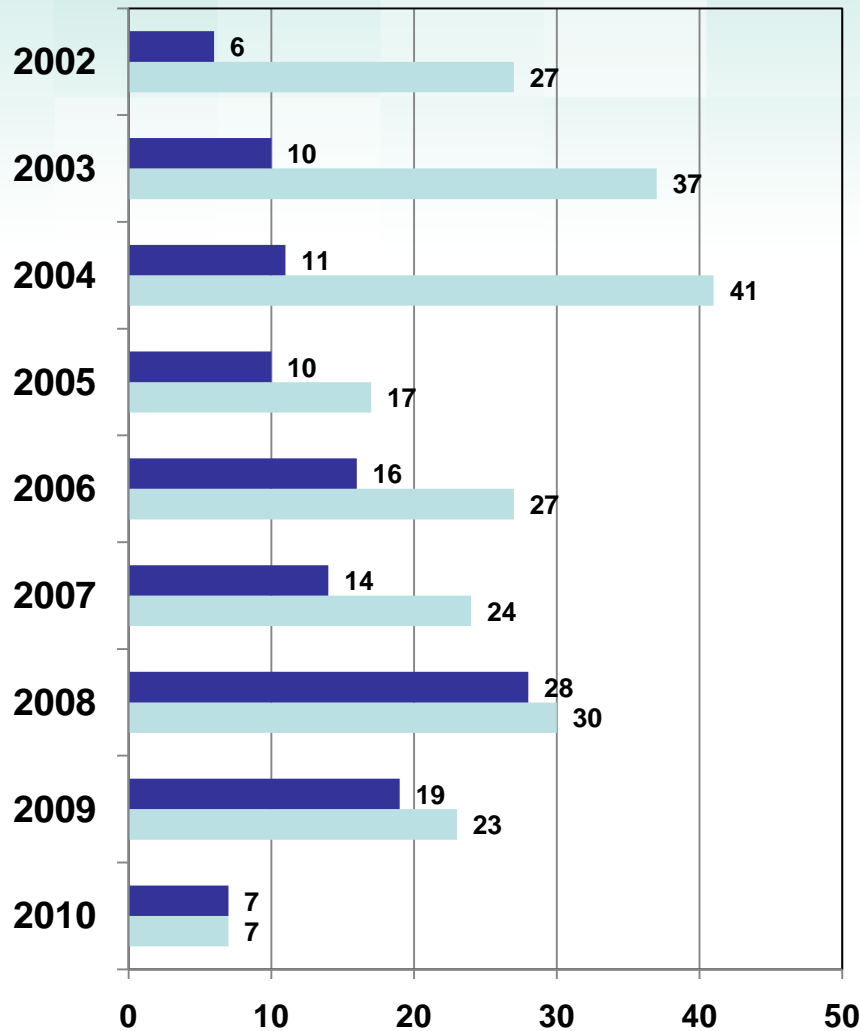
Pathways and Pathway Affiliates – Change from 2009



Library Size

month	# of managed resources	# of collections	# of new collections
Sep 1, 2010	131,342	121	3
May 1, 2010	125,083	117	0
Dec 1, 2009	120,919	114	1
Nov 1, 2009	115,692	113	0
Oct 1, 2009	118,835	114	1
Sep 1, 2009	153,725	131	2
Library	Refocus	Begins With	Deaccessioning
Aug 1, 2009	1,657,659	160	2
July 1, 2009	2,186,256	170	2

Collection Longevity



■ Number of the 121 collections still in NSDL
■ Yearly number of collections accessioned

*NAB Affect on 2010:
8 collections reviewed,
7 accepted*

Collections with the Most Page Views

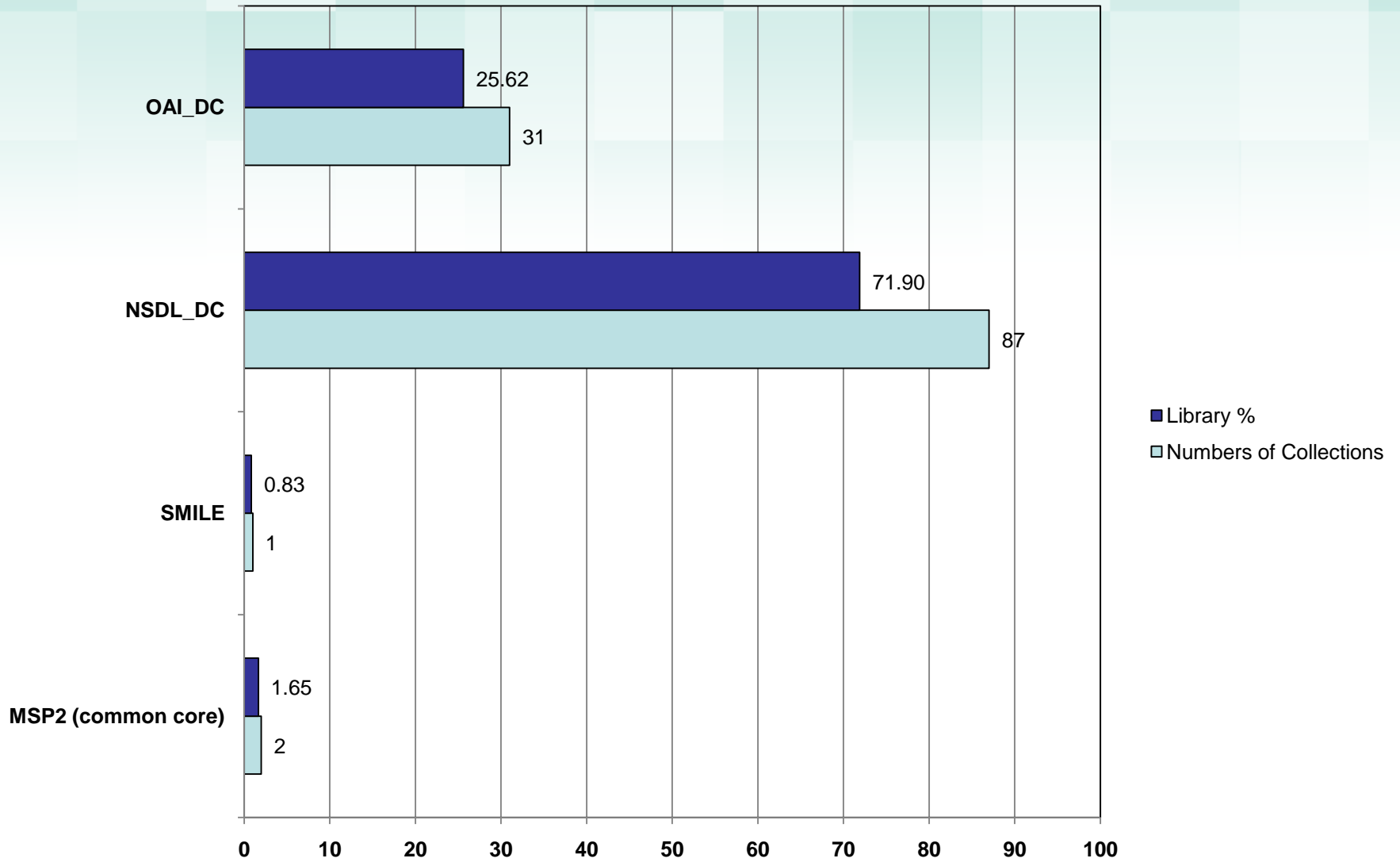
Most page views based on user input at NSDL.org

Nov 1, 2009 to Sep 14, 2010

1. Internet Scout
2. AMSER *Dup resources are tracked to each collection*
3. BEN
4. DLESE Community Collection
5. MSP2

Page views does not always reflect quality or usefulness of resource or metadata.

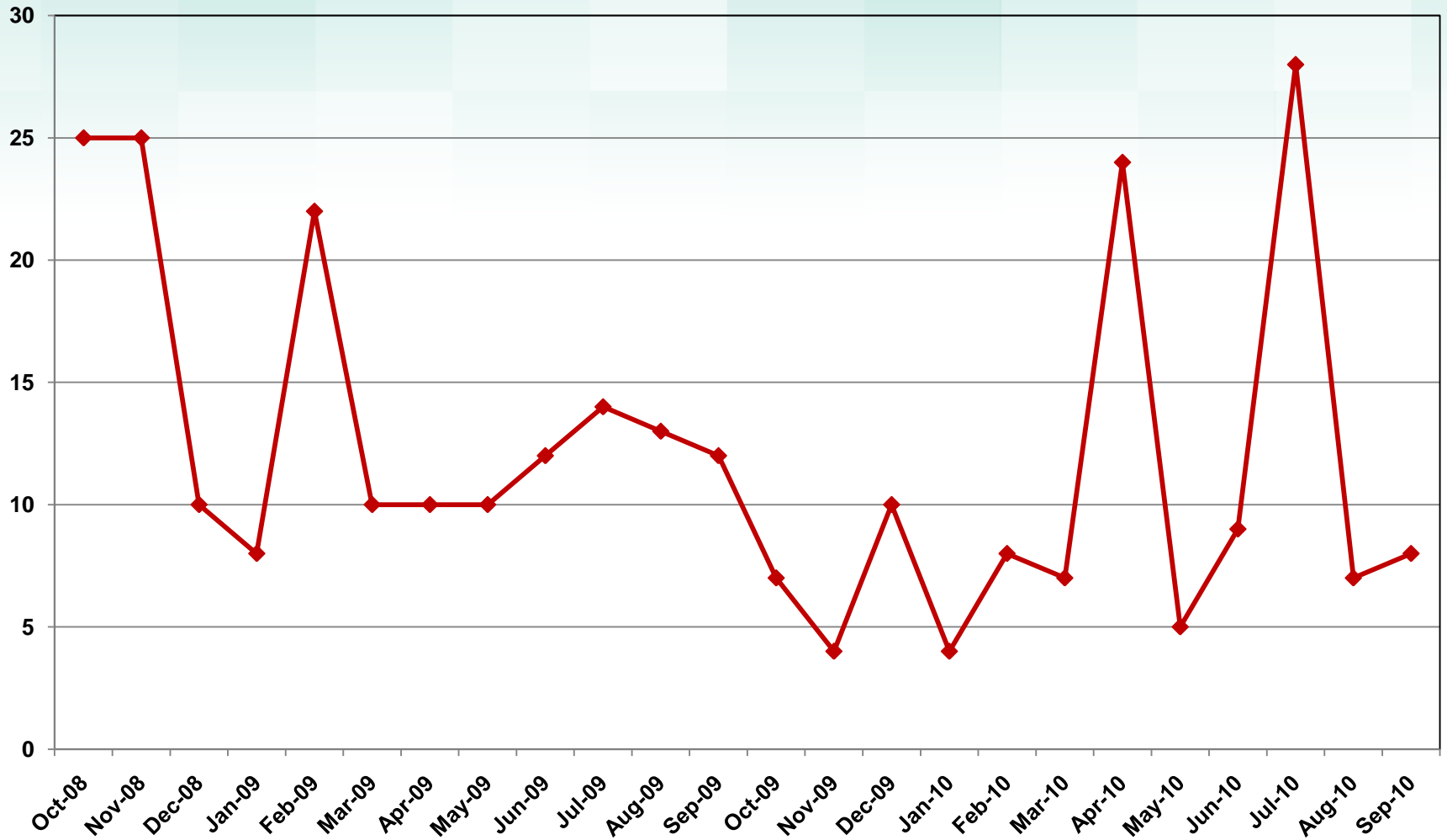
NSDL Native Metadata Format



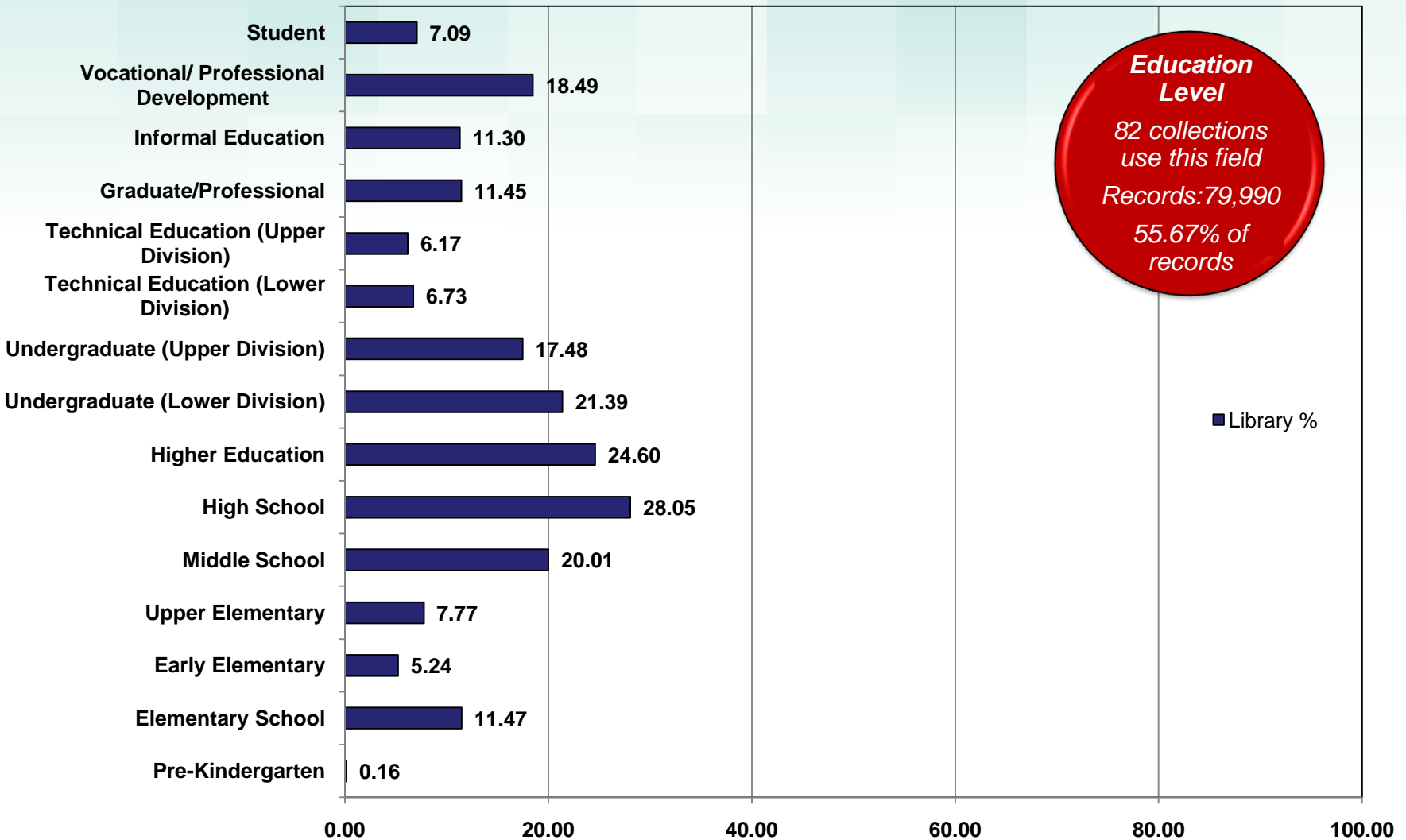
Collection Vitality: URL Link Checking

- **NSDL Collection**
 - ~17% of resources have **LOW** (6.4%) or **UNKNOWN** (10.6%) vitality, i.e. broken URLs, forbidden or other non-access errors
- **Individual Collections (121 collections)**
 - 77 collections have unknown vitality errors
 - 57 collections have low vitality errors
 - Was not able to complete intersection of these
- In Dec 2010, this goes live to collection contacts

Number of Resource Recommendations

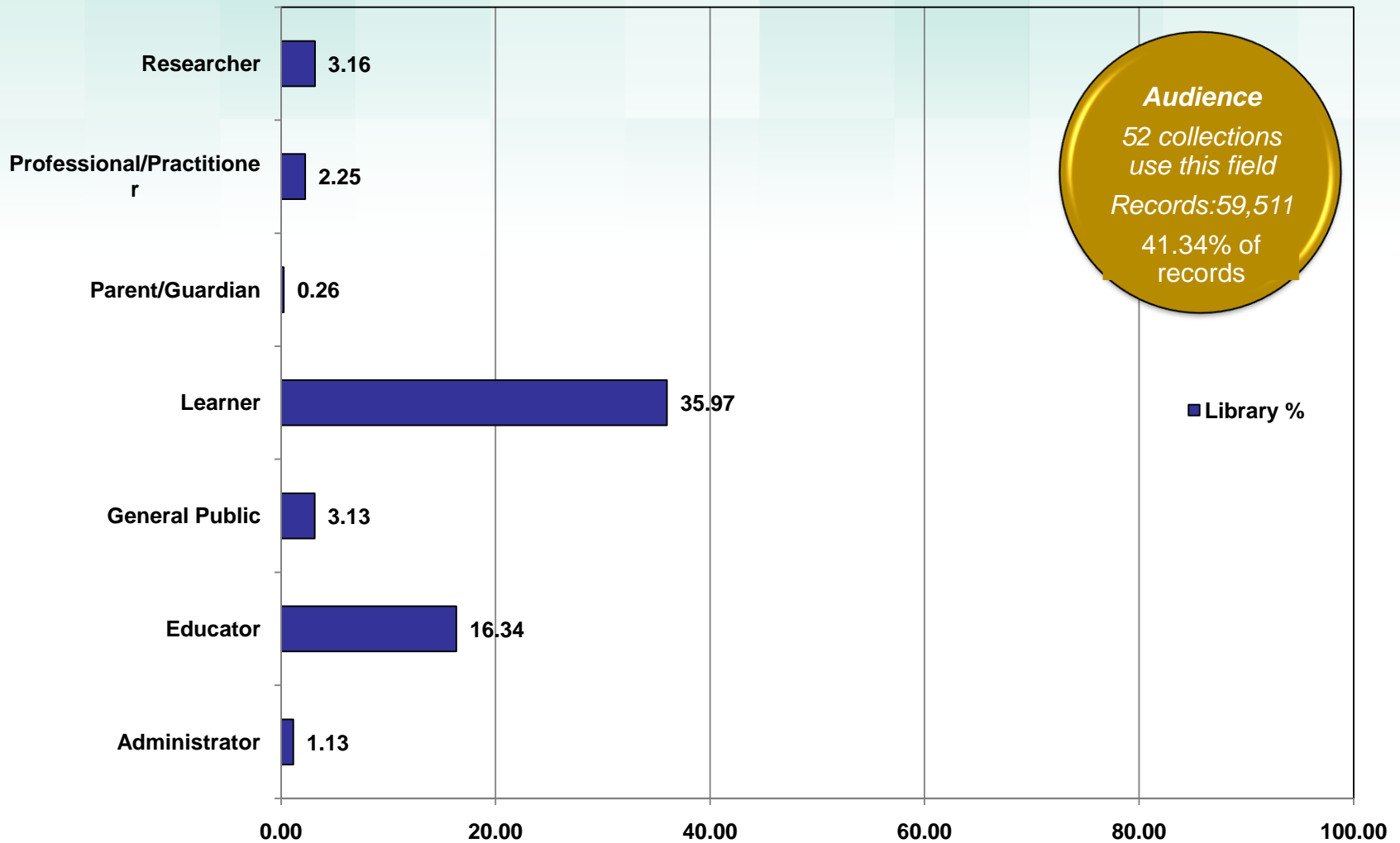


Education Level (55.67% of records have this data)



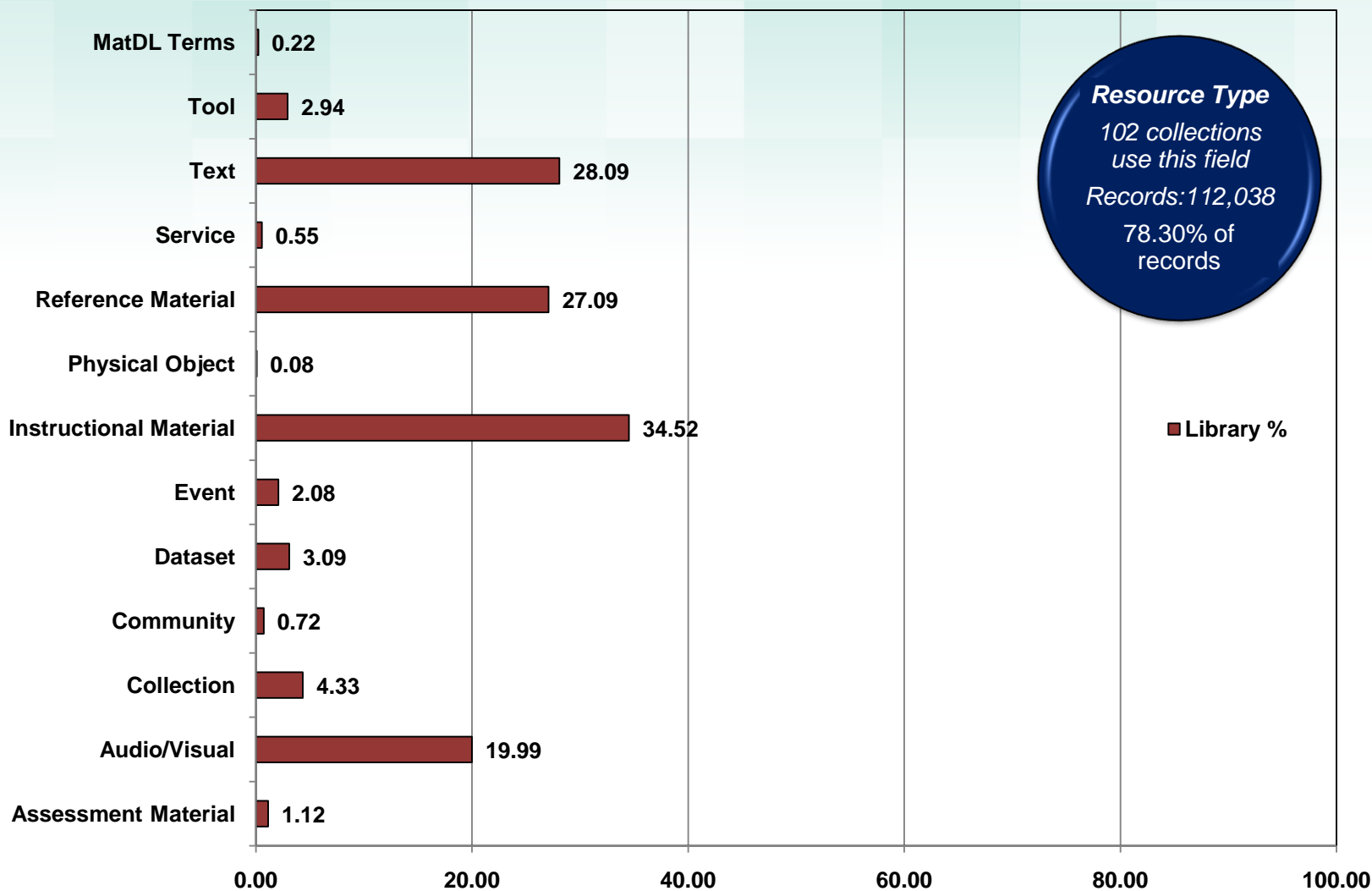
September 2010

Audience: (41.34% of records have this data)



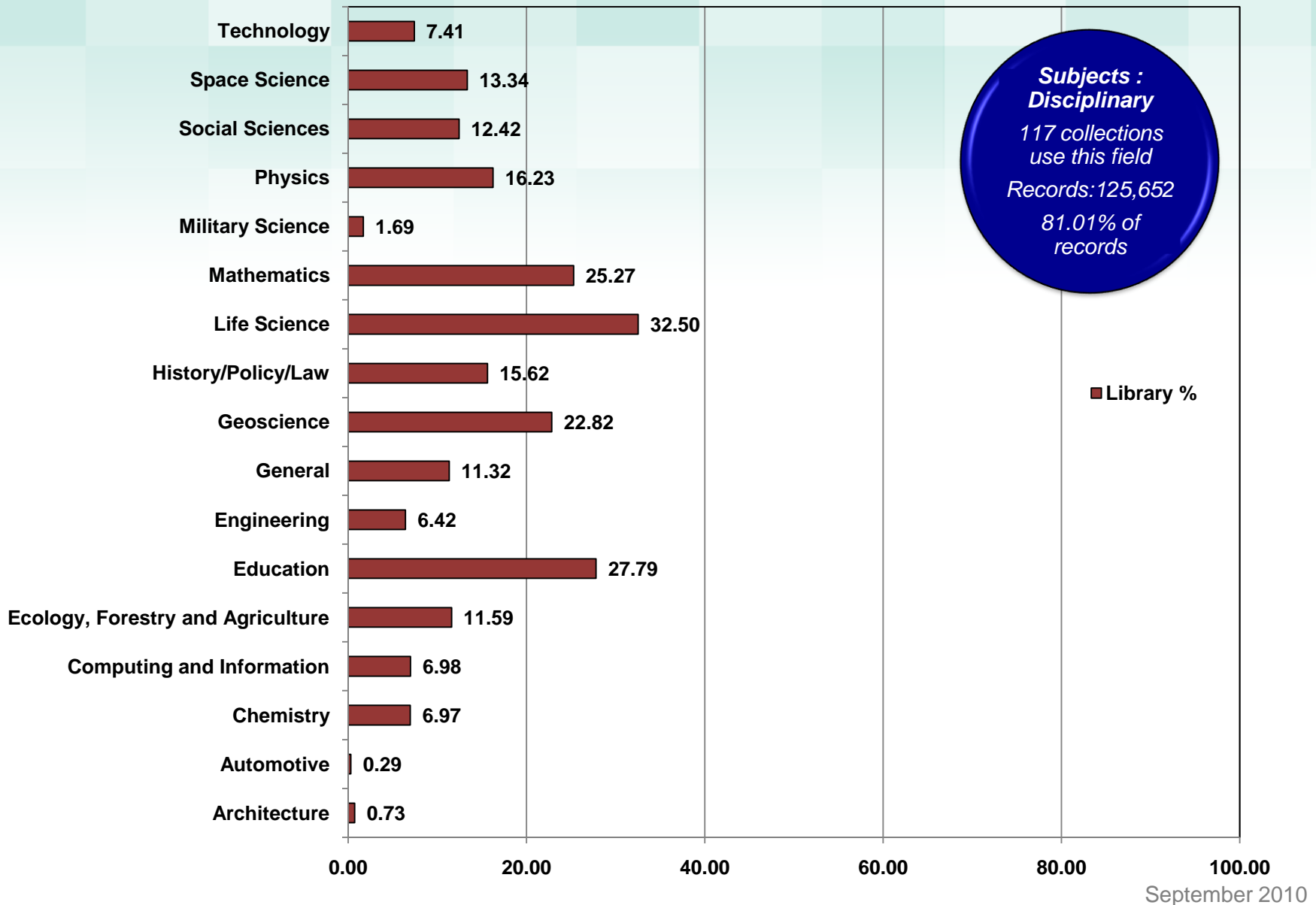
September 2010

Resource Type (78.30% of records have this data)

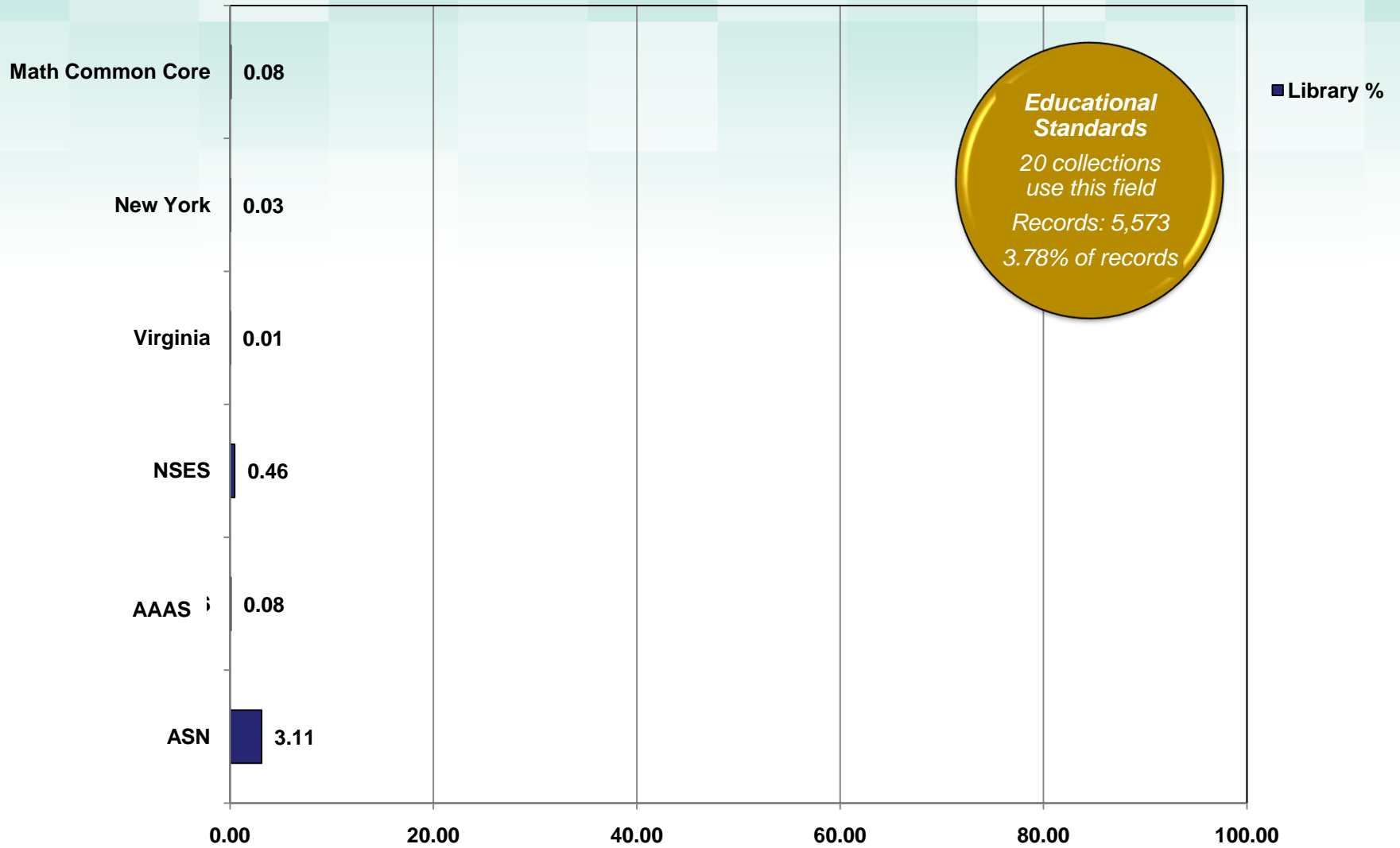


September 2010

Subject (81.01% of records have this data)

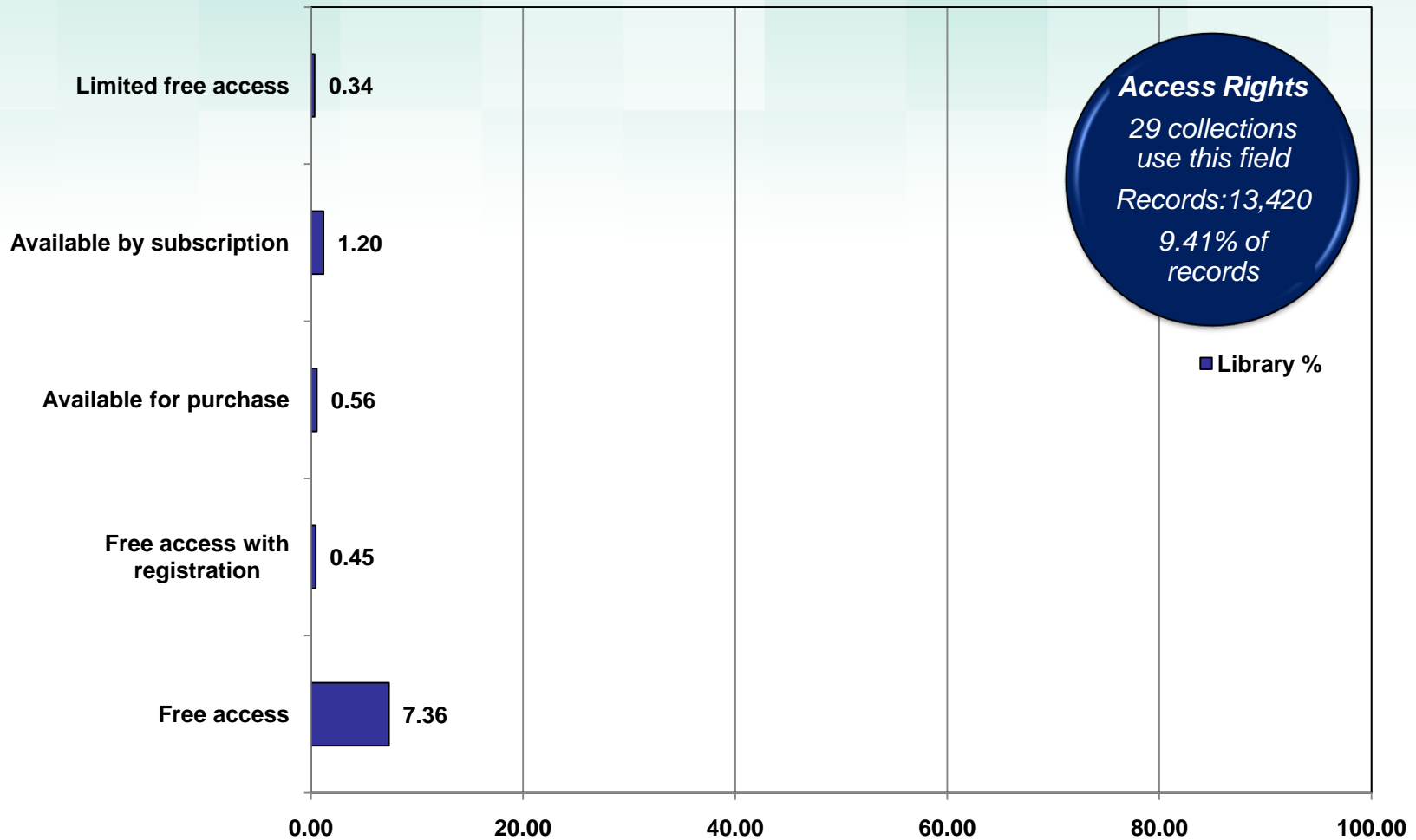


Educational Standards (3.78% of records have this data)



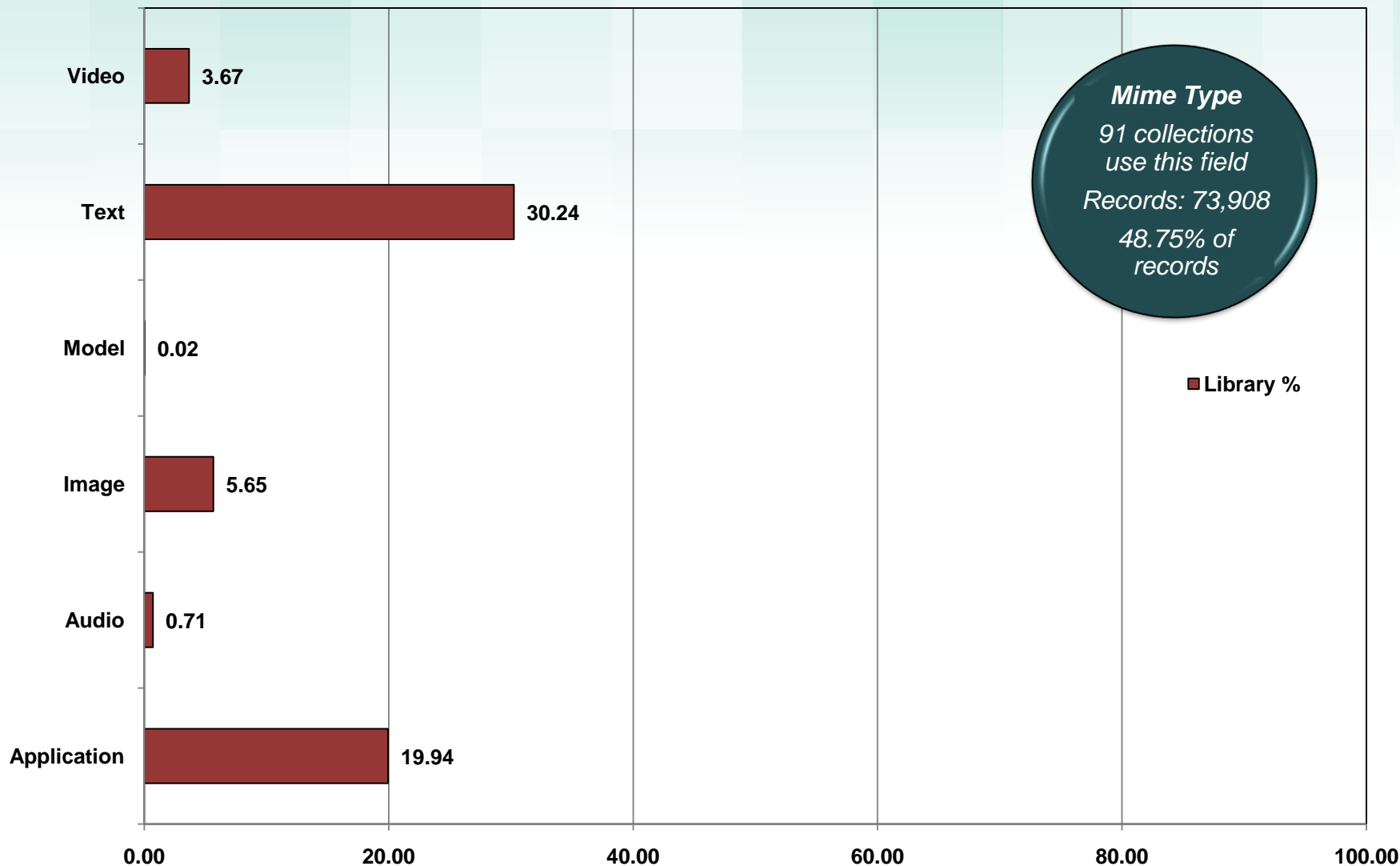
September 2010

Access Rights (9.41% of records have this data)



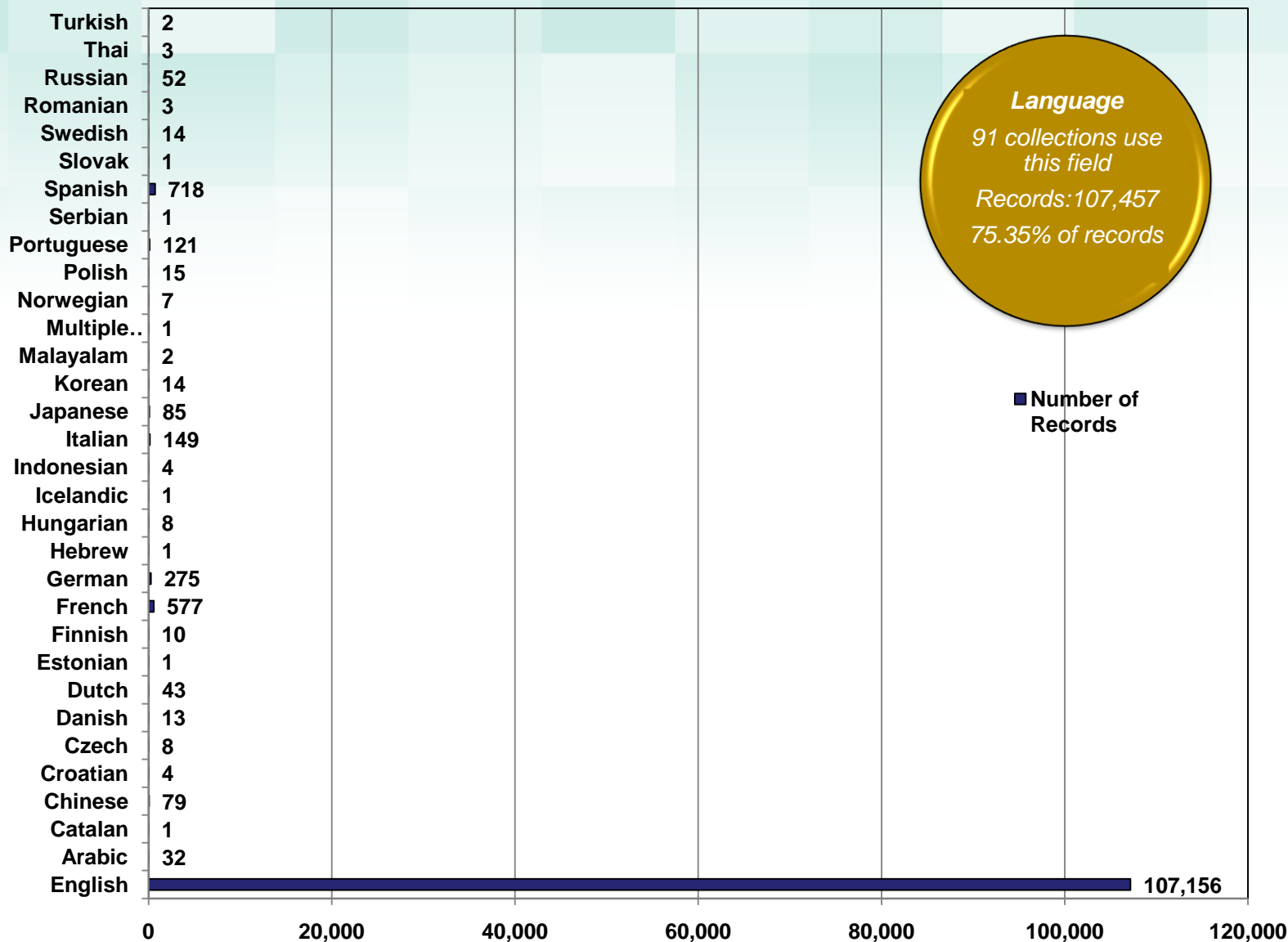
September 2010

Mime Type (48.74% of record have this data)



September 2010

Language (107,423 records have this data)



September 2010

Collection Reports:

See the 8 variables for your own collection.

URL at end of talk

Name	Last modified	Size	Descri
 Parent Directory			-
 ACM Women in Computing.html	15-Sep-2010 14:07	9.5K	
 AMSER Applied Math and Science Education Reposi.>	15-Sep-2010 14:07	9.9K	
 Access Excellence The National Health Museum Th.>	15-Sep-2010 14:07	10K	
 Advances in Engineering Education A Journal of .>	15-Sep-2010 14:07	10K	
 All Collections.html	15-Sep-2010 14:07	11K	
 Alsos Digital Library for Nuclear Issues.html	15-Sep-2010 14:07	9.7K	
 American Museum of Natural History.html	15-Sep-2010 14:07	9.6K	
 Analytical Sciences Digital Library ASDL.html	15-Sep-2010 14:07	9.6K	
 Animal Diversity Web.html	15-Sep-2010 14:07	9.5K	
 Ask A Biologist.html	15-Sep-2010 14:07	9.4K	
 Atmospheric Visualization Collection AVC.html	15-Sep-2010 14:07	9.6K	
 Atomic Archive.html	15-Sep-2010 14:07	9.4K	
 Beyond Penguins and Polar Bears An Online Magaz.>	15-Sep-2010 14:07	9.9K	
 Biological Sciences Gateways and Resources.html	15-Sep-2010 14:07	9.7K	
 BiosciEdNet BEN Digital Library Portal for Teac.>	15-Sep-2010 14:07	10K	
 Bridge NOAA Collection.html	15-Sep-2010 14:07	9.5K	
 Bridge Sea Grant Ocean Sciences Resources Cente.>	15-Sep-2010 14:07	9.8K	
 Broadening Participation in Computing BPC.html	15-Sep-2010 14:07	9.7K	
 COMET Program Collection.html	15-Sep-2010 14:07	9.5K	
 CSERD Computational Science Education Reference.>	15-Sep-2010 14:07	9.7K	
 Center for Sustainable Engineering CSE.html	15-Sep-2010 14:07	9.6K	
 Centers for Ocean Sciences Education Excellence.>	15-Sep-2010 14:07	9.8K	
 ChemCases General Chemistry Case Studies.html	15-Sep-2010 14:07	9.6K	
 Chemical Education Digital Library ChemEd DL.html	15-Sep-2010 14:07	9.7K	
 Chemistry Gateways and Resources.html	15-Sep-2010 14:07	9.6K	
 Choosing and Using DLESE.html	15-Sep-2010 14:07	9.5K	
 Collection Group DLESE.html	15-Sep-2010 14:07	9.5K	
 Collection Group Engingeering.html	15-Sep-2010 14:07	9.5K	
 Collection Group Math.html	15-Sep-2010 14:07	9.4K	

Collections for Learning Applications

K-12 & Higher Ed reports emphasize critical missing pieces for educational technologies & digital resources particularly:

- Lack of coherent integration
- Lack of platform interoperability

NSDL's experience with learning applications (e.g. CCS) begins to address these needs



REPORT TO THE PRESIDENT

PREPARE AND INSPIRE:
K-12 EDUCATION IN SCIENCE,
TECHNOLOGY, ENGINEERING, AND MATH
(STEM) FOR
AMERICA'S FUTURE

Executive Office of the President

President's Council of Advisors on
Science and Technology

SEPTEMBER 2010

PREPUBLICATION VERSION



Determine Collections for Learning Apps

The Goal is to support contextualized learning experiences, allowing users to find and use or deliver just the right digital content

- Used Curriculum Customization Service (CCS) as learning application. Resources could:
 - support a curriculum
 - be the curriculum
 - be for professional development
- Developed criteria to meet above goal
- Analyzed which collections met criteria
- Excluded DLESE collection in analysis since they already support CCS

Learning App Criteria – the RESOURCES

- **21st Century contexts:** resources advance critical thinking, problem solving, collaboration; support the interdisciplinary nature of knowledge
- **Collection relevance and quality:** content supports STEM; current, reliable and authored; sufficiently to meet needs of educators and researchers
- **Contextuality:** resources are fully described, in standard formats, and structured in such a way that users can easily draw upon and embed them
- **Accessibility:** Rights, licenses, permissions stated; and needed technical requirements are available

Learning App Criteria – the *METADATA*

Used to make resource criteria decisions programmatically

Field	Actual NSDL Record	Learning App Ready Record
Title	Rainwater Harvesting Service Learning Project	Rainwater Harvesting Service Learning Project
Descript	In this service learning project, students, teachers and community members will work together to design and construct a rainwater harvesting system for their school campus. Research RWH design basics and local conditions Explore how RWH could be used on your campus and develop a basic design. Present findings and action plan to community partners, school administration and student body. Enact the action plan to construct a RWH system on your campus and raise community awareness for water conservation	Use the same description or here is another. Students will gain an understanding of the history, benefits, and components of a rainwater harvesting system and partner with community members to design and build a rainwater harvesting system for their school. Students will learn about rainfall patterns, the relationship between catchment area and rainwater volume and water use.
Res Type	Project, Service Learning	Instructional Material: Project
Audience	None listed	Educators, Students
Ed Level	None listed but the actual resource has it on the 1 st page.	Middle School, High School, Higher Ed, Informal
Access Rts	None listed	Free access
Language	None listed	en-US

Collections Most Ready for Learning Apps

- TeachEngineering
- Math Common Core Collection
- NSDL Science Refreshers
- Harvard Smithsonian Digital Library

Also:

- TeachingWithData
- Teachers' Domain
- Compadre
- SMILE
- MSP2



Contacts

- ***Katy Ginger***: NSDL Collections Manager, Technical Network Services (ginger@ucar.edu)
 - ***Letha Goger***: MetaStreams Information Design (letha@meta-streams.com)
-

Individual Collection Reports

<http://www.dls.ucar.edu/people/kginger/assessment/final/collection-assessment.html>