

Collaboration in Information Ethics Education

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This paper reports a subset of the findings from a three-year, three-university collaborative study of innovative approaches to information ethics education. Specifically, it reports findings related to the effects of different forms of collaboration on learning in case-based information ethics education. The approach to case-based learning developed in this project is collaborative, since decisions are made sequentially by cooperating students playing multiple roles within a case, such that the decision made by one role affects the situation faced by and the choices available to the next role. This paper reports research results from implementation of different variations of this case-based approach within the first two iterations of a new Information Ethics course taught within the MLS program at the University of Maryland.

This paper focuses on three key research questions. First, is collaborative role-playing using cases effective for teaching information ethics? Second, is collaboration during open-ended or closed-ended discussions more effective for learning about information ethics? Third, is it more effective for all students to collaborate to make each decision for each role or for students to collaborate within the context of the specific roles by having each student play a different specific role after being advised by their cooperating team members? This paper will report findings for all three of these research questions.

Ten cases were developed for an information ethics course. The cases have the following primary format, which was subsequently changed to test forms of collaboration. Students first choose roles. Next, a basic setup for the case is provided, leaving the first role with an open-ended ethical dilemma. The students discuss the open-ended ethical dilemma, including identifying and discussing alternative solutions. The role is then given a specific closed-ended choice from among two or three options, and students discuss the respective merits of each option. After that, the student playing a role considers the discussion and makes a decision, which determines the setup and open-ended ethical dilemma for the second role, and the process repeats. Finally, at the end of the case, students are either given a specific outcome based on the decisions made by each role or are asked to write their own outcome.

In a parallel variation, students collaborate to play the roles. Students are instructed to reach consensus through discussion, rather than just voting. In this variation, students collaborate more explicitly by being required to reach consensus about the decision that each role should make.

At the end of both semesters, students completed questionnaires about how collaboration enabled their learning of information ethics. The questionnaires also asked about the effectiveness of open-ended versus closed-ended discussions and collaboratively playing the same role versus playing different roles. This paper reports findings from these questionnaires.

In answer to the first research question, there was significant evidence that the collaborative learning employed within the cases was effective for teaching about information ethics. For example, in response to the question, "Please explain how the group interaction helped you to learn about ethical theories, if at all?," one student answered: "I feel like I was very focused on the three theories that I understood best and working with others helped me to better understand the remaining theories." In response to the same question, another student replied, "It helped to clarify my understanding of the theories when we tried to decide which would apply best to a particular case." Finally, in response to the question, "Please explain how the group interaction helped you to learn about your values or other people's values, if at all?," another student replied, "I gained a better appreciation of other people's values because of the passion they had when they made their case – sometimes I was forced to change my decision after looking at

things from their perspective.” Thus, from our preliminary data, collaborative learning appears that it can be effective for teaching information ethics.

The results from the second research question about closed-ended versus open-ended discussions were more mixed. For example, in response to the question, “What did you learn from the open-ended discussion before each decision?,” one student explained, “I got a better sense of how others were thinking about the case.” Similarly, in response to the same question, another student commented, “It opened my eyes to new ideas.” However, in response to the question, “Did you prefer the open-ended or closed-ended discussions? Why?,” another student answered, “I like the closed-ended discussion – it gives you a ‘frame’ that grounds our discussion in the options and makes you think deeply about each option.” Thus, there were mixed responses about open- versus closed-ended decision making.

Finally, results from the third research question about playing the same role versus different roles were also mixed. For example, in response to the question, “What did you learn from the cases where you collaborated to play the same role?,” one student stated, “How to work within the group to form consensus and strengthen an argument for one particular option.” Another student gave a very compelling answer to the same question, “The give and take required to make a consensus decision seemed to reflect more accurately what happens in a library, where teamwork is often emphasized.” However, when asked, “Did you prefer cases where you each played separate roles or where you collaborated to play the same role?,” yet another student answered, “I preferred when we each had individual roles because it did designate someone with the responsibility of decision making, and it was easier to have this than trying to ‘group think’ our way to a conclusion.” Thus, both approaches to collaboration were potentially useful in these cases.

Overall, the conclusion of this paper is that collaboration is an effective approach for teaching information ethics, and further, that combining different forms of collaboration can be especially effective. Additional research is needed to explore how the case-based approach developed in this research might apply to other LIS education topics in addition to information ethics. However, this approach shows promise as a novel approach for promoting collaboration in LIS education.

Building a Virtual Archives and Preservation Curriculum Laboratory at Simmons College: A Case Study in Collaborative Construction

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This paper describes the role and effectiveness of collaborative environments in developing and incorporating realistic practice with digital materials into the curriculum in LIS/IS schools. It addresses the broad question of how best to present the difficulties posed by digitized and born-digital content in the classroom. More particularly, it addresses this question in a discipline-specific context – that of archives and preservation. Since archivists and preservationists will be confronting digital materials and issues at the workplace, they ideally need to work in digital environments in the classroom.

Research question:

How can an archives and preservation curriculum offer practical real-world experience with digital objects in a classroom setting?

Methodology:

The research question will be explored through a case study of a Digital Curriculum Laboratory (DCL) currently being constructed at the Graduate School of Library and Information Science (GSLIS) at Simmons College. With the support of funding from several sources including IMLS, Simmons is currently developing a virtual curriculum laboratory for archives and preservation learning where both

faculty and students can experiment with digital content and tools within a curriculum structure. The DCL is an attempt to address the problems posed by access to digitized and born-digital content in the classroom, by providing students and faculty in the archives education community with realistic hands-on experience with archival processes and procedures in virtual environments. Multi-faceted collaboration is an essential element of the DCL and is a significant driver in the entire laboratory planning and building process. Within the context of the overarching research question, this paper addresses three issues: What is the role of collaboration in building an Archives and Preservation Digital Curriculum Laboratory; how effective has this collaboration been to date; and how might collaboration contribute to the sustainability of such a laboratory? These questions are explored by describing progress to date on implementing the DCL, paying particular attention to the efforts made to ensure that collaboration with partners in the United States and internationally is effective.

Discussion

The Digital Curriculum Laboratory will provide integrated access to digital content, content tools, curriculum-based scenarios, and a workspace for class-specific exercises and products. Students and educators will be able to experiment with and implement a range of digital archival and preservation procedures, and evaluate and gain practical experience with current software and standards, including a variety of open-source content-management systems. Planning for the DCL began in early 2009 and the work is currently entering the implementation phase. An initial model of the DCL can be seen at <http://gslis.simmons.edu/spaclab/>

By definition, a laboratory is a cooperative environment. Collaboration is intrinsic to the DCL and has been built into its structure in numerous ways and at several levels: in its planning and development; in the seeking and combining of funding from different sources; in the use of ‘open source’ technology (itself a collaborative enterprise); in the testing and evaluating of the final products by geographically disparate partners; and in the ultimate goal of sharing and sustaining this product within the archives and preservation education communities.

Within the archival and preservation professions as a whole, collaboration is occurring with industry partners to develop learning modules that represent situations encountered in practice. The modules in the laboratory will consist of an array of curriculum-specific scenarios providing contexts for the DCL’s content and tools. GSLIS is partnering with experienced practitioners to develop the scenarios and learning modules. These scenarios will offer a sequence of events and tasks within a specific context that require students to take a variety of actions including problem-solving, making choices, evaluation, assessment or performing a series of processes to achieve certain learning outcomes. Inter-institutional cooperation is essential for the testing and evaluation of the DCL. To date the Archives programs at New York University and the University of Wisconsin at Milwaukee, and an international partner, the Archives and Information Science program at Mid Sweden University, Härnösand, Sweden, have agreed to participate in the Simmons project. Through these partnerships the Simmons team also hopes to address the question of collaborative sustainability.

By examining and assessing the Simmons Digital Curriculum Laboratory as a case study in collaborative enterprise on many levels, we will address the research question and demonstrate the pivotal and essential role that cooperation plays in the development of any curriculum /learning tool in a digital environment. A virtual environment is, by its very nature, a collaborative one that must engage the efforts of an online community around any successful initiative. A Digital Curriculum Laboratory has the potential to create a supportive online community of teachers, researchers and learners.

“IMLS Encourages Partnerships”: Patterns of Collaboration among Recipients of Laura Bush 21st Century Librarian Program Grants

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Introduction and Research Focus

A 17 June 2009 press release from the Institute of Museum and Library Services (IMLS) characterizes the accomplishments of the Laura Bush 21st Century Librarian Program to date as:

“Since its inception in 2002, the program has funded the education and training of 3,220 Master’s students, 186 doctoral students, 1,256 pre-professionals, and 26,206 continuing education students. The program also supports grants for research related to library education and library staffing needs, curriculum development, and continuing education and training.”¹ Less visible, but no less important when gauging the impact of this grant program on library and information science (LIS) education, are the partnerships that underlie a large proportion of the funded projects: “IMLS encourages partnerships that are large enough to address the broadest possible needs, including statewide and regional collaborations. An application may include one or more partners. The lead applicant in a partnership must be eligible to apply as an individual entity, and all members of a partnership should be active contributors to and beneficiaries of project activities.”² LIS schools submitting proposals for master’s program support must do so in partnership with one or more eligible library entities; other categories of grants (e.g., doctoral programs, programs to build institutional capacity) also encourage partnerships.

This IMLS emphasis on partnerships and collaboration is of course not unique to the Laura Bush 21st Century Librarian Program. As Robert Martin remarks, “at IMLS we were under statutory mandate to encourage collaboration. The kind of collaboration we have tried to foster at IMLS is neither a joined-at-the-hip symbiosis nor a parasitic relationship. Rather, it is a mature and reflective recognition of intersecting nodes of interest, activity, and mission that offers the opportunity for creating synergy out of cooperation, building a structure in which the whole is greater than the sum of the parts.”³ He continues, “Collaboration, however, is not easy. It requires that we, as individuals and as institutions, behave in ways that are not ‘normal,’ that feel unnatural.”⁴

External funding serves as a stimulus, but sustainability (a criterion for receipt of IMLS funding) requires finding workable collaborative models that can continue once external funding ceases. Research needs to be undertaken to analyze and synthesize the outcomes of the partnerships that underlie grants funded through the Laura Bush 21st Century Librarian Program, so that lessons learned can be disseminated to benefit educational programs beyond those directly involved in the specific projects.⁵

This paper investigates the patterns of collaboration in grants funded through the Laura Bush 21st Century Librarian Program. A review of the grants awarded to date indicates that nearly 50 different LIS programs and schools (public, private, ALA-accredited, NCATE-accredited, in many different states) have received one or more grants in at least one of the six grant categories:

1. Doctoral programs
2. Master’s level programs
3. Research
4. Pre-professional programs
5. Programs to build institutional capacity
6. Continuing education

Some grants are awarded to the school alone or in partnership with other units within its university, others to the school in partnership with schools at other institutions, and others to the school in partnership with various libraries, library consortia, or library associations.

Method and Findings

Using “Search Awarded Grants” on the IMLS web site (<http://www.imls.gov/search.asp>), yields a total of 243 grants in the period 2003-2009 through the Laura Bush 21st Century Librarian Program (called the Librarians for the 21st Century Program from 2003-2005). Grants for 2004-2009 are already classified by category; grants for 2003 were classified based on the project abstract. A few corrections were made to the listed category when the project clearly appeared to be misclassified. Each project is assigned to a single primary category even if applicable to more than one. Based on this analysis, the distribution of the 243 projects across program category is as follows: doctoral (22); master’s (107); research (25); pre-professional (15); building capacity (27); continuing education (47). As noted above, LIS schools are required to collaborate in a partnership to be eligible for funding under the master’s category. Review of the project abstracts demonstrates that there are at least some partnerships in every other category as well.

Content analysis of project abstracts, as provided in the IMLS database of awarded grants, is the source of descriptive data for all projects. Each project will be characterized by the number and type of partners identified in the abstract, including such factors as organizational type and geographic proximity. The results of this analysis will provide the “landscape” of partnership patterns for each of the grant categories. Given the limited details included in some abstracts, it is acknowledged that this initial analysis cannot capture the full extent of partnerships, including the role of such entities as advisory groups.

This will be followed by purposive sampling of funded projects to illustrate different partnership structures in each of the six grant categories. Surveys of PI’s and co-PI’s will determine: whether the partnership preceded or was stimulated by the grant, how partners were identified, the roles of each partner and how collaborative work was managed, and factors affecting sustainability of the partnership beyond the grant period. The results of this study can provide a foundation for further research, more in-depth case studies of collaborative models stimulated by this grant program.

References

1. “IMLS Awards More than \$20 Million in Librarian Recruitment and Education Grants.” Press release. 17 June 2009. Available: <http://www.imls.gov/news/2009/061709b.shtm>
2. Institute of Museum and Library Services. 2009 Laura Bush 21st Century Grant Program Guidelines. Washington, DC: Institute of Museum and Library Services, 2008, p. 10. Available: http://www.imls.gov/applicants/grants/pdf/L21_2009.pdf.
3. Martin, Robert S. “Intersecting Missions, Converging Practice.” RBM 8(1): 85, Spring 2007.
4. Ibid.
5. Smith, Linda C. “From Foundation to Federal Funding: the Impact of Grants on Education for Library and Information Science.” *Advances in Librarianship* 31: 141-165, 2008.

Fostering collaboration in the field: The Florida Leaders & Managers project

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The Florida Leaders & Managers (FLM) project at the Florida State University School of Library and Information Studies (FSU SLIS) was funded by an IMLS Laura Bush 21st Century Librarian grant. It offered scholarships to 30 students who (a) were seeking the MSLIS degree or a pre-or post-master’s Certificate in Leadership & Management and (b) were identified as promising candidates by their Southeast Florida library employers to become leaders in libraries that serve an increasingly large and diverse Southeast Florida population. The FLM project was designed as a close collaboration between

FSU SLIS and the Broward County Library, the Miami-Dade Public Library System, the Southeast Florida Library Information Network (SEFLIN), and the State Library and Archives of Florida. This close collaboration enhanced the experience of the FLM scholars because (a) the partners, led by SEFLIN, developed focused local workshops each semester for the scholars in Southeast Florida and (b) the scholars' employers had a vested interest in the project and their employees' participation in it. Although course work at FSU SLIS can normally be completed entirely online and does not include face-to-face meetings, the FLM students met face-to-face annually at the Florida Library Association (FLA) annual meeting, and they met face-to-face each semester at the workshops in Southeast Florida. Data were captured about their experiences through focus groups conducted throughout the project and via the scholars' personal statements in their scholarship applications and capstone papers.

Relationship to conference theme

This project reflects the ALISE conference theme in three ways. First, the design of the FLM project involved identifying the right collaborators and, in this case, creating the right mix of library systems and the appropriate regional library consortium. Second, the execution of the FLM project has required finding the right balance of involvement by all the collaborating partners so that everyone feels involved and invested without feeling burdened, at the same time respecting the varied institutional cultures at play. Third, the FLM project has allowed us to identify the important characteristics and results of this multi-institutional collaboration through the collection of formative and summative evaluation data.

Intent

This data collection was designed to describe and evaluate the experiences of the FLM students, a group of students benefiting from a multi-institutional collaboration that enhanced their educational experience.

Scope

This project follows a research agenda exploring community engagement among online LIS students and ways to support learning that is embedded in local communities (Haythornthwaite & Kazmer, 2002; Kazmer, 2005a, 2005b, 2007a). The current project focused specifically on how LIS educators can collaborate with local community institutions to enhance the learning experience of students. The current project encompasses the FLM population, and while not generalizable to other populations or programs, it may have implications for evolving models of effective collaborations between learning institutions and library organizations.

Research questions

The research questions addressed through this project include: How do students in a scholarship program supported by significant multi-institutional collaboration perceive that their experience was enhanced by that collaboration? What are the strengths and weaknesses of the collaborative activities? How do students' job outcomes compare with their application goals statements?

Methods

Data were collected via two focus group sessions conducted in April 2008 and April 2009. Additional data were collected via self-evaluative capstone papers. Students submitted goals statements when applying to the program; their career outcomes are being evaluated compared with their goals.

Research base

This project continues a research agenda (Haythornthwaite & Kazmer, 2002; Kazmer, 2005a, 2005b, 2007b) focused on methods of learning that encourage interactions between learners and their local communities (e.g., situated learning, action learning, service learning). Such research addresses the overall question of how the learning environment "connects to students' larger community and culture" (Swan, 2005, p. 21).

The current project draws on literature addressing the topics of educational institutions collaborating with distant community partners to meet local needs, such as educating upcoming library supervisors and managers, and serving diverse populations (Bishop, Bruce, & Jeong, 2009; Hunter, 2002; Krichten, Stohr, & Warlick, 2009; Roy, L., 2001; & Yontz & McCook, 2003).

Overview of findings

The scholars perceived that their experience was enhanced by the collaboration between FSU SLIS and the partners for three primary reasons: (a) seeing the FSU SLIS faculty and administrators collaborate regularly with the libraries and library consortium helped them understand how their coursework could help them in the workplace and vice versa; (b) the explicit support and facilitation from their employers allowed them to participate fully in workshops and conferences associated with the scholarship; and (c) for these scholars, who are primarily non-traditional students whose first language was not English, the close collaboration between their employers and FSU SLIS helped them navigate the various administrative processes at the university (application, acceptance, registration, etc.) that might otherwise have hindered their seeking the degree or certificate. The main weakness of the collaborative activities identified by the scholars was that they occasionally perceived that their library colleagues felt it was “unfair” that the scholars got to participate in extra activities. With respect to the employment outcomes of this project, the reality of the economy (particularly bad in Florida) means that not every scholar may be promoted immediately upon completion of the program, but the scholars said during the focus groups that they feel well-positioned to keep their jobs and move upward when times improve.

Significance

The results of this project help us understand how LIS educational institutions can collaborate closely and successfully with library organizations and communities at a distance to (a) educate students for needed roles in those communities’ libraries, and (b) enhance students’ educational experiences through a mix of coursework and focused local face-to-face events.

References

- Bishop, A., Bruce, B. C., & Jeong, S. (2009). Beyond service learning: Toward community schools and reflective community learners. In L. Roy, K. Jensen, and A. H. Meyers (Eds.), *Service learning* (pp. 16-31). Chicago, IL: American Library Association.
- Haythornthwaite, C., & Kazmer, M. M. (2002). Bringing the Internet home: Adult distance learners and their Internet, home and work worlds. In B. Wellman & C. Haythornthwaite (Eds.), *The Internet in everyday life* (pp. 431-463). Oxford, UK: Blackwells.
- Hunter, B. (2002). Learning in the virtual community depends upon changes in local communities. In K. A. Renninger & W. Shumar (Eds.), *Building virtual communities: Learning and change in cyberspace* (pp. 96-126). New York: Cambridge University Press.
- Kazmer, M. M. (2005a). Community-embedded learning. *Library Quarterly*, 75, 190-212.
- Kazmer, M. M. (2005b). Cats in the classroom: Online learning in hybrid spaces. *First Monday*, 10(9). Available at <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1278/1198>
- Kazmer, M. M. (2007a). Community-embedded learning. In R. Andrews & C. Haythornthwaite (Eds.), *Handbook of e-learning research* (pp. 311-327). London: Sage.
- Kazmer, M. M. (2007b). How do student experiences differ in online LIS programs with and without a residency? *Library Quarterly* 77(4).
- Krichten, M., Stohr, S., & Warlick, S. (2009). Practicum and internship experience in LIS education: A perspective from ALA emerging leaders. In L. Roy, K. Jensen, and A. H. Meyers (Eds.), *Service learning* (pp. 185-190). Chicago, IL: American Library Association.
- Roy, L. (2001). Diversity in the classroom: Incorporating service-learning experiences in the library and information science curriculum. *Journal of Library Administration*, 33, 213-228.

- Swan, K. (2005). A constructivist model for thinking about learning online. In J. Bourne & J. C. Moore (Vol. Eds.), *Elements of quality online education: Vol. 6. Engaging communities* (pp. 13-30). Needham, MA: Sloan-C.
- Yontz, E., & McCook, K. de la P. (2003). Service-learning and LIS education. *Journal of Education for Library and Information Science*, 44, 58-68.

Across Political Borders: Collaboration of Turkish Scientists with Their International Counterparts

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International research collaboration plays a vital role in the development of science and technology in both developing and developed countries by sharing expertise, knowledge, and technology in the scientific mainstream. A considerable amount of research has focused on the impact of scientific research collaboration, particularly international collaboration (Bordons and Gomez 2000; Lawani, 1986; Bridgstock, 1991) in the literature. There is no doubt that collaboration brings quality and quantity, and, therefore, encouraging international scientific collaboration would significantly improve scientific research in developing countries.

Turkey has its own unique socio-cultural and historical patterns that make it unique and difficult to differentiate it from other developing countries. It is a European Union (EU) candidate, located in between Asia and Europe, and surrounded with cultural nuances that have remained from the Ottoman Empire.

The fundamental research question being pursued in this doctoral dissertation is what influences the degree of international collaboration among Turkish scientists? While the study has been illuminated by bibliometric analysis, including comparing the degree of international collaboration in Turkey with that of other selected countries, the research study is largely exploratory and qualitative.

This study has been proceeded in three major steps. First, the Web of Science (WoS) ISI Thompson's Citation Database was used to identify the extent of collaborative efforts between Turkish scientists and scientists located abroad, in order to see how such efforts affect patterns of changed in this post-Internet era. The seventeen years of (1990-2006) scientific research collaboration of Turkey and the G7 nations (France, Germany, Italy, Japan, UK, USA, and Canada) was examined by using WoS data. Some other non-mainstream scientific countries which are in comparable size with Turkey; such as Greece, Poland, and Portugal as well as the mainstream ones such as Denmark, Switzerland, Norway, Sweden, and the Netherlands were chosen to see the extent of the scientific collaboration with G7 countries in SCI and SSCI. In order to do so, a bibliometric research method was used where co-authorships are regarded as an indicator of international research collaboration. Literature review, in both languages English and Turkish, has been conducted exhaustively prior to the data gathering.

For the second part of the research study, an email questionnaire survey has been administered to Turkish scholars. A brief questionnaire asking participants to explain how they have started to collaborate for their past or present research projects, how they have met the international co-author(s), how they got funding, and their perception on the importance of some factors effective in collaboration was emailed to prospective Turkish subjects.

The third step was to conduct semi-structured interviews with the volunteer researchers from Turkey. A salient feature of this qualitative study is that the data were collected by a fellow countryman, with whom interviewees can be expected, at least to some degree, to be more forthcoming that they might otherwise be (Gorden, 1992).

Collaboration is a very complex process and many technological, economic, strategic, and policy factors play an important role in the researchers' collaborative behavior. In-depth interviews in the Turkish researcher's mother tongue have been very beneficial to investigate all the aforementioned collaboration factors. One of the highlights of the study is that the using triangulation of qualitative and quantitative research methods. International collaboration is such a fascinating process and there is no doubt that it cannot easily be measured by using a single research method.

Our analyses suggested that the picture of scholarly trends is differing from region to region in Turkey. State and Private universities have distinctively different academician profiles. The ANOVA analysis for the institution type also showed a significant difference among State and Private as well as other affiliated scholars on the importance of five main factors; these are namely (1) Importance of Government information policies, (2) EU Information Policies, (3) Economic Reasons, (4) International Travel Support, (5) Turkey visit of an International scholar. These five factors are particularly relevant since that these are closely related to economic and policy issues. Factor Analysis Component Plot indicates that these above five factors are closely positioned mutually on the component plot as well. Based on the feedback of the interviews and surveys of various scholars, perhaps the most obvious differences among Turkish scholars are from different type of institutions is the economic and information policy related factors.

There is another assumption embedded in the survey data that economic problems are heavily hindering the international scientific collaboration in Turkey. The independent t-tests showed that there scholars who studied abroad are significantly different than the scholars who did not study abroad on the importance of perceiving importance of economic reasons as a barrier to collaborate. I believe that the above ideas, generated from my own and other researchers work are central to understanding the scholarly collaboration behavior of Turkish scientists. I had a chance to demonstrate and given some examples from many of the constant themes of scholarly collaborations from the Turkish case. As it was stressed many times, context is very important in order to see the factors affecting collaborative behaviors of scientists. Questionnaire surveys and interviews have provided in-depth value to this study to observe all these nuances within the context that are impossible to catch by the bibliometric research. In conclusion, it is expected that this doctoral dissertation research will contribute to the understanding of Turkish scholars' international collaboration processes pertaining to technology, economic, strategic, and cultural factors for prospective readers.

A Collaborative Approach to Fighting Health Disparities Through e-Health Training

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This paper describes how collaboration between a library school and a department of public health education at an historically black college or university (HBCU) helped to fight health disparities by training healthcare professionals and volunteers to use e-health resources from the National Library of Medicine (NLM). These efforts included the development of e-health training and assessment materials for participants in far-flung areas of North Carolina. The materials were developed by library, public health education and psychology specialists in conjunction with the NLM.

The primary research goal of the "Eagles e-Health" project was to apply outcomes-based research to evaluate the use of training workshops and workbooks about public health information resources available from the NLM. Measurements included awareness of and comfort with the use of online information resources before and after training. These evaluations took the form of interviews and questionnaires delivered online and in face-to-face settings as well as proficiency assessments delivered entirely online. Proficiency test questions were either developed from the content provided during the training or were derived from the self-test portions of the NLM database websites.

The challenge for the informatics and web application specialists on the team was to collect statewide data that demonstrated program effectiveness three months after training sessions. The project used web-based post-training and proficiency testing to demonstrate the effectiveness of the e-health training. In addition to the original workshops and workbooks, a website was developed for training material review and post-hoc evaluation. The web-based tools allowed individuals in remote areas to follow-up on their training without imposing scheduling or travel hardships. Targeted participants were from underserved areas where known health disparities exist, but most were expected to (and indeed did have) have Internet access.

Evaluation of participant awareness and proficiency in pre- and post- training assessments shows that combining public health education resources with online information retrieval training can increase public awareness of e-health.

This process of collaboration and discussion guided the development of the training resources, research tools and the web applications. Collaborators came from various disciplines and had different skills and expectations with regard to web tools. The web development team, having the highest level of technical expertise, was most enthusiastic about possible applications of web technologies. The whole team shared interest in the potential of web applications for documentation, training, and participant evaluation. Substantial differences in awareness of and facility with health information retrieval technology exist between participant groups; appropriate training in the use of online technologies at each level is crucial. Ultimately, web tools were used to communicate, to collect assessment data and to provide access to e-health resources. Among the silos of higher education, communication and commitment are required to sustain collaboration. In the future, refinements to improve training and assessment are planned to facilitate distribution of e-health information, to identify community health information needs and to integrate the website with the hands-on workshops.

Collaboration in LIS Education: Trends in Co-authorship

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Co-authorship has increased in recent decades (Glanzel, 2002; Hart, 2000; Hart, 2007). The relationships between co-authorship and article quality (Bahr & Zemon, 2000; Hart, 2000; Hart, 2007; Hernon, Smith & Croxen, 1993; Presser, 1980), and researcher productivity (Bahr & Zemon, 2000), have included several fields within LIS, but not LIS education. Factors that influence willingness to collaborate and co-author include: disciplinary background; rising publication expectations; gender; race/ethnicity; funding; prior success; institutional expectations; mentoring and proximity (see Fox & Faver, 1984; Gelman & Gibelman, 1999; Glanzel & Schubert, 2004; Hart, 2000). Hart (2007) observed an increase of co-authorship of articles published in academic library journals, and asked whether this increased quality as measured by citation counts. Many have criticized the use of citation counts to measure (Adler, Ewing & Taylor, 2008; Hart, 2007; Thomas, 1980). Some argue that citation counts measure impact only, and that additional measures are needed (Bornmann & Daniel, 2009; Bornmann, Mutz & Daniel, 2008; Lindsey, 1989). Others argue that self-citation counts need to be excluded from assessments of quality (Lehmann, Jackson & Luehtrup, 2006) and still others maintain that they should be included (Davaranah & Amel, 2009; Fowler & Aksnes, 2007). One study found that self-citation increased with co-authorship (Glanzel & Thijs, 2004). Cole and Cole (1973) argued that citation counts are valuable as rough indicators of article quality.

The purpose of this research is to investigate the role of collaboration in the authorship of articles on LIS education. Citations will be counted for articles published in the Journal of Education for Library and Information Science (JELIS), 1991-2000. Authors and citers will be surveyed.

We will acquire the following data measured through the JELIS publication record, citation counts and survey responses:

1. Quantity of co-authored articles;
2. Number of authors per article;
3. Proximity of co-authors;
4. Affiliations of co-authors;
5. Funded vs. unfunded research;
6. Prior co-authoring success;
7. Institutional expectations;
8. Gender, race and ethnicity;

9. Disciplinary background; and
10. Mentoring.

(1) through (4) will be extracted from the JELIS publication record. Article authors will be asked through a web survey why they chose to single-author or co-author the article, and to rank the factors that contributed to this decision, for (5) through (10). Citing authors will be identified through the Web of Science, and asked to provide assessments of: 1. Quality of the article cited as compared to the quality of all the articles cited in the citing article; 2. Impact of the article at the time of citing as compared to the impact of all the articles cited in the citing article; 3. Quality of the article cited as compared to the quality of all articles they have read on this topic since the citing article was published; and 4. Impact of the article as compared to the impact of all articles they have read on this topic since the citing article was published.

It is expected that the results of this study will make significant contribution to the trends in co-authorship in the subject of LIS education as they relate to article impact or quality.

References:

Adler, R., Ewing, J., and Taylor, P. (2008), Citation Statistics. Joint Committee on Quantitative Assessment of Research, A report from the International Mathematical Union (IMU) in cooperation with the International Council of Industrial and Applied Mathematics (ICIAM) and the Institute of Mathematical Statistics (IMS).

Bahr, A.H. & Zemon, M. (2000, September). Collaborative authorship in the journal literature: Perspectives for academic librarians who wish to publish. *College and Research Libraries*, 61, 410-419.

Bornmann, L. & Daniel, H.D. (2009), The state of h index research. Is the h index the ideal way to measure research performance? *EMBO Reports*, 10 (1), 2-6.

Bornmann, L., Mutz, R., & Daniel, H.D. (2008), Are there better indices for evaluation purposes than the h index? A comparison of nine different variants of the h index using data from biomedicine. *Journal for the American Society for Information Science and Technology*, 59 (5), 830-837.

Chew, F.S. (1988), Coauthorship in Radiology Journals. *American Journal of Radiology*, 150, 23-26.

Cole, J.R. & Cole, S. (1973). *Social Stratification in Science*. Chicago: University of Chicago Press.

Davarpanah, M.R. & Amel, F. (2009), Author self-citation pattern in science. *Library Review*, 58 (4), 301-309.

Durden, G.C. & Perri, T.J. (1995). Coauthorship and publication efficiency. *Atlantic Economic Journal*, 23(1), 69-76.

Fowler, J.H. & Aksnes, D.W. (2007). Does self-citation pay? *Scientometrics*, 72 (3), 427-437.

Fox, M.F. & Faver, C.A. (1984). Independence and cooperation in research. *Journal of Higher Education*, 55, 347-359.

Gelman, S.R. & Gibelman, M. (1999). A quest for citations? An analysis of and commentary on the trend toward multiple authorship. *Journal of Social Work Education*, 35, 203-213.

Glanzel, W. (2002). Co-authorship patterns and trends in the sciences (1980-1998): A bibliometric study with implications for database indexing and search strategies. *Library Trends*, 50, 461-473.

Glanzel, W. & Schubert, A. (2004). Analyzing scientific networks through co-authorship. In H.F. Moed et al. (Eds.), *Handbook of Quantitative Science and Technology Research* (pp. 257-276). Netherlands: Kluwer Academic Press.

Glanzel, W. & Thijs, B. (2004). Does co-authorship inflate the share of self-citations? *Scientometrics*, 61 (3), 395-404.

Hart, R.L. (2007). Collaboration and article quality in the literature of academic librarianship. *The Journal of Academic Librarianship*, 33(2), 190-195.

Hart, R. L. (2000). Co-authorship in the academic library literature: A survey of attitudes and behaviors. *The Journal of Academic Librarianship*, 26(5), 339-345.

Hernon, P., Smith, A & Croxen, M.B. (1993). Publication in College & Research Libraries: Accepted, rejected, and published Papers, 1980–1991. *College & Research Libraries*, 54, 303–321.

Lehmann,S., Jackson, A.D., & Luatrup, B.E., Measures for measures. *Nature*, 444, 1003-1004.

Lindsey, D. (1989). Using citation counts as a measure of quality in science measuring what's measurable rather than what's valid. *Scientometrics*, 15(3-4), 189-203.

Presser, S. (1980). Collaboration and the Quality of Research. *Social Studies of Science*, 10, 95 -101.

Thomas, J.B. (1980). Scholarly productivity in psychology; a criticism of citation count research. *British Educational Research Journal*, 6 (1), 91-95.

Collaborating for Success: Partnering with Community Colleges To Conduct Information Literacy Research

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Introduction

This paper will describe a collaborative research project funded by the Institute for Museum and Library Services that focuses on developing effective information literacy instruction for non-proficient students and involves faculty from an ALA-accredited LIS school and academic librarians at two community colleges. The paper will briefly describe the project itself and summarize the results to date, but will focus primarily on the role of collaboration in the project: the reasons collaboration made sense for this project, the process for identifying collaborators, the various communication technologies being used to sustain the collaboration, and the partners contributions to the expected outcomes of the project. It will be argued that the collaborative nature of this project can serve as a model for collaboration between LIS schools and libraries, as well as between research universities and community colleges. The paper will conclude with a brief discussion of how this research—both the process and the results—can inform LIS education.

Background

For some time, research has shown that students arrive at college with a wide range of information literacy skills, and freshmen and students with low academic performance in particular demonstrate non-proficient information literacy skills levels (Jaio & Onwuegbuzie, 1998; Massey-Burzio, 1998; Maughan, 2001; Seiden, Szymborski, & Norelli, 1998; Valentine, 1999). More recently, the Educational Testing

Service (ETS) found that of 3000 college students and 800 high school students only 13% proved to be information literate, as determined through a test (Foster, 2006). Moreover, as a longitudinal study at the University of California, Berkeley, discovered, college students often report much higher self-assessments of their information literacy skills that they are actually able to demonstrate through testing (Maughan, 2001). Competency theory (Kruger & Dunning, 1999) suggests that people who operate at a low skill level in a given knowledge domain may have difficulty in being able to recognize their skill deficit. Evidence indicates that competency theory applies in the domain of information literacy (Gross & Latham, 2007). Understanding more clearly the discrepancy between some students' self-assessments and their actual skill levels can lead to the development of more effective instruction to help ensure that non-proficient students will gain the knowledge and skills they need to become information literate and be successful in school, work, and their personal lives.

Attaining Information Literacy Project

The Attaining Information Literacy Project involves identifying first-year community college students with low information literacy skill levels. The Information Literacy Test (ILT) (James Madison University, n.d.), a web-based, 60-question multiple-choice test, was used to identify non-proficient students. Fifty-seven of these students were recruited for semi-structured interviews in spring 2009. In fall 2009, approximately 60 additional non-proficient students will be recruited to participate in six focus groups (three at each community college). Based on data gathered in the interviews and focus groups, the research team will develop an innovative information literacy intervention to address the needs of non-proficient students.

This research project is informed by three frameworks: competency theory (Kruger & Dunning, 1999), imposed vs. self-generated information seeking (Gross, 1995), and Bruce's (1997) study of higher educators' perceptions of information literacy. The project seeks to address the following broad research questions:

1. What are first-year community college students' perceptions of information literacy?
2. What are first-year community college students' perceptions of how information literacy is best attained?
3. What are first-year community college students' views of their own information literacy skills?

Collaboration

This IMLS-funded research project represents a partnership between an ALA-accredited LIS school and two community colleges. In the proposed paper, the project will be described briefly as a context in which to examine more closely the dynamics of collaboration involving the two different cultures of a research university, on the one hand, and community colleges, on the other. The focus of the paper will be on the following aspects of collaboration with discussion of the benefits and challenges related to each:

1. **Why we decided to collaborate with community colleges.** Given the extremely wide range of academic preparation found among community college students, we felt that it would be easier to identify and recruit non-proficient students in this environment than it had been in our previous studies with university students. For the community colleges, retention and completion rates are often low due in part to students not having the skills needed for college-level work. This project offered the possibility of improving information literacy skills among students and perhaps increasing the overall student success rate.
2. **How we identified the particular community colleges that we partnered with.** We considered student demographics as well as diversity of geographic location in selecting the community colleges with which to partner. We also discovered many challenges in working with institutions where the primary mission is education and where there is little experience with or infrastructure to support funded research.
3. **How we are using technology as well as face-to-face meetings to facilitate communication with our collaborators.** We have developed two websites—one a public site and the other a

secure project site—to facilitate communication. In particular, we are using various web-based interactive technologies to facilitate communication among our partners.

4. **How each of the collaborators is contributing to achieving project outcomes.** The librarians in the community colleges are in a unique position to identify and recruit students, to oversee the administration of the Information Literacy Test, and to liaison with other faculty at their colleges.

Significance

The primary outcome of the research will be an effective and innovative information literacy intervention that can address the needs of non-proficient students. The results will be shared with other community colleges and with the academic libraries and the LIS field in general. This project will also provide a model for successful collaboration between LIS schools and academic libraries and, more broadly, between research universities and community colleges. In addition, the lessons learned from the project will inform LIS education not only as relates to developing information literacy instruction, but also in facilitating collaboration between researchers and practitioners.

References

- Bruce, C. (1997). *The seven faces of information literacy*. Adelaide: Auslib Press.
- Foster, A. L. (2006, October 27). Students fall short on “information literacy,” Educational Testing Service’s study find. *The Chronicle of Higher Education*. Retrieved October 28, 2006, from <http://chronicle.com/weekly/v53/i10/10a03602.htm>
- Gross, M. (1995). The imposed query. *RQ*, 35, 236-243.
- Gross, M., & Latham, D. (2007). Attaining information literacy: An investigation of the relationship between skill level, self estimates of skill, and library anxiety. *Library & Information Science Research*, 29, 332-353.
- James Madison University. (n.d.). *The Information Literacy Test*. Retrieved December 12, 2005 from http://www.jmu.edu/assessment/wm_library/ILT.pdf
- Jiao, Q. G. & Onwuegbuzie, A. J. (1998). Perfectionism and library anxiety among graduate students. *The Journal of Academic Librarianship*, 24, 365-371.
- Kruger, J. & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one’s own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology*, 77, 1121-1134.
- Massey-Burzio, V. (1998). From the other side of the reference desk: A focus group study. *The Journal of Academic Librarianship*, 24, 208-15.
- Maughan, P. D. (2001). Assessing information literacy among undergraduates: A discussion of the literature and the University of California-Berkeley assessment experience. *College & Research Libraries*, 62, 71-85.
- Seiden, P., Szymborski, K., & Norelli, B. (1998). Undergraduate students in the digital library: Information Seeking Behavior in an heterogeneous environment. Paper presented at Choosing our futures: Eighth National Conference, April 11-14, 1998 Association of College and Research Libraries, Nashville, Tennessee. Retrieved February 12, 2004 from <http://www.ala.org/ala/acrl/acrlvents/nationalconference/conference8.htm>

Valentine, B. (1999). Students versus the research paper: What can we learn? Paper presented at ACRL Ninth National Conference, April 8-11. Detroit, Michigan. Retrieved February 12, 2004 from <http://www.ala.org/ala/acrl/acrlvents/nationalconference/conference9.htm>

Closing the Diversity Gap in LIS Education and Librarianship

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The importance of diversity in the field of Library and Information Studies continues to face an internal struggle as the United States becomes more ethnically diverse. Over the last decade, the American Library Association (ALA) along with other library science professional organizations and libraries, have made recruiting and retaining minority librarians a priority with the hopes of transforming the field of librarianship into a more diversified profession that mirrors the society it serves. The impact of these efforts, however, appears to be nominal at best and the gap is widening.

In 2002, ALA president John Berry set up a special diversity task force to help examine, identify challenges, and plan for strategies to address the issue. Part of the taskforce's findings highlighted the issue in stark numbers: In one decade, 1990-2000, the four major minority groups increased by a combined 152% of the U.S. population while at the same time the number of MLIS degrees from accredited LIS programs awarded to minority students increased by a modest 4% (9% to 13%) during that same time period. One of the primary conclusions of the task force was to issue a statement and challenge that "today's librarians should reflect the diversity of the communities they serve."

A review of the literature suggests that to improve diversity within the library science profession, the LIS community must seek to understand the motivations behind why students of color select other career paths instead of library science. There are library science programs that have begun implementing incentives to attract minority students by providing financial assistance, developing mentoring programs that provide professional and emotional support, encouraging minority staff members to pursue professional careers in LIS, redesigning marketing strategies to appeal to "techno savvy" students, marketing the profession to students in junior high school by developing relationships with advisers, and attending career days at undergraduate institutions with high minority enrollment. Other recruitment strategies involve providing special programs allowing LIS graduate students the opportunity to work directly with LIS faculty and utilizing the presence of faculty and staff of color in the recruitment process.

The purpose of our study is to explore the general issue of diversity in the field of library and information studies, explore the combined efforts of a university's LIS department and University Libraries to reconcile real enrollment gaps, and evaluate the overall effectiveness of these initial efforts to address the issue of diversity. The study has three research questions: 1) What was the rationale for addressing the issue of racial diversity, 2) What are some of the obstacles to have led to low minority enrollment in our program, 3) What activities were implemented to address this issue, and 4) How effective have these activities been?

Searching Together, Searching Alone: How Collaboration Works (or Doesn't) in Grade 7 Research

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Introduction

Our interactions with others strongly influence how we work, learn, play, and understand the world. Furthermore, it is becoming clear that the skills necessary for success in the 21st Century include the ability to communicate effectively and efficiently with others, to collaborate in solving ill-structured problems, and to reflect on group goals and processes (Bereiter & Scardamalia, 2006; Eisenberg, 2008).

Models of information seeking and information retrieval, which guide the development of information systems, services, and research, have historically been based on the assumption that the information seeker is an individual (Karamuftoglu, 1998; Hansen & Jarvelin, 2004; Talja, 2002). In these models, other social actors take on the roles of help providers or interpersonal information sources, but they are not directly involved in the search as collaborators. Consequently, many search tools and learning interventions are designed to support the individual user, rather than the group (Fidel et al, 2000; Romano et al, 1999; Talja & Hansen 2005). This discrepancy between the social nature of group work and individual assumptions which drive the design of systems and services has been labeled “the IR paradox” (Romano et al, 1999). This paradox is increasingly salient in K-12 education, which has built its information systems (print and digital) around individual student learning and performance.

An emerging body of work in collaborative information seeking and retrieval does seek to address this discrepancy. Studies have identified manifestations of social information behavior in diverse contexts (Bruce et al, 2002; Fidel et al, 2004; Hansen & Jarvelin 2004; Hyldegård, 2006; 2007). None of these studies, however, address how groups--compared to individuals--seek and use information, or solve information-intensive problems. Nor have LIS studies examined the outcomes of group vs. individual problem solving. The efficacy of group work is often assumed, but not (as yet) verified. Furthermore, these studies focus on adult work and learning domains. Studies of youth or student information seeking in K-12 education have not examined the products or processes of groups and individual learners.

Method of Empirical Investigation

This paper presents select findings from a mixed-methods study that explores the challenges of solving complex information problems alone and with peer learners. 120 grade seven students (ages 13-14) from five middle school classrooms completed information seeking tasks on health and wellness topics in two order-balanced conditions: individually, and in small groups of three students. Each student completed an individual and a group task, providing participants with the opportunity to critically reflect on their work under these two different conditions. This paper focuses on the 30 question survey provided to students after the completion of these two tasks. The survey consisted of three parts: five-point Likert-scale responses (12 questions in four groups), open-ended written response (4 questions), and a reflective process analysis (14 questions). Students’ scaled responses (quantitative) were analyzed using SPSS 17; written responses (qualitative) were coded using Atlas Ti. The response rate for the survey was 90% (108 of 120 students participated).

Findings & Discussion

Results of this survey illuminate student attitudes toward working alone and with others while solving information problems, in terms of learning outcomes, socio-affective concerns, and technical considerations. Drawing from Steiner’s (1972) theory of process losses and gains, as well as process models of information seeking and use (Eisenberg & Berkowitz, 1990; Kuhlthau, 2004) the survey focused on how the students perceived that the group process contributed to or detracted from their information seeking experience on a holistic and granular level. Survey questions explored issues of affective motivation, learning motivation, task efficacy, and task fairness. Key findings include:

- Students reported strong affective motivation for group work, most students citing that group work was preferred to individual work. Students also acknowledged resource pooling and constructive elaboration as key benefits to the group process.
- Student affinity for the group work experience was tempered by concerns for fairness and efficacy of group tasks. While students felt they learned more when working in groups, they also reported greater levels of distraction and issues with task management.
- Students offered mixed opinions of sharing technology during the information seeking process. While some student expressed frustration with the experience of using one computer in a group of

three students, others found this configuration beneficial to maintaining task focus and facilitating discussion.

- Process reflections reveal that students find neither condition perfectly suited to all information seeking stages; rather, a mix of individual and group work appears to be preferred. Students identified that stages of problem identification, resource assessment, and solution evaluation are best performed socially, while searching and reading stages may be best performed alone.

The findings extend current theoretical models of information behavior, add an important population to the emerging empirical work in this area, and inform pedagogical interventions designed to improve information skills in young people. By exploring new configurations of learners and tasks, this research provides guidance for LIS educators and practitioners seeking to optimize information literacy interventions. The more we know about how learners learn, the better we can inform how teachers teach. Effective instruction incorporating small groups will better prepare students for the world of work, where the ability to collaborate is becoming an essential skill.

References:

- Bereiter, C., & Scardamalia, M. (2006). Education for the knowledge age: Design-centered models of teaching and instruction. In P. A. Alexander & P. H. Winne (Eds.), *Handbook of educational psychology* (2nd ed., pp. 695-713). Mahwah, NJ: Lawrence Erlbaum Associates.
- Bruce, H., Fidel, R., Pejtersen, A.M., Dumais, S., Grudin, J., & Poltrock, S. (2002). A Comparison of the Collaborative Information Retrieval (CIR) Behaviors of Two Design Teams. *The New Review of Information Behaviour Research*, 3.
- Eisenberg, M. (2008) Information literacy: Essential skills for the Information Age. *DESIDOC Journal of Library & Information Technology*, 28 (2): 39-47.
- Eisenberg, M. B. and Berkowitz, R.E. (1990). *Information problem solving: The Big Six skills approach to library and information skills instruction*. Norwood, NJ: Ablex Publishing.
- Fidel, R. Pejtersen, A.M., Cleal, B. & Bruce, H. (2004). A Multi-Dimensional Approach to the Study of Human-Information Interaction: A Case Study of Collaborative Information Retrieval. *Journal of the American Society for Information Science*, 55 (11): 939-953.
- Fidel, R., Bruce, H., Pejtersen, A.M., Dumais, S., Grudin, J. & Poltrock, S. (2000). Collaborative Information Retrieval (CIR). *New Review of Information Behaviour Research*, 1, 235-247.
- Hyldegård, J. (2006). Collaborative information behavior – exploring Kuhlthau’s Information Search Process model in a group-based educational setting. *Information Processing and Management*, 42, 276-298.
- Hyldegård, J., & Ingwersen, P. (2007). Task complexity and information behaviour in group based problem solving. *Information Research*, 12(4) paper colis27. Retrieved from <http://InformationR.net/ir/12-4/colis/colis27.html>
- Karamuftuoglu, M. (1998). Collaborative Information Retrieval: Toward a social informatics view of IR interaction. *Journal of the American Society for Information Science*, 49 (12): 1070-1080.

Kuhlthau, C. C. (1993/2004). *Seeking meaning: A process approach to library and information services*. Westport, CT: Libraries Unlimited.

Romano, N. C., Roussinov, D., Nunamaker, J. F., & Chen, H. (1999). Collaborative Information Retrieval Environment: Integration of information retrieval with group support systems. Proceedings of the 32nd Hawaii International Conference on System Sciences (HICSS), January 1999.

Steiner, I. D. (1972). *Group processes and productivity*. New York: Academic Press.

Talja, S. (2002). Information sharing in academic communities: Types and levels of collaboration in information seeking and use. *New Review of Information Behavior Research*. Retrieved from: http://www.info.uta.fi/talja/Taljaisic2002_konv.pdf

Talja, S. & Hansen, J. (2006). Information sharing. In (A. Spink & C. Coles, Eds.) *New Directions in Human Information Behavior*. Dordrecht, The Netherlands: Springer.

Sustaining a Professional Specialty: The Young Adult Alternative Newsletter as an Expression of Collaboration in the Creation of Modern Young Adult Services

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In his 1988 title *The System of Professions* Andrew Abbott indicated that professions and professional work emerge from (among other things) contestation and conflict, battles over turf. I would argue that there is also collaboration and cooperation. Using the *Young Adult Alternative Newsletter* (YAAN, 1973-1979) as a lens, I will discuss how the evolution of young adult librarianship in the 1970s demonstrated the impact of collaboration between librarians as well as between librarians and external/community groups.

In the 1970s, librarians sustained and even grew their practice by conference attendance, reading professional literature, and by personal correspondence. Although YA librarians were active correspondents and conference-goers, they were at a distinct disadvantage when it came to professional literature. Their professional journal, *Top of the News*, was a joint publication with the children's librarians, and a 1973 survey of the contents indicated the lion's share went to children's literature and services. Articles about teen services (as distinct from teen literature) appeared in other journals, but they were few and far between, and there were few books that codified best practice for public library services to young adults. From 1973 until the *Voice of Youth Advocates* (VOYA) appeared in 1978, YAAN was the sole national serial dedicated to YA best practices. There may have been regional publications, but none seem to have caught the imagination and hearts of YA librarians in the way YAAN did, and none had the circulation.

What did collaboration look like in terms of this newsletter, and how did this express anything about the specialty? Practitioners from across the country contributed articles and news items, shared best practices, posed questions and problems for collective response, and provided a living model of the work of YA librarians. It wasn't that contributions from the field augmented YAAN content, these contributions were the content, making YAAN a collective, collaborative expression of the practice of YA librarianship. Items and articles from community (non-library) youth service providers give insight into how they also helped define the scope and role of the specialty, particularly in terms of the adolescents' cultural and social needs of the time.

This paper shares the outcomes of an historical study that utilized YAAN and its print contemporaries, as well as interviews with YAAN creator Carol Starr, YAAN contributors, and leading YA services experts. It considers the role of collaboration in creating and sustaining a professional specialty, and describes YAAN's impact (as a collective voice) on the field of YA librarianship.

Collaborative Service Learning in the Preparation and Evaluation of LIS Students

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Abundant research has been conducted and numerous articles have been written about service learning in the education of students and on competencies in the field of library and information science (LIS). In response to the "perceived gap between what is taught in ALA-accredited LIS programs and the knowledge, skills, and competences needed for work in the libraries of the 21st century," the American Library Association commissioned a taskforce to address the gap, and in January 2009, the ALA Executive Board released their approved Final Core Competences Statement (FCCS) for all graduates of ALA-accredited LIS programs.

Service learning (also, experiential learning) is one method for addressing the perceived gap between what is taught in LIS programs and the knowledge, skills, and competences needed for 21st century libraries. In addition to reviewing the recent literature on service learning and competencies, this paper includes the results of a study addressing the following competencies from FCCS: Foundations of the Profession, Information Resources, Technological Knowledge and Skills, Reference and User Services, and Research. The study focused on the perceived preparedness of recent graduates by surveyed professionals in comparison with the students' perception of their preparedness by the St. John's University Master of Library Science (MLS) program, which incorporates use of service learning through collaborative partnerships with the New York City Department of Education Office of School Library Services, the Queens Public Library, and the New York Hall of Science.

The overriding research question sought to answer if the students/recent graduates are prepared to meet the expectations of professionals by asking the following questions:

1. Overall, recently graduated MLS students are prepared for the realities of working in the public library or school media setting.
2. Recently graduated MLS students are prepared to deal with disruptive customers or students.
3. Recently graduated MLS students bring technology expertise with them to the job.
4. MLS students should have an internship experience in their area of interest prior to graduating.
5. Recently graduated MLS students are adept at providing quality reference using appropriate resources.
6. Recently graduated MLS students understand intellectual freedom and its importance.
7. What are some of the pros and cons of hiring recently graduated MLS students?
8. How important do you feel internships are for library students? And why?
9. What do recently graduated MLS students struggle the most with understanding or doing in their new jobs?
10. One thing I wish library schools did better to prepare their students is: _____

Questions 1-6 were answered using the following Likert Scale: Completely Agree (5); Somewhat Agree (4); Neutral (3); Somewhat Disagree (2); Disagree (1); and N/A (0). These results were analyzed by comparing the median responses and using a Fisher's Exact Test to examine whether or not, within each group comparison, the groups were equally likely to answer in the same manner. Questions 7-10 were open-ended questions analyzed with ATLAS.ti software.

Fifty-four St. John's University MLS students enrolled in two Spring 2009 management courses surveyed 348 practitioners in either public libraries (181) and school media centers (167) concerning perceived preparedness of recent MLS graduates for the realities of working in libraries. The students were provided with a brief script and the survey tool. The survey was completely confidential and voluntary; students took the Protecting Human Subjects Research course and were advised that survey responses are confidential and not to be discussed. After the surveying the practitioners, they took the survey and rated themselves. An example of the results of the comparison of the median responses is detailed in Table 1.

Table 1: Median Q1 – Overall, recently graduated MLS students are prepared for the realities of working in the public library or school media setting

Public Librarians Somewhat Agree	versus	School Media Specialists Somewhat Agree
Professionals Somewhat Agree	versus	Students Somewhat Agree
Student Public Somewhat Agree	versus	Student School Media Somewhat Agree

A simple examination of the median response appeared to indicate very little difference between the groups surveyed, regardless of how they were broken down. However, more sophisticated statistical tests revealed variations between the responses. A Fisher's Exact Test was used to examine whether or not, within each group comparison, the groups were equally likely to answer the question in the same manner. For Question 1, the Fisher's Exact Test revealed important differences for Public Librarians versus School Media Specialists. As seen in Figure 1, there was a statistically significant difference between how these two types of librarians answered this question. The Fisher's Exact test revealed that public librarians and school media specialists were not equally likely to answer this question in the same way. As indicated in the frequency table, school media specialists were more likely than public librarians to say that their students ARE prepared for the realities of the work place for which they are being trained.

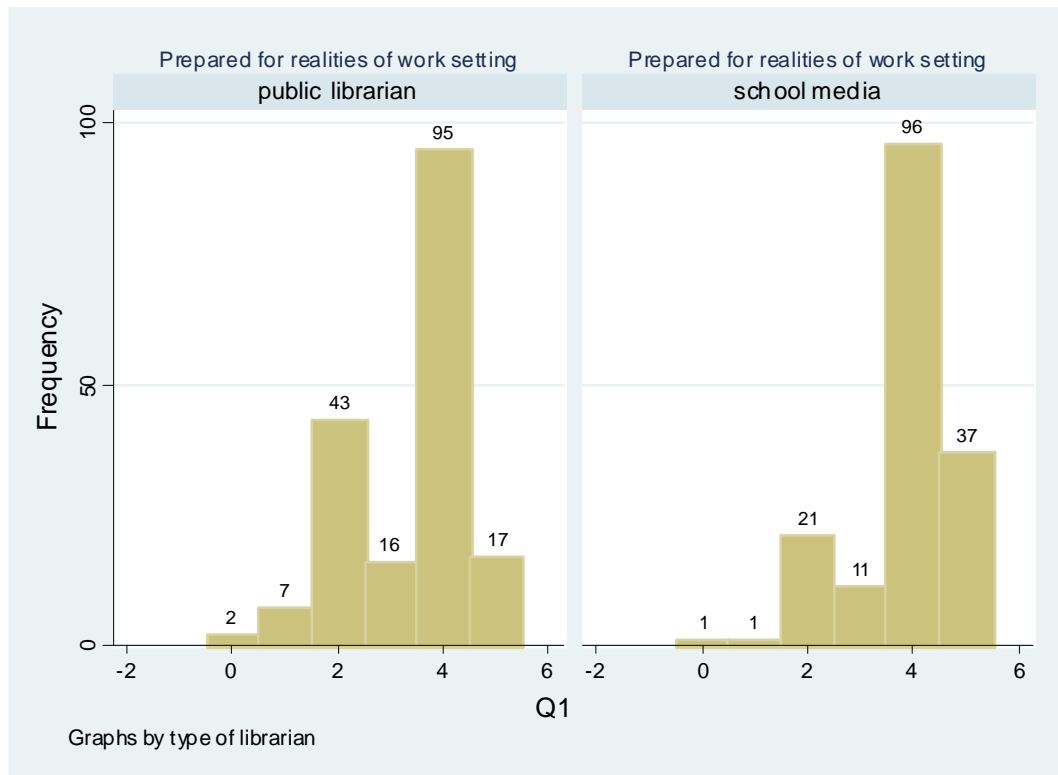


Figure 1: Frequency Q1 – Overall, recently graduated MLS students are prepared for the realities of working in the public library or school media setting

Repeatedly, when reviewing questions one through six, median responses showed little statistical variation, but in each case further examination revealed surprising results.

Initial results of the qualitative content analysis seemed to concur with the quantitative data. However, in closely reading the open-ended responses, patterns emerge between the perceptions of public librarians and school library media specialists at the expert and pre-service levels of experience. One in particular is the readiness of recent graduates to handle unruly public library patrons and/or disruptive K-12 students. Those who have been public library trainees or classroom teachers are perceived as better prepared.

Preliminary results reveal several trends for further study. First, service learning through collaboration may impact preparedness; second, the perceived gap concerning the knowledge, skills, and competences may not be an issue for students from ALA-accredited LIS programs incorporating service learning. More sophisticated analysis procedures are being employed in order to identify patterns within and between categories. The eventual level of detail should shed light on the experiences that best prepare students for the competencies that matter for success in the profession.

Information Seeking and Avoidance in Collaborative Learning: A Case Study from a Graduate Reference Course

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Introduction

In academic world, learning collaboratively has been accepted as an effective means to enhance education (Farmer, 1999; Johnson & Johnson, 1999). While employers appreciate team work in professional settings, faculty might lack time and support to integrate collaborative activities into curriculum, partly due to decreasing funding on the support and increasing pressure to seek external funding (Hunter, 2009,

p.9). From students' perspectives, group projects may be completed by one or two individuals, while the rest of the team is idling. Online education makes collaboration even harder when students may never meet face-to-face, one of the important factors that promote individual interactions and success (p. 71). Currently, little is known how to identify students who will practice collaborative learning online or avoid collaboration. The purpose of this project is to enhance collaborative learning by identifying potential avoidance behavior in online classrooms. Particularly, how individual coping styles on information seeking and avoidance will influence collaborative learning in a Web-based collaborative learning environment.

This paper addressed the following research questions:

- 1) How to identify collaborators at an online learning environment using a coping behavior scale?
- 2) To what extent will different coping styles, particularly as monitors and blunters, affect students' participation and satisfaction in a collaborative online learning environment?

Literature review

Collaborative learning

Computer-assisted collaborative learning theories are based on two important theoretical models: social cognitive theory (Bandura, 1986) and social development theory (Vygotsky & Cole, 1978). Social cognitive theory emphasizes how observation during learning intervention impacts learning outcomes. Social Development Theory suggests that social interaction, beyond observational learning, plays a fundamental role in the development of cognition. Social Development Theory was based on the context of language learning in children.

Similar terms have been used interchangeably in education literature on learning collaboratively, notably cooperative learning (Johnson & Johnson, 1999), student team learning (Slavin, 1999), group investigation (Sharan & Sharan, 1992), and collaborative learning (Barnes, Britton, & Torbe, 1990). Johnson & Johnson (1999) summarized five important elements cooperative learning as positive interdependence, individual accountability, face-to-face promotive interaction, social skills, and group processing. Farmer (1999) stated that cooperative learning emphasize structured group of people who have a specific learning task to accomplish together, while collaborative learners need not a deep-seated relationship with their peers in order to work with them. Collaborative learning may improve student self-esteem, attitude toward school, and ability to work with others (Farmer, 1999, p. 1).

Information Avoidance

Information scientists found an interesting phenomenon with regards to the information seeking behavior, particularly people with stress, may not seek information actively, and some cases they may avoid information of all forms (Case, 2005).

Suzanne M. Miller's coping styles theory reveals that when facing stressful situations, people differ in ways of dealing information. Monitors try to decrease the stress by actively seeking and keeping them alert. Blunters deal with the adverse events by distracting themselves and avoiding information in order to protect themselves. Miller Behavior Style Scale is one of situation-response inventories. The scale provides four stressful, imaginary scenarios with eight coping options for each situation. The situations include dental office visiting, terrorist attacking, job layoffs, and airplane hijacking.

Baker (2006) reviewed Miller's theory on monitoring and blunting and has previously published its use on health-related information seeking issues (Baker & Pettigrew, 1999). Information avoidance might link to another concept called Learned Helplessness (Peterson, Maier, & Seligman, 1993), a psychological phenomenon when humans or animals have learned to behave helplessly and avoid negative circumstances, even when the positive opportunity is restored.

Method

A Theoretical Framework for Collaborative Learning

After summarizing theories related to information seek and avoidance, this paper proposed a theoretical model on collaborative learning. The proposed model proposed the effects of social interaction, situational needs, and individual coping style on student collaborative effort, by choosing either to participate or avoid the collaborative process. Social norm is a term that defined here as peer pressure

from inside and outside collaborative groups. Ajzen and Fishbein (1980) developed a similar term “subjective norm” in their Theory of Reasoned Action, which means “a person's belief that specific individuals or groups think he/she should or should not perform a behavior and his/her motivation to comply with the specific referents” (p. 8). Situational needs include individual socio-economical status, anxiety, and cultural background. Coping styles is individual tendency under stress, as either monitoring or blunting to external information tasks (Miller, 1987; Baker, 2006).

Research Design

This research project applied a qualitative design to confirm the validity of the model. Fifty-two library and information science students from a southwest state university participated in the project during the summer 2009 semester at their first a few days of class meeting. They filled out two surveys: a background survey on students’ social norm, situational needs, perception of collaboration, and the Miller Behavioral Style Scale (MBSS), a self-report inventory that intends to measure monitoring (i.e. confronting oneself with the threat) and blunting (i.e. avoiding the threat) coping styles. MBSS has been validated by previous researchers, particularly related to information behavior of consumer health scenario. The student participants worked collaboratively to complete 30 information search projects. During the end of face-to-face collaboration, students finished an online survey and reported barriers of learning collaboratively at face-to-face and online environments. Answers to open-end questions were analyzed using content analysis. Results from student answers confirmed the construct validity of this model.

Discussions and conclusions

This study examined the plausibility of a proposed theoretical model on collaborative learning in LIS distance education, using concepts of situational needs, coping style, and social norm. This study yielded new understanding of online collaboration at LIS distance learning scenarios. Understanding individual coping style might help educators designing courses more efficiently.

References

- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Baker, L. (2006). Monitoring and blunting. In K. E. Fisher, S. Erdelez, & L.E.F. McKechnie (eds), *Theories of information behavior*. Medford, NJ: Information Today.
- Baker, L.M. & Pettigrew, K.E. (October 1999). Theories for practitioners: Two frameworks for studying consumer health information-seeking behavior. *Bulletin of the Medical Library Association*, 87(4). Accessed October 14, 2009 from <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=226619>
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Barnes, D., Britton, J., & Torbe, M. (1990). *Language, the learner, and the school* (4th ed). Portsmouth, NH: Boynton/Cook
- Case, D. (2005). Avoiding versus seeking: The relationship of information seeking to avoidance, blunting, coping, dissonance, and related concepts. *Journal of Medical Library Association*, 93(3), 353-362.
- Farmer, L. S. J. (1991). *Cooperative learning activities in the library media center*. Englewood, CO: Libraries Unlimited.
- Hunter, J. (2009). *One more thing: Faculty response to increased emphasis on project teams in undergraduate engineering education*. Unpublished doctoral dissertation, University of Arizona.
- Johnson, D. W., & John, R. T. (1999). Making cooperative learning work. *Theory into Practice*, 38(2), 67-73.
- Miller S. M. (1987). Monitoring and blunting: Validation of a questionnaire to assess styles of information seeking under threat. *Journal of Personality and Social Psychology*, 52(2), 345–353.
- Peterson, C., Maier, S. F., Seligman, M. E. P. (1993). *Learned helplessness: A theory for the age of personal control*. New York: Oxford University Press
- Sharan, Y., & Sharan, S. (1992). *Expanding cooperative learning through group investigation*. NY: Teachers College Press.
- Slavin, R. (1999). Student teams-achievement division. In S. Sharan (Ed.), *Cooperative learning methods* (pp. 3-19). Westport, CT: Praeger Publishers.
- Vygotsky, L. S. & Cole, M. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Discourse Analysis of the Question-Answering Service of the Internet Public Library

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As libraries increase digital reference service, librarians must be comfortable collaborating via computer mediated communication channels. The findings of this study demonstrate how linguistic stylometric features can be used to effectively collaborate with patrons.

Research Questions

The development of communication technologies enables dynamic social interaction and collaboration through the computer mediated communication (CMC) channel. For instance, in the library setting digital information service through email or real-time chat has seen rapid growth. The Internet Public Library (www.ipl.org) is a public service organization and a learning/teaching environment founded at the University of Michigan. In January 2007, IPL entered a new phase and it was physically

moved to Drexel's College of Information Science and Technology. Since 2007, eighteen partner or participating universities have been involved with the IPL Consortium. The IPL solicits questions from the general public on just about any topic via its web-based Question-Answering Service.

In order to facilitate more effective collaboration during utilization of digital information services, analysis of discourse between librarians and users is essential (Park, 2007; Park, 2008). In this research we investigate the linguistic stylometric patterns found in the librarians' answers, with the aim of identifying the discourse features that make up different types of answers.

This study addresses the following research questions:

- How do librarians employ the stylometric features during the course of offering information to users?
- What implications can be drawn from the frequently occurring stylometric features in question-answering service?

Methods

We sampled transcripts of 462 question-answers from the IPL, focusing on analyzing the stylometric patterns in the answers provided by IPL librarians. The data was provided by participating members of the IPL Consortium.

Feature Extraction

This study is closely related to a linguistic research domain called stylometry, which focuses on a statistical analysis of literary style (Holmes, 1998). The central task of stylometry is to extract a set of features that can represent the writing styles of a particular author. Stylometry has been successfully applied to authorship identification of historical literature and recently for online messages (Zheng et al., 2006). In this study, we adopted the following types of stylometric features from previous literature to analyze the discourse data from question-answering service of IPL.

- Lexical Features

Lexical features represent a person's writing styles based on the use of characters and words. For example, the total number of words is counted to describe the length of an answer.

- Structural Features

The structural features are sentence- or paragraph- level features that indicate how texts are organized. The structural features may influence the clarity of the answer. They may also provide clues to the richness of an answer.

- Sentimental Features

Librarians may offer their subjective opinions on answers. For example, he/she may express positive or negative opinions towards a particular source. There are clues that can reveal the sentiments of librarians. We defined sentimental features based on a lexicon of subjective clues (Wiebe et al., 2004).

- Positive/Negative Politeness Features

Positive/negative politeness attends to the speech participants' face desire. Positive face desire relates to fostering positive interpersonal relationships by decreasing social distance between speech participants, such as seeking agreement, delivering compliments, showing interest, approval or sympathy. Negative face desire can be realized by giving others options, independence and freedom of action and freedom from imposition, such as avoidance, apology, deference, self-effacement and formality. The politeness coding scheme for this study is derived from Park (2008).

Table 1. Stylometric Features for Discourse Analysis

Lexical Features (9)	Sentimental Features (6)
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Number of characters Frequency of upper case characters Frequency of lower case characters Frequency of digits Frequency of special characters Total number of words Average word length Standard deviation of word length	Frequency of strong positive words Frequency of weak positive words Frequency of strong negative words Frequency of weak negative words Frequency of strong neutral words Frequency of weak neutral words
Structural Features (3)	
Total number of sentences Average number of words per sentence Average number of words/answer Average number of URL's	
Positive Politeness Features (11)	Negative Politeness Features (9)
Paying Attention Seeking Agreement Avoiding Disagreement Seeking Common Ground In-group Markers Presuppose Needs Acknowledgement /Appreciation Showing Understanding Informality (e.g. Contractions and Abbreviations) Being optimistic Non-Verbal Markers (e.g. emoticons)	Minimal assumptions Being pessimistic Being apologetic Surname/ title Giving Option Being Indirect Minimizing Imposition Being hesitant Formality

Dimensional Reduction

We developed a program to automatically extract the 39 stylometric features from answers in the discourse data. Next, we conducted a Principal Components Analysis (PCA) on the features in an attempt to reduce data dimensionality. A PCA can identify major dimensions, called principal components (PCs), which account for most of the variance of data. Each PC is a linear combination of several original variables and the variables with high loadings can be used to interpret the meaning of each PC.

Results and Discussion

In our PCA of the stylometric features, we selected the top PCs based on the eigenvalue-greater-than-one heuristic. Table 2 summarizes the top three PCs and their highly loaded features (loading > 0.4). Each PC is given a name based on these features to interpret its meaning. The selected components accounted for 46% of the variance.

Table 2. Top Three PCs and their Highly Loaded Features

PCs	Features	Loadings
Richness	Total # of Characters	.933
	Freq. of Lower Case	.928
	Total # of Words	.927
	Freq. of Upper Case	.856
	# of Sentences	.853

	# of URL's	.795
	Strong Positive Words	.787
	Weak Neutral Words	.743
	# of Special Char.	.683
	Understanding	.672
	Giving Options	.672
	Weak Neutral Words	.656
	# of Integers	.630
	Weak Negative Words	.625
	Strong Neutral Words	.549
	Avoiding Disagreement	.492
Precision	Average word length	-.875
	SD of word length	-.845
	Paying Attention	.552
Supportiveness	Minimal Assumptions	.755
	Agreement	.640
	Being Optimistic	.543

As libraries increase digital/virtual reference service, librarians must be comfortable collaborating with patrons via computer mediated communication channels. The findings demonstrate how librarians can effectively collaborate with patrons by using linguistic stylometric features to form responses. For example, rich answers often contain large amounts of characters/words/sentences, URL's of sources, and librarians' positive sentiments and opinions. Answers composed of shorter words tend to be precise. A librarian could demonstrate support by showing agreement (e.g., "agree," "right") with the questioner. By understanding the features that make up certain types of responses, librarians can construct better responses, which more effectively answer patrons' questions.

References

- Holmes, D.I. 1998. The evolution of stylometry in humanities. *Literary and Linguistic Computing*, 13(3), 111-117.
- Park, J. (2007). Interpersonal and affective communication in synchronous online discourse. *Library Quarterly*, vol. 77, no. 2: 133-155. (Special Issue on Discursive Approaches to Information Seeking in Context (S. Talja and P.J. McKenzie eds.).
- Park, J. (2008). Linguistic politeness and face-work in computer mediated communication, part 1: A theoretical framework. *Journal of the American Society for Information Science and Technology* 59(13): 2051-2059.
- Park, J. (2008). Linguistic politeness and face-work in computer mediated communication, part 2: An application of the theoretical framework. *Journal of the American Society for Information Science and Technology* 59(14): 2199-2209.
- Park, J. (2008). Solidarity and rapport in social interaction through computer mediated communication channel. Sigrid Kelsey (ed.) *Handbook of Research on Computer Mediated Communication*. IGI-Global.
- Wiebe, J., Wilson, T., Bruce, R., Bell, M., Martin, M. (2004). Learning subjective language, *Computational Linguistics*, 30(3):277-308.

Zheng, R., Li, J., Huang, Z., Qin, Y., Chen, H. 2006. A framework for authorship identification of online messages: writing-style features and classification techniques, *Journal of the American Society for Information Science and Technology*, 57(3):378–393.

Collaboration in Online Question Answering Services

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Statement of Problem

Question answering (Q&A) services, where inquirers pose questions seeking answers, have grown in popularity on the Web. A typology of online Q&A services (Rozaklis & MacDonald, 2009) found four different categories of Q&A services. Some of these Q&A services are library-oriented (e.g., Ask Here PA), as many librarians have extended their reach to connect with users via digital or virtual reference efforts. Other Q&A services managed by educational institutions, including museums (e.g., Ask Joan of Art) and universities (e.g., Ask Dr. Math), connect experts with users around domain-specific problems. Further, in recent years, there has been a proliferation of online Q&A services spearheaded by commercial entities with users themselves answering others' questions (e.g., Yahoo! Answers, ExpertBee). Each type of online Q&A service exhibits distinct processes of collaboration by information providers for answering questions.

Within the library environment, much attention has been paid to collaboration in question answering from the institutional viewpoint of the provision of a Q&A service, rather than from a focus on the transactional level of question answering. The literature on collaboration in libraries has centered on multi-institution endeavors like Q and A NJ (Long, 2002) or the recent Info Quest spearheaded by the Alliance Library System (McKiernan, 2009), intra-institution cooperation between library departments (e.g., De Groote, Dorsch, Collard, & Scherrer, 2005; Malefant, 2006), and between libraries and other agencies, including museums (e.g., Goodrum, 2003; Lavender, Nicholson, & Pomerantz, 2005) and schools (e.g., Jackson & Hansen, 2006). Fewer researchers have concentrated on collaboration during specific reference interactions, either librarian-to-user or librarian-to-librarian.

Collaboration between librarians during interactions with users was encouraged early on by Margaret Hutchins (1944), when she urged librarians to “call on other [librarians] for suggestions”. More recently, the Reference and User Services Association’s Guidelines for Behavioral Performance of Reference and Information Service Providers (2004) recommended multi-librarian collaboration for question answering: “[guideline] 5.4... Consults other librarians or experts in the field when additional subject expertise is needed.” McKenzie (2003) studied effective reference desk behavior in transactions that involved collaboration between multiple librarians. In other instances, authors suggested that librarian-to-librarian collaboration during interactions may augment reference performance and improve reference accuracy (e.g., Kemp & Dillon, 1988; Nolan, 1992; Quinn, 2001; Pomerantz, 2006).

This research will identify and examine existing online Q&A services in order to describe the methods of collaboration utilized in these services. Then the study will focus on transactions in a specific online Q&A service, the Internet Public Library’s (IPL) Ask an IPL Librarian. Since its inception in 1995, the IPL has remained an online information enterprise consisting of a question answering service and a collection of authoritative digital resources.

Research Questions

This study addresses the following research questions:

1. How is collaboration between inquirers and information providers carried out in online Q&A services?
2. What kinds of collaboration occur between librarians in the Ask an IPL Librarian digital reference service?

- a. How frequently does collaboration between librarians occur for question answering in this service?
- b. Do the types of collaboration differ based on a question's subject?

Methods

This study is being conducted through the following methods for data collection and analysis: First, using the previously developed typology of online Q&A services (Rozaklis & MacDonald, 2009), sixty online Q&A services were identified through a purposive sample to aid in the development of a typology of collaboration between information providers in online Q&A services. Two researchers individually examined twenty of the sixty online Q&A services to define collaboration conducted by information providers through a review of all sampled services' websites, viewing respective question answering policies and processes, and assessing the mechanisms (procedural- and technology-related) for posing and answering questions, as well as accessing answered questions. The researchers then compared their details of collaboration in question answering for consistency, and detailed collaboration in question answering for the remaining forty online Q&A services. Finally, categories of types of collaboration between information providers were labeled and described.

Second, reference transactions of answered questions received between March 1995 and June 2009 by the IPL's Ask an IPL Librarian digital reference service that contained at least one instance of collaboration between librarians were collected from the IPL's reference data archive. Reference transactions which include collaboration between librarians are ascribed a code (either "Followup message" or "Post-a-Note") in the question answering software by the librarian initiating or responding to a request for collaboration. These reference data were gathered to identify the frequency of occurrence of collaboration between reference volunteers.

From the gathered 2007 (N=1,985) and 2008 (N=2,144) reference data of answered questions which include at least one instance of collaboration between librarians at the transactional level, a roughly 15% systematic sample was collected for a combined total of 589 reference transactions. Researchers examined the systematically sampled 2007 and 2008 reference data and coded for question's subject and user location, as self-reported data is supplied by inquirers who pose their question to the Ask an IPL Librarian service via Web forms. Researchers also gathered descriptive information about the number of times librarians collaborated per question, the number of words per submitted question, the number of times a question was claimed or unclaimed for answering by a librarian, and the time required to resolve the question since being posed to the digital reference service.

Researchers worked in teams to examine the information shared between librarians to classify the types of collaboration. Researchers individually coded forty reference transactions following standard content analysis guidelines, compared coding for agreement, and then coded the remaining instances of collaboration present in the systematically sampled reference transactions. From the types of collaboration categorized from the coding, a typology was created.

Statement of Significance

This study will provide an understanding of the types of collaboration in online Q&A services, as well as specific types of collaboration in one library-oriented online Q&A service, the IPL, and may provide the basis for application in other settings. Further, a comprehensive understanding of how collaborators communicate in online Q&A services may allow researchers to develop technological solutions for enhancing the types of collaboration specific to librarians in a question-answering context.

References

- De Groote, S.L., Dorsch, J., Collard, S., & Scherrer, C. (2005). Quantifying Cooperation: Collaborative Digital Reference Service in the Large Academic Library. *College & Research Libraries*, 66(5), 436-454.
- Goodrum, A.A. (2003). Visual Resources Reference Collaboration Between Digital Museums and Digital Libraries. *D-Lib Magazine*, 9(2).
- Hutchins, M. (1944). *Introduction to Reference Work*. Chicago, IL: American Library Association.
- Jackson, L., & Hansen, J. (2006). Creating Collaborative Partnerships: Building the Framework. *Reference Services Review*, 34(4), 575-588.
- Kemp, J., & Dillon, D. (1989). Collaboration and the Accuracy Imperative: Improving Reference Service Now. *RQ*, 29(1), 62-70.
- Lavender, K., Nicholson, S., & Pomerantz, J. (2005). Building Bridges for Collaborative Digital Reference Between Libraries and Museums through an Examination of Reference in Special Collections. *Journal of Academic Librarianship*, 31(2), 106-118.
- Long, S. (2002). Partnerships: 'Q and A NJ' Handles Reference 24/7. *Interface*, 24(2), 4.
- Malefant, C. (2006). The Information Commons as a Collaborative Workspace. *Reference Services Review*, 34(2), 279-286.
- McKenzie, P.J. (2003). User Perspectives on Staff Cooperation During the Reference Transaction. *The Reference Librarian*, 83/84, 5-22.
- McKiernan, G. (2009, June 30). Info Quest: Alliance Library System Text Message Reference Service. Message posted to: <http://mobile-libraries.blogspot.com/2009/06/infoquest-alliance-library-system-text.html>
- Nolan, C.W. (1992). Closing the Reference Interview: Implications for Policy and Practice. *RQ*, 31(4), 513-521.
- Pomerantz, J., & Stutzman, F. (2006). Collaborative Reference Work in the Blogosphere. *Reference Services Review*, 34(2), 200-212.
- Quinn, B. (2001). Cooperation and Competition at the Reference Desk. *The Reference Librarian*, 34(72), 65-82.
- Reference and User Services Association. (2004). *Guidelines for Behavioral Performance of Reference and Information Service Providers*. Retrieved 9 July 2009, from <http://www.ala.org/ala/mgrps/divs/rusa/resources/guidelines/guidelinesbehavioral.cfm>.
- Rozaklis, L., & MacDonald, C.M. (2009). Q&A Service Overload: How Many Does the Web Really Need?. Unpublished work. Poster session presented at the 2009 Annual Meeting of the Drexel University's Research Day.

Visibility as a lever of collaboration: Implications to designing collaborative spaces

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Key Words: GIS, mapping, volunteered geographic information, crowdsourcing, social production, inquiry cycle, OpenStreetMap

Extended Abstract

Previous research has emphasized collaboration in formal organization settings. Commonly reported issues of collaboration in such settings include: organizational interdependence (Thomson, 1967), inter-organizational exchange (Cook, 1977), necessity, reciprocity, legitimacy, stability, and efficiency of parties that enter into collaboration (Oliver, 1990), and coordination (Malone & Crowston, 1994). In such collaboration, parties are often bound with formally defined rules and responsibilities. Because of the formal nature of the collaborative endeavor, those entering into the collaboration need to focus as much on what they are obligated to do as on what they can create or do. Despite research efforts, in practice, we still continue to encounter stringent challenges in managing many collaborative enterprises.

On the other hand, recently, we are beginning to see a radically different model of collaboration.

This new model has been variously called as social-production (Benkler, 2006), volunteered information (Goodchild, 2007), and crowdsourcing (Howe, 2008), where individuals, loosely formed groups and organizations collaborate without formal mandates. This is especially evident in the use of web 2.0 based tools. In this paper, we begin by asking a question: What drives people to engage in this new model of collaboration and what lessons can we learn from it?

Based on our study of a collaborative online mapping community called OpenStreetMap (www.openstreetmap.org) and middle school students' collaborative mapping of a cemetery in Illinois, we discover that 'visibility' of the shared goal, a participant's contribution, and how much more contribution is still required to accomplish the goal is a crucial factor in the degree of participation in a collaborative endeavor.

In the case of OpenStreetMap, we analyzed 2846 conversation messages qualitatively using grounded theory (Glasser & Strauss, 1967), and in particular constructivist grounded theory (Charmaz, 1983). Although the analysis suggests different factors, we find that 'visibility',

2

particularly in the form of maps, plays a crucial role in the motivation to achieve a shared goal and hence acts as a lever of collaboration. Maps, by their very nature, are effective communication and visualization tools, and hence appeal to members of a community to contribute in two distinct ways: First, when one sees a contribution appear visually in maps, it provides a deep satisfaction that enhances the inquiry cycle. Second, seeing a blank area in a map accentuates the instrumentality of the contributions, leading the participant to map that area.

In the case of the cemetery mapping project, one of the authors spent several hours observing a group of six middle school students while they mapped people's gravestones using Google map in an after-school program. At the beginning of the project, students spent several weeks in library research and each identifying a few people, mostly from the 18th century, for further study. They then went to the cemetery, where they recorded the locations of gravestones using GPS, and captured pictures and videos using digital cameras. For the lab work that followed the field work, they created a Google map, which acted as a shared mapping space, in which each student could map gravestones on the same map. We used the inquiry-based cycle of ask-investigate-create-discuss-reflect as a framework in this project (Bruce & Bishop, 2002; Bruce, 2009).

The mapping activities extended several hours. Unsurprisingly, different students had different mapping skill levels. Because students could immediately see the push-pin once they marked

each gravestone on Google map, this immediate visibility of their work motivated them to map other gravestones and improve different aspects of the map. When students who were lagging behind their peers saw that the gravestones they were interested were not mapped, they were immensely motivated to map them. When they saw the map of stones mapped by other students, they got a sense of how the map would look once it was mapped. In addition, there was a bit of competition with peers; they did not want their efficacy to be questioned. Whatever the underlying reasons were, they were all triggered by the visibility. Thus, it played important roles to motivate collaborators, which are strikingly similar to what we discovered in our earlier case. Based on our study, we conclude that ‘pleasure of creation’ and ‘instrumentality’ of one’s contribution motivate humans to participate in collaborative works. Visibility plays a significant role in one’s decision to take part and provide sustained contribution in a collaborative enterprise. The notion of ‘visibility’ proposed here relates to Erickson & Kellog’s (2000) discussion of spatial constructs—visibility, awareness and accountability—in the design of collaborative information systems. One major difference, however, is that we emphasize visibility in terms of contributions, rather than simply the visibility of participants’ spatial locations and proximity. Clearly mapping the visibility of the goal, how much one has already contributed, how much others have contributed, and what additional contributions are needed in order to accomplish the goal is worth considering in designing collaborative spaces.

References

Benkler, Y. (2006). *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. Yale University Press.

Bruce, Bertram C. (2009, April). Building an airplane in the air: The life of the inquiry group. In Joni Falk & Brian Drayton (eds.), *Creating and sustaining online professional learning communities*. New York: Teachers College Press.

Bruce, B.C. & Bishop, A.P. (2002). Using the Web to support inquiry-based literacy development. *Journal of Adolescent & Adult Literacy*, 45(8), 706-714.

Charmaz, K. (1983). Grounded theory method: an explication and interpretation. In Robert Emerson (ed.), *Contemporary field research: a collection of readings*. Waveland Press.

Cook, K. S. (1977). Exchange and power in networks of inter-organizational relations. *Sociological Quarterly*, 18, 62–82.

Erickson, T. & Kellog, W. (2000). Social Translucence: An Approach to Designing Systems that Support Social Processes. *ACM Transactions on Computer-Human Interactions* 7(1): 59-83.

Howe, Jeff (2008). *Crowdsourcing: why the power of the crowd is driving the future of business*. Glaser, B. G & Strauss, A. L. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research*, Chicago, Aldine Publishing Company.

Goodchild, M. F. (2007). Citizens as sensors: the world of volunteered geography. *GeoJournal*, 69, 211–221.

Malone, T. W. & Crowston, K. (1994, March). The interdisciplinary study of coordination. *ACM Computing Surveys*, 26(1), 87-119.

Oliver, C. (1990). Determinants of inter-organizational relationships: Integration and future direction. *Academy of Management Review* 15 (2): 241–65.

Thompson, J. D. (1967). *Organizations in action*. New York: McGraw-Hill.

Staff Roles and Their Perceptions on Trustworthiness, Commitment, and Conflict in Collaborative Projects.

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Introduction

Collaboration appears to be a magical solution for many problems when there is scarcity of resources, lack of knowledge or skills, and/or environmental threats. The increasingly complex tasks derived from fast rate of technological change, globalization process, lack of knowledge, resources, or skills to reach certain goals are forcing organizations, groups and individuals to collaborate. Collaboration at the most basic level could be defined as a dynamic, interactive, and interdependent process in which the stakeholders work together, share resources, and communicate visions in order to achieve their goals. To facilitate successful collaboration, it is important to have a better understanding about the nature of collaboration, its structures, the roles that participants play, and issues that affect this phenomenon.

The needs of lifelong learning arise from the impact of new technologies and dramatic changes in the marketplace and industry that affect the labor market. Museums and libraries have long traditions of service in their communities and, potentially, have the opportunity to expand their presence beyond the traditional environment, using the technology available, and creating enhanced learning environments. While telecommunications and computers allow the integration of technologies, provide access to information and knowledge, and may help to combine different reliable sources of information, one of the major challenges faced by non-profit organizations is their need to obtain financial and human resources to achieve their goals and meet the increased users' demands. Technological changes and economic factors are forcing museums and libraries to collaborate in order to insure access to our rich cultural heritage.

Objective

This study investigated the relationship among different staff roles and their perceptions on the three factors – trustworthiness, commitment, and conflict- in collaborative projects between museums and libraries.

Relevant concepts

Trustworthiness. Successful exchanges between parties are evidence of trustworthiness, which allows partners to expand their relationship and immerse in more significant and risky exchanges. No relationship is solidly established until bonds based on reciprocal exchange are achieved. Some exchanges are informal, which provides flexibility and allows partners to go beyond the constraints of formal agreements. Frequent and constructive contacts promote trust, consideration, and respect, and they are important in the development of the collaborative relationship. The creation of trustworthy relationships is the function of exchange.

Commitment. Commitment is compromise, obligation or responsibility, and the ability to stick to the objective or course. Commitment could be understood as the level of involvement in the decision making process. It is driven by expectation, based on incremental exchanges, and molded on both formal and informal agreements. An agreement is a mutual understanding that shapes expectations and defines wished goals, responsibilities, structures, controls, and actions to achieve the goals.

Conflict. Conflict is a complex phenomenon, in which many factors and circumstances are affected. A common element in a conflictive situation is disagreement about or misunderstanding of one or more of the following aspects: values, status, power, needs, goals, or the way partners may use their resources.

Methodology

Participants. The human subjects participated in this study were drawn from several collaborative projects between museums and libraries. The method of snowball sampling was used to find members of organizations that have collaborative projects. Fifty respondents answered the questionnaire, and they played three different roles in the projects: 16 participants, 21 project coordinators, and 13 project directors.

Method. To undertake the objectives of this research, a questionnaire was created and administered. The data collected was analyzed using correspondence analysis, which is an exploratory data reduction method that represents relationships between two or more categorical variables by using cross tabulation and more frequently two-way tables. Correspondence analysis is often applied as a feature-based procedure, and the results of this method could be represented graphically in a low-dimensional map, usually two dimensions in which similar items are drawn closer and vice versa. The low-dimensional map synthesizes information of rows and columns from a contingency table in the same graphical representation, which is very helpful in uncovering the character of relationships. Relationships among variables are exposed by fragmenting categorical data into a lower set of dimensions.

Results

Preliminary results show that different staff roles in a collaborative project have distinctive behaviors and perceptions when confronting specific aspects in the collaborative endeavor. Project directors perceived that they have easy access to partners information, have the freedom to try new things, and the coordination of activities was performed by common routines. The perceptions of project coordinators who have different point of view about other party's commitment were analyzed. Project coordinators who perceived low commitment from their partner considered they did not get information from their partner easily; the planning of activities for the project was not very significant, and their partners did not always share the same interests. In the opposite case, project coordinators who considered their partners commitment as high thought that the project goals and the organizational ones were well aligned; they depended on their partners' knowledge; their relationship started as networking process and evolved from there, and the execution of the project activities was a relevant issue. Project participants thought that redefinition of activities and performing common evaluations were important. Their partners were reliable, but they have different points of view.

Limitations

This study has some drawbacks that are imperative to emphasize. First, this study is predisposed to issues related to any field study. In field research, the possibility to control issues that could justify these research findings is restricted. Second, the data is self-reported. These data are helpful, but accuracy could be a restrictive issue. Third, the study was also limited to specific population, and the results may not be generalized. Finally, the analysis ignored the dynamic nature of the collaborative process. Future research should address some of these problems.

The Best We Can Be: Collaboration for Preparing Instructional Librarians

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The Association of College and Research Libraries Instruction Section/Association for Library and Information Science Joint Working Group in Curriculum was charged in 2008: "To identify and communicate effective practices for preparing students in graduate programs of library and information science for careers in the areas of instruction and information literacy. The task force will gather information on approaches and models currently in use in order to identify commonalities and needs, identify a set of effective practices, and prepare a toolkit of resources for library science educators. The

committee will also look for opportunities to engage ACRL Instruction Section and ALISE members in constructive dialog about preparation in this area.”

Thus, a truly collaborative project was born, with a view to building on existing informal collaborations among practicing librarians and library educators, in the area of preparation for instructional work. Preparation for the teaching role is challenging, complex, and indeed a collaborative responsibility among educators in programs preparing professional librarians for this work, practitioners with responsibility for instructional work, who also have responsibility for developing the embryonic skills of novice librarian-instructors, and library administrators who must allocate resources to support ongoing development and training. The question underlying the efforts of the Working Group is: how can librarian-instructors, responsible for guiding students and other clients in developing their information literacy understandings and skills, be fully prepared for that work? Building from this starting point we may ask: Can we identify effective practice for educating these practitioners? What curricula are available? What practical experiences, internship, or other experiential learning opportunities are being made available to future instructional librarians? Which of these learning opportunities can provide models? What does research in the area of preparing librarians for teaching roles tell us about effective instructional practice? And, finally, what is the relative collaborative responsibility for preparing librarians for instructional work—how far do the efforts of MLIS programs go, and where must workplaces pick up the project? Thus, how may MLIS programs and practicing librarians collaborate during MLIS programs to enhance students’ preparation during their academic experiences?

Currently, the Joint Working Group is researching the literature on preparing future library-instructors, and analyzing available curricula, with a view to answering these questions. For example, the Working Group has found that most of the ALA-accredited library schools offer experiential learning through practica or internships. Most often, the choice of practicum experience is dependent on the student, and not specifically dedicated to instructional work. Opportunities for study at the course-level with MLIS programs are increasingly available, but rarely required. In light of these findings, the level of collaboration required to supplement this minimal preparation is apparent. Preparation of novice librarians for the teaching role currently must fall on practicing librarian-instructors, whose mentorship, direction and guidance is certainly needed to help new librarian-instructors develop into effective teachers.

The literature on preparing librarians for the teaching role tends to fall into one of three general categories: i) an examination of library school syllabi and curricula, ii) the increasing role of instruction in library work, and iii) how librarians receive training for instructional duties. It appears that, despite the increasing role of instructional work as a component of librarianship, translation of that imperative into required curricula in order to prepare graduates for that role has yet to occur on a broad scale. One recent study found that exposure to information literacy-related content was available in only 66% of core courses in MLIS programs (Sproles et al., 2008); thus, graduates not taking elective courses on instruction may well graduate with no exposure to this area of librarianship. Another study (Wright, 2007) found that elective instruction courses may not refer to ACRL standards for information literacy nor provide practical experiences for students. Exceptional elective courses in MLIS program were identified in earlier work (Julien 2005); that list includes courses at San José State University, Indiana University, the University of Texas at Austin, the University of Hawai’i at Manoa, and the University of Alberta. One of the opportunities available in all of these courses is experiential learning via practica or through delivery of instructional sessions.

These are the early findings of the Working Group, which are expected to translate into useful tools for all those collaborating in the education of librarians for their teaching responsibilities. Only through collaborative efforts such as these, united in a goal to develop librarians’ teaching effectiveness to the highest standards, will the promise of truly effective information literacy instruction be fulfilled.

References

Julien, Heidi. "Education for information literacy instruction: A global perspective." *Journal of Education for Library and Information Science* 46, no. 3 (2005): 210-6.

Sproles, Claudene, Anna Marie Johnson and Leslie Farison. "What the teachers are teaching: how MLIS programs are preparing academic librarians for instructional roles." *Journal of Education for Library and Information Science* 49 no3 (2008, Summer):195-209.

Wright, Alease Jordan. Preservice preparation programs for academic librarians for teaching information literacy. Ed.D. diss., Morgan State University, In *Dissertations & Theses: Full Text*, <http://www.proquest.com.login.ezproxy.library.ualberta.ca> (accessed May 11, 2009), 2007.

Public Library Community Engagement: Seeking to Identify a Culture of Engagement and Collaboration

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Increasingly a variety of community agencies and nonprofit organizations engage collaboratively to address local issues and problems. They may collaborate to promote economic development, improve the quality of life in neighborhoods, or foster better health and education for children and families. Such coalitions often harness the power and expertise of multiple diverse community organizations around a common problem or issue, increasing the opportunities for civic engagement. Collaborative efforts may focus on a single issue or a constellation of related issues or problems, and can lead to sustained collaborations over time.

Despite decades of library involvement in providing community information, (Durrance, 1984; Williams & Durrance, 2010) libraries are often overlooked as community coalitions develop. Even when libraries become involved in community coalitions, librarians may need to actively overcome the perceptions of other organizations that assume that libraries/librarians have little to contribute to a community-focused collaborative activity. In spite of these obstacles, a number of public libraries have been nationally recognized for actively collaborating in a variety of ways within their communities. See IMLS National Medal for Museum & Library Service <http://www.ims.gov/about/medals.shtm> and Urban Libraries Council (2007, 2008). Such engagement facilitates libraries' abilities to anticipate community needs and become more engaged with their communities (Durrance, et al., 2006). This study develops a best practice-based model of community engagement through analyzing the practices of these public libraries.

While there is no common definition of public library engagement or collaboration, our previous research has suggested that the engaged library can be conceived as one that tends to operate from a community, rather than a library, perspective (Souden & Walker, 2007). These libraries tend to work "shoulder-to-shoulder" with local coalitions and civic organizations and see themselves as having a "place at the table" (Durrance et al., 2006). In light of shifting economic, social and technological forces, community collaborations and the role of libraries within them can be expected to become increasingly important to the vitality of Americans living in rural, urban and suburban areas. The potential contributions of public libraries to community collaborations can be more widely leveraged when scholars and librarians can identify and aggregate elements of successful community engagement practice. This research analyzes a set of practices from libraries recognized for their contributions to fostering engagement with their communities. By examining the features and characteristics of these libraries, we identify factors that

encourage and contribute to a culture of collaboration, and model a range of community engagement practices for the public library.

Research questions addressed by this study include:

- What does community engagement look like for the public library- what types of problems are most likely to drive library-community agency collaboration, with what organizations, and through what activities?
- What are the common barriers to collaboration and how do libraries overcome them?
- What core strengths or competencies do libraries leverage in actively engaging with their communities?
- What practices, structures and philosophies support collaboration and community engagement?

This research employs several approaches to data collection, incorporating data from selected best-practice community-focused libraries including those recognized by IMLS, ULC, & Library Journal; interviews with 1) library directors actively engaged in community-focused collaboration and 2) coordinators of selected library programs that clearly incorporate community-focused collaborative activities; observations of community-focused activities at selected libraries; findings from several previous studies conducted by the PI and others examining public library community engagement and collaboration; content analysis of articles and reports that include library-community collaboration; and content analysis of national reports of community collaborations that fail to incorporate libraries. Thematic analysis is used to code data by identifying themes of interest based on the librarianship practice and information behavior literature and also allowing relevant themes to emerge through the data. Coding and analysis emerged through multiple iterations by the research team.

Preliminary findings suggest that there is a range of collaborative practice among libraries recently recognized for their community engagement. Some collaborations arise from the library's recognized areas of strength such as working with children or improving literacy; while some build on years of collaboration with community partners to address a variety of issues, including economic development and community problem solving. Libraries that proactively collaborate with local agencies and partners to address community needs have a place at the table in ways that push the boundaries of traditional librarianship and go beyond community misconceptions of the roles of libraries in their communities. Engagement at this level is correlated with staff presence in the community beyond the walls of the library, where community needs and opportunities for collaboration can be more readily identified. Our findings suggest the emergence of a field-based model of librarianship that builds on earlier community information initiatives and moves away from the reference desk to more effectively facilitate active engagement with civic agencies and community organizations. Such collaborative practice has the power to transform the library and its staff into more direct civic partners with municipal organizations and social service organizations.

References

Durrance, Joan C., Maria Souden, Dana Walker, & Karen E. Fisher. (2006). "Community problem-solving framed as a distributed information use environment: bridging research and practice " *Information Research*, 11(4) paper 262 [Available at <http://InformationR.net/ir/11-4/paper262.html>]

Durrance, Joan C. (1994) *Meeting Community Needs through Job and Career Centers*. New York: Neal-Schuman.

Durrance, Joan C. (1984) *Community information services: An innovation at the beginning of its second decade*. *Adv. Librarianship*. 13: 100–128.

Urban Libraries Council (2007) *Making Cities Stronger: Public Library Contributions to Local Economic Development*. Chicago: Urban Libraries Council.

Urban Libraries Council (2008) *Welcome Stranger: Public Libraries Build the Global Village*. Chicago: Urban Libraries Council.

Putnam, Robert D. & Lewis M. Feldstein (2003). *Better Together: Restoring the American Community*. New York: Simon & Schuster.

Souden, M. and Walker, D. (2007) *Anticipating Community Needs: A Model From Practice*. Poster presentation at ALISE 2007; Seattle, WA.

Williams, Kate and Durrance, Joan C. (2010) *Community Informatics*. IN *Encyclopedia of Library and Information Science*, 3rd Edition. Eds Marcia Bates and Mary Niles Maack. ISBN 978-0-8493-9709-7. Routledge Press. In Press.

Collaborations between LIS Education and Rural Libraries in East Tennessee: Improving Librarian Technology Literacy and Management Training

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People living in rural communities in the Southern and Central Appalachian (SCA) region have critical information needs resulting from the marginalizing circumstances they experience (e.g., poverty, low education, and few information and technology resources) owing to the region's unique cultural, social, economic, and environmental characteristics (Appalachian Regional Commission, 2002; Kusmin, 2008; Schwartz, 2004). Moreover, national trends reveal that the SCA region is lagging in community development, growth, and progress since poor socio-economic conditions and a lack of appropriate information and technological infrastructures in these areas have prevented their active involvement in the contemporary global networked information environment (Dabson, 2005; Haaga, 2004; Lichter & Campbell, 2005; Sanchuk, 2004).

These harsh facts are providing a 'wake-up call' for regional library professionals in the SCA region to take action and make efforts to integrate information technology (IT) competencies and information management skills in their work settings and practice (Oden, Strover, Inagaki, & Lucas, 2004) in order to help their communities respond to the crucial challenges they are facing in the 21st century (Black, Mather, & Sanders, 2007; Herzenberg, Price, & Wial, 2005). For example, The American

Library Association Task Force on Rural School, Tribal and Public Libraries (2004) recently reported that a lack of qualified staff, limited computer knowledge for staff and customers, and inadequate library degree programs for staff were major shortcomings in rural libraries, in addition to limited money and poor collections and equipment. This paper presentation reflects on the conference theme of creating a culture of collaboration in this regard, and explores some possible solutions to address how and what kind of collaborations can be formed between library and information science (LIS) educators and rural library information professionals to improve library and information services to rural populations in the SCA region.

The work is informed by a grant proposal entitled “Rural Library Professionals as Change Agents in the 21st Century: Integrating Information Technology Competencies in Southern and Central Appalachian Region (ITRL)” that was recently funded by the Institute of Museum and Library Services’ Laura Bush 21st Century Librarian Program for the period October 2009 – September 2012 at the University of Tennessee’s (UT) School of Information Sciences (SIS). The grant project teams UT’s SIS with East Tennessee’s Clinch-Powell Regional Library, Sevier County Public Library System, Watauga Regional Library, and most recently the Nolichucky Regional Library, to recruit and provide 16 IMLS-funded scholarships so that well-qualified technology and management support professionals already working as paraprofessionals in the region’s libraries can earn a master’s degree in librarianship. The IMLS grant will allow for implementation of community engagement efforts to further the education process of LIS students via the synchronous distance education (DE) program offered in the UT’s SIS, with coursework tailored for a specialization in IT and rural librarianship. Upon graduation, ITRL students will be prepared to assume leadership roles in their regional libraries to help their communities address some of their unique debilitating challenges and circumstances.

This paper identifies collaborations that were significant in planning and developing the grant proposal, as well as those partnerships that will be instrumental towards successful implementation of future activities listed in the grant proposal. The paper also draws upon an exploratory study that was conducted to assist in funding the grant proposal, namely, to explore the perspectives of East Tennessee’s regional librarians about their need for a professional library education to integrate IT competencies and information management skills in their work environments (Mehra, Black, & Lee, under review). Research methods for data collection in the exploratory study included: quantitative web-based survey; ongoing feedback from regional librarians in the UT’s SIS advisory board and alumni networks; paraprofessional experiences of students in the SIS’ DE program; anecdotal feedback collected during participation in local, regional, and state-level professional library networks; and strategic planning leadership experiences in East Tennessee’s two regional libraries.

Pilot findings in the exploratory study indicated that East Tennessee’s regional librarians have an overwhelming desire to gain access to professional library education that integrates IT competencies and library management training for graduates to better serve their rural communities. Implications of these research findings call for a structured curriculum at the UT’s SIS program and other LIS programs around the country that provides students individually-tailored formal/informal professional mentoring by educators and practitioners while they learn IT competencies and develop rural library work applications in their courses that are especially suited towards the needs of the SCA communities. Further, such a curriculum requires integration of two major components, namely, IT and rural librarianship courses. IT deliverables applied towards rural libraries include:

- Technology planning, assessment, and analysis;
- Database and web design, development, and usability;
- Building digital library, web portals, and Library 2.0 tools;
- Establishing hardware and software configurations for networking systems.

Management outcomes in rural library courses include:

- Service evaluation/assessment in rural libraries;
- Planning/management of a rural library program for youth and adults;
- Reader's advisory and other information services;
- Grant writing and partnership development.

This paper analyzes the development of these courses to identify strategic relationship building and innovative partnerships with various stakeholders in the SCA region (e.g., education-based and library institutions, non-governmental organizations, funding sources, local businesses and industry, government sector, and telecommunication services) that can be integrated into course work and course assignments. Potentially viable collaborations are identified in the learning of information-related problems, IT competencies, and rural management topics in the specific course offerings available in the UT's SIS program. The process will help to implement LIS curriculum changes for ITRL students that integrate IT and rural library management solutions in the coursework so as to develop outcomes that better meet the needs, wants, and expectations in the SCA region's rural library environments. With the emergence of newly graduating cohorts aware and trained in developing IT towards achieving tangible outcomes responsive to their local information-related settings, such efforts will have a reach in multiple levels of impact including the rural community level, the educational program level, and the national level.

List of References

- American Library Association. (2004). The American Library Association Task Force on Rural School, Tribal and Public Libraries – Final Report to the Council of the American Library Association. Chicago, IL: American Library Association. Retrieved November 2, 2008, from http://www.ala.org/ala/aboutala/offices/olos/outreachsource/docs/ruraltf_finalrpt.pdf
- Appalachian Regional Commission. (2002). Evaluation of the Appalachian Regional Commission's Vocational Education and Workforce Training Projects. Washington, DC: Appalachian Regional Commission. Retrieved November 8, 2008, from <http://www.arc.gov/images/reports/education/arcvoked.pdf>
- Black, D. A., Mather, M., & Sanders, S. G. (2007). Standards of Living in Appalachia, 1960 to 2000. Washington, DC: Appalachian Regional Commission. Retrieved November 8, 2008, from http://www.arc.gov/images/reports/2007/standardsliving/Standards_Living_Appalachia.pdf
- Dabson, B. (2005). Networks, systems, strings...And other Appalachian futures. Speech presented at the Central Appalachian Roundtable, Walkersville, West Virginia. Retrieved November 2, 2008, from http://www.cannetwork.org/roundtable/keynote_feb_8.pdf
- Haaga, J. (2004). Educational Attainment in Appalachia. Washington, DC: Population Reference Bureau. Retrieved November 2, 2008, from <http://www.arc.gov/images/reports/prbeducation/attainment.pdf>
- Herzenberg, S. Price, M. & Wial, H. (2005). Displacement in Appalachia and the Non-Appalachian United States, 1993-2003: Findings Based on Five Displaced Workers Surveys. Washington, DC: Appalachian Regional Commission. Retrieved November 2, 2008, from http://www.arc.gov/images/reports/2006/displacement/pdf/displacement_arc.pdf
- Kusmin, L. (2008). Rural America at a glance 2008 Edition. Economic Information Bulletin, EIB-40(6). Retrieved November 2, 2008, from <http://www.ers.usda.gov/Publications/EIB40/>
- Lichter, D. T., & Campbell, L. A. (2005). Changing Patterns of Poverty and Spatial Inequality in Appalachia. Washington, DC: Appalachian Regional Commission. Retrieved November 2, 2008, from <http://www.arc.gov/index.do?nodeID=2914>

- Mehra, B., Black, K., & Lee, S. (under review). Perspectives of East Tennessee's Rural Public Librarians about the Need for Professional Library Education: An Exploratory Study. *Journal of Education for Library and Information Science*.
- Oden, M., Strover, S., Inagaki, N., & Lucas, C. (2004). 2004 Update of Links to the Future: The Role of Information and Telecommunications Technology in Appalachian Economic Development. Washington, DC: Appalachian Regional Commission, Retrieved November 2, 2008, from <http://www.arc.gov/images/reports/telecomupdate/links.pdf>
- Sanchuk, P. (2004). Information needs in rural America. *Rural Libraries*, 24, 41-46.
- Schwartz, J. H. (2004). Development and Progress of Appalachian Higher Education Network. Washington, DC: Appalachian Regional Commission. Retrieved November 2, 2008, from <http://www.arc.gov/images/newsandevents/publications/ahen/AHENetwork.pdf>

LIS Program Expectations of Incoming Student Technology Knowledge and Skills

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Within library and information science (LIS) education, programs are becoming more technically demanding in response to technological changes (Pettigrew & Durrance, 2001; Markey, 2004). As programs continue to incorporate information and communications technology (ICT) into their curricula, one of the challenges they face is the diverse technology backgrounds and competencies of incoming students. Students without adequate preparation may experience difficulty when confronted with topics such as web page creation, relational databases, and systems analysis. Programs should inform incoming students of expectations and help students address weaknesses early so they are technically prepared as they begin an LIS program. But what competencies are considered important for new students? There have been attempts to better understand program expectations and student preparedness (Andersen, 2002; <http://blogs.iis.syr.edu/alise/archives/86>), but there are few reported research results to date. This paper reports on a web content analysis of the requirements and expectations for incoming students that 57 ALA-accredited LIS programs have published on the web, extending preliminary findings reported in Kules, McDaniel and Banta (2009).

The study addressed four research questions:

1. What technology competencies (knowledge and skills) do LIS programs expect their incoming students to have?
2. What techniques are being used to assess incoming students' technology competencies?
3. What supports are being provided to help students fill competency gaps?
4. What differences do we see between online programs and face-to-face programs?

Methodology

The study relied upon an iterative content analysis to identify categories of ICT competencies expected of incoming students. It also examined how programs assess student readiness and support students with gaps in their knowledge or skills. An initial set of 17 categories was drawn from sources within and beyond the LIS field, including: The National Research Council's report, *Being Fluent with Information Technology* (National Research Council, 1999) and the ALA's draft core competencies (McKinney, 2006). Initially, web pages from four LIS programs were analyzed looking for the presence of these 17 categories as well as additional categories. The additional categories were reviewed and, as appropriate, added to the original 17 to yield a set of 36 ICT categories. In a second round of review, 13 programs were analyzed using the expanded set of 36 categories. These results were refined into 49 categories. A third round of review was performed on 25 programs and yielded a set of 45 categories.

Next, two researchers independently analyzed 12 programs. We measured inter-rater consistency, using Cohen's kappa instead of percent agreement to correct for the agreement that could be expected by chance (Stemler, 2004). Of the 45 categories assessed, 33 had a kappa value greater than 0.60, indicating substantial agreement between the raters (Landis & Koch, 1977). We removed categories with lower kappa values from the subsequent analysis. In the final round we collected and analyzed data from the web sites of the 57 programs.

We also examined the diagnostic approaches and methods for student support and/or remediation present on the various programs' web pages. Because there were fewer examples of these, we did not attempt to analyze them statistically. Instead we provide an overview of the approaches and illustrative examples.

Overview of Results

We found few consistent expectations between programs. Programs commonly expressed expectations in terms of skills (28 categories) rather than conceptual knowledge (5 categories). The most common category ("Use a word processor to create and edit a text document") was listed by only 31 (54%) of programs. Only two other categories ("Open, compose and send email," and "Create a spreadsheet using spreadsheet software") were listed by at least one-third of the programs. Although online programs listed more expectations than traditional face-to-face programs, there was no core set of expectations that are common across these programs: only the above three categories were listed by at least half of the online programs.

The analysis identified several practices to assess students and provide support, including: making a set of baseline competencies an admissions requirement, administering a diagnostic assessment, making all students take a required ICT course, offering optional ICT workshops or online tutorials, providing recommendations of other places to take courses, and simply providing a list of software.

The results of this study suggest that there are few common expectations regarding technology competencies between programs. Although some variation is to be expected, we believe that incoming students would benefit from clearer expectations. The competencies identified from this study could form the basis of a more comprehensive set of expectations and student support mechanisms.

References

- Andersen, D. (2002). Teaching analytic thinking: Bridging the gap between student skills and professional needs in Information Science. *Journal of Education for Library and Information Science*, 43(3), 187-196.
- Kules, B., McDaniel, J., Banta, M. (2009) LIS Program Expectations of Incoming Student Competencies with Information and Communications Technology. Poster presented at the Annual Conference of the Association for Library and Information Science Education (ALISE 2009). Retrieved July 15, 2009 from <http://faculty.cua.edu/kules/Papers/KulesALISE2009Poster.pdf>.
- Landis, J.R., & Koch, G.K. (1977). The Measurement of Observer Agreement for Categorical Data. *Biometrics*, 33(1), 159-174.
- Markey, K. (2004). Current educational trends in the Information and Library Science curriculum. *Journal of Education for Library and Information Science*, 45(4), 317-339.

McKinney, R. (2006). Draft proposed ALA core competencies compared to ALA-accredited, candidate, and precandidate program curricula: A preliminary analysis. *Journal of Education for Library and Information Science*, 47(1), 52-77.

National Research Council. (1999). *Being Fluent with Information Technology*. Washington, DC: National Academy Press.

Pettigrew, K., & Durrance, J. (2001). KALIBER: Introduction and overview of results. *Journal of Education for Library and Information Science*, 42(3), 170-180.

Stemler, S. (2004). A comparison of consensus, consistency, and measurement approaches to estimating interrater reliability. *Practical Assessment, Research & Evaluation*, 9(4).

Service-Learning Immersion: LIS Students Connect with Professionals in Second Life

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Second Life (SL) is an Internet-based, general-purpose 3D virtual world where people interact with each other through motional avatars and create information displays using modeling tools and automated scripts. It provides an environment that enhances sharing through interoperability and creates interactive experiences that would be hard to duplicate in real life (Bransford & Gawel, 2006). LIS educators have been using SL as an instructional venue to facilitate teaching and learning in recent years. However, most of the SL adoption in LIS education focuses only on taking advantage of the immersive technology to create animated learning experiences, especially for online students (Mon, 2008; Tu, 2009). To further explore SL's potential in supporting education, the authors conducted a case study of an ongoing class where the service-learning approach was used to link students with the active professional LIS community in SL and engage them in a learning process working with SL librarians. This case study advances beyond the benefits of the immersive technology, places teaching and learning in a professionally and socially developed virtual world, and hopes to create a model where pseudo-professional collaboration in virtual spaces can enhance online learning experiences.

Given the increasing popularity of SL in the world of library and information professionals, an online course titled "Seminar in Information Science Topic: Immersive Worlds including Second Life" was taught starting in Summer 2007 to introduce students to the new platform for library and information services (Kemp & Haycock, 2008). The principle learning objectives (Kemp, 2008) for students included the ability to:

- navigate, communicate and retrieve information proficiently in Multi-User Virtual Environments (MUVES, SL in particular);
- use 3D building and scripting tools to organize and represent knowledge in simple structures and interactive objects in MUVES;
- become familiar with the literature in the use of MUVES for library service and information delivery tasks;
- make recommendations to peers and managers about implementing MUVE activities in libraries and information organizations.

To better achieve the expected learning outcomes, a service-learning assignment was designed to connect students with the LIS community in SL. Service-learning is defined as "a form of education in which students engage in activities that address community needs together with structured opportunities

intentionally designed to promote student learning and development” (Jacoby, 2009). In this 15-hour assignment, students were asked to work on short projects to assist library and information professionals in SL and attain the learning objectives from their reflections on this experience. In the Spring 2009 version of the class, this assignment comprised three parts (Kemp, 2009):

- Identify the community needs. A message was sent to the SL librarians’ listserv to solicit for “clients” who need help on their SL projects, such as building an information booth, preparing a simple tutorial for a SL library, organizing a synchronous event, staffing an information help desk, and managing a SL group. Clients were then matched with students based on their interests, and a “service contract” was drawn up by both parties to specify the client’s expectations, the student’s responsibility and deliverables upon completion of the project.
- Address the community needs by service. Following the specifics in the service contract, students used knowledge and skills learned in class to complete the projects. In this process, they maintained constant communication with the clients for clarification and feedback.
- Reflection. When the project was completed, each student submitted a report detailing the experience and their reflections on what they learned, including both course content and professional values developed via serving the LIS community in SL. In addition, they made public presentations to share their experience and reflections with the entire class.

This assignment covered two important concepts in service-learning – reciprocity and reflection. In the process of completing the projects, librarians and information professionals benefited from the service provided by students, and students gained valuable experience and knowledge from contributing to the growth of the community. Their reflections helped them internalize lectures, digest course content and eventually achieve learning outcomes. To further assess the value of service-learning in SL education, a survey study is planned to be conducted among both students and their librarian clients, eliciting feedback on how this service-learning experience has helped them professionally and academically, and evaluating the effectiveness of service-learning in enhancing learning experiences and bettering communities. This evaluation, combined with students’ performances in class, will produce a solid understanding of applying the service-learning approach in SL classes.

Based on the case study, the authors intend to create a pedagogical framework of service-learning for LIS courses taught in SL that educators can adapt in their own teaching practice. Rooted in Dewey’s (1956) theory that active student involvement in learning is an essential element in effective education and learning should move beyond the theory and rhetoric of traditional classrooms to focus more on individual student experiences, service-learning has been playing an important role in higher education. The literature has revealed that it improves learning through action, promotes personal and professional development, fosters the development of civic responsibility and accrues benefits to the community (Waterman, 1997). In the past few decades, service-learning typically has occurred in face-to-face settings and "real life." However, with the educational environments becoming more diversified and catering to a wider range of needs, it is imperative to understand the potential value of service-learning in LIS education using virtual worlds. The authors hope this study takes the first step toward that goal.

References

- Bransford, J., & Gawel, D. (2006). Thoughts on Second Life and learning. In D. Livingstong and J. Kemp (Eds) Proceedings of the Second Life education workshop at the '06 Second Life Community Convention. UK: University of Paisley.
- Dewey, J. (1956). Experience and education. New York, NY: Macmillan.
- Jacoby, B. (1996). Service-Learning in higher educations. San Francisco, CA: Jossey-Bass Inc.
- Kemp, J., & Haycock, K. (2008). Immersive Learning Environments in Parallel Universes: Learning through Second Life. *School Libraries WorldWide*, 14(2). Retrieved from http://asselindoiron.pbwiki.com/f/14_2haycock_kemp.pdf.
- Kemp, J. (2009). Libr 287: Virtual worlds workshop, Spring 2009 syllabus. Retrieved July 14, 2009 from <http://slisapps.sjsu.edu/gss/ajax/showSheet.php?id=195>

- Mon, L. (2008). Experiential learning in virtual environments: The Internet Public Library, Second Life, and Web 2.0. Paper presented at the Annual Conference of Association of Library and Information Science Educators, Philadelphia, PA.
- Tu, F. (2009). How a simulated library in the Second Life world enhances Library and Information Science (LIS) education: An LIS education program study. Retrieved July 1, 2009 from <http://blogs.iis.syr.edu/alise/archives/16>
- Waterman, A. (1997). An overview of Service-Learning and the role of research and evaluation in Service-Learning programs. In A. Waterman (Ed) Service-Learning: Applications from the research (pp. 1-12). Mahwah, NJ: Lawrence Erlbaum Associates.

Inviting the World into the Online Classroom: Teaching and Gaming in Libraries Course via YouTube

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The model of the traditional classroom has been challenged. A Webcast discussion between well-known technology pundits, led by Leo Laporte, focused on the point that other service fields have drastically changed the way they interact with users in the last hundred years, but traditional lecture-based instruction has stayed the same. They challenged the way that students currently interact with information, and encouraged faculty members to explore new ways of teaching content (This Week in Tech, ep. 197, 5/31/09).

The School of Information Studies at Syracuse University is very supportive of exploring entrepreneurial methods of teaching online courses. During the summer of 2009, I taught an asynchronous online course on my research area, Gaming in Libraries, via YouTube. This course was a graduate one-credit distance course and was taught as a WISE+ course in partnership with the American Library Association, with additional funding for the course provided by the Kauffman Initiative project.

The course was taught through daily 10-20 minute videos as the primary lecture format every day for the month of June 2009. The weekday videos consisted of lectures in a variety of formats, and the weekends were presentations of specialized topics by guest speakers, most of whom were librarians talking about their own experiences in the topic. These videos were placed on YouTube and the Internet Archive and new content notifications came through a blog, RSS Feed, and e-mail notifications. The videos were also placed in the iTunes store. The primary blog for the class and all content is still available at <http://gamesinlibraries.org/course>.

The primary discussion space for the class was hosted by the American Library Association through ALA Connect, which is the social networking space for the ALA. The space was configured so that both ALA members and non-members could join and participate in the discussions. There was a forum created for each of the videos for anyone to ask questions and add comments, and the videos pointed users with questions to the forums.

Students who were enrolled in the class had a few additional activities. Students were required to produce one video every week and publish it as a Video Response to one of the lectures. There was a secondary discussion space for the class in the school's Learning Management System for the students who were enrolled in class. In this space, students could ask questions in a closed environment about both content

and video creation, discuss assigned readings, and deliver the final project, which was a plan for a gaming program in a specific library.

The number of students enrolled in the class was lower than a course typically requires to be successful – only 6 students were enrolled at the start (three from Syracuse, and three from the WISE consortium). During the first part of the course, three students dropped out, each claiming the course required more work than they expected. As of October 2009, over 2,000 people have watched the first video from the class and over 375 watched the last video of the course either on YouTube or through the Internet Archive via iTunes or the RSS feed.

The course drew a variety of others –students from a variety of institutions, librarians, gamers, and professionals from the gaming industry. Given my background as a professional game designer and my Web-based video series, Board Games with Scott, I was able to market this course in channels to reach out to gamers and professionals from the gaming industry. In addition, ABC on Campus put together a segment about the course, which ran both on ABC on Campus and on MTV University.

The course continues to be active. Each month, a new short video lecture is added to the course, so that it is an ongoing resource. The Games in Libraries podcast is also a monthly resource that I produce and host, and many of the guest speakers from the video course present regular segments for the podcast.

During the last video of the course, viewers were asked to fill out a short survey. Out of the 300 people who finished the course, 55 filled out the survey. Of those who took the survey, about 30% were students, 40% were librarians and library staff, and 10% were professionals in the gaming industry.

One of the goals of the class was to raise awareness of how libraries work with gaming, and through opening up the course to the world, a much wider variety of people were exposed to the course content than would have seen it if it were taught only in the password-protected learning management system. Evidence of success of this is seen in the survey, where 30% of responders said that they were not at a library but planned to contact a library and volunteer their time to start a gaming program.

From a tuition-based economic perspective, this course was a failure. The overall economic impact of this type of course needs to be considered beyond the tuition it produces. This course also serves as a marketing tool for the school and for the profession. After the course, a number of gamers wrote me personal notes indicating that they were now wanting to become librarians. Some high school students asked have inquired as to what undergraduate degree would best prepare them for the library degree.

In conclusion, inviting the world into the online classroom is an activity that, while not directly generating tuition, can market the profession to new groups of people and can result in more students coming to the institution. It also serves to help librarians, library staff, and library volunteers who may not have the funds for continuing education to learn about new developments in the field. Opening up the classroom to the social networks through authentic course content, while risky, can be a great marketing tool for the school and for the profession.

Collaborations between LIS and Science: The DataONE case study

Suzie Allard and Arsev Aydinoglu, University of Tennessee -

One complex societal problem the world is facing is climate change (Pachauri & Reisinger, 2007), and gaining an understanding of this phenomenon necessitates that researchers work collaboratively across disciplines (Michener, 2009). This paper presents a descriptive case study of the communication processes that support the project DataONE (Observation Network for Earth), a collaboration between earth environmental scientists, computer scientists, librarians and information scientists (Michener et al., 2009; Sandusky, Cruse, Kunze, Allard & Tenopir, 2009). The results of the case study demonstrate how LIS educators and professionals can be collaborative partners in a large complex scientific research organization and how LIS skills and knowledge can help facilitate the culture of collaborative research in a transdisciplinary environment. It also suggests how the communication channels established in these collaborations can help facilitate LIS education. For example, a project to enhance doctoral LIS education was created by building on these collaborations and it was recently funded by the Institute of Library and Museum Sciences

Paper Methodology

Case study methodology is used in many disciplines (Swanson & Holton, 2005) and provides insight into a phenomenon by examining one setting in intricate detail (Gomm, Hammersley, & Foster, 2000; Yin, 2003). This case study focuses on the communication processes and events used by the collaborative DataONE partnership. A theory of action (Patton, 2001) is presented to study this collaboration and to provide linkages between the data and the two research questions:

- What communication processes facilitated the collaboration between LIS and science?
- What LIS skills and knowledge helped facilitate this transdisciplinary culture of collaborative research?

The unit of analysis is a communication transaction within the communication processes. The theory of action postulates that the communication processes involved in this case are influenced by several factors: motivation to collaborate is high (there is an incentive to collaborate); transdisciplinary collaboration is encouraged (parameters are suggested in the incentive); participants in the communication processes have some level of expertise with the processes; and communication channels exist although how they are to be employed are not dictated. The case study uses the following criteria to study the collaborative communication processes at work: classification of the transaction as virtual or analog; classification of the transaction as a communication or information intensive event; classification of the transaction as collaboration intensive or project intensive; temporal nature of the transaction; and information skill or knowledge embodied in the transaction. Participants in the transaction are classified as a representative of either LIS or science.

About DataONE

DataONE and the Data Conservancy are the first two partners to be funded by the National Science Foundation through its datanet program. The highly interdisciplinary nature of the DataONE collaborators is evidenced by the list of PIs and Co-Is noted below. The DataONE focus is evident in its vision statement "DataONE will be commonly used by researchers, educators, and the public to better understand and conserve life on earth and the environment that sustains it." To achieve that vision DataONE is developing an organizational structure that will support the full information life cycle of biological, ecological, and environmental data and tools. It addresses both the human component of an organization and also answers the NSF call to action for cyberinfrastructures to support science (NSF Cyberinfrastructure Council, 2007). The four key challenges addressed by DataONE are: (1) data loss; (2) scattered data sources; (3) data deluge; and (4) poor data practices (Michener et al., 2009).

DataONE focuses on preserving at-risk data with a system that is highly collaborative by nature -- a system featuring three existing data centers (i.e., coordinating nodes) and many associated collections at libraries, research networks, and academic and governmental organizations (i.e., member nodes). Collaboration is facilitated using many processes including working group meetings which facilitate community engagement for a variety of activities including engaging computer and information scientists

are engaged in improving data integration through developing ontologies which improve the work of scientists by simplifying the building of complex scientific workflows.

Quick Overview of Results

This case study provides a clearer picture of a large scientific research intensive organization and the communication processes that enable collaboration for this organization. In answer to the first research question it is apparent that many communication processes facilitated the collaboration including common ones such as email and face-to-face meetings, and less common ones such as technology mediated meetings, collaborative work sites and working groups. As this is an emerging organization, results from the classification criteria are still developing, however, preliminary analysis suggests that there is a balance of virtual or analog transactions; that most transactions are information intensive, and that collaborative intensive transactions are an enduring dimension in the organization. The second research question is addressed by reviewing each of the processes noted above.

The Collaborators (LIS people in bold)

WILLIAM MICHENER (PI) 1, **Suzie Allard**², Paul Allen³, Peter Buneman⁴, Randy Butler⁵, John Cobb⁶, Robert Cook⁶, **Patricia Cruse**⁷, Ewa Deelman⁸, David DeRoure⁹, Cliff Duke¹⁰, Mike Frame¹¹, Carole Goble¹², Stephanie Hampton¹³, Donald Hobern¹⁴, Peter Honeyman¹⁵, Jeffery Horsburgh¹⁶, Vivian Hutchison¹¹, Matthew Jones¹³, Steve Kelling³, Jeremy Kranowitz¹⁷, **John Kunze**⁷, Bertram Ludaescher¹⁸, **Maribeth Manoff**², Ricardo Pereira¹⁹, **Line Pouchard**⁶, **Robert Sandusky**²⁰, Ryan Scherle²¹, Mark Servilla¹, Kathleen Smith²¹, **Carol Tenopir**², Dave Vieglais²², Von Welch⁵, Jake Weltzin¹¹, Bruce Wilson⁶

Collaborator institutions: 1University of New Mexico; 2University of Tennessee; 3Cornell University; 4University of Edinburgh; 5University of Illinois - Urbana Champaign; 6Oak Ridge National Laboratory; 7University of California - California Digital Library; 8University of Southern California; 9University of Southampton; 10Ecological Society of America; 11U.S. Geological Survey; 12University of Manchester; 13National Center for Ecological Analysis and Synthesis - University of California - Santa Barbara; 14Atlas of Living Australia; 15University of Michigan; 16Utah State University; 17The Keystone Center; 18University of California – Davis; 19Taxonomic Databases Working Group (Campinas, Brazil); 20University of Illinois – Chicago; 21National Evolutionary Synthesis Center; 22University of Kansas

References

- Gomm, R., Hammersley, M. & Foster, P. (eds). (2000). Case study method. Thousand Oaks, CA.: Sage.
- Michener, W. (2009). Building informatics solutions for multidecadal ecological research: Re-envisioning science, technology, and the academic culture. Presentation at the National Center for Ecological Analysis and Synthesis, 12 February 2009.
- Michener, W., Allard, S., Allen, P., Buneman, P., Butler, R., Cobb, J., Cook, R. et.al. (June, 2009). DataONE: A Virtual Data Center for Biology, Ecology, and the Environmental Sciences. Poster session presented at e-Biosphere 09, London, U.K.
- NSF Cyberinfrastructure Council. (2007). NSF's Cyberinfrastructure vision for the 21st century discovery, available at (March 2007). <http://www.nsf.gov/pubs/2007/nsf0728/nsf0728.pdf> . Last accessed 14 July 2009.
- Pachauri, R.K. and Reisinger, A. (editors) (2007). Synthesis report of the IPCC Fourth Assessment Report. Available at http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm . Last accessed 14 July 2009.

- Patton, M.Q. (2001). *Utilization-focused evaluation: The new century text* (4th ed.). Thousand Oaks, CA.: Sage.
- Sandusky, R., Cruse, P., Kunze, J., Allard, S. & Tenopir, C. (June, 2009). *The Role of Academic Libraries in DataONE: Engaging in E-Science through Project Partnership*. Poster session presented at the annual meeting of the Association of College Research Libraries, Chicago, IL.
- Swanson, R.A. & Holton III, E.F. (2005). *Research in organizations: Foundations and methods of inquiry*. San Francisco, CA.: Berrett-Koehler Publishers, Inc.
- Yin, R.K. (2003). *Case Study Research* (2nd ed.). Thousand Oaks, CA.: Sage.

Finding that Special Someone: Modeling Collaboration in an Academic Context

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This paper is developed around the conference theme of indentifying collaborators, focusing on collaborating within organizations, across organizations, across borders and characteristics of successful collaborators.

Problem Statement

Collaboration between scholars of differing backgrounds has been a major factor driving groundbreaking scientific research (Kuhn, 1996). Collaboration is a hallmark of LIS research, but insight into the collaboration process itself is hard to come by. Bibliometric studies, where the number of citations is used as a proxy for quality, have not always shown consistent results on the effect of collaboration on the quality of research. While a number of studies have shown it has a positive effect (Katz and Hicks, 1996; deB. Beaver, 2004; Levitt and Thelwall 2009), others fail to show that collaboration a significant effect (Herbertz 1995; Hart, 2007). Furthermore, existing models of collaboration are described from different perspectives; they can be from an organizational perspective (Butterfield et al., 2004) or from that of the individual (Foster and Meinhard, 2002; Thompson et al., 2007). However, in a given context it may be hard to differentiate the factors that affect the organization from those that affect the individual. To better understand collaboration, particularly interdisciplinary collaboration that extends beyond the traditional LIS borders, it would be beneficial to have one overall model. The main goal of this research is a model of collaboration that incorporates the existing theories from the interdisciplinary literature on collaboration. Furthermore, while existing models largely cover the factors that affect the likelihood of collaboration, these models do not fully address the factors that increase the likelihood of collaborative success. We believe there is value to this and incorporate these factors into our model. Thus, we explore the following research questions:

1. How can models of collaboration be consolidated into one model that is consistent with existing literature?
2. How to incorporate factors relating to the success and failure of collaborations into such a model?

Significance

The technological advances of the latter part of the 20th century have opened the door for scholarly collaboration on an unparalleled level. While it has become easy to collaborate across the globe, the problem of finding the right collaborator still remains. Chance plays a large part in how some researchers discover collaborators; a random meeting at a conference or a casual conversation with colleagues often is the means by which researchers discover a potential collaborator (deB. Beaver, 2001). Researchers prefer to leverage personal ties and links to discover collaborators (Crane, 1972; Granovetter, 1973), but these ties may not exist in the case of interdisciplinary research, where collaborators need to be

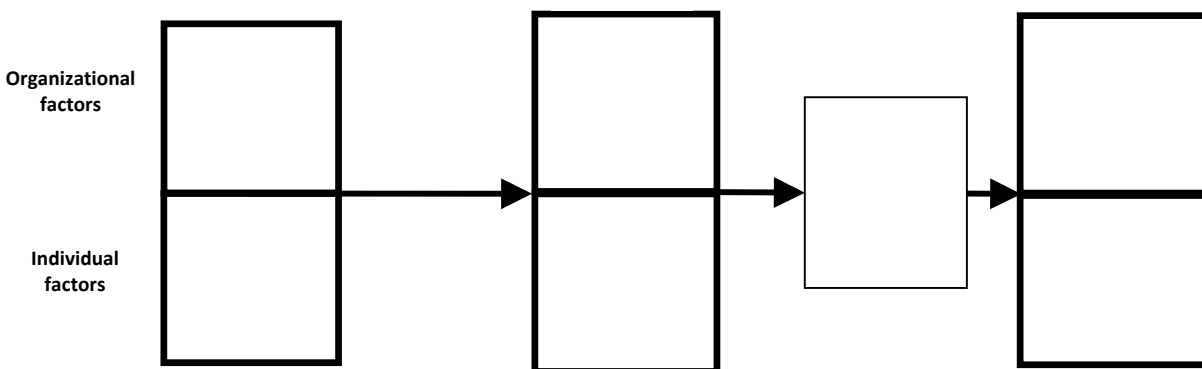
found in unfamiliar fields. Furthermore, cultural, structural, and environmental differences result in the practicalities of collaboration varying from field to field (Thargard 2006; Birnholtz, 2007). Thus, finding a collaborator, particularly if one wishes to undertake interdisciplinary research can be a challenging task.

Scientists have always had strong motivations to collaborate: to combine expertise, to learn new skills, and to pool resources, being just a few (Katz and Martin, 1997; Bozeman and Corley, 2004). Now, scientists face added institutional motivations and pressures not just to collaborate, but to collaborate across disciplinary boundaries. The National Science Foundation places a strong emphasis on cross-institutional interdisciplinary collaboration when awarding grants (National Science Foundation, 2006); one of the four pillars of the National Institutes of Health (NIH) Roadmap for Medical Research is to “change academic culture to foster collaboration” (NIH, 2004). Thus, given today’s high demand for interdisciplinary work, successful collaboration can require finding collaborators in different fields. Incentives such as these make it vital that we have a deep understanding of collaboration and what makes it successful.

This paper presents one step in an approach to help discover new collaborators: it attempts to distil existing models of collaboration into one suitable for an academic context and incorporate into it factors associated with successful collaborations. Our main research goal is to increase our understanding of collaboration and thereby inform the LIS research community both from a research perspective and practical perspective in terms of how they could approach their own collaborations. Additionally, we intend to use the knowledge gained to design a system to recommend the selection of interdisciplinary collaboration partners to produce successful collaborations.

Methods

To investigate these questions, we survey the literature on theories of collaboration and the factors associated with the success of collaborations. This draws on fields such as education, sociology, public policy management, bibliometrics, and organizational behavior, in addition to library and information science. Consistent themes are synthesized into the following proposed (preliminary) model of collaboration. Gray and Wood (1991) suggest a framework comprised of preconditions, processes, and outcomes. We follow their example with the one modification. They define preconditions as factors that facilitate, motivate, or otherwise make collaborative alliances possible; this definition does not translate well into the field of library and information science, so we use the term environment in its stead. This model is a work in progress.



Concluding Remarks

In this work we advance our understanding of collaboration by addressing two general questions regarding the consolidation of collaboration literatures and models and the inclusion of success factors. The proposed model can help researchers to better understand the nature of their own academic

collaborations by highlighting the best practices when it comes to choosing interdisciplinary collaborators.

Future work

The next step of this research is to validate this model via semi-structured interviews and via analysis of products resulting from successful academic collaborations, such as grant proposals and publications. The interview protocols will address each component of the proposed model, especially the effects of factors, such as proximity, that promote both collaboration and collaborative success. Data analysis will include mining existing corpuses to determine if the characteristics suggested by the model hold true in the face of empirical data. Further research into the applicability of this model in different organizational contexts would be an additional rich topic of future investigation.

References

- A 21st Century Frontier of Discovery: The Physics of the Universe (2004). Washington, DC: National Science and Technology Council.
- Altevogt, B. M., Hanson, S. L., & Leshner, A. I. (2008). Molecules to Minds: Grand Challenges for the 21st Century. *Neuron*, 60(3), 406-408.
- Birnholtz, J. P. (2007). When do researchers collaborate? Toward a model of collaboration propensity. *Journal of the American Society for Information Science and Technology*, 58(14), 2226-2239.
- Bozeman, B. and Corley, E. 2004. Scientists' Collaboration Strategies: implications for scientific and technical human capital. *Research Policy*, 3(4), 599-616.
- Butterfield, K. D., Reed, R., & Lemak, D. J. (2004). An Inductive Model of Collaboration from the Stakeholder's Perspective. *Business Society*, 43(2), 162-195
- Crane, D. (1972). *Invisible Colleges*: University of Chicago Press.
- deB. Beaver, D. (2001). Reflections on scientific collaboration (and its study): past, present, and future. *Scientometrics*, 53(3), 365-377.
- deB, B., D. (2004). Does collaborative research have greater epistemic authority. *Scientometrics*, 60(3), 399-408.
- Foster, M. K., & Meinhard, A. G. (2002). A Regression Model Explaining Predisposition to Collaborate. *Nonprofit and Voluntary Sector Quarterly*, 31(4), 549-564.
- Granovetter, M. S. 1973. The Strength of Weak Ties. *American Journal of Sociology*, 78(6),1360-1380.
- Gray, B., & Wood, D. (1991). Collaborative Alliances: Moving from Practice to Theory. *Journal of Applied Behavioral Science*, 27(1), 3-22.
- Hart, R. L. (2007). Collaboration and Article Quality in the Literature of Academic Librarianship. *The Journal of Academic Librarianship*, 33(2), 190-195.
- Herbertz, H. (1995). Does it pay to cooperate? A bibliometric case study in molecular biology. *Scientometrics*, 33(1), 117-122.
- Katz, J., & Hicks, D. (1997). How much is a collaboration worth? A calibrated bibliometric model. *Scientometrics*, 40(3), 541-554.
- Kuhn, T. (1996). *The Structure of Scientific Revolutions*. University of Chicago Press.
- Levitt, J. M., & Thelwall, M. (2009). Citation levels and collaboration within library and information science. *Journal of the American Society for Information Science and Technology*, 60(3), 434-442.
- National Institutes of Health. NIH Roadmap for Medical Research. Division of Program Coordination, Planning, and Strategic Initiatives, US Department of Health and Human Services. Retrieved June 22, from website: <http://nihroadmap.nih.gov/>
- National Science Foundation. Strategic Plan FY 2006-2011: Investing in America's Future (NSF 06-48), September 2006. Retrieved November 14, 2007, from Government of United States, National Science Foundation Website: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf0648#.
- Omenn, G. (2006). Grand Challenges and Great Opportunities in Science, Technology, and Public Policy. *Science*, 314.

- Thargard, P. (2006). How to collaborate: Procedural knowledge in the cooperative development of science. *Southern Journal of Philosophy*, 44, 177-196.
- Thomson, A. M., Perry, J. L., & Miller, T. K. (2007). Conceptualizing and Measuring Collaboration. *Journal of Public Administration Research and Theory*, 19(1), 23-56.

Multicultural Education and the Core Youth Services Curriculum in Library and Information Science: A Collaborative Inquiry

Kafi Kumasi, Wayne State University, and Sujin Huggins, University of Illinois- Urbana Champaign,

Overview

In this paper, two library scholars report on a framework for analysis that they developed for a study that explores how issues of multicultural education are taken up within the core youth services (YS) curriculum of ALA accredited institutions. The authors will provide an overview of the four phases of this investigation while concentrating their presentation mainly on the third phase, which deals with the development of the framework for analysis. The first phase of this investigation involved refining the overarching research questions related issues of race and multicultural education in the LIS curricula. The second phase entailed synthesizing the findings of an initial study by Moeller and Kumasi (2007) that served as the impetus for the current study. Moeller and Kumasi's study looked at pre-service youth service librarians' conceptions of multicultural education as it relates to their roles serving culturally and linguistically diverse youth in library settings. The authors deduced from Moeller and Kumasi's findings that there is great potential in infusing multicultural education into the LIS curriculum as a way to move toward a more culturally sensitive library education curricula. As a result, the authors began working on the third phase of this investigation, which involved developing a framework to determine the extent to which other youth services courses at ALA accredited institutions are addressing similar issues of multicultural education. The fourth phase, which will be addressed at a later time, would be the implementation of the framework.

Review of Literature

Like multicultural education (MCE), there are many critiques of the library and information science (LIS) curriculum with respect to issues related to multiculturalism and diversity. These critiques stem in part from the LIS field's failure to fully articulate what constitutes „multiculturalism --and by extension a multicultural children's books-- as well as its tendency to overlook its „racialized past (Barter, 1996; Honma, 2005; Pawley, 2006). Ravitch (quoted in Barter, 1996) has drawn attention to the “two distinct strands [of] the [multicultural] movement”; one being the pluralistic approach seeking to have the views and contributions of the various ethnic groups recognized and the other being the particularistic approach that is described as “unabashedly filiopietistic and deterministic” (p. 2). In this presentation, the authors discuss some of the scholars and theorists who seek to address these debates within and outside of the field (e.g. Honma, 2005; Pawley, 2006; Harrington; 1994; Ladson-Billings, 2004; Nieto, 2000) and suggest that Youth Services programs and practitioners are poised to be at the forefront of the foregrounding and subsequent resolution of such debates within the field.

Methodology: Conceptualizing the framework

As previously stated, the authors adopt an interdisciplinary approach to the deconstruction of the issues raised by other scholars and in the development of an implementable framework for the analysis of YS curricula. At its most effective, this framework would address two key issues: the extent to which the principles and concerns of multiculturalism, in its broadest definition, are reflected in the content of the curriculum and the extent to which practitioners exposed to these curricula are “prepared” to engage with these principles in practice as a result of exposure to these curricula.

Three overarching research questions guided this theoretical exploration of relevant ideas in LIS and multicultural education:

1. What are the guiding principles for the conception and practice of LIS?
2. To what extent do these notions overlap with conceptions within the field of MCE and how, if in any way, can the YS curriculum be evaluated in terms of an MCE agenda?
3. How can the LIS education that YS practitioners receive be improved to maximize the benefits to all children served by public libraries and other institutions within communities?

Based on these questions, specific evaluative criteria were derived from relevant key concepts/theories. These criteria were then mapped onto implications for practice to create a broader framework for analysis.

Preliminary Findings: Articulating the Framework

The authors found that by combining the tenets of the Multicultural Library Manifesto (2006) with Nieto’s (2000) delineation of the seven characteristics of MCE and Bennett’s (2001) Conceptual Framework of Research Genres, a model of deconstruction of the language and content of existing Youth Services curricula can be devised. The presentation will more fully discuss the evaluative questions at the core of this model, in particular, the juxtaposition of LIS education and multicultural education, and the steps involved in constructing the next phase of the project where we seek to find answers to these questions.

References

- Barter, R. (1996). Multiculturalism and libraries: and still the battle rages. *New World Library*, 97, n.p.
- Bennett, C. (2001). Genres of research in multicultural education. *Review of Educational Research*, 71; p.171-217.
- Harrington, J. (1994). *Multiculturalism in library programming for children*. Chicago: Association for Library Services to Children.

Honma, T. (2005). Trippin over the color line: The invisibility of race in Library and Information Studies. *UCLA Journal of Education and Information Studies*, 1 (2); p. 1-26.

International Federation of Library Associations. (2008). The IFLA Multicultural Library Manifesto. Accessed on Monday 16, 2009 from <http://www.ifla.org/VII/s32/pub/MulticulturalLibraryManifesto.pdf>

Ladson-Billings, G. (2004). Culture versus Citizenship. In *Diversity and Citizenship Education*. Banks, James (ed.). Jossey-Bass, 99-126.

Pawley, C. (2006). Unequal legacies: Race and multiculturalism in the LIS curriculum. *Library Quarterly*, 76, 149-168.

Moeller, R., and Kumasi, K. (2007). Building multicultural competence in the library: The promise of multicultural literature for children and young adults. Unpublished manuscript.

Nieto, S. (2000). Multicultural education and school reform. In *Affirming Diversity*. Longman, 303-322.

Age Appropriate Web Design: High School and Middle School Students as Design Partners

Anthony S. Chow, Kathelene McCarty Smith, and Katherine Sun, University of North Carolina at Greensboro

This study personifies the conference theme of “Creating a Culture of Collaboration.” Working in partnership with Middle and High School students, our research team has designed age appropriate Web sites by directly involving students in the creative process throughout the sites’ design and development lifecycle. This collaboration has proven to be an effective method of designing a site which remains interesting, current, and relevant to its target age groups.

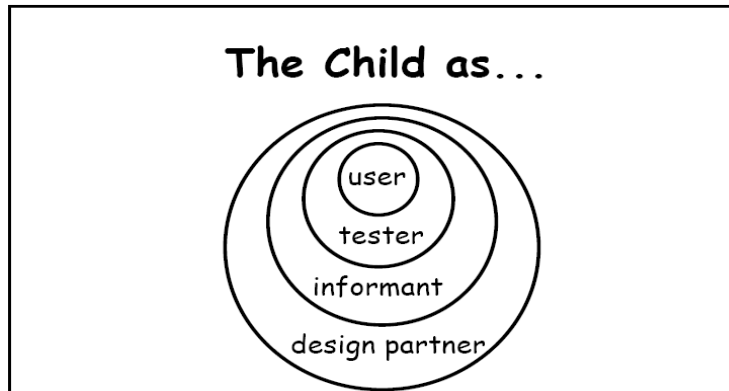
The STARS (Students and Technology in Academia, Research, and Service) Alliance Web site was initially designed as a part of a 2006 NSF proposal focusing on broadening participation in computing and information technology. Originally a partnership between ten universities, the Alliance has grown to twenty universities representing nine different states. The Web site, located at www.starsalliance.org, is the primary marketing and dissemination vehicle for the Alliance, providing information and resources to Middle and High School Students with the goals of student recruitment, retention, and bridging.

Designing Age Appropriate Web Spaces

Studies concerning age-group preferences in Web navigation show specific needs and interests with each group. Although there are similarities between the search behavior of high school and middle school students, usability studies have also shown specific differences. Middle School students require specific visual cues for successful searches such as bright and engaging colors, creative icons, animation and sound effects (Large, 2006; Neilson, 2005) while High School students bore easily and dislike flashy graphics, moving images, and sites perceived as “kid orientated” and tend to prefer photographs, age-appropriate graphics, and relevant icons (DiMichele, 2007; Fidel, 1999; Nielson, 2005).

While research and focus group feedback provided the basis for the design of the STARS Alliance Web site, it was apparent that a more intimate group of students working directly with the Web designer to create and iteratively test age-appropriate portals within the site was essential to reach our goal. In fact,

there have been studies by Bilal and Druin (1999) which have demonstrated the effectiveness of children as design partners. Incorporating these studies, Druin's research in the use of students in the evolving roles of user, informant, test, and overall design partner and applying the theory of DDE (Design, Develop, and Evaluate), our research team sought to integrate Middle and High School students into our team as design partners. Druin's model is shown in Figure 1 below.



(Source: Druin, 1999)

The purpose of our research is to explore how the partnership of Middle and High School students and Web designers has driven the overall design, development, and evaluation of the STARS Alliance Web site (www.starsalliance.org). Our study's four research questions are: 1) How do you design a Web site for diverse populations spanning Middle to High School age users, 2) How can students be incorporated as design partners in creating an age-appropriate Web site, applying the theory of DDE (Design, Develop, and Evaluate), 3) How effective is the use of students as partners from the beginning of the design process, and 4) How can the design partners design and test the Web site to ensure its usability, effectiveness, and appeal to its user group?

Method

Students were recruited to form a permanent advisory group with the objective of assisting in every aspect of the design of the Web site. The final advisory group was comprised of three Middle School Students (two girls and one boy) and four High School Students (three boys and one girl). The group was shown the current designs for the Middle School and High School Web portals and was asked specific questions addressing the strengths and weakness of the site, its appeal to its target age group, and overall satisfaction. The students were next asked to view the portals with the Web designers, commenting on their age group's specific interests and how to best incorporate them within the site.

Results and Significance

The feedback from the student design partners directly corresponded with current literature and focus group feedback. Specifically, the Middle School students suggested the addition of more graphic design, vibrant colors, and "pictures of kids." This age group also recommended the use of icons to link to careers and interactive sites and games and the addition of animation and sound. The High School students liked the unanimated photo and the color but several felt that the site was "dull and not appealing to kids." This age group suggested the addition of blogs, walls, and online quizzes.

If the student design partners' feedback coincided with that of the focus group and the literature, our research team sought to find the disconnect between what we, as adults, were hearing and what we were able to operationalize in the Web site. We realized that the step that we missed initially was failing to include both Middle School and High School-aged users at the very beginning of the design and development process. It has been the inclusion of these student design partners that has truly clarified and increased the validity of our research. These partners have been able to translate the research and the feedback enabling our team to view the site from their perspective, as representatives of their respective age groups

The significance of our study centers on five primary points. First, this study shows that Web sites can be designed to appeal to users of different age groups while effectively disseminating relevant information. Second, this study provides an example of how Web designers and students can collaborate to more successfully create an age appropriate Web site. Third, this study provides an example of the application of theory into practice by integrating the concept of DDE (Design, Develop, and Evaluate) with active, age appropriate Web design. Fourth, this study documents how involving students in the design process from the beginning is key to its success, showing a direct line from the student as a user, tester, informant, and finally, design partner. Fifth, this study shows that it is imperative for Web sites geared toward the use of children to be iteratively tested by the same group for essential input needed.

References

- Bilal, D. (2000). Children's Use of the Yahoo!igans! Web search engine: I. Cognitive, physical, and affective behaviors on fact-based search tasks." *Journal of the American Society for Information Science*. 2000 May; 51 (7): 646-665.
- Bilal, D. (2001). *Children's Use of the Yahoo!igans! search engine: II. Cognitive and physical behaviors on research tasks*. *Journal of the American Society for Information Science and Technology*, 2001 January; 52 (2): 118-136.
- Bilal, D (2002a). *Children's use of the Yahoo!igans! Web search engine: III. Cognitive and physical behaviors on fully self-generated search tasks*. *Journal of the American Society for Information Science and Technology*, 2002; 53 (13): 1170-
- DiMichele, P. (2007). *University of Houston – Prospective Student Usability Testing: Results and Recommendations*. 23 April 2002. Retrieved on July 10, 2008, from http://www.uh.edu/evolvinguh/documents/UH_usabilityMemo.pdf.
- Druin, A., Bederson, B., Boltman, A., Miura, A., Knotts-Callahan, D., & Platt, M. (1999). *Children as our technology design partners*. A. Druin (Ed.), *The design of children's technology* (pp. 51-72). San Francisco, CA: Morgan Kaufmann.
- Fidel, R., Davies, R. K., Douglass, M. H., Holder, J. K., Hopkins, C. J., Kushner, E. J. and Miyagishima, B. K. et al. (1999). *A Visit to the Information Mall: Web Searching Behavior of High School Students*. *Journal of the American Society for Information Science*, 1999: 50 (1), 24-37.
- Large, A., Beheshti, J., Nessel, V. and Bowler, L. (2006). *Web portal design guidelines as identified by children through the processes of design and evaluation*. Proceedings of the 69th ASIS&T Annual Meeting. Information Realities: Shaping the Digital Future for All, Austin, Texas, November 3-8. Silver Springs, MD: American Society for Information Science and Technology, 2006, 1-12.
- Nielsen, J. (2005). *Usability of Websites for Teenagers*. Jakob Nielsen's Alertbox, January 31, 2005. Retrieved on July 10, 2009, from <http://www.useit.com/alertbox/teenagers.html>.