

# How Does Switching to a Discovery Tool Affect Circulation?

*Tony Greiner*

## **Abstract**

One year after adoption of the WorldCat Local discovery tool, the circulation, consortial and interlibrary loan borrowing, and full-text article retrieval at three small academic libraries was studied to see how the change affected the use of materials. All libraries experienced a notable increase in retrieval of full-text articles from locally-subscribed databases, and a slight decline in requests for articles via ILL. All experienced a decline in the use of the local collection, accompanied by a rise in borrowing from outside libraries. While the discovery tool undoubtedly contributed to the rises in borrowing and full-text article use, it is posited that problems with the design and functioning of aspects of WorldCat Local may be responsible for the declines as well.

## **Introduction**

Since the 1990s there have been improvements in technology to meet libraries' interest in expanding their traditional catalogs to include article-level periodical holdings. (Metasearching.) The metasearch tools developed fall into two general categories. "Federated search" products take a search term and run it through each of a set of databases (the catalog, a periodical databases, another periodical database, sometimes Google, etc.). The results are then consolidated and presented to the user. The other is a process that has been termed "discovery". Discovery tools cre-

ate a single large index of the catalog and the content of some or all of the periodical databases to which a library subscribes. This index is then searched by the users through the discovery interface.

There are a number of discovery tools on the market, including EBSCO's "Discovery Service", Ex Libris "Primo Central", Serials Solutions' "Summon" and OCLC's "World Cat Local." This paper looks at how the adoption of WorldCat Local has affected collection use and circulation at three Oregon college libraries: Reed College, Willamette University, and Portland Community College. All three are members of the Orbis Cascade Alliance, a library consortium with a shared catalog dubbed "Summit." The data included in this paper covers the first year of WorldCat Local's implementation at the three libraries, and a look at what happened at the community college library when it changed the set of periodical collections in the index.

## **Literature Review**

The newness of discovery tools has not given researchers much time to study how they have affected collection use. However, some research is available. Doug Way examined how the Summon product affected periodical use during the first semester of its implementation at Grand Valley State University in Michigan. He found that the use of Summon led to a "dramatic decrease" in the use of abstracting and

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indexing databases, and a “dramatic increase” in the use of full-text resources.<sup>1</sup> Summon, at least as implemented at Grand Valley State University Library, does not incorporate the catalogs of consortial libraries associated with GVSU.<sup>2</sup>

The University of Washington Library was the first adopt WorldCat Local, as a beta site in 2007. Three UW librarians tracked Interlibrary loan and consortial borrowing before and after a switch to WCL. In the first the switch, borrowing from Summit members increased 64%, and use of non-consortium ILL increased 123%. While undergraduate use of ILL materials increased from 14% of the total to 23%, most borrowing continued to come from graduate students.<sup>3</sup> A year later, a more formal study by Dear-dorff and Nance presented data on how WorldCat local continued to affect Interlibrary loan at the same library. They found that the discovery tool led to big increases in both the number of articles filled (41% the first year, another 100% the following year) and in returnables, (150% and 31% in the first two years.)<sup>4</sup>

In 2002 the Longborough University Library found that after it turned on the MetaLib federated search product, searches of all databases rose over 600%. Curiously, many databases not indexed by MetaLib also saw a significant rise in searches. Longborough did not report downloads of full-text articles or present circulation numbers.<sup>5</sup>

### Background to this Study

This study looks at how implementation of OCLC’s WorldCat Local discovery tool affected material use in three college libraries in Oregon. *Willamette University* is a liberal-arts college based in Salem, Oregon, 50 miles south of Portland. It has about 1900 Undergraduate and 800 graduate students. Graduate programs include a Law School, (with a separate library not included in this data), and graduate degrees in Management and Education. Enrollment has been essentially stable through the recession. Willamette’s Hatfield Library has about 425,000 volumes, and subscribes to over 100 databases.<sup>6</sup>

*Reed College* in Portland, Oregon is almost entirely undergraduate. Enrollment is about 1,400, of who only 18 are in graduate school. Reed operates from a “great books” philosophy and all seniors need to write a thesis. Enrollment has been essentially stable through the recession. The Reed Library has about 614,000 items, and an extensive set of electronic resources.<sup>7</sup>

*Portland Community College* (PCC) is a large community college with 3 full campuses and 7 academic centers spread around the Portland metropolitan area. For the year before implementing WorldCat Local it had a full-time equivalent enrollment of 26,383. With the recession, that FTE enrollment increased 19% in 2009 to 31,395 for the year WCL was launched. The Fall term of the 2010–2011 academic year began with another increase of 4.7% FTE from the year before.<sup>8</sup> Because PCC saw these significant increases in enrollment, some of the data for that library will be presented in both raw numbers and numbers adjusted to account for the increased enrollment. PCC has full-service libraries at three main campuses, and pickup and drop-off locations at two of the seven centers. It has approximately 100 databases and indexes, and has about 110,000 items in its collection.

All the libraries in this study are members of the Orbis Cascade Alliance, a consortium of 36 colleges and universities in Oregon and Washington. Members of the Orbis Cascade Alliance share materials through the Summit union catalog. Summit holdings are incorporated into WorldCat Local for those libraries that made the switch to WCL. The Summit Catalog contains 9.2 million titles representing 28.7 million items, and more than 400,000 items are loaned between institutions yearly.<sup>9</sup>

Until 2009, the consortium had used Innovative Interfaces’ “INNReach” interlibrary loan system to track borrowing between institutions. A significant increase in the price of this product led the consortium to switch to OCLC’s “WorldCat Navigator” interlibrary loan system. With this switch, several (but not all) of the Alliance member libraries also chose to implement WorldCat Local as a discovery interface to their catalog. Willamette, Reed, and PCC made the switch to WorldCat Local in the summer of 2009. The University of Washington, an Orbis/Cascade member, had started using WorldCat Local in 2007, as a beta site. All of the libraries continue to use Innovative Interface’s “Millennium” as the underlying cataloging and circulation system.

This paper will track how switching to WorldCat Local affected use of the three libraries’ book and video collections, database and index collections, and interlibrary loan and Summit (consortial) borrowing in the first year after switching to WorldCat local. It also looks at changes in full-text periodical database use at Portland Community College after it switched

the periodical databases indexed by WorldCat Local, and will discuss some possible reasons for the changes that are noted.

### About WorldCat Local

WorldCat Local (WCL) is a discovery tool developed by OCLC. Most, but not all adoptees are academic institutions.<sup>10</sup> WCL uses a common index of the catalogs, (based on the WorldCat records), and several periodical indexes and databases. The results of a search are displayed in a unified list. The user may then use limiters, called “facets” to narrow a search by material type or original index. For example, they may want to limit their search to articles indexed in “ArticleFirst.”<sup>11</sup> WCL displays “tiers” of search results, and all the libraries in this study display results the same way. After a search is made, the first set of results are those of the home institution, displayed according to a relevance formula. Then come the Summit consortial holdings, again ranked by relevancy. Lastly come those items in OCLC’s WorldCat database. Patrons may use WorldCat Local to request items from their local collection, consortium libraries (via a courier) or by Interlibrary Loan. Cited articles can be connected to existing full-text versions using a link resolver, or connected to an ILL request form.

When WorldCat Local was adopted by the libraries, they decided to have it index the WorldCat database, and the set of periodical index databases recommended by OCLC:

- ArticleFirst
- British Library Serials
- Elsevier metadata
- ERIC
- Inside Serials
- JSTOR Archive
- Medline
- OAIster
- PapersFirst
- ProceedingsFirst

Other indexes and databases were theoretically available, but were not included in the original set. After about a year, the PCC library made a big switch in periodical databases included in the index, dropping all the databases in the original set and replacing them with 5 EBSCO databases. Willamette University retained the original set, but allowed some of the EBSCO products to be added in by those doing an advanced search. While the staff at PCC see this big switch as an improvement, problems remain. (See the discussion section for more detail.)

WorldCat local also makes an attempt at implementing FRBR (Functional Requirements for Bibliographic Records) for the books and videos in the index. The idea is that for an item with many different editions, such as Machiavelli’s *The Prince*, all editions and items are linked into a single record. This attempt is of mixed success. At least one other discovery tool, VTLS’s “Virtua”, also incorporates aspects of FRBR into its catalog. While there are at least theoretical benefits to OCLC’s FRBR approach, there are serious drawbacks in implementation. Among these are the difficulty in finding local holdings from the main entry, and local subject headings being stripped from the records display. (More in the discussion.)

### Changes in Circulation

#### Local Items

Once enrollment increases were accounted for, all three libraries experienced a decline in the use of their local collections (measured as physical items—books, DVDs, printed periodicals, etc. Electronic databases are covered later.) This is true even at Portland Community College, which had several consecutive years of increased use of library-owned materials before the switch.

For comparison, the University of Washington Library experienced a small increase in local use in the first year of implementation, followed by drops. Those drops might be accounted for in part by the general decline of book use at UW and other academic librar-

**TABLE 1**  
**Circulation of Local Materials**

Library	Circulation Fiscal Year 2009 (July 2008-June 2009)	Circulation Fiscal Year 2010, after WCL	Change in Percentage.	Change in Percentage at PCC after allowing for increase in enrollment.
Reed	59,775	55,814	-7%	
Willamette	25,499	24,284	-5%	
Portland CC	91,179	106,533	17%	-2%

ies, as well as changes in UW circulation rules that reduced the number of recorded checkouts. Comparison here is tricky—the initial form of WCL was considerably different than the current version.<sup>12</sup>

**Consortial Borrowing**

Two of the three libraries in this study experienced an increase in materials borrowed from the Summit collection, and all saw an increase in ILL returnables.

	PCC	Reed	Willamette
Borrows from Summit 2008–09	4,470	15,701	8,708
Borrows from Summit 2009–10	7,776	14,176	9,476
Percentage Change	74%	–10%	9%

**ILL Returnables**

Interlibrary Loan borrowing (of physical items outside the Alliance Consortium) saw an increase at all libraries:

Library	ILL Borrows FY 2009	ILL Borrows FY 2010	Change in Percentage
Reed	2,559	2,998	17%
Willamette	1,571	2,609	66%
Portland CC	346	1,201	247%

These increases are consistent with the rise in ILL borrowing by patrons at the University of Washington Library.<sup>13</sup> Curiously, graduate student and faculty are the biggest users of ILL at the University of Washington, but the community college had the biggest increase of the three libraries in this study. Clearly, use of World Local does lead to a decrease in use of the local collection, and increases in the use of consortial and ILL returnables.

	ILL Article Requests 2008–2009	ILL Article Requests, 2009–2010	Percentage Change
Willamette	4,663	4,512	–3%
Portland CC	1,214	1,154	–3%

**ILL Articles**

ILL article request information was unavailable from Reed. The reduction in articles (as opposed to returnables) requested via Interlibrary loan at the Oregon schools is different than the rise seen at University of Washington Library. The difference may be due to the large graduate program at UW.

**Changes in Full-Text Use**

Another change promised by discovery tools is providing users access to periodical articles in the same set of results as a search for traditional library materials. Data for Reed College was not available, so this part of the paper deals only with Willamette University and Portland Community College.

While the initial set of databases recommended for WorldCat Local by OCLC are not generally full-text databases, it was thought that citations found in these collections would frequently connect via the link resolver to their full-text versions in one of the library’s databases.

	FT Downloads 2008–09	FT Downloads 2009–10	% Change	Change at PCC after enrollment increase
Willamette	114,162	147,833	29%	
PCC	410,087	507,694	24%	4%

To track this information accurately only those databases that provide reliable use data are included here.

Much of the Willamette increase can probably be attributed to WorldCat Local, as link resolver hits there had a 54% increase. (Willamette did not specifically track links from WCL, so other factors may have been involved.) The smaller increase at PCC may be because that library’s full-text holdings did not line up well with the indexes provided by OCLC. A related problem at PCC, especially in the first months after implementation was frequent problems between the link resolver and WCL. PCC Library dedicated a lot of staff time to fixing or mitigating these problems, and the situation improved to some degree by the end of the first year.

**Switching the Periodical Databases indexed in WorldCat Local**

When library staff and OCLC found a way to make EBSCO databases function reasonably well in World-

Cat Local, they implemented them in different ways. Willamette chose to make these databases available to patrons who went to the advanced search and purposefully added them to the set of indexes. It is not known how many students opted to do so, but the number is probably small.

At Portland Community College continued dissatisfaction amongst the staff about how OCLC's default collection of indexes worked with the PCC collection and the needs of community college students, so the decision was made to remove the initial set of periodical indexes and replace them with five of the EBSCO set: Academic Search Premier, Masterfile Premier, Business Source Premier, Health Source Consumer Edition and Newspaper Source. This switch was made for the beginning of the Fall quarter, September 2010. The chart below compares full-text downloads from September–November 2009 (when the library was using OCLC's initial set of recommended databases) and the same months of 2010, after the five EBSCO databases took their place.

	FT Article Downloads Sep–Nov 2009	FT Article Downloads Sep–Nov 2010	% Change 2009–2010	% Change per FTE
Portland CC	112,188	131,185	17%	12%

These statistics come from just those full-text sources for which reliable data was available. It includes the majority of PCCs full-text sources, the EBSCO and Gale periodicals, JSTOR, Science Direct and Lexis/Nexis Academic. Initially, I thought this increase was due to the higher percentage of full-text articles in the EBSCO indexes. However, this was not the case.

	EBSCO FT downloads Fall 2009	EBSCO FT downloads Fall 2010	% Change per FTE
Portland CC	56,760	55,193	-7%

Curiously, adding five of the EBSCO databases into the WorldCat Local index actually decreased their use. The big gainer in the first three months after the switch was EBSCO's competitor, Gale. The Gale Suite

of databases saw an increase of 236% per full-time equivalent after the incorporation of the five EBSCO databases into WorldCat local. It is possible that some students are discovering and preferring the Gale suite (it was added to the collection in 2008) or it could be that the articles that are index-only in EBSCO match up better with the full-text holdings in the Gale, so the article linker finds a full-text version more frequently.

Another possibility is that the problems WorldCat Local has in indexing the EBSCO holdings reduced their availability and use by PCC students. (See discussion) Supporting this idea is use of EBSCO's "Communication and Mass Media Complete" which saw a rise of 6% per FTE, even though it was not included in the WorldCat Local index and could only be accessed through a link from the library website.

### FRBR and ILL and Consortial Borrowing

If the idea of a discovery tool is to expose library users to the widest range of library materials, and to connect them with the best sources of information, this study showed WorldCat Local as only partially meeting this goal. The rise in full-text downloads is undoubtedly a good thing. However, all three libraries experienced a decline in the use of the local collection, and a considerable rise in borrowing returnables from other institutions. While it has been argued that patrons are finding more appropriate sources of information by being exposed to a wider pool of resources, there has yet to be a study to determine if that is what is really happening. While it is possible that the collections at all three libraries, developed to meet the specific information needs of that school's students fall short of that goal, a technical problem with WCL is the likely culprit.

The tiered results display in WorldCat Local provides first local holdings, then the Summit catalog, and finally resources nationwide. The increase in borrowing outside the home institution that is a standard result of implementing WCL has been touted as proof that library patrons are finding the most appropriate information sources regardless of their location.<sup>14</sup> However, there is no evidence that the increases in Consortial and ILL returnable borrowing are actually associated with scholarly activity. OCLC itself has written about WorldCat local users that "navigation past the second or third page of search results did not happen often, even for scholars. Although we had participants do topical searches in their areas of exper-

tise, we could not get them to look past the first two pages of search results. Completeness of these search results ... were not a concern for our test participants. Selection is often made from brief search result pages, without going further.”<sup>15</sup>

So if patrons are not doing exhaustive work trying to pick the best sources, but there has been a rise in borrowing within and outside the consortium, what explains the decline in local collection use and the rise in borrowing from elsewhere? Further study is needed, but I suspect two things account for much of the rise.

First, WorldCat Local, in its attempt to implement the concepts of FRBR (Functional Requirements of Bibliographic Records), often hides many copies of core holdings from users. For example, note the entry for *To Kill a Mockingbird* from the Portland Community College collection.

At first glance, a user would think that Portland Community College only owns one copy of Harper Lee’s classic. Should the displayed item be checked out (which it often is) a user would think they had to borrow a copy from one of the consortium libraries listed further down on the screen. However, Portland Community College owns 7 copies of *To Kill a Mockingbird*, but as they are different editions than the one displayed by WorldCat Local, they can only be found

by clicking on the tiny “view all editions and formats” link on the display. (Next to 1st ed)

This link leads to a display of all editions in the WorldCat database. The “newest first” default sort cannot be changed by the library.

Aside from the single copy found in the initial search, users have to turn to page 10 of the results, item 91, before they see another of the copies owned by PCC. Naturally, they have already requested a copy from elsewhere before they would have discovered this. I suspect that the poorly-executed attempt at FRBR accounts for much of the increase in out of the library borrowing, and the decline in the use of the local collections: library patrons are requesting items that are actually on the shelf.

OCLC’s usability testing did note that all graduate students and faculty, heavy users of the University of Washington library, used the “sort by library” option to locate local materials, or specific editions as needed, but only some undergraduate students (the bulk of the users at the three libraries in this study) used the sort.<sup>16</sup> It is possible that, as currently configured, the catalog aspect of WCL is more appropriate for libraries with large graduate schools. Still, the consistent decline in the use of local collections cannot be seen as a good thing.

FIGURE 1  
Screen Image from WCL

**To kill a mockingbird**

Author: [Harper Lee](#)

Publisher: Philadelphia : Lippincott, ©1960.

Edition/Format: Book : Fiction : English : 1st ed [View all editions and formats](#)

Database: WorldCat

Summary: The explosion of racial hate in an Alabama town is viewed by a little girl whose father defends a black m

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**Find a copy in the library**

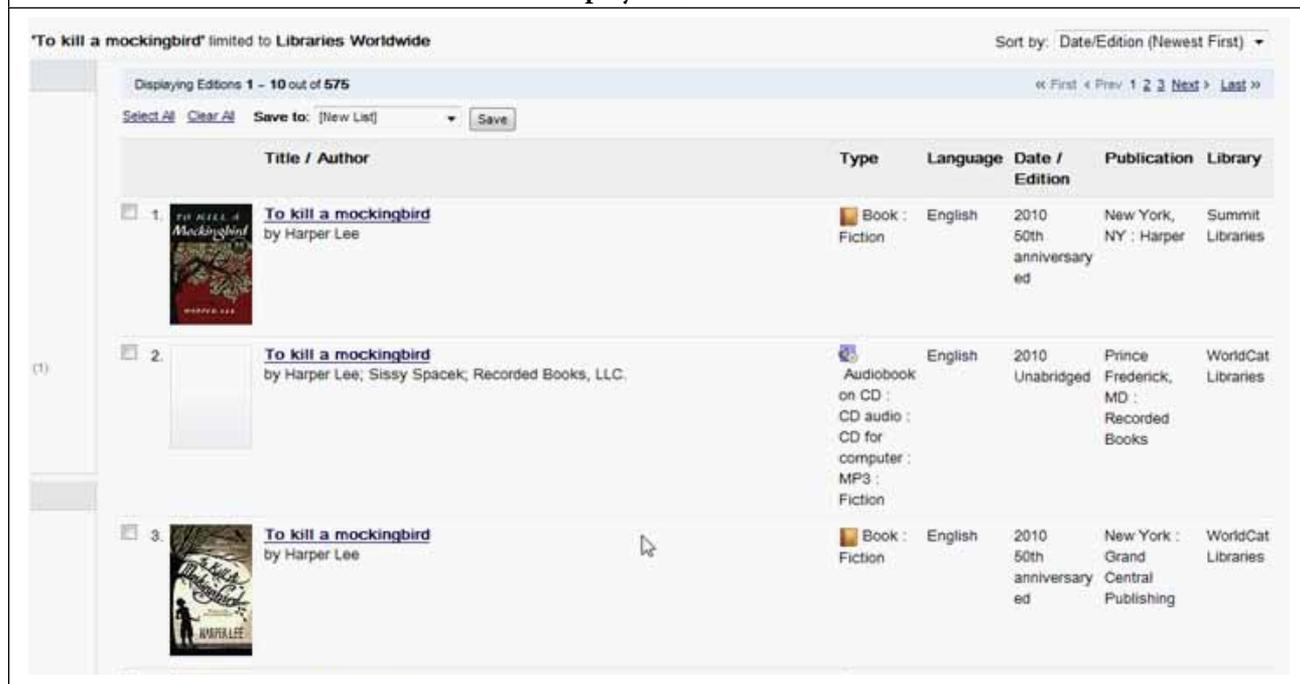
**Portland Community College Library**

Get it in the library

**1 of 1 available**

Location	Status	Call number	Notes
Sylvania	AVAILABLE	813.54 L44 1960	

**FIGURE 2**  
Default Display to 'See All Editions'



**Problems with Periodical Database Indexing**

The staff at Portland Community College generally consider the swap of the EBSCO databases for the original indexes an improvement. The EBSCO set provide more full-text, and contain more material appropriate for lower-division undergraduates. However, the decline in Full-text use of EBSCO products after they were added to WorldCat Local is troubling. Some of this decline is probably due to incomplete indexing of the EBSCO databases.

A search was made in late December 2010, of EBSCO's Academic Search Premier and Masterfile Premier for "Salmon." It retrieved 28,127 hits. In WorldCat Local, the same search limited to those two databases provided only 7,462. "Salmon Oregon" (not in quotation marks in the actual search) brought up 728 in EBSCO, but only 33 in WCL.

When asked about this, a representative from OCLC wrote that when asked about this several months ago, "subjects and abstracts were not indexed in terms of metadata from EBSCO." OCLC is still working on this problem.<sup>17</sup>

To test this another search was made, for "Jacques Derrida" (without quotation marks). It brought 2110 hits in EBSCO, 155 in WorldCat Local. Searches that would not include the abstract, although better, still

have problems. When Jacques Derrida was searched in the title field, EBSCO provided 146 results, WCL 121. In the author field, EBSCO 37, WCL 35. I looked to see if WCL did not index the full back files provided by EBSCO, but they both provided the same article as the oldest in the set, 1976. While the gaps here are not as startling, the bigger problem of WorldCat Local not being able to include abstracts in its index remains.

**Suggestions for Further Research**

The ideas presented here to explain the circulation changes caused by WorldCat local, both positive and negative remain just that, ideas.

Research needs to be done to track item-level use copies of local material (is the displayed copy used more than the copies that might be found behind "view all editions"?) Another interesting study would be to compare search terms entered by patrons with requests for ILL items. Given the size of the index provided by discovery tools, is the increase in the use of borrowing outside the home library the result of badly formed searches bringing up something, or are users really searching for and finding the best material for their needs? Has WorldCat Local's inability to fully integrate databases such as EBSCO's really led to the declines in full-text use of EBSCO articles noted at

Portland Community College, or is something else involved? Lastly, are the problems noted here unique to WorldCat Local, or are they typical of discovery tools in general?

Thanks to the following colleagues co-workers who helped gather the data for this paper, and provided insight and clarification. Some do not agree with this paper's conclusions, but their willingness to help reflects well on our profession: Bill Kelm, Willamette University; Jim Holmes, Reed College; Jennifer Ward, Thomas Deardorff and Heidi Nance, University of Washington; Dave Lippert, Allie Flanary, Torie Scott, Donna Meeds, Katherine Stevens, Portland Community College.

## Notes

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