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Barcoding and ILS Migration from Start to Finish: A Case Study

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ABSTRACT

This practice-oriented article outlines one institution's process of implementing both electronic checkout and a new integrated library system (ILS) for an academic library of 187,000 physical items. Special attention is given to the need for background research, administrative buy-in, and project management. Lessons learned and recommendations conclude the article.

Introduction

Barcoding in libraries is not a new technology; electronic circulation and integrated library systems (ILSs) have been around for decades. As such, it can be discouraging for libraries which, for one reason or another, may not be up-to-date in these areas. There can be a sense of embarrassment at not keeping up with the times, even if there is justification for holding off on important upgrades due to finances, for example. The Emmaus Bible College Library has been in this position and, having recently barcoded the collection for the first time and transitioned from an aging ILS to an open-source option, found the process to be both challenging and rewarding. The goal of this article is to share the three-year process that led to much-needed improvements in this area of library services so that those in similar situations can be both encouraged and equipped to do the same.

Background

Emmaus Bible College is a four-year institution of higher education in Dubuque, Iowa, with an FTE of 243. The college is accredited by both the Association for Biblical Higher Education and the Higher Learning Commission. The Emmaus Bible College Library is staffed by two full-time, credentialed librarians, part-time support staff (one employee at fifteen hours per week), and approximately fifteen student workers who each work about three hours per week. The library boasts over 187,000 items in the physical collection.

The Need for Barcoding and a New ILS

The Emmaus Library transitioned from a physical card catalog to an electronic catalog (minus the circulation module) in the year 2000. Through the years, this electronic catalog had become increasingly "clunky" and difficult for current students to intuitively understand and use. Its functionality in the area of reporting was less than sufficient for the institution's needs. Additionally, the vendor had ceased providing maintenance and support. However, the aging ILS was extremely inexpensive, especially compared to the prices associated with other ILS options.

The inactive circulation module required library users to sign out books manually using library book cards. While this was a functional way of handling circulation, it made managing due dates and re-shelving returned books quite time-consuming. It also provided a larger margin of error in circulation statistics, which prevented library staff from making calculated, data-driven decisions about the collection.

Providentially, during the summer of 2014, conversations began between library staff and the administration regarding the possibility of upgrading to a new ILS and barcoding the library to allow for electronic checkout. The administration was aware of the need but unaware of specific costs or ILS options. They asked library staff to research possibilities and submit a proposal for consideration.

Barcode and ILS Research

Barcode Research

Library staff sent out a query on the Association of Christian Librarians (ACL) listserv regarding recommendations for barcode suppliers, as well as recommendations for barcode placement and the use or non-use of label protectors. Library staff also asked for projections on the amount of time it would take to barcode the collection, based on other librarians' experiences in this area. This proved to be extremely helpful; library staff collated the advice and reasoning behind various types of barcodes available (such as "smart" or "dumb" barcodes) and barcode placements to make an informed decision about the collection. Key insights were also received about the process of barcoding the collection, such as dividing the process into steps and focusing on completing one step at a time (i.e., attaching barcodes to the entire collection first, and then going back through with a laptop and cart to scan barcodes and connect them with bibliographic records).

Barcode samples were from various suppliers and informally tested for durability against water, paint thinner, and other household cleaners, to simulate the potentially rough handling of patrons. Looking at both the resilience and cost of our various options, the staff opted to go with a laminated paper sticker and forego the barcode label protectors. We went with dumb barcodes that could be attached to any item,

rather than smart barcodes, which are pre-assigned to specific items. We also decided to place the barcode sticker on the top right corner of the back outside cover of each book to allow for easy inventory scanning.

During this process, a helpful article on the barcoding process by Karen Commings (1989) was located. She describes her institution's process for barcoding 75,000 items over the course of three weeks, and provides helpful insights and project management suggestions. Library staff took these lessons into consideration in the planning of this massive undertaking.

ILS Research

Concurrently with the barcode research, library staff began researching various ILS options, both open-source and proprietary. A brief literature search on open-source ILSs provided much-needed insight on this new (to us) territory. Carla Wale (2011) effectively parses the differences between proprietary ILS options and open-source ILS options, which are summarized in Table 1.

Table 1

Proprietary vs. Open-Source Integrated Library Systems from Wale (2011)

Proprietary Integrated Library Systems	
Advantages	**Disadvantages**
Functionality	Technology does not evolve fast enough
Known costs for services	Costs (expensive)
Guaranteed support & upgrades	Created for print
	Vendor/product interdependence
	Necessity to create workarounds

Open-Source Integrated Library Systems	
Advantages	**Disadvantages**
Cost-savings	Costs of hiring additional IT staff OR vendor support
Control & customization	No guaranteed support or upgrades without vendor support
Adaptability & interoperability	Quality and functionality can sometimes be questionable
Flexible support options	

Best practices and guidelines for migrating to open-source options were gleaned from articles by Singh (2013) and Dennison (2011).

With background information acquired from the literature, library staff were able to effectively understand Library Technology Guides' Automation Surveys offered by Marshall Breeding (2016). This website provides statistical reports for dozens of ILS options (both proprietary and open-source) with regard to functionality, support, and overall satisfaction. It also provides comments from current users of the various ILSs. This information proved invaluable in narrowing down which ILS options to explore.

Ultimately, library staff narrowed down the possibilities to five options, three of which were open-source and two of which were proprietary. An initial email to each of these organizations included the following five questions:

1. What is your price framework for a library?
2. What is the cost for migration? What do you do in this process?
3. What do you expect libraries to do before data migration?
4. What type of support do you offer?
5. What type of training do you offer?

From here, library staff set up virtual demonstrations of the ILSs with the five vendors. Prior to beginning these demos, library staff came up with a list of must-haves in an ILS and a wish list of functions to ask about during virtual demonstrations. From these demonstrations, library staff weighed each option and broke down the costs into the following categories:

• Installation
• Data migration
• OPAC customization
• Support
• Hosting
• Training (Type and Cost)
• Notes (including projected year 2 and year 3 costs)

With this information, library staff agreed that using Koha, an open-source ILS, with vendor support through ByWater Solutions made the most sense for our situation. We found that an open-source option with vendor support was much less expensive than the proprietary options. Additionally, we valued the flexibility, customization, and quality of support provided by ByWater Solutions. Finally, enlisting hosting and support through a vendor alleviated the need for either librarian to suddenly become an expert in computer systems management.

Barcoding and ILS Proposal

This initial research was completed during the fall of 2014 and the spring of 2015. Library staff were able to craft a proposal for the administration to review during the summer of 2015. This proposal began with the recommendation of using Koha with vendor support through ByWater Solutions. It also provided rationale for this choice and estimated costs for years one and two. Because we also needed to get the collection barcoded, we included the cost of purchasing barcodes, barcode scanners, self-checkout and circulation computers, and student labor wages for applying the barcodes, with the thought that perhaps we could hire students to work in the summer to apply the barcodes to the collection.

In December of 2015, the administration asked for a clearer breakdown of costs for barcoding the library, a new ILS, and student labor costs in order to put these figures in an advancement giving proposal for potential donors. A month later, Emmaus' IT director, who had also been involved in conversations about a new ILS, recommended to the administration that we break the project down into two phases, focusing first on getting the collection barcoded during the lag time before funding became available for a new ILS. This was a low cost up front, and would actually result in savings in the long run by using existing student labor during the school year to apply the barcodes, rather than paying extra in wages over the summer months. We were approved to go ahead with this, and the administration provided the funds to purchase the barcodes and the barcode scanners.

One week after we began applying barcodes to the collection, the college was providentially given a gift for technology upgrades in the library, covering the first year's cost of Koha with ByWater Solutions support. The college also received the Jonathan N. Thigpen Enrollment Growth Award at the annual meeting of the Association for Biblical Higher Education which included a cash gift designated for the library; we ended up using this gift to purchase new hardware for the self-checkout and circulation computers.

Taking Action

With funding in place, we began working the plans to both barcode the library and implement a new ILS. In our conversations with ByWater Solutions, we were able to establish an initial data migration date of September 2016. This provided seven months to attach barcodes and connect them to bibliographic records.

Library staff trained student workers in applying the barcodes, who then worked tirelessly on the project during the library work hours. They were provided with a cardboard guide to put on the books to ensure uniform barcode placement. Many student workers ended up not needing it, but it was helpful in providing clear instructions to fifteen people.

Because there was such a large group working on the same project, we wanted to make sure everyone knew where they should start when it was time for them to work. We kept track of our progress in three ways. First, student workers tracked their progress in a binder each time they worked to record the barcode number and book they started on, the barcode number and book they did last, and the total number of barcodes applied. They also were responsible for placing a brightly colored paint stirring stick on the shelf after the last book they barcoded, to provide a visual starting point for the next worker. Finally, we recorded our overall project progress on a chart with one square representing one shelving unit in the library. Students filled in a square when a shelving unit was completely barcoded, which gave the entire team a quick visual on our progress. Our goal was to apply 12,000 barcodes per week in order to complete the collection before the end of the semester. Ultimately, the student workers and several student volunteers completed about 120,000 items by the beginning of May, and one of the librarians completed the rest during May and June.

Once a barcode was applied to a book, we needed to attach that barcode number to the bibliographic record. Because of the limitations of our legacy system, we were not able to insert the barcode directly into the bibliographic record. Instead, the IT director exported the records, manipulated them in an Excel document, and provided a spreadsheet with just the fields we needed to correctly identify an item (call number, title, author, pages and publication information, and unique ID). This massive spreadsheet was then separated into about fifteen spreadsheets based on areas of the collection and uploaded to Google Drive. By sharing these spreadsheets in the Google Suite, multiple people could work with the data at the same time, allowing two individuals (a librarian and a highly capable volunteer) to simultaneously scan in barcodes to the corresponding records on the Google Sheets. This process was much slower than applying the barcodes, as it required more attention to detail; we averaged about 6,000 items per week from the middle of February though the end of August. We occasionally encountered anomalies that needed to be corrected in the legacy system prior to migration, and used our weekly team meetings to address the management of these anomalies so that everyone was on the same page. We also used the same chart as the student workers to keep track of our progress in scanning barcodes.

Data Migration

Although our contract with ByWater Solutions was signed in February of 2016, the real work of migrating our data began in September of 2016. At the time of signing the contract, they provided our team with a timeline of key events, including the initial data migration, initial testing, on-site training, and the final data migration. Their team was incredibly helpful in clarifying the process of getting from our legacy system to the Koha ILS through a migration handbook. As we ran into snags with

our data, they were extremely gracious in helping us figure out workarounds. They also provided three days of training on our campus using the data from our initial migration; this hands-on approach with our records was invaluable in understanding various processes and also in identifying data transfer issues to correct prior to our final migration in December.

After our final data migration, we did have a few issues. The diacritics did not transfer well, and we will need to explore how to correct this in the future (at this point it doesn't seem to impact keyword searching). Additionally, we had issues with the unique IDs of the bibliographic records, which we used in connecting barcodes with bibliographic records in Koha. Fortunately, our IT director was able to correct most of the issues so there was minimal manual correction on our part. There were a few other minor data transfer issues that needed to be corrected after migration, which were resolved within a few months of our launch date.

Communicating Our New ILS

Because we switched to a new ILS in the middle of the academic year (between the fall and spring semesters) we had a short window of time to communicate the change to our patrons. Students and Emmaus employees received a note in their mailboxes with their new account information and bullet points on the functionality of the new system (see Appendix A). They received the same information (minus their username and passwords) via email. We posted similar signage in the library regarding new checkout procedures and where to ask for help. Koha allows for a self-checkout option, so we set up a self-checkout station with step-by-step instructions at this station. Additionally, we created short video tutorials on how to use the new Koha OPAC which were linked in the emails we sent and are currently on the OPAC homepage (lib.emmaus.edu).

In addition to our residential students and employees, we also needed to communicate these changes with our distance education students and community patrons. For the distance education students, we updated the library section of the learning management system to reflect these changes and created slightly modified versions of the previously made video tutorials. For community patrons, we sent emails to notify them of the change and to ask them to come into the library to receive a new library card and update their account. We included links to the tutorial videos with these emails.

In spite of our best efforts at communicating to the Emmaus community, we found that we were often answering the same questions of patrons (*How do I check out a book? How long can I have it? How do I renew it? Do I need my student ID to check this out? How do I get my password?*). It was important for us to be gracious with each patron. It was also important to show them how to do things themselves, rather than

doing things for them; for example, if a student needed to renew an item, we would show them how to log in to their account on the OPAC and renew it there, rather than renewing it on the staff side (even though this was faster).

Lessons Learned and Recommendations

The entire process of barcoding the collection and migrating to a new ILS took almost three years, although the bulk of the work took place between February 2016 and January 2017 (see Appendix B for full timeline of events). Reflecting on these past three years has provided insights and hopefully helpful suggestions for others who may be undertaking a project of this magnitude.

If budget has been the barrier between you and a new ILS, do some homework. Many times donors and administrators want to know fairly accurate costs involved in a project before funding it. Demonstrate to stakeholders that you have done your homework by extensively researching your options. This can be off-putting as it involves a lot of work, but it is necessary to get administrative buy-in. Additionally, do your best to keep your proposal to one page, highlighting the key factors involved in migrating. You can include appendices with more details, but often administrators want to know the bottom line and how a change will positively impact the institution as a whole. We also purposefully included the need for a new ILS in our yearly assessment data and explained why it was needed using non-library terms.

Work with a team. Our team consisted of a library director, a librarian, the institution's IT director, a highly capable volunteer, and fifteen student workers. Our volunteer was the spouse of an Emmaus employee who had recently retired; he donated thirty hours per week for seven months to this project. He was eager to learn and easy to train in the tedious task of connecting barcodes to bibliographic records. His work was absolutely necessary, as it would have been impossible for full-time library employees to give that much time to this project without sacrificing time in other vital areas. Carefully selected volunteers can make or break a project like this.

As a team, we had weekly meetings where we provided updates on our progress, talked about snags we were running into, and solidified action items for the next week. Sometimes these meetings were just a few minutes long, but it was beneficial for all to have a quick check-in. We also kept notes of our meetings in a Google Doc, so that we could easily go back and refer to previous conversations.

Additionally, include and provide thorough training to any student workers in your migration process. It is important to keep these individuals aware of the project's progress, and remind them often of how vital they are to the big picture. We often

reminded our student workers that the work they were doing was going to impact Emmaus students for years to come, and sent periodic emails to the whole team updating them on how many barcodes had been applied and how many were left.

Crowdsource. Take advantage of all the individuals who have gone before you in projects such as these, and consult them regarding their experiences and recommendations. We sent out numerous emails to the ACL listserv asking for input from fellow librarians about barcode options, barcode placement, and experiences with various ILSs. We also connected with our local library, who had recently migrated to Koha with ByWater Solutions support, and were able to glean from their migration process.

Project management. The process of barcoding a collection or migrating to a new ILS can be overwhelming. Take the big picture and break it down into smaller phases, and then break down each phase into smaller steps. If you're not sure where to start with this, do some crowdsourcing and consult with someone who has does this before to determine what steps you need to take. Additionally, having a visual to represent your progress is motivating for the entire team, and helps you celebrate milestones.

Conclusion

Major projects can initially be overwhelming, especially if they are on top of the normal day-to-day duties of library employees. Good project management, teamwork, research, and funding are all necessary for a successful migration to a new ILS or barcoding a collection. By forming a team of individuals who have strengths in each of these areas, libraries can effectively move forward with even the most intimidating projects. ⚜

ABOUT THE AUTHOR

Beth Arjona was formerly a librarian at Emmaus Bible College in Dubuque, Iowa. While she is no longer working in the library world, she is happy to correspond regarding her migration experiences. She can be contacted at barjona@ emmauscourses.org.

APPENDIX A
New ILS Communication Templates

WELCOME TO KOHA
YOUR NEW LIBRARY CATALOG

Swipe your ID card to check out books and reserve items.

Use your library account to place holds, renew items, and set messaging preferences.

Borrowing periods:
Books: 28 days
Course Reserves: 2 hours

EMMAUS BIBLE COLLEGE

koha
FREE LIBRARY SYSTEM

STUDENT NAME: **MAILBOX:**

GREETINGS EMMAUS STUDENTS!

The Emmaus Library's catalog software has changed from _____ to Koha, providing a better online experience for you.

With Koha, you'll be able to:
- Access our public catalog via any mobile device (lib.emmaus.edu)
- Review current checkouts, renew materials, and place holds online
- Manage your own privacy settings for reading and search history
- View detailed fine/charges information
- Select and change notification format preferences as well as the frequency you receive these notifications
- Add your own tags, reviews and star ratings to titles
- Make purchase suggestions online
- Create, manage, and share lists of your favorite books
- And much more!

Along with our upgrade to Koha, we are better able to track check-outs and check-ins. Thus, as a student, **you can check out up to 50 items at a time for 28 days, with the opportunity for two renewal periods of 28 days each if no one else has placed a hold on the item.**

If an item is more than 21 days overdue, **you will be charged the replacement price of the item plus a processing fee, and you will not be able to check out any more items until you have settled your account.**

These new policies ensure that all students have access to library materials.

Additionally, **to check out a book OR a course reserve item, you will need to swipe your student ID card** on a self-checkout machine near the front of the library.

Here is your log-in information for your library account:
        Username:
        Password:

Please see Beth Arjona if you have any questions about this.

Be sure to check out the quick tutorials to learn about the great features offered by Koha at
lib.emmaus.edu

Thank you for your patience and understanding as we migrate from one software system to the next. We are confident you'll be pleased with the final product.

APPENDIX B

Timeline of Barcoding and Migration Process for Emmaus Bible College Library

July 2014	Library staff asked to research new ILS options
April 2015	Finished barcode research and ILS demonstrations Presented ILS proposal to administration
December 2015	Used research to provide funding specifics to advancement team
January 2016	Received approval to begin barcoding collection
February 2016	Ordered scanners and barcodes Began applying barcodes to items in collection Began scanning applied barcodes to connect to bibliographic records Full funding for new ILS provided Received enrollment growth award with cash gift Contract signed and kick-off meeting with ByWater Solutions
June 2016	Finished applying barcodes to items
August 2016	Finished scanning barcodes to connect to bibliographic records
September 2016	First data extraction from legacy system to Koha
November 2016	Hands-on Koha training
December 2016	Second extraction Go-Live Day
January 2017	Launched Koha to Emmaus Community

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