They Didn't Teach Me That in Library School! Building a Digital Teaching Commons to Enhance Metadata Teaching, Learning and Research

Sherry L. Vellucci, Ingrid Hsieh-Yee, and William E. Moen

Introduction and Background

The Metadata Education and Research Information Commons (MERIC) originated from an action plan of the Library of Congress to prepare future information professionals to organize and provide access to digital resources. It is a joint initiative of the Association for Library and Information Science Education (ALISE) and the Association for Library Collections and Technical Services (ALCTS). As a portal-based information center, MERIC is conceived as a virtual environment where the metadata community of educators, trainers, practitioners, researchers, publishers, and other resource providers can share their work products and experience, and collaborate on instructional design and research projects.

Library and information science (LIS) programs and professional organizations have provided education and training on metadata, but their effort has been limited, mainly because of the rapid development of metadata schemas, tools, applications and research in various subject disciplines and domains. In addition, the expanding array of topics that comprises the field of information organization—including cataloging, classification, indexing, abstracting, thesaurus construction, information architecture, content management, metadata, etc.—makes it difficult for any LIS program to cover all subjects in-depth. The Metadata Education and Research Information Commons (MERIC) initiative presents a new model for providing metadata education for the LIS field. In this paper we discuss the development of MERIC from a clearinghouse for metadata teaching materials to a "teaching and research commons," and the problems and issues faced when developing such a collaborative virtual community of practice.

Background

In November 2000 the Library of Congress (LC) held the Bicentennial Conference on Bibliographic Control for the New Millennium, resulting in an action plan that identified the strong need to educate and train metadata specialists to organize resources for access in the 21st century. Part of the Action Plan addressed LC's concern that new LIS professionals receive a high quality cataloging and metadata education that would prepare them

Sherry L. Vellucci is Assistant Professor, School of Communication, Information and Library Science, Rutgers University, email: vellucci@scils.rutgers.edu. Ingrid Hsieh-Yee is Professor, School of Library and Information Science, Catholic University of America, email: hsiehyee@cua.edu. William E. Moen is Associate Professor, School of Library and Information Sciences, Texas Center for Digital Knowledge, University of North Texas, email: wemoen@unt.edu.

to work in the evolving digital environment and enable them to participate in the development and refinement of metadata standards used both within and outside libraries. As the principal investigator of Item 5.1 of the LC Action Plan, http://www.loc.gov/catdir/bibcontrol/actionplan.html, Dr. Ingrid Hsieh-Yee conducted research to determine the current state of LIS curricula in this area, to identify levels of expertise necessary to thrive in the metadata environment, and to develop a plan that would help educators and practitioners update their knowledge and skills in order to teach and train future and current professionals. Hsieh-Yee's investigation showed that LIS education in this area continues to lag behind the rapid developments in the broader metadata arena and clearly illustrated the need for more in-depth metadata and cataloging courses in LIS programs. Among her recommendations, Hsieh-Yee proposed the establishment of a "Web Clearinghouse for resources related to teaching cataloging and metadata." A joint task force of the Association for Library and Information Science Education and the Association for Library Collections and Technical Services (ALISE/ALCTS) was appointed by the Library of Congress and Dr. Anita Coleman was charged to develop a proof-of-concept clearinghouse to demonstrate the potential usefulness of sharing and reusing teaching and learning resources.

The clearinghouse proof-of-concept developed by Coleman, http://www.sir.arizona.edu/faculty/coleman/lc/final/, gathered examples of many types of learning objects appropriate for LIS instruction, continuing education, mentoring, and self-study. These materials included activities (exercises and assignments), articles, bibliographies, crosswalks, FAQs, glossaries, guides and tutorials, interactive resources and services, presentations, online books, software, standards, syllabi, tests and quizzes, and units of instruction. The clearinghouse model provided links to the resource, which resides elsewhere. Impressed with the possibilities demonstrated by the clearinghouse developed by Coleman, the ALCTS/ALISE Task Force on Preparing Cataloging and Metadata Educators and Trainers recommended that an advisory board be appointed to assist in the development of the Web clearinghouse. The board would serve under the auspices of the ALISE Technical Services SIG with liaison to the Cataloging and Classification Section Committee on Education, Training, and Recruitment for Cataloging (CETRC), and the Library of Congress. The Board initially named the prototype the Metadata Education and Research Information Center (MERIC) and began work on specifications to design the infra-

structure, navigation and display, to develop administrative guidelines for submitting and using materials, and to develop a review process for evaluating the accuracy and currency of the learning objects' content.

As we explored ways to develop the clearinghouse prototype, we were attracted to the concept of a "teaching commons," recommended by the Carnegie Foundation for the Advancement of Teaching, where "communities of educators committed to pedagogical inquiry and innovation come together to exchange ideas about teaching and learning and use them to meet the challenges of educating students…" The networked environment is ideal for collaborative work; the open-source technology for creating such a virtual space is readily available; and the LIS field, especially the cataloging community, has a long history of cooperation and resource sharing. Inspired by the possibility of providing a virtual environment for collaborative teaching, learning and research, the Board agreed to expand the scope of MERIC and rename MERIC the Metadata Education and Research Information Commons. By drawing on the collective experience, effort, and wisdom of the metadata community and taking advantage of advanced network technology, we will be able to provide better metadata education to practitioners and students and advance metadata research in a more effective and less costly fashion.

When thinking about the concept of a teaching and research commons, we need to acknowledge the changing nature of LIS education. Most LIS programs have incorporated digital learning materials into traditional classroom instruction and many deliver courses fully online or in mixed-mode format. LIS faculty is responsible for developing learning objects that fit into course management systems and are web-ready. Technology presents new opportunities for creating digital learning materials that can be shared, modified, and repurposed easily. It is common for instructors to reuse their own materials and materials from various sources, and the benefits of sharing learning objects in higher education have been identified. Yet the cost for creating online courses and the necessary learning objects is high and the course subjects are increasingly complex and challenging. Development of new instructional materials can pose financial burdens on institutions of higher education. This burden can be ameliorated by sharing learning objects for course development. A teaching commons with a digital repository of learning objects could reduce costs by allowing faculty members from different institutions to reuse and repurpose learning objects. Judging
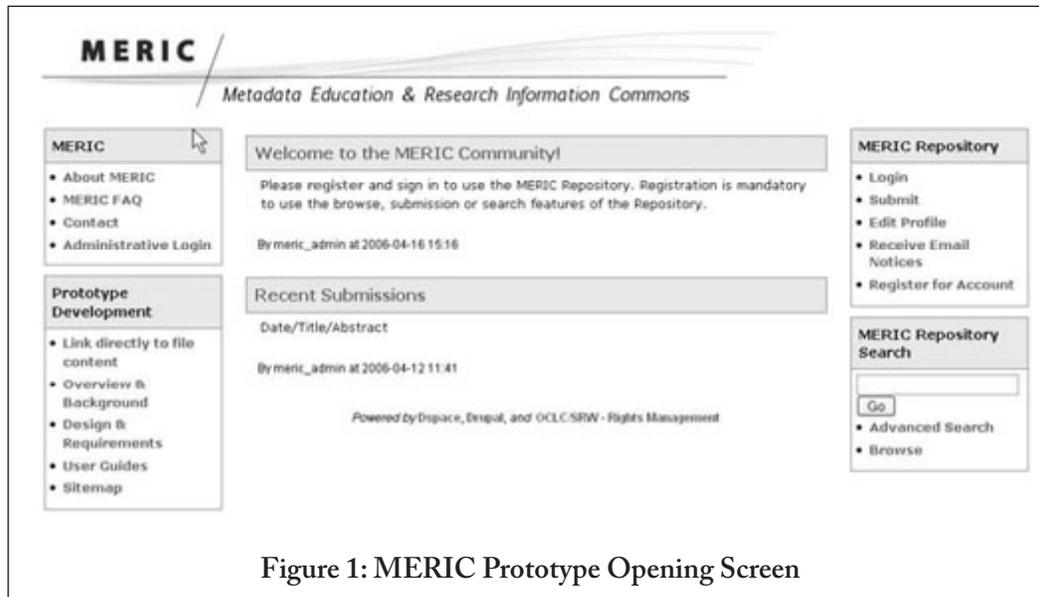
Figure 1: MERIC Prototype Opening Screen

from responses to the proof-of-concept clearinghouse developed in the early phase of the MERIC Initiative, the metadata community has a strong interest in sharing and reusing learning objects. The MERIC initiative will build on this interest and provide an environment for sharing and collaboration on a much larger scale.

Prototype Development

The evolving vision for MERIC is as a web-based application comprised of 1) a metadata-driven digital repository of learning objects and research resources; 2) system features to encourage and improve research; 3) system features to build a community space for collaboration among metadata educators, trainers, practitioners, and researchers; and 4) principles, policies, a governance structure, and related social agreements to support a community of practice.
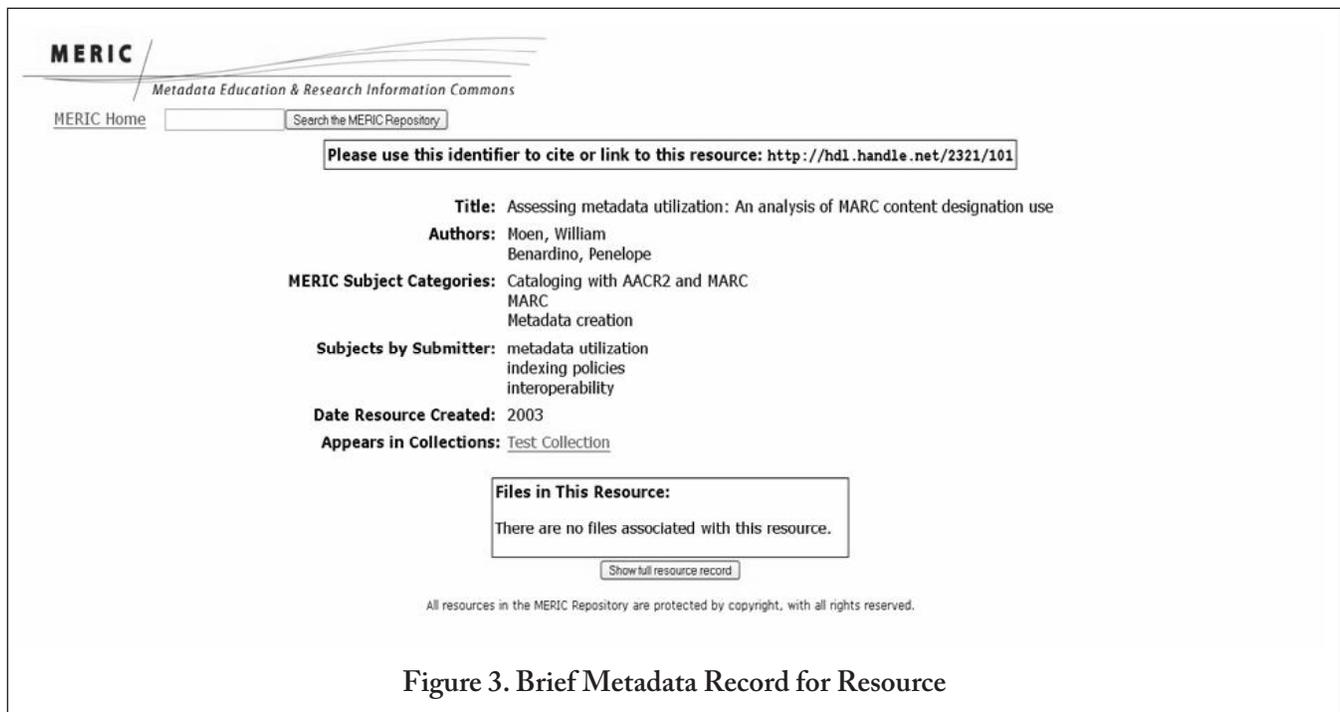
The Texas Center for Digital Knowledge (TxCDK) at the University of North Texas collaborated with the

MERIC Advisory Board to implement a prototype of the MERIC vision. Under the direction of Dr. William E. Moen, graduate students in his spring 2006 course, Metadata and Networked Information Organization and Retrieval, comprised the project team that designed, developed, and implemented a repository-based application.

The MERIC application is intended to present a range of services to support the teaching and research commons envisioned by the MERIC Board. There are two primary open source components. The MERIC Website is the point of entry to all MERIC services, both publicly available and/or authenticated user services, http://meric.lis.unt.edu/. A content management system (Drupal) ensures ease of maintenance and dynamic generation of web pages and other aspects of the website. The MERIC Repository supports the submission, metadata creation, storage, and access functions. The repository is a separate application from the web-

Figure 2: MERIC Resources List

Figure 3. Brief Metadata Record for Resource

site application. Some repository services are provided by the native user interface of the application (e.g., submission), while other features use web services to support user interaction with the repository from the website. The repository uses DSpace as its platform, as it met most of the functional and technical requirements and the project team had some DSpace experience.

A number of services may be supported through the combined functionalities of the website, the repository, and other applications. Possible user services to be supported include user registration; material submission; metadata generation; search and access; comment; and peer-review, discussion, news, and alert services. During the six-month design and implementation period, the project team focused on installing and customizing Drupal and DSpace to provide a common look and feel; creating a MERIC application profile for the supporting metadata scheme; developing rules for creating metadata records; and user testing. Various draft and final project documents are available on the MERIC site, http://meric.lis.unt.edu/.

In addition, we explored the use of a standard search protocol, Search and Retrieve URL/Web Service (in the form of SRU), to power the Access Service. SRU provides a standard XML-based search interface to the repository, and enables easier customization of user interfaces for searching and presentation of results. It demonstrates the power of separating interfaces from the underlying applications. Further, it provides stan-

dards-based access to MERIC for federated searching (in addition to OAI-PMH access).

The "research commons" component of MERIC, which is still in the conceptual stage, will provide a useful and innovative space to support and encourage new collaborative research in areas of interest to the MERIC community. The best collaborative metadata research involves a cross-fertilization of ideas and methodologies among educators and practitioners, yet finding common ground to develop this type of collaboration is not easy. MERIC can serve as a bridge to important metadata research sites such as UKOLN, "a center of expertise in digital information management" based at the University of Bath, and the Metadata Research Center at the University of North Carolina and can offer a virtual common space to develop research agendas, cultivate ideas, and collaborate across invisible boundaries.

If We Build It Will They Come?

The Board began to explore funding sources to bring MERIC into a production level system and provide for its sustainability, when it learned about the problems that digital libraries and repositories were having with low participation rates. Feedback from participants who contributed resources to Coleman's proof-of-concept project also indicated that barriers might exist to full participation in the project. We then began to investigate strategies for building a strong community of practice through MERIC.

We recognize that the human and social dimensions of a virtual community must be taken into account before proceeding to build a production level system. The culture, values, and expectations of potential community members must be understood and used as the basis to design the structure and process for such an information commons. Specifically, we need to understand what social, economic, and cultural factors will influence stakeholder participation in MERIC and develop solutions to address those factors.

There are enablers for and barriers to sharing and reusing learning objects in institutions of higher education. Incentives include factors such as reward and recognition, but factors such as control of academic content, quality of the objects, ownership, and copyright can be impediments for knowledge sharing. A virtual repository must be supported by the community of practice to be effective, and the importance of the human element as a driving factor in the implementation of learning object repositories is often neglected.

A main concern of the fields of computer supported collaborative work and collaborative learning is how groups adopt collaborative technology to support work in a distributed environment. Studies have found that adoption is greatly affected by the cultures, values, and practices of the social worlds of potential participants. Studies on collaboration have identified six categories that can make or break collaborative efforts: environment, membership, structure and process, communication, purpose, and resources. Findings from these studies and the experience of digital repositories suggest that the belief that "build it and they will come" is not a valid assumption regarding virtual repositories.

Based on our review of the literature, we agreed on the necessity of further research to investigate community building in order to ensure a firm foundation for MERIC, and have submitted a grant proposal to IMLS for funding. If funded, the principal investigators (PIs) will be Drs. Hsieh-Yee, Moen, and Vellucci. The primary focus of the research project will be to investigate the critical factors affecting participation in the MERIC community of practice and to develop positive responses in terms of governance structure, principles, policies and system features that would encourage sustained participation in the MERIC community.

Conclusions
The MERIC initiative, when completed, will provide a new model of collaboration that enables educators and trainers to design, use, and share learning objects for

metadata education; promotes integration of metadata into LIS curricula; helps LIS educators and trainers to keep up with metadata research conducted in various disciplines; and facilitates their interaction with researchers inside and outside the LIS field. The current MERIC prototype implementation is now being tested by potential MERIC users. Hopefully, the proposed research to identify the factors affecting stakeholders' participation and collaboration will lay the socio-technical foundation for MERIC and the solid empirical data will enable us to build a user-centered teaching and research commons and a stronger community of practice for MERIC that is based on reality rather than assumption.

References

Hsieh-Yee, Ingrid. 2002–2003. "Cataloging and Metadata Education: A Proposal for Preparing Cataloging Professionals of the 21st Century." A report submitted to the ALCTS-Education Task Force in response to Action Item 5.1 of the "Bibliographic control of Web Resources: A Library of Congress Action Plan." 2002–2003. Approved by the Association for Library Collections and Technical Services. http://lcweb.loc.gov/catdir/bibcontrol/CatalogingandMetadataEducation.pdf. (Accessed Jan. 8, 2007)

Hsieh-Yee, 2002–2003, iii.

Original Advisory Board members were Ingrid Hsieh-Yee and Sherry L. Vellucci, co-chairs, Anita S. Coleman (ALISE TS SIG Convener),C. Olivia Frost, Patricia Lawton, Shawne D. Miksa, and Steven J. Miller (CETRC representative). Current Advisory Board members include Ingrid Hsieh-Yee and Sherry L. Vellucci, co-chairs, C. Olivia Frost, Patricia Lawton, William E. Moen, and Elaine Yontz (ALISE TS SIG Convener), Steven J. Miller (CETRC representative).

Huber, Mary Taylor, and Pat Hitchings. 2005. "The Advancement of Learning: Building the Teaching Commons: A Carnegie Foundation Report on the Scholarship of Teaching and Learning in Higher Education." Stanford, California: Jossey-Bass.

Campbell, L. 2003. "Engaging With the Learning Object Economy." In *Reusing Online Resources: A Sustainable Approach to E-Learning*, ed. Allison Littlejohn, 35–45. London: Kogan Page; Littlejohn, Allison. 2003. "An Incremental Approach to Staff Development In The Reuse of Learning Resources. In *Reusing Online Resources: A Sustainable Approach to E-Learning*, ed. Allison Littlejohn. Sterling, Va.: Kogan Page, 221–33; Collis, Betsy, and Allard Strijker. 2004. "Technology and Human Is-

sues in Reusing Learning Objects." *Journal of Interactive Media in Education*, 2004 (4): 1–32. http://www-jime.open.ac.uk/2004/4/collis-2004-4.pdf (Accessed Jan. 8, 2007).

Littlejohn, Allison. 2003. "An Incremental Approach to Staff Development In The Reuse of Learning Resources. In *Reusing Online Resources: A Sustainable Approach to E-Learning*, ed. Allison Littlejohn. Sterling, Va.: Kogan Page, 221–33.

Littlejohn, 2003.

Lavitt, Neil. "Institutional Use of Learning Objects Three Years On: Lessons Learned and Future Directions." In *Learning Objects 2003 Symposium: Lessons Learned, Questions Asked*, eds. Eric Duval, Wayne Hodgins, Dan Rehak and Robby Robson, 39–43. http://www.aace.org/conf/ed-media/LO2003Symposium.pdf. (Accessed Jan. 8, 2007); Uijtdehaage, S., J., Contini, C.S. Candler and S.E. Dennis. 2003. "Sharing Digital Teaching Resources: Breaking Down Barriers by Addressing the Concerns of Faculty Members." *Academic Medicine* 78 (3): 286–94.

Acker, Stephen R., Dennis K. Pearl, and Steven W. Rissing. 2003. "Is The Academy Ready For Learning Objects?" In *Learning Objects: Contexts and Connections*, ed. Catherine M. Gynn and Stephen R. Acker, 83–89. Ohio: Ohio State University; Brabazon, Tara. 2002. *Digital Hemlock: Internet Education and the Poisoning of Teaching*. Sydney, Australia: University of New South Wales Press; Campbell, L. 2003. "Engaging With the Learning Object Economy." In *Reusing Online Resources: A Sustainable Approach to E-Learning*, ed. Allison Littlejohn, 35–45. London: Kogan Page; Chitwood, Kay, Carol May, David Bunnow, and Terri Langan. 2000. "Battle Stories from the Field: Wisconsin Online Resource Center Learning Objects Project." In *The Instructional Use of Learning Objects: Online Version*, ed. D. A. Wiley. http://reusability.org/read/chapters/chitwood.doc (Accessed Jan. 8, 2007);

Strijker, Allard. 2004. "Reuse of Learning Objects in Context: Technical and Human Aspects." http://130.89.154.170/proefschrift/Chapters.html (Accessed Jan. 8, 2007); Uijtdehaage, S., J. Contini, C.S. Candler, and S.E. Dennis. 2003. "Sharing Digital Teaching Resources: Breaking Down Barriers by Addressing the Concerns of Faculty Members." *Academic Medicine* 78 (3): 286–94.

Foster, Nancy Fried, and Susan Gibbons. 2005. "Understanding Faculty to Improve Content Recruitment for Institutional Repositories." *D-Lib Magazine* 11 (1). http://www.dlib.org/dlib/january05/foster/01foster.html. (Accessed Jan. 8, 2007)

Kautz, Karlheinz, and K. Thaysen. 2001. "Knowledge, Learning and IT Support in a Small Software Company." *Journal of Knowledge Management* 5/4: 349–57; Rubenstein-Montano, B., J. Liebowitz, J. Buchwalter, D. McCaw, B. Newman, and K.J. Rebeck. 2001. "A Systems Thinking Framework for Knowledge Management." *Decision Support Systems* 31: 5–16.

Mark, G., and Stephen Poltrock. 2003. "Shaping Technology across Social Worlds: Groupware Adoption in a Distributed Organization." *Proceedings of GROUP/03*, 284–93;

Orlikowski, Wanda J. 1993. "CASE Tools as Organizational Change: Investigating Incremental and Radical Changes in Systems Development." *MIS Quarterly* 17 (3): 309–39.

Mattessich, Paul W., Marta Murray-Close, and Barbara R. Monsey. 2001. *Collaboration: What Makes It Work*, 2nd ed. Saint Paul, Minn.: Amherst H. Wilder Foundation.

Foster, Nancy Fried, and Susan Gibbons. 2005. "Understanding Faculty to Improve Content Recruitment for Institutional Repositories." *D-Lib Magazine* 11 (1). http://www.dlib.org/dlib/january05/foster/01foster.html. (Accessed Jan. 8, 2007); Gierveld, Helen. 2006. "Considering a Marketing and Communications Approach for an Institutional Repository." *Ariadne* 49. http://www.ariadne.ac.uk/issue49/gierveld/ (Accessed Jan. 8, 2007).