

April 2011 Progress Report

STEM Exchange and the Learning Registry

Prepared for NSDL Future Planning Meeting | Boulder, CO | April 21-22, 2011

Initial Pilot

The initial STEM Exchange pilot project was designed to test the core concepts of (1) expanding diffusion of NSDL resources into online communities of educators, (2) capturing data about how educators interact with NSDL resources in the context of professional collaboration platforms, and (3) integrating usage data (defined by this project as *paradata*) back into library-held metadata in order to make teacher-held knowledge openly visible in the information space around the resources. From an initial pool of several dozen organizations and projects that attended the STEM Exchange startup meetings, three groups volunteered to pilot these ideas within their teacher-to-teacher peer networks: Butte County Office of Education, Florida State University, and Intel Corporation.

The Butte County (California) Office of Education operates several online teacher collaboration platforms, including CTEonline (<http://cteonline.org>) and Brokers of Expertise (<http://www.myboe.org>). NSDL has worked with Butte County to successfully connect the CTEonline and Brokers sites with the STEM Exchange. Since Fall 2010, they have been pulling the Common Core Math Collection and other NSDL metadata of their choice into their in-house learning object management system via the DDS web service developed by NSDL Technical Network Services. They are also returning paradata to the NSDL Data Repository via OAI-PMH. For now, these data are visible in a sandbox area of NSDL.org and not yet integrated into the general user experience or search results displays. The STEM Exchange is a core model for the Learning Registry (LR, see below), and we are replicating the metadata-paradata exchange with Butte County as a proof-of-concept project for the Registry by testing the underlying technologies and specifications being developed by the LR.

Florida State University created a teacher collaboration site for the Florida Department of Education (<http://floridastandards.org>) that is the foundation for iCPalms (<http://www.icplams.org>), a portal for standards-based instructional resources funded as an NSDL Pathway in 2010, and scheduled for full release in Fall 2011. NSDL is working iCPalms to import metadata most appropriate for their users and to plan the mechanics of paradata export from their system. Intel Corporation has been building a new online community space for cadres of teachers who complete Intel's professional development academies, along with other educators around the world. The launch of their new platform has been delayed by technical issues unrelated to the STEM Exchange. We hope to re-engage them in the upcoming weeks.

Next Steps

- We have developed STEM Exchange systems sufficiently to begin working with Pathways and other NSDL projects who are ready to share paradata they may be generating. A web meeting is scheduled for April 25th to walk through the mechanics of paradata submission.
- With more partners sharing paradata, we can better experiment with integrating this information into existing user interfaces on NSDL.org, in search results, and elsewhere—and in turn—better understand how to interpret paradata for meaningful evaluation of resource utility.

- We are working on the design for Resource Profile Pages that will serve as resource-centric dashboards of paradata from across multiple user platforms.
- The next teacher-to-teacher sites we will be connecting to STEM Exchange are likely Better Lesson (<http://betterlesson.org>), an organization with whom we have been talking since STEM Exchange initiation, and the state of Maryland learning object repository. Others from the original STEM Exchange meetings remain in the pipeline as they work with their own internal development timelines.

Paradata

A critical milestone of our progress to-date was the creation of a draft XML paradata framework that proposes some minimum standardization for initial paradata elements likely to be generated by online teacher communities (<http://nsdlnetwork.org/content/group-wiki/1279/paradata-framework-proposal>). This framework, CommPara_1.00, has been released to the NSDL and LR communities (http://ns.nsd.org/ncs/comm_para/1.00/schemas/comm_para.xsd), and we will continue to evolve the schema with time. The paradata concept and the CommPara framework have become integral to the Learning Registry project, and were introduced by the LR to the European digital resources community at the OER Hackday event (http://www.ukoln.ac.uk/events/devcsi/oer_hackdays) in late March, where feedback was generally positive. European SchoolNet consortium has implemented the framework to begin sharing paradata into the LR, and we are starting a test with them to loop NSDL metadata and their usage paradata relevant to NSDL resources.

Learning Registry

Learning Registry (<http://learningregistry.org>) is an initiative led by the US Department of Education and the Department of Defense. The Learning Registry (LR) project is building a deeply backend infrastructure “messaging” system to support the exchange of learning resources, and their metadata and paradata. A range of agencies and (non- and for-profit) organizations that generate, aggregate, contextualize, broker, and productize digital content are being engaged by LR to participate in technical development and user requirements gathering. A beta launch is targeted for Fall 2011.

STEM Exchange is the primary proof-of-concept project for the Learning Registry technical platform, and we are replicating the successful resource metadata and paradata loop we established with Butte County, now using LR technology. The CommPara framework is being adopted as the default framework for the Registry.

Next Steps

- Phase II of NSDL work with LR involves helping other content and data partners connect to the LR technology, deep diving into issues of paradata integration and analysis, and addressing adoption barriers related to metadata that teacher peer networks will likely be facing.
- LR is hosting a PlugFest event this summer to encourage U.S. developers to rapid test the code.

Strategic Value for NSDL

The value to NSDL of the STEM Exchange, and our related involvement in the Learning Registry, is largely one of positioning. Our growing relationships with state and national educational resource platforms provide opportunities to disseminate NSDL partners’ content into the hands of teachers— for them to use and share within their established trust networks and accountability

systems. Combined with other NSDL efforts, such as Learning Application Readiness, that are improving the relative quality of NSDL resources and their metadata, we hope to increase overall adoption of NSDL project content and drive additional traffic back to projects' sites. In brokering these outlets for NSDL resources, we are enhancing the utility of our content to teachers on the ground, creating additional points of sustainability leverage

The paradata concept seems to have tapped a certain zeitgeist. Others have been exploring around ideas of "user activity streams", "contextualized attention metadata", and "user analytics", but the notion of sharing these data as open information to enhance resource discovery, use, and evaluation is apparently a timely contribution to the field. In addition to the value of our thought leadership and process setting around paradata, the data themselves offer potential sustainability models related to support services and data mining; as well as the competitive advantages inherent in amplifying our knowledge about what is useful (and not useful) about our content through observing teachers' digital resource habits.

In addition, our leadership-level participation in the Learning Registry aids our positioning among the federal agencies and other stakeholders who are convening and funding education reforms and innovations. LR provides us with opportunities bring the capabilities of NSDL to the table, and to demonstrate the value of our community knowledge and lessons learned, our corpus of learning content, and our unparalleled network of STEM education partners. Through this work we are positioning NSDL at the front of the conversation around the next generation of digital content.