Improving Usability of Summon Web Scale Discovery System

Melissa Correll
Info 608
Human Computer Interaction
Jennifer Rode
Drexel University
Winter 2012
**Executive summary**

Web scale discovery systems (WSDSs) are gaining popularity in academic libraries. User satisfaction varies with such systems, and interface usability issues exist that detract value from the search experience and make WSDSs less competitive with web search engines. The literature on WSDS usability is reviewed. Formal cognitive walkthrough techniques were employed to evaluate one such WSDS, Summon, in use at Drexel University Libraries. Interface problems were noted during the task completion process, and prototypes were drafted for an improved redesign of aspects of the interface. Prototypes suggest solutions for improving usability heuristics including semantics and mapping, visibility, error recovery, standardization, flexibility and efficiency of use, and aesthetics and minimalist design. Recommendations for further research and collaborative development are made.

**Table of contents**

Executive summary _____________________________________________________ 2  
Table of contents ______________________________________________________ 2  
Introduction __________________________________________________________ 3  
The Application: Summon _______________________________________________ 3  
Literature Review _____________________________________________________ 4  
Final prototype _______________________________________________________ 7  
Conclusions __________________________________________________________ 9  
Appendices: __________________________________________________________ 12
**Introduction**

Library catalogs continuously evolve, keeping pace with technological advances to provide their patrons optimal access to information resources. The physical card catalogs of libraries past were succeeded by online public access catalogs (OPACs), which were later supplemented with union catalogs used to provide access to resources outside of patron’s local library.

Libraries endeavor to stay current and competitive in the technological market. Federated search systems that reach across library resources and gather information from catalog, database, and online journal sources are the logical development of current library discovery systems. Implemented primarily in academic libraries, these systems allow students and researchers convenient access to a variety of information resources.

**The Application: Summon**

The proliferation of information resource formats presents challenges to libraries. Academic libraries are at the fore of adopting a new method of information resource discovery that harvests information about digital and physical resources in the library.

Summon is a web scale discovery system (WSDS) provided by Serials Solution and used in Drexel University Libraries to search simultaneously across most of the libraries’ resources. WSDSs improve on traditional OPACs, which represent only the resources held locally in the library catalog. Libraries using only traditional OPACs require patrons to search databases separately; this information silo structure necessitates repetitive searches.
Realism aside, today’s patrons expect instantaneous access to the whole of their libraries collections. Repeating searches in separate information resources is perceived as time-consuming drudgery. Noble in vision, WSDSs aim to make libraries not only competitive with web search engines like Google Scholar, but to raise library systems above web searches, providing instant access to a massive collection of vetted scholarly information.

Such discovery systems are a relatively new development, and much room exists for improvement. Users express both satisfaction and frustration with the systems. Reviewing Summon in isolation of other WSDSs allows us a clear perspective on how the Drexel community might use and perceive this tool.

**Literature Review**

The age of WSDSs in academic libraries is young. Literature on best practices for design has yet to coalesce into a coherent oeuvre. However, a few studies test usability and performance of Summon and its peer systems. In their user testing of WSDSs, Gallaway & Hines (2012) found that students approach such systems much as they would search the web. Students do not use Boolean operators or subject searches, and instead rely on keyword searches, expecting search term completion, spelling correction, and ready links to related results. A similar study of Summon by Gross & Sheridan (2011) corroborates that students rely on keyword searching, adding that students rarely use limiters and may have difficulty interpreting item formats. Majors (2012) also found from user testing that students’ approach to WSDSs resembles their approach to web search engines, and that students would prefer their library’s search to be more like Google.
Way (2010) also found that students like the similarities between WSDSs and the web, preferring the convenience of simultaneously searching a broad swath of databases to individual database searching. Users perceive searching a library information system as more difficult and as requiring a higher attention cost than a web search (Barton & Mak 2012; Rieh, Kim, & Markey 2012). Korah & Cassidy (2010) note that undergraduate students especially prefer the simplicity of WSDSs, but find that satisfaction with the system decreases as students progress in class standing, presumably because their levels of information competency increase and they begin to recognize that more results are not always better results.

There is much room for improvement in the way WSDSs rate relevancy of results. Variation exists between WSDSs in the way they harvest metadata from resource silos. While next generation catalogs (NGCs) harvest metadata strictly from indexing, WSDSs have full text searching capability, which increases the amount of results returned by searches executed in Summon and its peer systems. While this increases the likelihood that a user will find a document that discusses their topic, it also returns many irrelevant resources. As Antrell & Huang (2008) point out, subject searching would circumvent this issue. However, their study of transaction logs showed that subject searches comprised less than 5% of OPAC searches. This is especially relevant to results culled from the catalog, as the full text of physical objects such as books is not available for the WSDS to search.

Summon and other WSDSs retrieve information about catalog resources from MARC records. Communication between the WSDS and the local catalog is vital to performance as well as discovery. Han (2012) discusses issues surrounding this,
Correll 6

mentioning that missing MARC fields can completely obfuscate holdings. Ballard & Blaine (2011) add that inconsistencies in MARC records present retrieval challenges. The Library of Congress (2011) has announced that the time has come to evolve cataloging practices for the digital age, moving toward a universal standard. Han (2012) correctly notes that increasing cataloging granularity will improve discovery of books and anthologies that contain a chapter or article of interest to a researcher. Conversion of legacy records is a daunting prospect indeed, especially in the case of massive collections like those at the largest academic and research libraries; however, such an undertaking is necessary to the success of WSDSs for library resources.

While such technical redesign will improve the usability of WSDSs, our approach to evaluation and redesign is concerned primarily with the graphical user interface. Summon’s usability is weakened by the proliferation of limiters and functional inconsistencies between them. Novice users may encounter semantic difficulties in limiters, formats, and nomenclature of the WSDS itself. Help is not visible. Flexibility and efficiency features can be improved. Changes to the GUI may improve and add value to the user’s search experience.

**Paper prototypes descriptions**

Library systems are user-oriented, and it follows that user opinion is vital to effective evaluation. As often mentioned throughout HCI literature, combining methods yields better evaluation and reveals more interface issues presenting redesign opportunities (Gray & Salzman 1998; Jeng 2005; Preater 2010; Wharton, Rieman, Lewis, & Polson 1994). The cognitive walkthrough method appealed to our lack of budget, time, and
human resources for user testing. Te method’s focus on task completion made it useful to evaluate Summon’s effectiveness in connecting users to information resources.

Cognitive walkthrough techniques revealed problem areas in the Summon interface that may impede users’ connection with information resources. The group developed a series of tasks, which were attempted from the perspective of personae developed to represent typical Drexel library users. These tasks were translated into forms adapted from Lewis, Polson, & Rieman (1991). Group members utilized these in formal cognitive walkthroughs to evaluate Summon’s usability. Steps taken to accomplish each task were recorded, and problems encountered along the way were noted for redesign.

After conference, the group decided on a set of correct sequences of actions needed to execute each task. Redesign considered the problems encountered, and aimed to facilitate the users’ implementation of the correct sequence of each task, therefore easing cognitive load and the amount of mental effort required to achieve success in WSDS searching.

Each group member submitted redesigns of the front page and results list for review. After discussion, the group decided on the strongest aspects of the redesigns, using previously identified problems as evaluation criteria. A subsequent prototype was developed incorporating these strong points. This prototype was reviewed, revised according to group discussion, and finalized.

**Final prototype**

The final redesign of the Summon search engine on the front page of the library website addresses three severe usability issues, identified in Nielsen’s heuristics (1994): mappings/semantics, visibility, and aesthetics/minimalist design. Drexel uses an icon labeled “Get it” on the library’s link resolver; this icon and terminology replaced the
Summon icon and terminology to achieve a standard reference for the library’s WSDS. The tabs were renamed to clarify functionality. The search box allowing search of the library website was removed for error prevention, and replaced with a tab. A tab was designated for chat reference, and the tabs allowing access to course reserves and research guides were removed. The links for help, advanced search, and explanation of the federated search functionality (What is this?) were enlarged to increase visibility. Explanatory text was rephrased to improve labeling in the search box. Visual clutter was eliminated to improve aesthetics and lighten user’s cognitive workload.

The search results page was also improved for visibility, semantic mapping, standardization, and flexibility and efficiency of use. A help button was added and featured prominently in a bright orange consistent with the color of the search button. Links to more search filters were enlarged and made bold. The text explaining the function of the radio button that allows retention of refinements when altering search terms was clarified. Explanatory text was linked to the limiter for scholarly articles. The update button was removed from the publication dates limiter, which was previously the only limiter that relied on an update button, and replaced with a link to more publication date limiters. Unused and unclear limiters were removed, and the limiters were reordered to reflect frequency of use. Flexibility and efficiency of use were improved by the relocation of the results per page tool to the top of the page, and linking to the saved items folder at the top as well as the bottom. An additional efficiency feature was added in the form of an icon for quick citing of items in the results list. Efficiency was further

---

1 A link to the Research Guides rests in the middle of the library homepage, below the search box. Course reserves have been integrated into Blackboard Learn.
bolstered and user expectations met by the inclusion of a link to related searches. Users are aided in recovering from errors by the addition of a button to clear all limiters.

**Evaluation of the chosen prototype**

Although no formal evaluation of the final prototypes has been executed, the new design improves on usability issues raised during the cognitive walkthroughs and specifically address heuristic violations of the existing interface. To successfully evaluate the redesigned prototypes, a combination of methods should be employed. Cognitive walkthrough combined with a heuristic evaluation should precede a beta version of the new interface, which should then be tested with actual users before being completed, finalized, and released.

**Conclusions**

WSDSs will become the standard in library discovery systems within the next few years. Academic libraries are the main consumers of these systems, and it is imperative that they take an active role in design, development, and testing of these systems to ensure functionality and user satisfaction. The GUIs of WSDSs are already more appealing than OPACs, and WSDSs are on the way to becoming extremely usable, powerful search tools that provide easy access to vast collections of resources, scholarly and otherwise. Because issues exist in communication between WSDSs and OPACs, librarian involvement in the development of discovery systems is more important now than ever, as metadata standards and discovery systems have a new opportunity to evolve together into tools much more powerful than a web search engine.

**References in APA format**


Appendices:
Front Page Prototypes

Drafts

Final Front Page Prototype
Results Page Prototypes

Drafts

Redesign: