

Information System Research Report

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The information system I chose to examine is Durham County Library's Online Public Access Catalog (OPAC), BiblioCommons. BiblioCommons primarily provides OPAC and web services to libraries, but they also have a whole suite of products, including an events calendar, email marketing, and more (BiblioCommons, n.d.). Durham County Library (DCoL) uses BiblioApps, the mobile app builder, BiblioCore, the OPAC, and two add-ons: BiblioCloudRecords and BiblioLanguages. BiblioCloudRecords pulls the library's digital holdings from Hoopla and OverDrive and adds them to the catalog without needing a MARC record. BiblioLanguages is a per-language add-on that translates the website, catalog, and app interface. This paper will focus on the BiblioCore OPAC and, to a lesser extent, the two BiblioCore add-ons. In keeping with the language DCoL uses, any mentions of BiblioCommons from here on out are referring specifically to the OPAC, not the company as a whole.

Description

Overview

DCoL uses BiblioCommons to organize a wide variety of information resources, including physical materials like books, DVDs, and CDs; electronic materials like eBooks and eAudiobooks from Libby and Hoopla; archival materials in the North Carolina Collection like manuscripts, microforms, and video cassettes; as well as miscellaneous materials like hotspots and kits, including learning to read kits, book club kits, sensory kits, and science kits.

BiblioCommons provides access to library resources in a number of different ways. First, the system provides access to information about library resources. Each catalog listing includes bibliographic information as well as ratings, reviews, and community and staff lists featuring that title. For physical materials, BiblioCommons lists how many copies the library has, where those copies are located across the system, and whether or not they're checked in. It provides the

collection and call number to assist with in-person access. BiblioCommons also allows patrons to place items on hold to be picked up at their location of choice. For digital materials through Libby, patrons are able to put them on hold or check them out directly through BiblioCommons, without being redirected to Libby to complete the transaction. For digital materials through Hoopla, patrons are redirected to Hoopla where they can check out the item. DCoL also provides access to a number of online resources, like ProQuest, Transparent Language, and Consumer Reports, but those are listed on the library's website and not within the OPAC.

The OPAC is an integral part of any public library because it not only organizes the library collection, but also serves as a proxy for the public to access the library's collection by providing detailed records of each of the library's resources (Post, 2024b). The metadata in each catalog record provides controlled access points that allow patrons to find what they're looking for. Because the OPAC is the public-facing version of the Integrated Library System (ILS), patrons are also able to complete basic library operations independently, like checking out eBooks, placing items on hold, and paying fines.

Primary Users and Use Cases

From the company's marketing and their list of partner libraries, it seems that BiblioCommons is more geared towards public libraries than academic or school (Libraries We Work With, n.d.). Durham County Library is a public library, so Durham County residents of all ages would be the primary users.

There are a wide variety of use cases for a public library's OPAC, including searching for materials, managing one's account, placing holds, renewing materials, checking out eBooks and eAudiobooks, and more. The primary use cases for the DCo Library app, the mobile version of the OPAC, can be identified by the features it advertises: "instantly access your library card,

search the library collection, place and manage holds, renew checked out items, check library hours and locations" (Durham County Library, 2024).

Analytical Evaluation

Organizing Information to Support Access

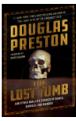
Organizing a library's materials is no easy task. Considering the varied subject matter, heterogeneous formats, diverse communities of users, and even the size of the collection, libraries have to implement a wide variety of information organization methods to try and keep their collection under control (Post, 2024a). From item-level organization methods like metadata standards and authority control to collection-level methods like classification schemes and subject headings (Post, 2024c), there are many different options, several of which DCoL implements for their own collection.

DCoL utilizes multiple different metadata standards in their cataloging, including the data content standard Resource Description and Access (RDA), data value standards Library of Congress Subject Headings (LCSH) and Dewey Decimal Classification (DDC), and data encoding standard MARC 21.

RDA, as a content standard, determines the language and syntax used to describe a resource. Using RDA, the formatting of bibliographic information such as the author's name, title, edition, publication, and more is standardized across all records. This descriptive metadata standard aids in discovery by providing a consistent form of content description and subject access (Post, 2024d).

Figure 1

[RDA Catalog Record](#)

Full details
 <p>The Lost Tomb and Other Real-life Stories of Bones, Burials, and Murder Preston, Douglas J., Book, 2023</p>

Details	
CREATORS	Preston, Douglas J., Author
TITLE	The lost tomb : and other real-life stories of bones, burials, and murder / Douglas Preston ; foreword by David Grann.
EDITION	First edition.
PUBLICATION	New York : GCP, 2023

Data value standards are used to create controlled vocabularies. Specific words or phrases are set as preferred, which keeps terminology consistent across different item records and even different libraries (Post, 2024c). With LCSH, DCoL uses set terms to describe the subject matter of a given material. In BiblioCommons, these subject headings are hyperlinked, so someone interested in archaeology could see what other materials the library has in that same subject. In this way, BiblioCommons is able to recreate the in-person browsing and discovery experience by linking similar materials, all of which would be located together on the shelf.

Figure 2

LCSH Catalog Record

Subject and genre	SUBJECT <u>Archaeology — Miscellanea.</u> <u>Civilization, Ancient — Miscellanea.</u> <u>Curiosities and wonders.</u>
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Regarding items located together on the shelf, Dewey Decimal Classification is another data value standard. It's a controlled vocabulary of sorts, but in addition to assigning words or

phrases, DDC establishes numerical codes for every topic or subject. Classification schemes like DDC help systematically organize materials in a (mostly) logical, hierarchical structure. DCoL uses DDC to organize nonfiction materials and fiction materials are organized by author's last name. An organized collection is a searchable and retrievable collection, both of which enable discovery and access. While DCoL doesn't use LCC, providing that call number improves interoperability between public libraries like DCoL and nearby University libraries like Duke or UNC.

Figure 3

[DDC Catalog Record](#)

Call number and classification

LIBRARY OF CONGRESS (LCC) CALL NUMBER
CC165 .P675 2023

DEWEY DECIMAL (DDC) CALL NUMBER
930.1

LIBRARY ASSIGNED CALL NUMBER
930.1 PRESTON

Data exchange standards, also known as data encoding standards, dictate the structure of records to ensure machine-readability (Hoffman, 2019). While most patrons aren't fluent in MARC-ese, markup languages are still an important aspect of a collection's accessibility. With MARC, DCoL's collection is searchable and interoperable. BiblioCommons takes the MARC records from DCoL's ILS and converts them into a patron-friendly format—the OPAC. Without MARC, BiblioCommons wouldn't be able to read the library's records.

Figure 4

[A Portion of MARC Catalog Record](#)

Original record



The Lost Tomb
and Other Real-life Stories of Bones, Burials, and Murder
Preston, Douglas J..

Format: MARC 21

Display subfields on separate lines

000	00000nam a2200000ii 4500
001	339656
005	20231204091921.0
008	231120s2023 nyu 000 0 eng
010	\$a 2023026359
020	\$a 9781538741221 \$q (hardcover)
020	\$a 1538741229 \$q (hardcover)
035	\$a 339656
035	\$a (OCoLC)1409803235
035	\$a (OCoLC)on1409803235
040	\$a LBSOR \$b eng \$erda \$c JBL \$d JBL \$d OCLCO
050	00 \$a CC165 \$b .P675 2023
082	00 \$a 930.1 \$2 23/eng/20230629
092	\$a 930.1 \$b PRESTON
100	1 \$a Preston, Douglas J., \$e author. \$0 _aPreston_Douglas_J

How BiblioCommons Supports Access: The Five Essential User Tasks

If the purpose of a library is to “...meet the educational, informational, and entertainment needs of the people it serves” (Hoffman, 2019), then supporting patron information seeking should always be one of the library’s top priorities. The IFLA Reference Model breaks information seeking down into five generic tasks: finding, identifying, selecting, obtaining, and exploring (Riva et al., 2017). To facilitate information seeking, an information system must “enable effective searching,” “clearly describe resources,” “allow and support relevance judgements,” “provide direct links to online information or location information for physical resources,” and “support discovery by making relationships explicit” (Riva et al., 2017). These steps are crucial to making a collection accessible.

To evaluate how BiblioCommons supports access through the five essential user tasks, I conducted a number of test searches based on a few examples of each user task outlined in Chapter 6 of the IFLA Library Reference Model (Riva et al., 2017).

Find

To evaluate this user task, I chose *1984* by George Orwell. DCoL offers multiple versions of this work, including multiple eBook versions, eAudiobook, audiobook on CD, and two different editions of the physical book. When I searched the keyword “1984,” the following image is of the first search result. BiblioCommons collocated all versions of this title, across multiple formats and publication dates. BiblioCommons successfully *found all versions of a work*.

Figure 5

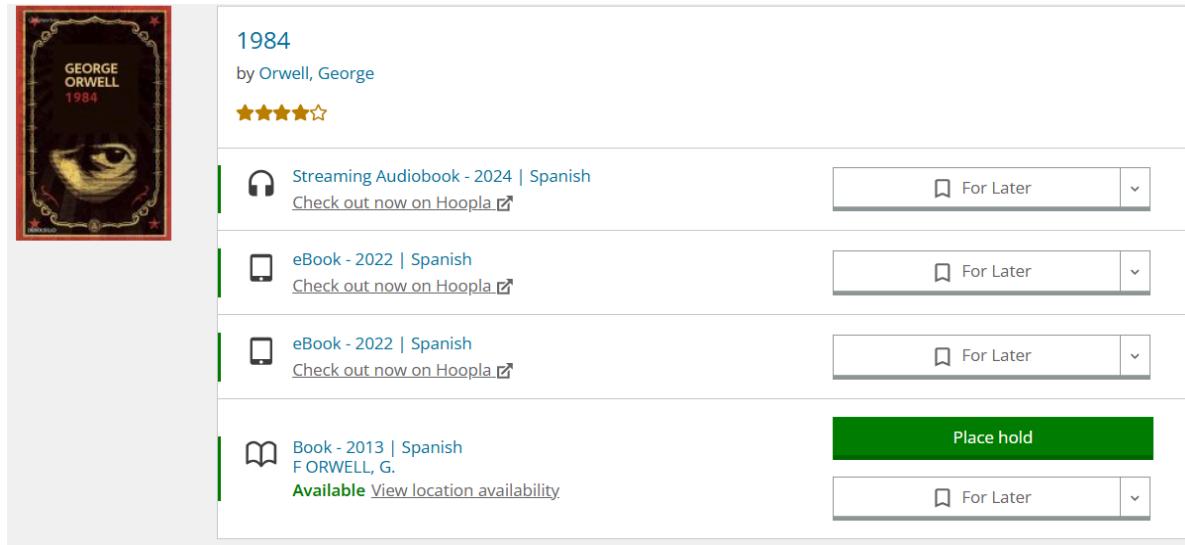
1984 Search Result

Format	Publication Date	Availability	Action Buttons
eBook	2024	Check out now on Hoopla	For Later
eBook	2023	Check out now on Hoopla	For Later
eBook	2023	Check out now on Hoopla	For Later
eBook	2021	Check out now on Hoopla	For Later
Streaming Audiobook	2021	Check out now on Hoopla	For Later
Audiobook CD	2007	BK CD FORWELL, G. Available View location availability	Place hold For Later
Book	2017	FORWELL, G. All copies in use View location availability Holds: 2 on 5 copies	Place hold For Later
eBook	2013	All copies in use Holds: 8 on 6 copies	Place hold For Later
Book	1983	FORWELL, G. All copies in use View location availability Holds: 5 on 1 copy	Place hold For Later

The second search result returned all versions of the work in Spanish:

Figure 6

1984 Search Result Two



The screenshot shows a search result for the book "1984" by George Orwell. The title "1984" is displayed prominently at the top, followed by the author's name "by Orwell, George". Below the title, there is a 5-star rating icon. The main content area lists four different formats of the book, each with a small icon, the format type, the year, the language, and a link to "Check out now on Hoopla". There are also "For Later" and "Place hold" buttons next to each listing. The bottom section shows a single listing for a "Book - 2013 | Spanish" version by F ORWELL, G., with the status "Available" and a "View location availability" link, along with a "Place hold" button.

Format	Year	Language	Action Buttons
Streaming Audiobook	2024	Spanish	For Later
eBook	2022	Spanish	For Later
eBook	2022	Spanish	For Later
Book	2013	Spanish	Place hold For Later

There are a number of different options to filter the results of a search, including format and language, that the patron could use to narrow search results if the keyword search was too broad. BiblioCommons successfully *found a version of a work written in a specific language*.

It's also clear that the BiblioCommons keyword search was able to *find works by name*. And, because the author's name is listed under the book's title, it's possible to *find name by works*. While the catalog record does show the work's place of publishing, it does not allow users to search by those criteria. BiblioCommons is *not able to find works by place published*. It is also possible to *find works by Library of Congress Subject Headings* using Search by Subject. Based on the examples listed by Riva et al. for the Find user task, BiblioCommons does a good job at pulling appropriate materials and allowing patrons to find what they need.

Identify

Searching by Author: J.D. Robb returns results for J.D. Robb and Nora Roberts, so BiblioCommons was able to *identify the correct person, even if they go by a different name.* When searching for a common author name, like David Mitchell, BiblioCommons returns results from multiple different authors. It doesn't group the authors in any way or differentiate the authors in the search results. If you click on the catalog record for *Cloud Atlas*, the author's name is listed as Mitchell, David (David Stephen) and there is an About the Author section. Searching Mitchell, David (David Stephen) only returns results by the *Cloud Atlas* author. There is another David Mitchell, a British comedian, who has written a few comedic books. His name in the catalog record is Mitchell, David, 1974-, but it isn't actually possible to search that, as some of his catalog records are listed only as Mitchell, David. A third David Mitchell, who has written several books about origami, is also just listed as Mitchell, David, and not all of his titles include an About the Author section. I'd say that it is only sometimes possible to *identify the correct person, even if there are multiple people with the same name.*

Users are able to filter search results by Audience: Adults, Children, or Teens. Many children's books also list an Interest Age Level or Interest Grade Level in the title's full details, and several catalog entries include critic reviews which will sometimes list a grade range. This isn't standardized across all titles, though, so I was not always able to *identify whether a resource is for an appropriate level or group.*

Searching by subject "pool" brings up a variety of results, including books with subjects "Vernal Pool Ecology," "Tide Pool Ecology," and a few "Pool (Game)". It does not return any results about swimming pools. There are 10 results under subject "Billiards," and 13 under "Pool (Game)," so not every billiard-related title has both subjects listed. It seems that BiblioCommons does a decent job at identifying multiple different subject headings with the same word in them,

but in the case of homonyms, not all materials were tagged correctly. I'd say I could sometimes *identify the resource using subject headings, even if homonyms*. As a whole, it seems that BiblioCommons does better in helping patrons with Find than with Identify.

Select

Back to *1984* by George Orwell, [Figure 5](#) demonstrates how easy it is for the patron to *select the work that's in the most convenient format* and *select the work that's in a medium that can be used by the user*. By filtering search results, patrons can easily *select the work that's available in the user's location*.

Figure 7

[1984 Filter by Location](#)

Title search: **1984**

[View as keyword search](#)

Filter your results by...

Available Now ^

Available Online (146)

LOCATIONS

At any location (66)

Bragtown Library (1)

East Regional (8)

Main Library (27)

North Carolina Collection (26)

North Regional (14)

South Regional (14)

Southwest Regional (23)

Stanford L. Warren (1)

Other search filtering options allow users to *select a work based on language or intended audience, date of creation, and more*. Because BiblioCommons Finds and collocates items so effectively, it makes Selecting the correct resource simple for the patron.

Figure 8

[Filter your results by...](#)

Available Now	▼
Format	
Books	▼
Audiobooks	▼
Movies & TV	▼
Music & Sound	▼
Magazines & Newspapers	▼
New at the library...	▼
Titles I can...	▼
Content	▼
Audience	▼
Form/Genre	▼
Topic	▼
Regions	▼
Author	▼
Languages	▼
Published Date	▼
Rating	▼
Tags	▼

Obtain

[Figure 5](#), with the eBook and streaming audiobook versions' hyperlinks to Hoopla, it's clear that BiblioCommons allows patrons to *obtain resources by downloading or accessing from library catalog*. In addition, the physical materials have an option to Place on Hold, which allows the patron to *obtain by physically borrowing*. The catalog record's full details includes the ISBN of each item, which would allow patrons to *obtain by purchase using product information found in the catalog*.

If a patron was looking to read *Trans Wizard Harriet Porber And The Bad Boy Parasaurolophus* by Chuck Tingle, they would find that searching that title (unsurprisingly) yields no results. DCoL does offer interlibrary loan services, but through the main library website, not within the catalog. Searching a nonexistent title does not prompt BiblioCommons to redirect the user to the ILL request form on the DCoL website. While patrons are able to *obtain materials by ILL*, they are not able to do so through BiblioCommons. Other than the ILL shortcoming, BiblioCommons does a decent job of providing access to obtain materials.

Figure 9

[Trans Wizard Harriet Porber](#)

Title search: **Trans Wizard Harriet Porber And The Bad Boy Parasaurolophus**
[View as keyword search](#)

Nothing found for **Trans Wizard Harriet Porber And The Bad Boy Parasaurolophus**.

Explore

BiblioCommons allows users to search by subject, and the subjects listed for each title are hyperlinked, taking the user to a list of all items with that same subject heading. Figure 8 shows that one of the filtering options is by topic. When searching a subject like dystopian, BiblioCommons allows the user to filter the results by related topics like survival, zombies, epidemics, and climatic changes. This means that patrons are able to explore by browsing concepts narrower than the starting subject and explore by following the derivation relationships. From the David Mitchell example in the Identify section, we know that it can be difficult to explore by browsing works associated with a given person. DCoL only uses LCSH, so it isn't possible to find the entity in different controlled vocabularies. Based on Riva et al.'s examples of the Exploring user task, Bibliocommons did a decent job at giving patrons access to explore the collection.

Identified Challenges for Accessing Resources & Proposed Solutions

After evaluating BiblioCommons through the five essential user tasks framework, it's clear that there are several things DCoL's OPAC does well to promote access, like collocating various editions and versions of a title into one catalog record to promote Finding and Selecting and utilizing BiblioCloudRecords to display electronic holdings in the catalog to promote Finding and Obtaining. There are other benefits to BiblioCommons' OPAC system, like allowing staff and patrons to make book lists. BiblioCommons also includes additional information in the catalog records beyond the basic bibliographic information—like ratings and reviews from critics and patrons across the country. That said, no information system is perfect, and there are also a number of shortcomings with BiblioCommons that can hinder access to resources and materials.

Keyword Searching

BiblioCommons allows for keyword searching, which is important for accessibility, especially at a public library where many patrons aren't familiar with the oftentimes convoluted syntax and vocabulary of LCSH. The success of a system's keyword search function is based on its retrieval algorithm, though, which in BiblioCommons' case is not ideal (Post 2024e). I've had my share of frustrations with BiblioCommons' search functionality over the years, and I had a hunch that BiblioCommons did not include summaries when doing keyword searches. After a few tests and some emails with our Library Webmaster, I discovered that I was correct. From internal communications with DCoL's Library Webmaster and BiblioCommons Support, BiblioCommons confirmed that the summary is not included in keyword search indexing because it comes from a third party. DCoL subscribes to Syndetics, a subsidiary of ProQuest that maps content including cover images, reviews, and summaries onto the catalog records. BiblioCommons Support claims that they "don't have an explicit list of all fields indexed for keyword search" (Sarah Dooley, personal communication, December 6, 2024), but it doesn't

seem to include many fields other than title and subtitle. So, while in theory keyword searching is a great accessibility move, in practice its limited list of indexed fields makes it not much more useful than searching by title. To truly make materials Findable, BiblioCommons Support would need to implement a more robust keyword searching system.

Interlibrary Loan Accessibility

As previously mentioned, DCoL does offer ILL services, but they are not available through the catalog and many patrons don't know it exists. Of course, patrons could approach a staff member to ask and the staff member could show them the ILL request form, but there are many sensitive subjects that patrons may not feel comfortable asking about. In the lighthearted case of Chuck Tingle's oeuvre, the patron may end up purchasing the book or checking Kindle Unlimited. But if a vulnerable teen is looking for a book on gender and sexuality, can't find it, doesn't feel comfortable asking a staff member, and doesn't know about the ILL program, then the library has done that person an injustice. In both instances, the library fails to provide the patron with a way to Obtain the resource they're searching for, and therefore does not satisfy their information seeking. BiblioCommons already provides an error message when a search returns 0 results: "Nothing found for **Trans Wizard Harriet Porber And The Bad Boy Parasaurolophus**." It doesn't seem difficult to add a second sentence to that message with a hyperlink to the ILL request form. For example, "Nothing found for **Trans Wizard Harriet Porber And The Bad Boy Parasaurolophus**. [Request it from another library system](#)." A simple change like this could significantly boost Obtainability for resources that DCoL does not own.

Searching by Call Number

Though it's not listed as an example in Chapter 6 of the IFLA Library Reference Model, I believe that allowing searches by call number or classification number would be incredibly helpful for patrons and staff alike. Searching by call number or DDC number would provide an

alternative to subject searching and would facilitate browsing by subject. It would help link the OPAC to the physical organization of materials, which would be useful for patrons who primarily browse by shelf location. For researchers or enthusiasts who would know their subject's call number, locating appropriate materials would be easier than searching multiple different keywords or subjects. Lastly, I've found that many patrons are confused and intimidated by the Dewey Decimal System. If the catalog could be browsed by classification number, patrons would begin to learn the call numbers of their subjects of interest and would know where to go in the library to find appropriate materials. I believe that a classification number search option would promote Finding, Obtaining, and Exploring, both physically and digitally.

Reflection

Evaluating BiblioCommons' use of various metadata standards like RDA, LCSH, and MARC revealed their importance in promoting discovery, representation, organization, interoperability, and preservation (Post 2024c). Evaluating BiblioCommons using the five essential user tasks showed that while it has its shortcomings, as a whole BiblioCommons has many features geared towards public libraries to promote access. Other frameworks we can use to evaluate BiblioCommons include querying, retrieval, display and navigation of results, and overall system design (Post 2024e).

One of the main dimensions to look at when evaluating an information system is its querying ability (Post 2024e). While BiblioCommons does provide keyword search functionality, it's a fairly rudimentary system that fails to index one of the largest sources of bibliographic information—the summary. Patrons are able to use boolean operators using the advanced search, or they could achieve the same results using the query construction form. BiblioCommons does allow for searching by subject, series, and more, and results can be filtered by format and genre. Unfortunately, though, BiblioCommons is not the most forgiving when it comes to misspellings,

which could present a barrier to access for many patrons, especially children. Because Bibliocommons does not index summaries for its keyword search, the retrieval is negatively impacted as several relevant items are not retrieved.

In terms of display and navigation of results, thanks to DCoL's contract with Syndetics, nearly every non-archival material in the library's collection has a cover photo. Referring back to [Figure 5](#) once again, we can see that Bibliocommons makes it easy to identify a material's format by using little pictograms, like headphones to indicate audio materials or an e-reader to indicate eBooks. As previously mentioned, Bibliocommons allows for faceted browsing by filtering search results.

Finally, in terms of overall system design, DCoL supports the needs of the Spanish-speaking community by subscribing to BiblioLanguages which translates the website and catalog interface into Spanish. In terms of accessibility, the BiblioCommons Commitment to Accessibility statement (2023) lists a number of improvements they are working on. These include providing alternative text on all images for screen readers, making the site compatible with screen magnifiers, and "improving keyboard access for non-mouse devices."

This deep-dive has revealed just how complex a system needs to be in order to even begin effectively organizing a large collection with heterogeneous formats and varied subject matter. Through a delicate balance of metadata standards for both item-level and collection-level organization, multifunctional search and filtering capabilities, and a careful consideration of UX and site accessibility that enables assistive technology, BiblioCommons has successfully created a user-friendly online public access catalog for public libraries like DCoL to effectively serve their patrons.

References

BiblioCommons. (n.d.). <https://www.bibliocommons.com/>

BiblioCommons Commitment to Accessibility. Durham County Library. (2023, March 16).

<https://durhamcounty.bibliocommons.com/info/accessibility>

Durham County Library. (2024). DCo Library (2.16.2) [Mobile application software]. Retrieved

<https://apps.apple.com/us/app/dco-library/id1593072710>.

Hoffman, G. L. (2019). *Organizing library collections : theory and practice*. [eBook]. Rowman & Littlefield. <https://uncg.on.worldcat.org/oclc/1099544085>

Libraries we work with. BiblioCommons. (n.d.).

<https://www.bibliocommons.com/libraries-we-work-with>

Post, C. (2024a). *Week One: Why Organize?* [PowerPoint slides]. Canvas.

<http://uncg.instructure.com>

Post, C. (2024b). *Week Three: Organizing Systems*. [PowerPoint slides]. Canvas.

<http://uncg.instructure.com>

Post, C. (2024c). *Week Four: Resource Description*. [PowerPoint slides]. Canvas.

<http://uncg.instructure.com>

Post, C. (2024d). *Week Five: Bibliographic Description*. [PowerPoint slides]. Canvas.

<http://uncg.instructure.com>

Post, C. (2024e). *Week Twelve: Systems Standards*. [PowerPoint slides]. Canvas.

<http://uncg.instructure.com>

Riva, P., Le Boeuf, P. and Zumer, M. (2017), *IFLA Library Reference Model: A Conceptual Model for Bibliographic Information*. International Federation of Library Associations and Institutions, (IFLA). <https://repository.ifla.org/handle/123456789/40>