

How the STEM Exchange Builds Upon Traditional Library Practices

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The concept of the STEM Exchange depends upon several new approaches for describing, accessing, and evaluating digital resources.

	Traditional Digital Library	STEM Exchange
Resource Access	Users come to a central website to search and browse as a solo activity, then leave the site to view resources on the websites of other aggregators or original authors. Some providers offer direct access (e. g., ability to download to local computer), but most resources can only be linked to.	Through customizable feeds and widgets implemented within online teacher networks and portals, users will be able to discover and collaborate around resources in context, when and where they are working with learning materials. Resources available through the Exchange will be downloadable or embeddable.
Resource Data	Structured, expert-generated <i>metadata</i> provides standardized descriptions of resources. Metadata creation, management, and exchange require technical library expertise and infrastructure. Individual metadata records must generally be edited by hand.	<i>Paradata</i> will blend expert and user-generated information to capture and share how resources are being used by communities of educators. Paradata will be generated and shared via commonly used social networking style tools and widgets, and administrators of online educational networks will be able to customize and build new Exchange tools via an open code base. Resource profiles in the Exchange will update continually and automatically based on real-time user activity.
Usage Data	Website visits and other standard webmetrics tell how many, and sometimes who, visited the site, performed a search, or followed a link to a resource. Richer data are available to resource provider sites with user logins, but data are rarely shared. Information on how sample populations of teachers are using resources may be available through structured research studies.	The Exchange webservice will capture usage patterns as teachers select, download, embed, align to standards, assemble lesson plans, and other authentic activities. Paradata will be aggregated at the community platform level and will not include personally identifying information about individual users. Community-level activity data will be fed back into information profiles of resources to enhance the information space that surrounds them.
Intellectual Property	The full range of intellectual property rights may apply. An IP Rights field is included in most metadata schemas, but information may be incomplete and may or may not be explicitly displayed. It is often difficult for users to discern their ability to use and reuse resources.	Resources available through the Exchange will be open for educational use and reuse under Creative Commons or similar licensing. IP rights permissions will be clearly displayed to users.

By combining traditional library value propositions with Web 2.0/3.0 functionalities, NSDL proposes to create a new frame of reference for educational resources that can further improve our collective knowledge and enrich individual understanding where STEM disciplines meet the real work of teaching and learning. The STEM Exchange will not be a social network for teachers, but rather will engage existing online practitioner networks and educational peer sharing sites as partners in building an interoperable tool that best meet their needs. The STEM Exchange will not be a standalone resource portal, but rather might function more like the dashboard of a stock brokerage website where investors can research trends, market wisdom, and performance potential and choose to embed custom data streams into their own websites. Through these services, the STEM Exchange can serve as an ongoing observation platform for emerging systemic trends in cyberlearning, and as a test bed that can inform resource dissemination strategies for digital content creators including those funded by federal grant-making programs and charitable foundations.