

Robyn Stobbs
University of Alberta, School of Library and Information Studies, Edmonton, Alberta,
Canada

Ali Shiri
University of Alberta, School of Library and Information Studies, Edmonton, Alberta,
Canada

Sharon Farnel
University of Alberta Libraries, Edmonton, Alberta, Canada

Cathy Cockney
Inuvialuit Cultural Resource Centre, Inuvik, Northwest Territories, Canada

Dinesh Rathi
University of Alberta, School of Library and Information Studies, Edmonton, Alberta,
Canada

Sandy Campbell
University of Alberta Libraries, Edmonton, Alberta, Canada

A COMMUNITY-DRIVEN USABILITY EVALUATION: THE CASE OF THE INUVIALUIT SETTLEMENT REGION DIGITAL LIBRARY (Paper)

Abstract:

This paper reports a usability evaluation study of the Digital Library North prototype that was conducted in May 2016. It proposes a culturally-aware and community-informed approach to the usability of digital libraries for Northern communities in Canada along with the emerging themes and the changes that were implemented as a result of the evaluation.

Résumé:

1. Introduction

The Digital Library North (DLN) Project is an ongoing collaboration between researchers and librarians at the University of Alberta and the Inuvialuit Cultural Resource Centre (ICRC). Together, the DLN team is building a digital library to provide access to the cultural materials held by the ICRC. The ICRC is located in Inuvik, which is in the Inuvialuit Settlement Region

(ISR) in the Northwest Territories and Yukon (see figure 1). The ISR spans approximately 91,000 square kilometres, and contains six communities: Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, and Ulukhaktok. As part of its mandate, ICRC aims to preserve and promote development of the Inuvialuktun language and its associated dialects, namely Kangiryuarmiutun, Siglitun, and Uummarmiutun. The digital library currently holds a broad range of content types from image and book items to multimedia collections containing oral history and genealogy. A digital library will increase access to the resources for members of the community, especially those who are not in Inuvik where ICRC is located.

[Insert Figure 1 here]

Figure 1: Inuvialuit Settlement Region (Joint Secretariat, n.d.)

Earlier stages of the project collected initial data and community feedback that helped the development of a digital library prototype. These stages included a) environmental scanning to understand the project context, b) surveys and interviews to gather community members' impressions of the project and an understanding of their information needs and behaviour, and c) an information audit with ICRC staff to understand the extent of their collection and how they envision it being accessed digitally. With this input, a prototype digital library was created using Omeka as the platform.

The objective of this paper is to report on a usability evaluation study of the Digital Library North prototype that was conducted in May 2016. It proposes a culturally and community-informed approach to usability of digital libraries and resources for Northern communities in Canada and the Arctic and reports on the emerging findings of the usability evaluation for the project.

2. Prior Research

In a review of literature on digital library user interface evaluation studies, Hariri and Norouzi (2011), propose a set of evaluation criteria. They found that a number of criteria have been widely and frequently used in previous research, some of which include navigation, search, design, interaction, learnability, ease of use, presentation, consistency, user experience, flexibility and accessibility. Zhang et al. (2008) note that searching and browsing are among the major interaction styles in digital libraries. Drawing upon the literature of digital library interface design and usability, Xie and Matuziak (2016) emphasize that "usability testing is a critical component of user-centered design and an approach for improving user interface." Sirinivasan (2007) conducted an evaluation of a community informatics system called Tribal Peace in Southern California using transaction logs to measure the usage of the system. However, he did not collect interview data on actual usability of the system rather he focused on quantitative data such as views and the number of queries. In the DLN usability study, a multi-method, community-driven and culturally relevant framework was adopted to provide a more holistic perspective of digital library usability.

3. Methodology

User evaluation and usability testing is an iterative process. Xie and Matuziak (2016) argue that iterative design is closely associated with iterative user-centered evaluation. The initial DLN

prototype was demonstrated and tested during a three-week period in May 2016. A mixed-method approach was adopted to provide a culturally aware and comfortable environment for evaluation. One of the innovative aspects of the usability evaluation methodology and methods used in this project was to collaborate with community leaders to develop a community-focused participatory approach. The mixed methods used included both formal and informal data gathering methods to allow flexibility and access to community participants as much as possible. This approach included formal usability testing, demonstrations, surveys, and an open house.

The formal usability testing was carried out using interviews. A list of possible questions was drafted based on data collected in earlier stages of the project, previous interface prototype usability studies, (Shiri et al., 2011, 2013), and literature on digital library usability (e.g. Saracevic 2000, 2004; Rosenfeld & Morville 2002; Nielsen 1993; Comeaux 2008; Parandjuk 2010; Hariri and Norouzi, 2011). Questions on topics relating to metadata, the users' process of searching or browsing, users' success, design, and navigation were included. Rather than going through a static list of questions, participants were encouraged to try out the library and voice their thoughts and impressions. As the participants navigated the prototype, the researchers asked them questions and invited them to elaborate on any thoughts or issues they came across. The development of the usability evaluation questions was an iterative process that took into account users' input on an on-going basis. The researchers also asked questions or prompted the user to conduct a search or to browse after the individual finished their initial exploration. These interactions were digitally recorded and the researchers took notes. A total of 6 usability interviews were conducted. An additional interview on metadata was carried out with a member of the ICRC staff. To maximize community participation, the team offered other ways for members of the community to give their input.

These other methods included demonstrations, surveys, and an open house. Demonstrations were given to several classes of students in junior and senior high at a school in Inuvik. Classes rotated in throughout the day to see a short demonstration followed by an opportunity to ask questions and give feedback. The researchers also asked the students questions and recorded responses in field notes. A total of 5 presentations were made to students and their teachers.

An open house was held at ICRC from 1:00 PM to 5:00 PM on Thursday, May 19, 2016 to allow community members and researchers to freely and flexibly attend the DLN usability study. The project team and the ICRC provided bannock and soup for participants in order to create a friendly and inviting environment. A total of 17 people participated in the event. The prototype was made available, and researchers took notes on people's impressions, suggestions, and any issues they encountered. A survey was also implemented at the open house, and five responses were collected. The surveys were written after some of the usability testing had occurred so that the questions incorporated community input. The use of less formal ways to collect usability data allowed the DLN team to interact with a larger number of community members, which led to more input that could be incorporated into the digital library itself.

4. Emerging Themes

The iterative methods used for data collection and the opportunity to receive immediate feedback led to many adjustments to the prototype during the three-week period. Adjustments began with

the researchers exploring the prototype and noting issues with the Omeka digital library software template used. Concerns about the 'browse by collection' page being text heavy with duplicate links led to the creation of a 'beta browse by collection' page. Both pages were presented to participants, and their comments led to further adjustments to the 'beta' page. Small changes were implemented and tested during the three-week period, while larger changes were scheduled for later. For example, the colour of the interface was a concern arising from the first demonstrations with school students. One of the researchers mocked up a new colour scheme that was shown on a separate computer at the open house, but the actual changeover to that scheme occurred after user testing.

Ongoing qualitative analysis of the user testing transcripts and researcher field notes continues to influence the digital library prototype. Emerging themes in the data include colour; use of space; changes to metadata elements, labels, and content; concerns about usability for users with sight difficulties; and suggestions for a more audio-based interface. Some of these themes have already been addressed through changes incorporated into the prototype. For example, the layout of the individual item pages has been adjusted to reduce scrolling by having the main metadata entry appear to the right of the image. This change was the direct result of the input of users.

5. Conclusion

Work on the Digital Library North continues. More content has been added, and metadata entries are being added and expanded. Work on multilingual options is on-going and directly influenced by data collected during both the early data collection and usability testing periods. Further analysis will reveal more ways in which the final library will reflect community input.

The DLN project fits well with the conference theme of *The Warp & Weft of Knowledge: Information Threads Connecting Disciplines, Identities and Perspectives*. The collaborative team works together to combine information science perspectives with social and cultural perspectives in the ISR to create a digital library that reflects the information needs of its community and supports the mandate of the ICRC. The team uses a variety of methods to maximize community input, valuing feedback in any form community members wish to give it. The project traces information threads and weaves them together into a digital library format where they can be accessed and incorporated into new threads by the community.

Reference List:

Comeaux, D. J. (2007). Usability studies and user centred design in digital libraries. *Journal of Web Librarianship*, 2(2-3), 457-75.

Hariri, N., & Norouzi, Y. (2011). Determining evaluation criteria for digital libraries' user interface: A review. *The Electronic Library*, 29(5), 698-722.

Joint Secretariat, (n.d.). "Inuvialuit Settlement Region", accessed December 30, 2016, <http://jointsecretariat.ca/resources/inuvialuit-settlement-region/>

Nielsen, J. (1993). *Usability Engineering*. Academic Press, Boston.

Parandjuk, J. C. (2010). Using information architecture to evaluate digital libraries. *The Reference Librarian*, 51, 124-134.

Rosenfeld, L. and P. Morville. (2002). *Information Architecture for the World Wide Web*. 2nd ed. Sebastopol, CA: O'Reilly.

Saracevic, T. (2000). Digital library evaluation: Toward an evolution of concepts. *Library Trends* 49(3), 350-69.

Saracevic, T. (2004). Evaluation of Digital Libraries: An Overview. Accessed September 20, 2012: http://www.scils.rutgers.edu/~tefko/DL_evaluation_Delos.pdf.

Shiri, A., Ruecker, S., Bouchard, M., Doll, L., & Fiorentino, C. (2013). User Evaluation of Searchling and T-Saurus: Multilingual Thesaurus-Enhanced Visual Interfaces for Digital Libraries. *Canadian Journal of Information and Library Science*, 37(2), pp. 137-160.

Shiri, A., Ruecker, S., Bouchard, M., Stafford, A., Mehta, P., Anvik, K., Rossello, X. (2011). User Evaluation of Searching: A Visual Interface for Bilingual Digital Libraries. *Electronic Library*, 29(1), 71-89.

Srinivasan, R. (2007). Ethnomethodological Architectures: Information Systems Driven by Cultural and Community Visions, *Journal of the American Society for Information Science and Technology*, 58(5), 723-733.

Xie, I., & Matusiak, K. (2016). *Discover digital libraries*. Elsevier Science.

Zhang, X., Li, Y., Liu, J., Zhang, Y. (2008). Effects of interaction design in digital libraries on user interactions, *Journal of Documentation*, 64(3), pp. 438-463.



Figure 1: Inuvialuit Settlement Region (Joint Secretariat, n.d.)