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OCLC's WorldCat Local versus III's WebPAC
Which interface is better at supporting common user tasks?

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Abstract

Purpose – This paper describes the results of a usability test performed at Western Washington University to determine if users were as successful performing common catalog-related tasks in WorldCat Local as they are in the library's current catalog, Innovative Interfaces' WebPAC.

Design/methodology/approach - A usability team developed a test based on tasks commonly performed in the library catalog. They then tested 24 participants of varying levels of experience and asked each to perform 20 common catalog tasks in either the WebPAC interface currently in use or the WorldCat Local interface. The WorldCat Local interface was a test version which reflected Western Washington University's library holdings, in addition to the Orbis Cascade Alliance consortial holdings and all WorldCat holdings.

Findings – While the results found that there were tasks in which participants were more successful in WorldCat Local than in the WebPAC, they also identified common tasks in which users were far less successful in WorldCat Local than in the WebPAC.

Originality/value – WorldCat Local is one example of a new generation of discovery interfaces that is being considered by a number of academic institutions. This article provides some insights into the strengths and weaknesses of the product.

Keywords Usability, WorldCat Local, OPAC, Innovative Interfaces WebPAC, Library catalog

Paper Type Technical paper

Introduction

In early 2009, Western Washington University Libraries considered adopting OCLC's WorldCat Local (WCL) interface as our primary discovery interface, replacing our current Innovative Interfaces' WebPAC Pro (WebPAC). The change would only involve the user discovery interface. The library would continue to use Innovative Interfaces' Millennium integrated library system (ILS) to support staff functions such as acquisitions, cataloging, circulation, course reserves, etc. The main advantage to the WCL interface is the collapse of three tiers of discovery; our local catalog, our consortium catalog (Summit) and WorldCat.

In considering the WCL interface, our working hypothesis was that users would be able to perform common tasks in WCL as well as or better than in the current WebPAC interface. To change a core interface or service such as the library catalog, however, can have serious implications for users and the library staff. Western Washington University Libraries, therefore, decided to conduct a formal usability study to determine if our initial hypothesis was correct, i.e., users would be at least as successful performing common tasks within WCL. In the study, we

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wanted to test common tasks a user would perform in an academic library catalog. Our working hypothesis would be disproved if the study uncovered common tasks that users were less successful at accomplishing in WCL as compared to the more traditional WebPAC interface. While the integration of the three tiers of discovery provided by WCL is highly desirable, we felt that the addition of this functionality would not be justified if our users had more difficulty performing common tasks. At the conclusion of the usability testing, our new understanding of the ability of our users to perform common tasks in both interfaces would be provided to the Dean of the Libraries as one a part of a larger decision-making process which needed to balance user needs with financial and possible political implications for the institution.

Background

Western Washington University Libraries is a member of the Orbis Cascade Alliance, a consortium of 36 universities, colleges, and community colleges in Oregon and Washington. A cornerstone service of the consortium is Summit, a union catalog containing all holdings of all member libraries, coupled with requesting and delivery systems that quickly transport materials between libraries. Western Washington University Libraries supports the needs of our campus patrons with a three-tier discovery model for books that is common in academic environments. In the intended process, a patron searches the local catalog first. If our library does not have the desired resource, the patron searches Summit to determine if the resource is available from a consortium member library. Finally, if no library in the consortium has the resource available, the patron requests the item from interlibrary loan. In some cases a patron may search WorldCat to identify an item but it is not a necessary step to requesting an item via interlibrary loan.

In December 2008, the Orbis Cascade Alliance replaced Innovative Interfaces' (III) Summit union catalog, and its integrated borrowing and requesting functionality, with OCLC's web-based WorldCat Navigator. The change resulted in the merger of two of our three discovery layers. A user still needed to search our local catalog first, but when they then went to the new WorldCat Navigator version of Summit, they could discover holdings of both consortium and non-consortium libraries within a single tool. The delivery services, both for the consortium and standard interlibrary loan, were integrated within the WorldCat Navigator interface.

Changing from our current WebPAC interface to the new OCLC interface and uniting WorldCat Local and WorldCat Navigator for Summit/WorldCat into one searchable interface was very appealing to the library. Searching the WebPAC and Summit meant the user has to deal with two different interfaces and know to move from the WebPAC to Summit to locate items held outside of the Western Washington University libraries, a step many fail to take. The move to the new Summit interface provided by WorldCat presented an opportunity to us to collapse these layers into a "one-stop shopping" tool for our users. The new WorldCat Local product not only combines the library catalogs of the Orbis Cascade Alliance libraries but also includes some articles from full-text journal databases (e.g., ArticleFirst, ERIC, Medline, GPO) potentially removing an additional silo for the user, the online database. One of the most appealing features of the WCL interface is the single search box – one step to search the entire database. Therefore, we were very interested in WCL as a possible discovery environment that would allow patrons to find resources in one place, whether the resources were available locally, through the consortium, or from other libraries via interlibrary loan. In order to do that, the WorldCat Local interface had to be at least as user-friendly as current WebPAC interface. While the possible integration of online databases is a significant advantage WCL has over

WebPAC/Summit/WorldCat and online databases in separate silos, the interface itself must allow the user to quickly and easily discover and navigate to desired resources.

Related Work

WorldCat Local is one of a number of new discovery interfaces developed in the last few years. Several Orbis Cascade Alliance members and other university libraries have evaluated WCL at different times over the last four years. The University of Washington Libraries, a significant contributor to the Orbis Cascade Alliance, was also a beta-test site for WCL and conducted a number of usability studies on WCL in its various stages of development (Ward et al., 2008b, p. 17). In early usability tests, although users were generally successful at completing the assigned tasks, University of Washington Libraries observed some issues with the user interface. Among others, the detailed record screen caused some problems, particularly for users trying to locate articles in WCL, since the interface displays retrieved items of all formats in a single list. In general, however, users were quite satisfied with WCL, although some still found the old catalog more user-friendly (Ward et al., 2008b, p. 23).

When the University of Washington Libraries released the new WCL catalog in April 2007, WCL became the default search box on their home page. The University of Washington Libraries team found that the changes to the WCL interface "improved the user experience at University of Washington" (Ward et al., 2008c, p. 39). These changes included the use of a simple search box, bibliographic records that display the current availability of the item, the removal of "article based silos, improved access to fulfillment options, search refinement options such as faceted searching, citation formatting, building and saving lists, etc., and, as a result, fewer 'dead ends'" in the discovery process (p. 39). In addition, University of Washington Libraries found that borrowing through the Orbis-Cascade consortium went up over 60% (Shadle, 2008). The University of Washington Libraries has continued to use WCL as its default search option on their home page.

Oregon State University Libraries conducted a review of WCL in early 2009. As a member of the Orbis Cascade alliance, it too faced the decision of staying with the current catalog (also WebPAC) and Summit division or moving to the more integrated approach of WCL. The purpose of the review was to make a recommendation to the library administration regarding this change. A task force looked broadly at the issue and identified several strengths of WCL, such as its integration of various fulfillment options including consortial requesting, interlibrary loan requesting and OpenURL article requesting, relevancy ranking of results and the FRBRized search results which bring work versions, formats and editions together. One important drawback the Oregon State University Libraries team mentioned is the lack of ability to customize of the interface in WCL (Boock, Chadwell, and Reese, 2009, p. 4), noting that they had spent considerable effort to customize the library catalog interface for their users.

Like the University of Washington Libraries, the Oregon State University Libraries performed usability tests on the WCL interface. The Usability Team (UTeam) tested the University of Washington Libraries WCL search interface and compared the results to the same tasks done in the Oregon State University Libraries Catalog (Innovative Interfaces). The test consisted of 4 tasks plus demographic and evaluative questions (Boock, Chadwell, and Reese, 2009, p. 8). Oregon State tested a large user pool consisting of 40 undergraduates, 16 graduate students, 24 library staff, 4 instructors and 18 faculty members from other departments (p. 8). The Oregon State University Libraries drew two main conclusions regarding the user interface:

> Known title searching was found to be more effective in the OSU Libraries Catalog, although respondents deemed the catalogs virtually equal for known title searching. WCL was deemed more effective for topical searches. Respondents prefer WCL overall. The most often mentioned reason is the ability to search and retrieve materials easily from other institutions in WCL and the ability to find articles. Several respondents also mentioned a preference for the multiple search boxes available on the OSU Libraries Catalog front page, although that was not a majority opinion (p. 8).

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They also reported that locating and requesting a specific edition of an item is not easy in the current WCL interface which uses FRBRization to pull these editions together into one record. They also felt that the advanced search was very limited (p. 5). Ultimately, Oregon State University Libraries chose to wait and review other services rather than commit to WCL at that time.

In 2009, OCLC released a report on patron perceptions of the library catalog. The study gathered information about catalog use and perceived catalog needs from both patrons and librarians. One of their key findings is that "end users expect a seamless flow from discovery to delivery; end users want to know immediately if the item is available and if so, how to get it" (OCLC, 2009a, p. 2). OCLC identified some areas that are of high importance to users of a library catalog. Users prefer to have a list of the libraries that own the item so they can easily see what is immediately available. Users also want to know what the delivery options are for an available item and make the delivery request within the system. The ability to refine a search with various facets is very important to users as well and, while many use the quick search option, the ability to search specific fields is appreciated by users. Users want their results to be in relevancy order but they also want to know why searches returned the results they did. The study, which included librarians, noted that librarians have similar needs and expectations of a library catalog, but are more concerned about content quality than the users (OCLC, 2009a).

OCLC has also done a considerable amount of usability testing on the WCL interface on its own. In addition to gathering feedback from other libraries, OCLC participated in the University of Washington Libraries tests, although not in comparison to any other library catalog product. In July 2009, OCLC released a report on their findings. Many of their tests had to do with display and additional features, such as a link to Amazon to purchase a book, which Western Washington University Libraries did not test. OCLC did look at several aspects of the user interface that were also of interest to Western Washington University Libraries during our test, including the use of a single search box, the value of faceted searching in helping a user refine a search, and the ability to locate materials (OCLC, 2009b).

Both the OCLC Usability test and the OCLC report came out after the Western Washington University's usability test of WCL, but point to some important issues about what users want in a catalog, what librarians want in a catalog, and why WCL is such a promising product.

These analyses corroborated our initial expectation that the WCL interface possessed both strengths and weaknesses and that there would be tradeoffs we would have to accept if we were to change our discovery interface. However, WCL offered two compelling benefits that led us to consider changing the discovery interface we provide for our patrons. First, WCL supports discovery of materials regardless of source. Within a single environment and with a single search, our patrons would be able to search some of our subscription databases, our local catalog, regional, national and some international catalogs, and digital collections from a wide variety of libraries. The second key benefit was that WCL offered an environment where all fulfillment

services (local holds, requests for Summit resources from consortial libraries, or interlibrary loan requests from non-consortial libraries) were offered in a single interface, rather than requiring users to search in a separate interface based on holding library. We felt this functionality was essential in any new-generation discovery tool we adopt, as we look at a future service model that will likely rely increasingly on interlibrary borrowing to meet the needs of our faculty and students. However, the interface that allows users to take advantage of the integrated services has to allow users to perform common search tasks successfully as well as delivery tasks such as locating or requesting resources. Failure to do both would prevent users from taking advantage of the benefits of the new system.

Problems and Goals

Realizing there would be tradeoffs for our patrons, we needed additional information to make sure we made an informed decision on whether to retain our current interface or switch to the WCL interface. We defined our primary research questions as:

(1) Are there common user tasks that our users are less or more successful at performing in the WCL environment?

(2) For any task that users have difficulty in accomplishing in WCL, does the usability problem also exist in the WebPAC, or is WCL introducing additional barriers to the ability of users to accomplish common tasks?

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We would then be able to use this data to inform our two subjective underlying questions:

(1) On balance, are our patrons more successful in the WebPAC or WCL interface?

(2) Overall, is there any compelling reason for us to retain our current WebPAC interface instead of switching to the newer WCL interface?

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We considered making our decision based on a comparison of system capabilities by experts (i.e., librarians) in conjunction with a literature search and possibly interviewing libraries that were already using WCL. This approach could be done with the least amount of effort and would allow us to make a decision fairly quickly. We decided, however, that the decision required additional data. We conducted a usability test in order to observe our patrons actually accomplishing tasks in each discovery environment.

Methodology

Usability Test

The task of evaluating the WCL interface was given to the Usability/Design Team (UDT) at Western Washington University Libraries. This team is made up of both faculty librarians and library staff, and has extensive experience evaluating user interfaces. While there are many ways of testing a website or interface, the UDT chose formal usability testing so we could observe user actions and responses as well as measure success rate, something we would not get with surveys or focus groups.

Usability testing has several goals and objectives, foremost of which is determination of the usefulness, effectiveness, and satisfaction of a tool. This is defined more specifically in Jeffrey Rubin's *Handbook of Usability Testing*. *Usefulness* refers to the "degree to which a product enables a user to achieve his or her goals" (Rubin, 1994, p. 18). In this case, it measures the success rate of the user. *Effectiveness* is "usually defined quantitatively, either by the speed of

performance or error rate" (Rubin, 1994, p. 19) in other words, the amount of time that is spent on a task. *Attitude* measures user satisfaction with a product.

The usability team chose to compare the two catalogs. A literature search revels that there are relatively few studies that have done comparative testing of two catalogs, although there are numerous examples of comparative tests of web sites and examples of usability testing of a single catalog (Chisman, Diller & Walbridge, 1999; Denholm, Kauler, Lavelle & Sokvitne, 2008). Others compare library catalogs with transaction log analysis or checklists, such as Mercun and Zumer (2008) who compare six different catalog interfaces using a checklist of features as do Luong and Liew (2009) who compare 13 library catalogs.

Antelman *et al.* (2006) at North Carolina State University compared their previous catalog interface to the Endeca Information Access Platform interface in 2004. In addition to some evaluation that included log analysis and searching for queries taken from the log, the team also performed some usability tests on the two systems. North Carolina State University Libraries tested 10 graduate students, with 5 participants randomly selected to search one catalog or the other. Participants searched for both known items and topical questions in the catalogs. Zimmerman and Paschal (2009) compared the search interfaces of two digital repositories. Participants were given a set of tasks to perform on each web site. The research team had the participants talk out loud during the test and then measured the successful completion of the task and the time required to complete the task. They also stressed the importance of satisfaction in comparing two products.

Thomsetts-Scott (2007) describes the method of competitive usability testing where participants are asked to perform tasks in several different catalogs. While this is somewhat different than the method Western Washington University Libraries employed, it does point out the value of testing two different interfaces to get a better understanding of the interface benefits and drawbacks. It also points out the challenges associated with testing library catalogs. For example, Thomsett-Scott points out that searching online catalog puts an "unintentional emphasis on typing skills of the participant" and that "difficulty with terminology was another major issue" (p. 31) in her tests. These issues also affected our tests, particularly in terms of time. She notes that "competitive usability in online catalog studies is an effective means of eliciting greater levels of feedback than would be provided in a single catalog study" (p. 34). However, she also notes that this method allows the participant to learn the catalogs more quickly, thus decreasing the time on task.

The UDT tested three areas of each catalog interface:

(1) Success rate
(2) Time on task
(3) Satisfaction with the interface

The UDT did not test learnability, defined by Rubin as the "user's ability to operate the system to some level of competence after some predetermined amount and period of training" (Rubin, 1994, p. 19) since the WCL interface was new to the users and we would not be providing any training on the tool prior to the usability study.

Although we could have used the existing University of Washington WCL interface in our tests, at the time of our testing their instance of WCL obtained local item data from the Orbis Cascade Alliance's III Summit consortial catalog which was scheduled to be closed down at the end of 2008. We felt, therefore, that using the University of Washington WCL interface would

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render some of the test results invalid. OCLC agreed to create a temporary WCL instance that we could use for review and testing purposes. This WCL instance would not use the Summit database for item information, and would contain most of the necessary links to our actual services, such as interlibrary loan, course reserves, etc. We also attended two webinars, WCL Branding Customization and WCL Fulfillment Customization, provided by OCLC to insure our test WCL interface was as close to possible to what our patrons would actually be using if we adopted WCL as our primary interface.

User Tasks

A UDT subgroup created a list of user tasks based on previous OPAC usability tests conducted at Western Washington University and at other libraries, and input from a number of staff that regularly interacted with patrons at the reference desk. The UDT took these comments and suggestions and developed a list of objectives. For each objective the team created a task. Each task was written to test a specific aspect of the catalog and to simulate the tasks that users are most likely to perform in the catalog. See Table I for a complete list of objectives and questions. The UDT decided to exclude tasks where the result was already known. For example, one task required searching for a music composition by uniform title. WCL did not, at that time, fully index uniform titles and it was impossible to accomplish this task within WCL. We also could not test scoping to a specific collection or call number searching as the system would not allow for these options. The UDT then pre-tested the tasks with two volunteers and made some minor adjustments in the wording of the questions before the first official round of testing began.

Table I. Test Objectives & Questions

Objectives	Test questions
1. Locate a book by author	1. Find a book by Vance Packard. Choose one of his books.
1a. Locate the status of a book	1a. There is a book called A Nation of Strangers by this author. Is it currently checked out?
1b. Locate the call number and location information of an item	1b. For the same book, what is the call number and where it is located (building & floor)?
2. Locate a book by title	2. Find the book titled Supply-side sustainability.
2a. Request an item	2a. Have the book above held for you at the Haggard Circulation Desk
3. Locate a book not in Western Washington University but available in Summit.	3. Find a copy of The big switch: rewiring the world, from Edison to Google?
3a. Request an item via Summit	3a. How would you obtain it?
4. Locate a book not in Western Washington University or Summit but available via interlibrary loan	4. Find a copy of the novel Beautiful just!
4a. Request an item via interlibrary loan	4a. How would you obtain it?

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5. Find a chapter in a book	5. Find the essay "To Write: An Intransitive Verb?" by Roland Barthes? What page number does the essay start on?
6. Locate a specific issue of a journal	6. There is an article in the July 2008 edition of History of Philosophy Quarterly. Has the library received this issue?
7. Locate a video in a specific format by title	7. You group has asked you to get a video clip from 2001: A Space Odyssey. What is the call number of a copy on DVD?
8. Access an online source using the library catalog	8. Find Beaches and bluffs of Puget Sound and access the online version.
9. Locate an item by author/number of copies	9. How many books does the library have by author Neil Gaiman?
10. Locate a book by subject/date	10. What is the title of a book about the artist, Vincent Van Gogh that is less than 5 years old?
11. Locate a book by author/specific subject	11. What is the title of a book about the artist, Vincent Van Gogh that is written by A. M. Hammacher?
12. Generate a list of items from the catalog	12. In the list of works about Vincent Van Gogh, create a list of 3 items.
13. Locate a source by topic	13. What is the name of a resource that would help you write a paper about electronic commerce?
14. Access your account	14. Find out what you have checked out from the library.
15. Renew an item	15. Renew an item you have checked out (describe how you would do so).

Participants

The next step was to recruit participants. Nielsen found that including around 20 users when collecting usability metrics offers a reasonably tight confidence interval (Nielsen, 2006). Nielsen further found that when testing involves more than three separate groups of users who will use the site in different ways, including three users from each group will ensure that the diversity of behavior among users will be covered (Nielsen, 2000). Given this, the UDT tested 24 users with a broad range of experience and research needs and academic status.

After obtaining the initial results from the usability testing, we re-tested the validity of our sample size using Jeff Sauro's "Sample Size Calculator for Discovering Problems in a User Interface" (Sauro, 2006). This calculator first builds an estimate of the probability of detecting a user interface problem based on sample data. It then produces an estimate of the number of users needed to discover the specified percent of total problems. It uses the Good-Turing and Normalization procedures discussed by Lewis (2001) and Turner, Lewis & Nielsen (2006).

In our WCL testing, out of 240 tasks (12 participants x 20 tasks) we discovered 80 total problems (a task that was not successfully completed by a test participant) including three unique problems (tasks in which only one test participant failed to complete the task). The adjusted problem occurrence is 0.26 which is the average of Normalization: 0.22 and Good-Turing (GT): 0.28. Based on this problem occurrence, in order to discover 95% of all problems available for

discovery, the recommended sample size is 10 participants. Therefore, our sample size of 12 participants can be expected to uncover more than 95% of all problems available for discovery. Very similar results were obtained in our WebPAC testing, again indicating that we needed 10 participants in order to discover 95% of all problems available for discovery.

While we tried to get an even demographic distribution among the participants for both sets of tests, it was not always possible. Recruiting freshmen or other novice users proved to be difficult, an experience we have had in other usability tests. The team recruited at library-hosted events, through email, and using guerilla tactics (i.e., simply asking people who happened to be in the library to participate in the study). A summary of test participant demographics in shown in Table II.

Table II. Demographics Summary

	%	n
Status		
Freshmen	16.6	4
Sophomore	4.1	1
Junior	8.3	2
Senior	25.0	6
Graduate Students	12.5	3
Faculty	25	6
Staff	8.3	2
Library Instruction		
No	70.8	17
Yes	29.2	7
Library Use		
Daily	4.1	1
Several times a week	41.6	10
Several times a month	12.5	3
Less than once a month = 33.3% (8)		
N/A = 8.3% (2)		

Testing Procedure

Usability tests were conducted in our "lab", a small office with a computer for the observer/recorder and a laptop for the participant to use. Two members of the UDT managed the test. One person acted as facilitator and the other as recorder. There was no remote observation of the test.

Prior to the test, the participant answered questions about their status, major, frequency of library use and whether they had any previous library instruction. The participants were informed that we were using screen recording software (TechSmith's Morae) to capture both the audio and the participants' actions on the screen. Each participant had a printed copy of the questions they could refer to during the test. We employed the "think out loud" protocol asking participates to speak out loud about why they were choosing a particular link and what they expected to find there. The facilitator occasionally asked questions about why a participant had followed a certain path but did not interfere in the test unless it was clear that the participant could not continue with the task.

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Participants were given 20 tasks to complete using one of the two library catalog interfaces, the current WebPAC and the WCL test site. Each participant accomplished the set of tasks in only one of the two interfaces. This would preclude having the test results affected by a test participant's familiarity with the tasks if they performed the same tasks a second time.

For most of the questions, participants were directed to begin from a designated starting point so that success performing individual tasks would not be affected by their navigation during a previous task. Several questions (1a, 1b, 2a, 3a, 4a) were follow-ups to previous questions and did not return to the starting point. The starting point in the WebPAC was the interface main menu (Figure 1); while the WCL starting point was the WCL home page (Figure 2), with the default scope set to search all libraries worldwide.

Figure 1. WebPac main menu

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Figure 2. WorldCat local default search page

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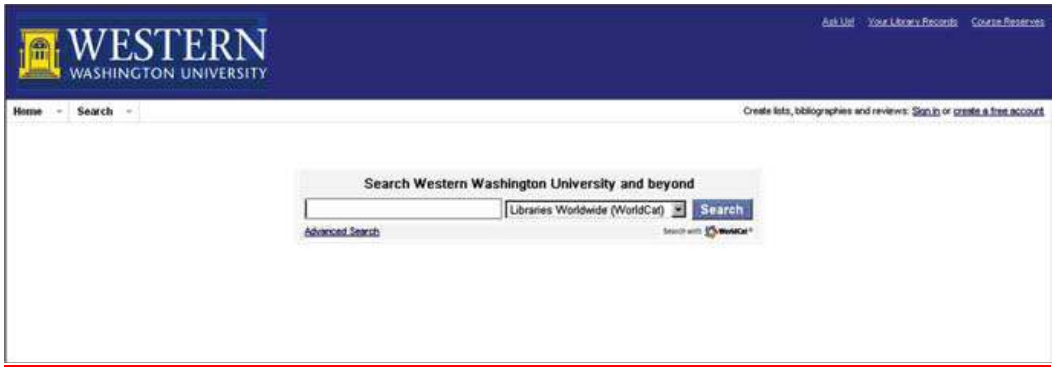

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At the end of the test, participants were asked two open-ended follow-up questions and were given an opportunity to provide additional feedback and comments. Then the participant filled out a ten question satisfaction survey, also administered using Morae. The results of all the tests were imported into Morae for analysis.

Scoring

To score the tests, the UDT employed a modified version of Jakob Nielsen's usability metric for measuring success (Nielsen, 2001). This metric is based on the user success rate, which Nielsen defines as "the percentage of tasks that users complete correctly" (Nielsen, 2001). Successful

tasks are awarded points, while no credit is given for incomplete tasks. The resulting formula is Successful tasks/All tasks = Success rate (%).

Time on Task

Each task was marked in Morae as "started" when the participant actually began to answer the question not when the facilitator began to read the question out loud. End times were marked when the participant completed the task, gave up, or the test was stopped by the facilitator. From start to stop is the time on task.

Satisfaction

The Morae program includes a satisfaction survey at the end of the test. For this test, The Usability Team felt satisfaction was as important as success. If the users are unsatisfied, they will not return to use the source. The satisfaction survey based on a Likert scale was administered directly after the participants complete the test and answer the follow-up questions.

Test Problems

Despite pre-testing the questions, we discovered some issues with our tasks as we proceeded through the test. Some of the test questions built on previous questions. If the participants could not complete the first task, then it was likely that the participant would have trouble with the second task. In a few cases, when performing the second part of the task, the participants returned to the designated home page before the question could be read to them. In those cases, the time on task started when the participant reached the point where they would have been in the test had they not returned to the designated starting point.

Two questions in particular caused problems. Question 11, locate a book by author & subject was difficult in WebPAC due to an authority control problem. The personal name 'see' reference from *AM Hammacher* to *Hammacher, Abraham Marie, 1897-2002* did not work correctly as the death date in the authority record had not been added to the headings in the bibliographic records.

Question 13, locate a source by topic, was occasionally misunderstood. Two of the participants thought we meant for them to find a resource that would help them to write a paper, such as a guide on writing a term paper, rather than a source about electronic commerce.

Results

Overall Success Rate

Table III shows the overall success rates of the two interfaces using the formula Total Successful Tasks/Total number of attempts. Table IV and Figure 3 show the success rates for individual tasks.

Table III. Overall Success Rate

	WCL	WebPAC
Number of Tasks	20	20
Number of Participants	12	12
Total number of attempts (tasks x participants)	240	240
Number of tasks completed successfully	163	167

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Success rate (%)	68	70

Table IV. Success Rate by Task

Task #	Task	WCL (%)	WebPAC (%)
1.	Locate a book by author	83	83
1a.	Locate the book's status information	100	100
1b.	Locate the call number and location of a book	92	100
2.	Locate a book by title	42	100
2a.	Hold a book at the circulation desk/document delivery	42	83
3.	Locate a book by title (not owned by WWU, in Summit)	75	75
3a.	Request a book via Summit	67	58
4.	Locate a book by title (not in WWU/Summit)	25	67
4a.	Request an item via ILL	42	17
5.	Locate a chapter/essay in a book	17	25
6.	Locate a specific issue of a journal	0	17
7.	Locate a video by title	100	75
8.	Access an online source using the library catalog	100	75
9.	Locate a book by author/number of copies	58	92
10.	Locate a book by subject	83	92
11.	Locate a book by author/specific subject	100	58
12.	Generate a list of items from the catalog	75	33
13.	Locate a source by topic	100	83
14.	Access your account	67	92
15.	Renew an item	92	67

Figure 3. Success rate by task

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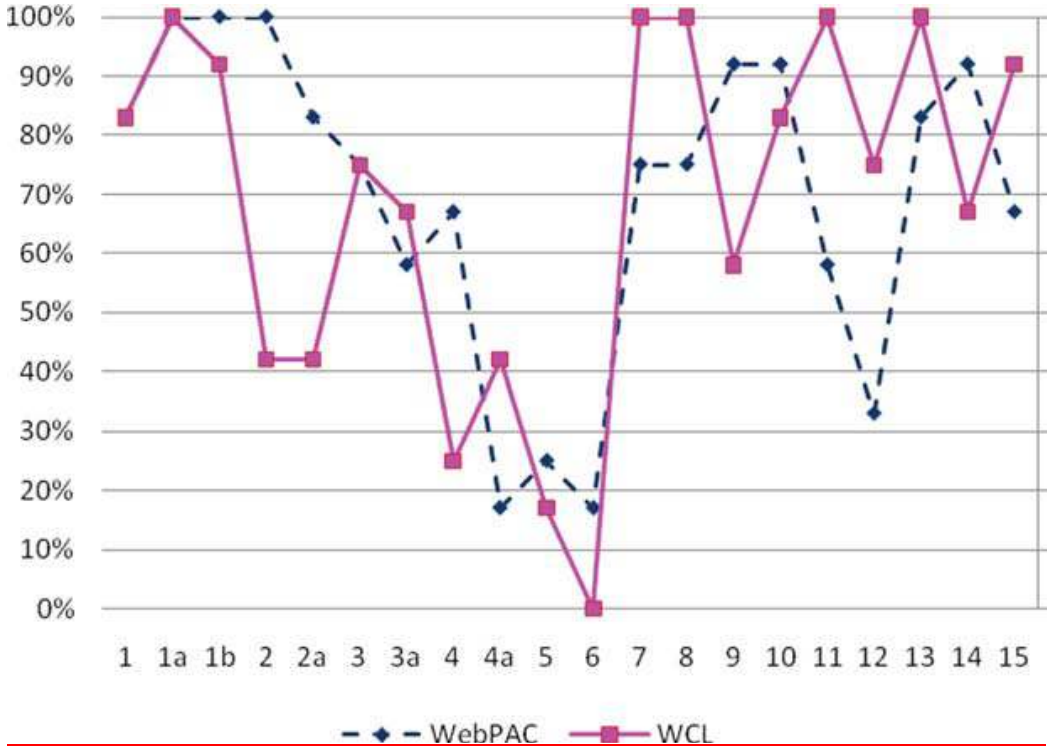

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Tasks successfully completed in WCL

Nine of the twenty tasks were successfully completed in WCL by at least 83% (10 of 12) of test participants. Four of the nine successful tasks were completed by at least 25% more test participants in WCL than in the WebPAC interface.

Locate a book by author (task 1). In the WebPAC, most users clicked on the drop-down and chose author or used the author tab. Participants who entered the last name first were immediately successful. Others saw the recommendation to retry the search with the author's last name first. Some resorted to a keyword search when the author search *Vance Packard* did not produce the desired results. In WCL, all participants entered *vance packard* into the search box. Only one participant used the advanced search (which allowed restricting the search to an author search). In both cases, the participants generally did not think to enter the author's name as last name, first name. WCL was, in this instance, more intuitive to them.

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Locate a book's status information (task 1a). Participants did not have any difficulty finding the status (or book availability information) in either interface. A few participants just did a title search rather than look through the results from the previous search. In WCL, it took a few seconds for the holdings information to appear but this did not seem to cause any problems.

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Locate a book's call number and location (task 1b). Participants who found the status in the previous task generally located the call number and location easily.

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Locate a video by title (task 7). Punctuation caused some problems for participants performing this search in WebPAC. If the participant did a keyword search and entered *2001: a*

space odyssey, the result was no hits. The participant would have to replace the colon with a semicolon or space for the search to work. The same problem occurred if the participant selected a video search and used a colon. If the participant did a title search (using either the title tab or the title dropdown) then the punctuation did not matter and the search was successful. In WCL, participants found the desired item quickly. A few refined the search to DVD using the faceted search feature. Some just tried *A space odyssey* and were still successful. WCL's basic keyword searching was more user-friendly since it did not present the same punctuation issues as WebPAC.

Access an online resource using the library catalog (task 8). In the WebPAC, most participants found this easily with a title search. Several did not see the link to the online version or saw it only after looking around. One participant commented that the link is "not very prominent" and another said he was "lucky to find it." A few clicked on the call number instead. Most participants searching WCL found this quickly with a general search. The link to the online version is more prominent in this display, although one participant said he did not expect to find it "buried in the middle." The location and size of the links to an online version made a significant difference in the results.

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Locate a book by subject (task 10). Almost all participants searched for *Vincent van Gogh* as a keyword or subject in the WebPAC. Some tried *Vincent van Gogh* as a subject which gave them a "Your entry *vincent van gogh* would be here" message. After that, some participants tried a keyword search instead. Participants who just did *van Gogh* as a subject did not always see the entry on the subject list which referred them to *Gogh, Vincent van*. If they saw the link, they got a very long list of subjects. Some participants confused the subject list with an actual book list. Most participants found an item eventually but it was more by chance than because the search engine was guiding them. In WCL, almost all of the participants searched by *Vincent van Gogh*, which brings up books and articles about the artist. Generally the users were less successful because they did not distinguish between a book and an article. Some added the date restrictions in the search field. The participants were asked to refine their search to 2005 but on the refine search menu on the left, the most recent date displayed is 2003. Participants had to click on the *Show more* link to see 2005. Some participants expected the most recent items to be at the top (the default sort is by relevance). The combination of books and articles in WCL confused the participants in several of the test tasks.

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Locate a book by author/specific subject (task 11). This task proved to be difficult for many participants using the WebPAC. Participants who tried *Hammacher, A.M.* were successful. However, most participants entered *AM Hammacher* (with varying punctuation) and were directed to use *Hammacher, Abraham Marie, 1897-2002.* When participants clicked on this link, no records were found, as the death date in the authority record had not been added to the headings in the bibliographic records. Participants found the desired resources much more easily using WCL. Most did either a search for *Hammacher* or just *Vincent van Gogh*. At least two participants had difficulty with the search because of a date restriction left over from a previous search or because they had set the search scope to our local catalog. Participants also had difficulty with the *refine by author* on the left side since some entries in the author names list had a fuller form of the name than the one provided (e.g., *Abraham Marie Hammacher* instead of *A.M. Hammacher*). The keyword default search of WCL in general proved to be more successful.

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Locate a source by topic (task 13). In the WebPAC, most participants did a keyword search or a subject search, and most found a source quickly. One participant misunderstood the question

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and thought we wanted him to search for a source on how to write a paper which added some time to his search. In WCL, most participants just entered *electronic commerce* in the search box. Some ended up selecting an e-journal or e-book. Participants did not discriminate in terms of the format of the resource they selected, but the instructions did not specify a particular format to look for.

Renew an item (task 15). Since not all participants had items checked out, it was not always possible to tell if they would have been able to accomplish this step. Most indicated they would expect to see a link to a list of items checked out where they could then select items to renew. Participants found the option of how to renew a book more easily in WCL.

Tasks presenting some difficulty in WCL

Five tasks were completed only by 50%-75% of the test participants. Of these, one task had significantly higher success rates WCL (task 12); while two tasks had significantly lower success rates in WCL than in WebPAC (tasks 9 and 14).

Locate a book by title for an item held by a consortial library but not in the local collection (task 3). In searching the WebPAC, several participants simply assumed that since they could not find the book in the WebPAC, they had done something wrong. Many saw the "your request would be here" message or "title not found" but did not necessarily understand that means the library does not own the book. Participants searching WCL generally entered the search in the quick search screen. If the participant changed the search scope to Western Washington University, i.e., whether all WorldCat Resources were being searched or only resources at Western Washington University, they did not find the item. While participants were generally successful in determining the item was not at WWU, they were generally not successful in completing the follow-up part of the task *Request a book through Summit (task3a)*. In the WebPAC, users who were familiar with Summit were able to do this quickly. Others assumed that because Western does not have it they could not get it or would need to go to the local public library or Amazon to get it. In WCL, participants saw the *Request Summit item* button fairly quickly, *if* they were in the book record. Not all the participants understood that they could request an item which may explain the relatively low success rate. Even when participants successfully located an item in WCL, the next step of requesting the item through Summit was not always intuitive.

Locate a book by author/number of copies (task 9). In the WebPAC, most participants entered *neil gaiman* as an author search (using either the Author tab or the Author keyword dropdown); while a few entered *gaiman, neil.* Those who entered *neil gaiman* were prompted to search for *gaiman, neil* instead. Not everyone saw this prompt. Some then tried a keyword search instead. Most participants were able to identify the number of books, although a few did not notice that some records are videos. In the WCL, the results depended on if the search scope was set to the local catalog, the Summit catalog, or WorldCat. Since the default setting is WorldCat, most participants searched the entire WorldCat database. Participants had a hard time distinguishing between things written by or about Neil Gaiman and between books and articles. Some participants saw the *Refine by author* option on the left (see Figure 4) but not all did. The difference between the three catalogs (Local, Summit and WorldCat) and why one would search one over the other was not clear to the participants.

Figure 4. WCL format icons

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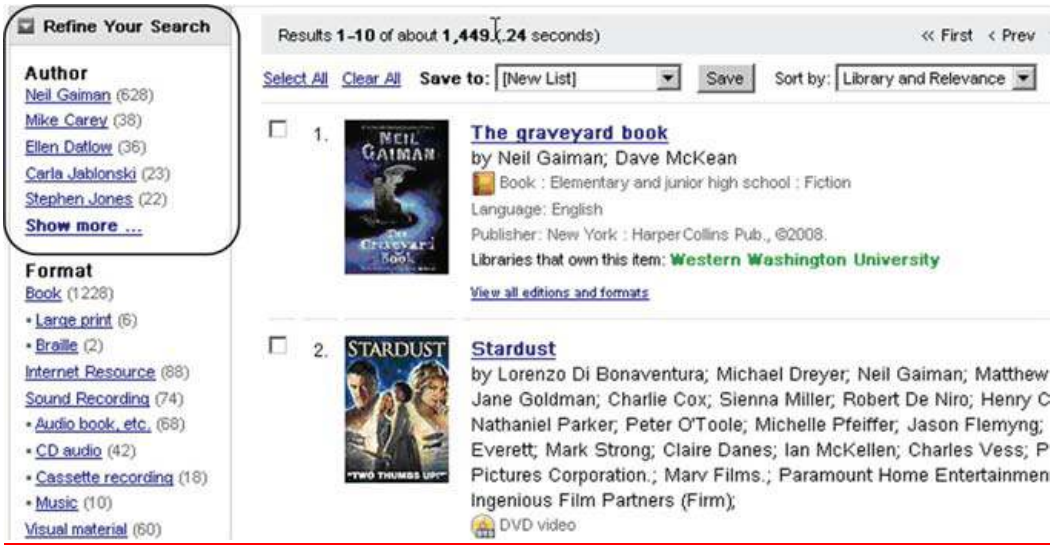

Generate a list of items from the catalog (task 12). Participants found this task a little difficult in the WebPAC. They correctly checked the boxes next to the desired resources and sometimes found the *save checked items* button, but were not sure what to do next since the option to generate a list is labeled *Save, print, email*. Some tried this link just to see if it would work. Others were confused and just gave up. Participants easily checked the boxes in WCL and most found the *Save to [New List]* option. None of the participants had a WCL account set up and in order to generate a list in WCL, patrons have to create an account. Patrons were not always sure if they already had an account or if they were logging into their library account, which could be a barrier to users in the future.

Access your account (task 14). In the WebPAC, participants quickly found the link to their account. Only one returned to the library home page to click on the link. One participant used the *Other* tab to look for the link (no link to their account is present on that tab). In WCL, most quickly saw the link to *Your Library Record*. Three participants thought they needed to click on *Sign in*, which provides access only to their Summit account and not to their local library account. After clicking the *Your Library record* link, one participant chose *Access Your Summit Record* instead of *Renew Western Washington University Library Materials*. Multiple accounts to renew or request items is a problem in both systems.

Tasks with high failure rates in WCL

50% or more of the test participants were unable to successfully complete six tasks in WCL. Test participants were significantly more successful in WebPAC on three of the six problem tasks (tasks 2, 4a and 4), while the remaining three tasks were problematic in both WCL and WebPAC.

Locate a book by title (task 2). In the WebPAC, participants generally did a title search using either the drop-down menu or the title tab, then found the title easily. In WCL, participants had a great deal of difficulty with this question, primarily because the results included both articles and books. In WCL, many participants selected an article without realizing it was an article, as they

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failed to notice the format icon next to each result (see Figure 5) or failed to understand its significance. A few participants realized this and went back and chose the book. Only one participant noticed the icons that distinguish a book from an article. Some participants simply chose the first item in the list. Some participants looked for an option to search just by title on the starting screen but did not see one.

Figure 5. Refine by author option

Place a hold on a book (task 2a). Participants had a harder time with this task in the WebPAC. The icon at the top reads *Request* and participants who found it were not always sure what that meant. Participants called it "tricky" and "confusing." This task was a little difficult in WCL, especially for those participants who chose the article (see task 2) rather than a book since the question builds on the previous one. A few participants noticed that they were in an article record at this point and found the book record instead. If the participants were in the book record, they found the *Place hold* button relatively quickly. The low success score for WCL for this test is accounted for by the low score in task 2 for WCL. Participants who did locate the title of the item had no difficulty with this task.

Locate a book by title for an item not in the local catalog and not held by a consortial library (task 4). Most participants did a title or keyword search for this item in the WebPAC, with three repeating the search in Summit. Only three participants knew that they would need to submit an ILL request to obtain the book. In WCL, most participants used the quick search and entered the title, while three enclosed the title with double quote marks. Most participants expressed frustration that the results did not seem relevant to the search they had entered, since they were basically just doing a keyword search. Limiting the format to "book" did not help locate the item, especially if the participant had set the search scope to our specific library or the Summit catalog. One participant used the advanced search, entered the title in the title field and chose fiction, which successfully retrieved the item. Several participants changed the results sort option to *Relevance only* and successfully located the item. Most participants simply gave up.

WCL has a default search scope of *Libraries Worldwid*e and a results sort parameter of *Location and Relevance*. Using these default parameters results in a search that looks at all holdings in WorldCat, then segments the results into three separate groups. The first group

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displays all records with a holding attached for the local library (Western Washington University in our case), as long as at least one of the search terms was somewhere in any search index. This first group also contains all articles in the database that are published in journals held by the local library. The second group of results are those records with consortial library holdings attached, while the final group of results are the remaining records, i.e., those records with neither a local library nor a consortial library holding attached.

This segmenting of the result set created a display in which the WorldCat record with a title exactly matching the search string was included as record number 546, in the 55th screen of results. The relevancy algorithm worked very well, as the target record was the very first record in the third (WorldCat) results grouping. However, that group was not displayed until after 545 not-as-relevant records were displayed that happened to have a holding attached for either the local library or a consortial library. If a user changed the result sort option to *Relevance Only*, and delimited the search string with quotes, the target record is displayed as the very first record. No user in our test, however, successfully guessed this necessary series of steps to produce a successful known item search. For academic searchers, finding a specific item – for example, a particular edition of a book – is often more important than finding items that reside in a particular library. Therefore, if/when Western Washington University adopts WCL as its primary discovery interface, we will likely choose to make the default sort parameter *Relevance Only*.

Request an item through interlibrary loan (task 4a). As this question was a follow-up to task 4 (see above), the participants ability to succeed at this task was somewhat impaired. In the WebPAC, a few participants went to Summit to try and locate the item. Those who knew about interlibrary loan said they would go there next. One participant said he would do an interlibrary loan but did not see any way of placing the request. Some participants stated they would either go to the local public library or talk to the librarians to locate the item. One simply assumed he would not be able to get the item. Success using WCL depended on whether the participant had set the search scope to the local catalog, the Summit catalog, or WorldCat. Several participants who were already familiar with the interlibrary loan service said they would go to interlibrary loan to get the item. One participant clicked on the *View other libraries that hold this item* and assumed he would have to go to Surrey, British Columbia to get the item. One participant stated that he would give up and go to Amazon at this point and found the WCL process "very tedious".

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For many users, the relationship between Summit and interlibrary loan is unclear. Even those participants who know about interlibrary loan were not sure how to place the request. This is especially true when searching in the WebPAC since there is no link within WebPAC results screens that allows them to place an ILL request. The user must go to a different web page, log in and manually fill in a request form.

Locate a chapter/essay in a book (task 5). This question was challenging in both applications. In both interfaces, a title in a contents note field (TOC) was only included in the title index if the record contained a formatted contents note. In records with an unformatted contents note, using a title search failed to retrieve most relevant records, even though they contained the essay's title. In the WebPAC, some participants entered the essay title while others used the author name. Only one of twelve participants went to the advanced search and did an author/title combination search. One participant looked for a tab for essays. Many participants found the book where the essay is located but did not scroll down far enough to find the table of contents to see that the essay was there. Several participants went to the articles search instead. They did not appear to know that they could search the table of contents of a book.

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Participants were far less successful in WCL. Most tried a combination of the title and/or author but did not locate the item. One participant went to the advanced search and set a number of parameters but was unsuccessful. A few participants found the book but did not scroll all the way down to the notes field to see that the essay is a chapter in the book. Some users went to the advanced search and did not realize that the search parameters from a previous search were still there, which then affected their new search. Students were able to locate a chapter or essay in a book more quickly in WebPAC that in WCL, although the task was a difficult one in either interface since the participant actually has to look at the bibliographic record to see the table of contents. In the WCL interface, however, the participant has to scroll down further to the details to find the content, whereas in WebPAC, it tends to display a little higher on the screen. This is one example of where using a laptop during the test has some implications.

Locate a specific issue of a journal (task 6). This question presented difficulties in both interfaces. In the WebPAC, most participants found the journal record quickly either through a title search or a keyword search. Seven of the participants used the journals tab to locate the journal. However, only two participants actually verified that the library had received the July issue. Most saw that the library had the most current issue and simply assumed we had the previous issues. Locating a specific issue of a journal was more difficult for participants using WCL. Most tried a quick search and found the journal but then did not know how to see if we had the July 2008 issue. Several tried to refine the search to 2008 on the left side of the screen. Participants had to click on the *Show More* link to actually see 2008. This search located articles published in 2008 in WorldCat but did not indicate if the library owns the issue or not. Some looked at the details of the record and saw the note that the entry is based on the January issue and thought this was the holding information. Others added the words *july 2008* to their search which did not produce the expected results.

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Time on Task

While results for time on task were also captured, in this test time on task provided little information beyond the more compelling success rate results. Also, use of time to complete tasks in studying catalogs may be irrelevant due to the variability in test participants typing speed and other issues affecting time on task data. Thomsett-Scott (2007) notes that time may not be that relevant is usability testing:

> "Typing issues, unfamiliarity with library terminology, and other issues all affect the timing data. Usability of a Web site is not gauged only by the lowest time to reach a particular point; satisfaction and ease of use of a site are also very important, and the time taken to reach a particular piece of information will be reflected in these results" (p. 35).

Therefore we did not consider time on task as the most compelling factor in our usability test although time on task is an important measure of the success of an interface. The average time it took to complete an entire test was 26 minutes. The average time in WebPAC was 24:58.9, while the average time in WCL was slightly longer at 27:42.8. We do not judge this difference significant, as there was some level of prior familiarity with the WebPAC.

Satisfaction

The participants were asked two follow-up questions prior to taking the satisfaction survey. In the follow-up questions, participants could provide open feedback on the interfaces. The

participants were asked, overall how easy or difficult did they found it to complete the tasks. For the WebPAC, the consensus was "pretty easy". Two participants found it easy at first but then judged it more difficult for later tasks. One participant commented that we had asked him to complete tasks he had not done before.

While the participants may have had some passing familiarity with WebPAC, WCL was new to all of them, except for its similarity to the design of WorldCat Navigator which went live in December 2008, only months before the usability test was conducted. Again, the overall consensus was that the interface was "pretty easy" to use. One participant found it "a lot easier than the current web page." One participant found the interface "really easy except for the one [question] I didn't know."

With both interfaces, the participants tended to attribute their inability to complete tasks to their lack of experience with the interface or type of material involved, or to a personal lack of ability, rather than to problems with the design of the interface. In the WebPAC, one participant commented "[I] don't think it's an interface issue so much as a person who does not use the library much" and another said "I missed some things. They're not hard to find, I just missed them."

The second follow-up question asked the participants how the two interfaces could be improved. They felt that their search results were too broad in WebPAC and that they needed a better way to narrow things down. They also wanted a spellchecker. Participants had more recommendations for WCL. They wanted the results to come up in reverse chronological order, which is a change that could be easily made. Most of the other comments were more about aesthetics than functionality, make certain links bigger, make the *clear* button in the advanced search more visible, make the refine option on the left more visible, and automatically clear search terms in the advanced search fields between searches.

At the time of this test, when a user entered terms in the WCL advanced search box, the terms were persistent, i.e., the terms were retained in subsequent searches unless the participant intentionally removed them. This was a problem when users entered a new search and did not clear the previous search. Similarly, if the user limited the search to specific years, but did not want that restriction carried forward to the next search, he had to either use the clear button or manually change the date limits. Several users experienced difficulties with this and no user saw the clear button. OCLC developers recognized the use of persistent search terms created problems for users and made search terms and parameters non-persistent in a later version of WCL (OCLC, 2009b).

Finally, the participants completed the satisfaction survey composed of questions supplied as part of the standard survey package in Morae. The participants responded that they would be more likely to use WCL and that they found WCL easier to use. They found WCL to be less complex than WebPAC and they believed they would need less technical help with WCL. Conversely, they believed WebPAC would be faster to learn, that the various functions were better integrated in WebPAC, and that they would need to learn more to get started with WCL. This may be due to the fact that most of our users had some experience with the WebPAC before the test. The results of the satisfaction survey are shown in Table V and Figure 6 and are remarkably similar, although in some cases slightly contradictory. Overall their preference was for WCL, although the difference was very small.

Table V. Satisfaction

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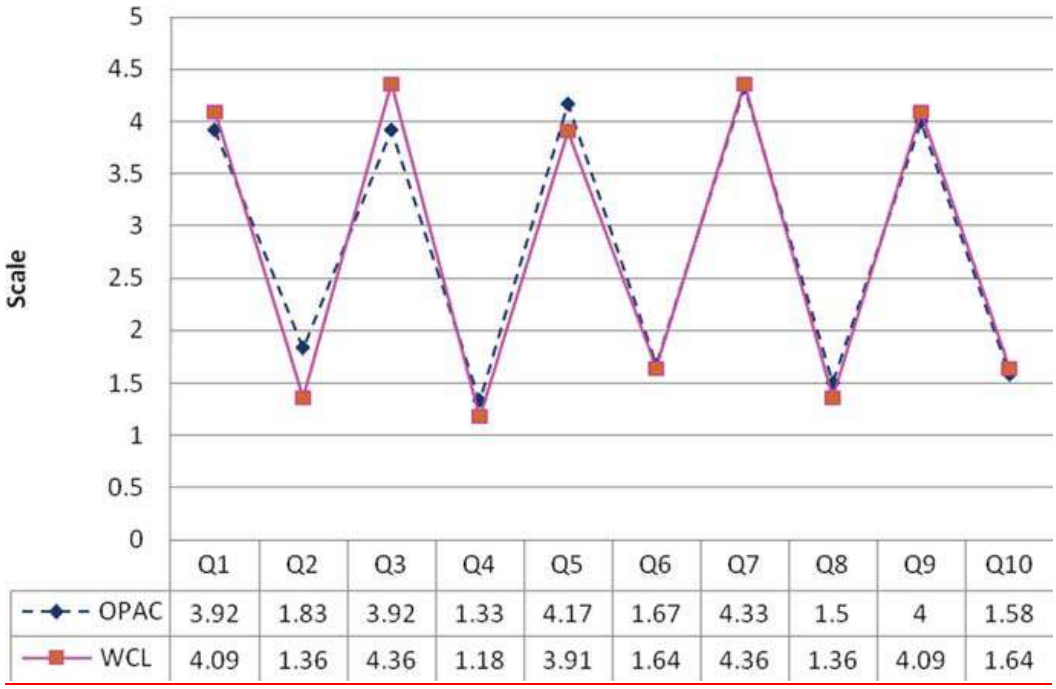
Questions	WebPAC	WCL
1. I think I would be likely to use this system frequently	3.92	4.09
2. I found the system unnecessarily complex	1.83	1.36
3. I thought the system was easy to use	3.92	4.36
4. I think that I would need the support of a technical person to be able to use this system	1.33	1.18
5. I found the various functions in this system were well integrated	4.17	3.91
6. I thought there was too much inconsistency in the system	1.67	1.64
7. I imagine that most people would learn to use this system quickly	4.33	4.36
8. I found the system very cumbersome to use	1.50	1.36
9. I felt very confident using the system	4.00	4.09
10. I needed to learn a lot of things before I could get going with this system	1.58	1.64

Figure 6. Satisfaction



	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
OPAC	3.92	1.83	3.92	1.33	4.17	1.67	4.33	1.5	4	1.58
WCL	4.09	1.36	4.36	1.18	3.91	1.64	4.36	1.36	4.09	1.64

Effect of User Experience

The six WebPAC test participants who self-reported using the library several times a week or more had an average of 72.1% task success in the WebPAC, a higher average success rate than the two participants who reported library use of less than once a month who had an average success rate of 66.25%. Yet, the four WCL test participants who reported using the library several times a week or more had an average of 61.25% task success in the WCL, an average

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success rate significantly lower than the six participants who reported library use of less than once a month who had an average success rate in WCL of 79.17%. Although the same pattern of differences in success rate carried over to those who reported previously receiving some form of bibliographic instruction and those without that type of training, the differences between the BI vs. non-BI groups was very small and statistically not significant. It was an interesting and unexpected finding that frequent library users were more successful in accomplishing tasks in the more traditional WebPAC, but less successful when initially introduced to a significantly different discovery interface like WCL. Further research would be needed to confirm that this pattern held true with a larger sample size, and if so, whether the difference in task success changes as experience is gained in the new search environment.

Conclusion

The goal of the usability test was to discover if there are common user tasks that users are less or more successful at performing in the WCL environment. A number of tasks were identified where users were significantly less successful in the WCL environment, disproving our original hypothesis that users would be able to perform common tasks in WCL as well as or better than in the older WebPAC interface. Some problems that stood out were:

- *Knowing the scope*: While our staff consider the collapse of the three-tiers as generally positive, we discovered that for users it created some new problems. When using three relatively distinct systems (WebPAC, Summit and WorldCat), the scope of each collection is more distinct. The library catalog tells you what is in this library; Summit is for Washington and Oregon libraries, etc. Putting all this into one database, with the additional complication of adding in database content, could make it easier to find items but also could make it considerably more difficult as demonstrated in tasks 3,3a, 4, and 9. The participants did not always understand that they may need to change the scope of a search to get the desired results or need to reset the scope between tasks.
- *Segmented results*: Users often did not understand that results in WCL were segmented by who held the resource, i.e., displaying separately materials in the local library, then Summit and then WorldCat. Since many participants do not distinguish between Summit and WorldCat, they did not know to scroll all the way down to where the WorldCat results are displayed (*task 4*).
- *Intermixing all formats*: This is, again, an area we thought would generally be positive, as users continuously tell us they want one search that does it all. However, our tests showed that this merger of format types within a single set of results caused confusion as the participants did not easily distinguish between books and articles (*task 2, task 9, task 10*).
- *Facet options display*: The display of the dates and author names in the facets area proved problematic. Author names can display in a variety of ways ("Abraham Marie Ham…", "A M Hammacher", "Hammacher A M", etc.) due to variations in both the heading and the field tag in WorldCat. In WCL, dates are displayed by the number of hits for that publication year, not in reverse chronological order. In our tasks, this problem came up primary in task 10 but also in task 9 where users were asked to

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identify how many items there are by an author. WCL does not allow for any way to merge the variations on the author's name.

- *Problems with known item searches*: Most participants used the QuickSearch function which defaults to a keyword search. Generally, this produced the desired results (*tasks 1,7,10 and 11*) but not always, particularly when searching for known items (*task 4*).

We also found that, while the users were able to request items more easily with the collapse of the three-tiers, almost as often interface problems hindered users' ability to successfully submit a request. Further, the lack of indexing of full uniform titles is a tremendous barrier to users seeking music resources. Based on our evaluation of the information obtained in this study, the usability team judged that at this time, the loss of functionality that would result from a transition from WebPAC to WCL outweighed the benefits offered by WCL.

At the end of the usability study, the results were presented to the library faculty and staff at a meeting dedicated to this study. The usability team presented their recommendation that the library wait until some of the issues mentioned were addressed, but also sought opinions from all library personnel. Responses at the meeting and informal conversations with library faculty and staff indicated that they agreed with our concerns and, based on their experiences with the similar WorldCat Navigator software, felt there was no compelling reason to change. The report, along with the staff comments, was also submitted to the Dean of the Libraries for his consideration; and to OCLC for their information. Ultimately, the Dean chose to delay a decision on whether to switch to WCL while the library staff continues to monitor the product and watch for other products capable of integrating the three tiers of discovery and still provide a search experience equal to or better that our current system. The Dean and the staff that manage the ILS environment have continued to revisit the original decision every 3-6 months. At the time this article was written, the central WCL usability issues identified during this study had not yet been addressed. The final report was made available to all library faculty and staff and is also available on the Western Washington University Libraries website at http://www.library.wwu.edu/info/wcl_usability_report.pdf.

A comparative usability test proved to be an excellent method of generating performance-based information on users' success using two very different search interfaces. We feel that any usability test comparing user accomplishment of tasks in WCL and WebPAC would identify the same or very similar strengths and weaknesses revealed in this study. How each library judged the overall balance of benefits versus loss of functionality, however, would depend on the needs of their local community.

WCL is a very promising interface that addresses many users' desires for a better library catalog. Further, it is a new interface that is being rapidly improved. While this test uncovered areas where WCL functionality is not yet as good as our current III WebPAC, we are hopeful that each of the issues identified will be remedied in future releases of WCL.

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Further reading

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About the authors

Bob Thomas is the Integrated Systems Librarian and Head of Cataloging at Western Washington University. In addition to his core duties, he conducts research in interface design, usability, and controlled vocabularies. He has previously worked at University of Virginia, OCLC and WLN. Bob Thomas is the corresponding author and can be contacted at: Bob.Thomas@wwu.edu

Stefanie Buck is the Instructional Design/Social Sciences Librarian at Oregon State University. At the time of this study, she was working at Western Washington University as the Librarian for Extended Education.

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