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Preparation is the Key to Success

Manageable Techniques for Measuring Collections for Moving

"Before anything else, preparation is the key to success."

—Alexander Graham Bell

Most librarians who manage collections will be involved in a shifting or moving project at some point in their career. There are numerous reasons why a library would need to move collections, from a large-scale renovation to a reorganization to accommodate changing priorities. The Pennsylvania State University Libraries consist of more than 20 campus libraries distributed across the Commonwealth. Penn State Brandywine and Penn State Scranton are two similarly sized campuses with enrollments between 900 and 1,200 students. The head librarians at both campuses had reasons to move collections into smaller spaces and realized that precise and mathematical preparation and planning was key to success. While some has been written about the methods and techniques for deselection, there are very few practical guides to the mechanics and mathematics of planning for a collection move. This article is intended to share our experiences and to provide quick and basic instructions about how to anticipate space needs and plan for redeployment of a collection—once the more complicated decisions about where, when, why, and how are answered. We think these methods will work best for collections of up to 100,000 items in an academic library setting.

Existing Resources

There are several existing manuals for planning a library move. *Moving Library Collections: Planning Shifts of Library Collections* provides hands-on instruction on how to plan for the shifting of library collections; however, some of the steps and instructions may not be necessary when using more contemporary tools.[1] Steven Fortreide's *Moving Your Library: Getting the Collection from Here to There* is more recent and provides a comprehensive toolkit for librarians preparing to move a collection, from the selection of a moving method, measuring the collection, and training workers. Chapter 4 focuses entirely on measuring the collection and designing the shelving layout, and Fortreide's methods are similar to our own. The book also contains spreadsheet templates that, as of this writing, are still available online to download.[2] Since then, several articles have built on these themes using their own libraries as case studies.[3,4,5]

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Measuring your Collections—Jennie Levine Knies

At Penn State Scranton, an imminent renovation prompted the need to evaluate the collection. The newly renovated space would allow for 1,600 linear feet of shelf space, as compared to more than 2,000 in the original configuration. The entire collection would be moved by professional movers and stored offsite for more than a year. Based on experience, I knew that the most important tools in planning for a move were my eyes, legs, and tape measure. Although collections are usually shelved in ranges that are divided into sections, which comprise a standard number of shelves, these divisions are not always as uniform as assumed. My first step was to simply stroll through the stacks. During this initial survey, I made several observations. I confirmed that the shelves were evenly spaced and of the same height. Standard 84-inch-high library shelving will usually consist of seven shelves, and the space between shelves is just large enough to accommodate a volume that is 28 centimeters (about 11 inches) tall. Reference book collection shelving is usually six shelves spaced 14 inches apart, and oversize book collections are often five shelves that are 16.5 inches high. However, sometimes libraries have interfiled books of all sizes and adjusted shelving randomly throughout the collection. During this initial walkthrough, I noticed numerous volumes turned sideways because they were too tall for the shelving. Since the Scranton library already had a separate section of shelving for oversized materials, I was able to proactively move those items into the oversized ranges. I also noticed a significant number of empty shelves, which had been created during previous deselection activities to make room for shifting and growth.

Most library shelves are between 35 and 36 inches wide. I measured our shelves to confirm their width and used that number to help determine future shelving needs based on the percentage of growth space allotted. To allow for 20% growth space, for example, would mean filling each shelf to 29 inches. On this walkthrough, I also made note of which sections seemed fuller than others, as this can indicate a subject area with more rapid growth, or one where extensive deselection may be necessary.

It is also helpful to count your current configuration, particularly the number of shelves you are currently using. At minimum, assuming no additional deselection or anticipated growth, this provides an easy baseline for planning. However, a move will run much more smoothly with accurate measurements, and literally measuring the linear feet of a moderately sized library collection is not an overwhelming task. At Penn State Scranton, I was able to engage staff and student workers in this process. Using a pad of paper, a pencil, and a ruler, they noted the measurement of the space the books took up on each shelf. We then consolidated these measurements into groupings by call number and entered this data into a simple spreadsheet. For example:

Section	Inches
A	42
B	1,799
C	310
D	1,370

These measurements provided an accurate snapshot in time of the collection's size. This data also helped to determine where we might be able to break the collection when moving it back into the space after renovation, since the new configuration would not be linear but

rather hugged walls and split in different spaces. We knew that approximately 3% of the collection was checked out and not on the shelf, but also knew that this was distributed across call number groupings and would not greatly affect our planning.

Learning how to perform a few basic formula calculations in a spreadsheet application is useful to the planning process. Once we gathered the measurements for our collections in inches, I could easily calculate the total linear feet of our materials. The formula in Microsoft Excel to total a set of rows in a column is, for example, =SUM(A2:A26). This calculated the total collection length in inches. To find out the linear feet, I divided the total inches by 12, modifying the formula to =SUM(A2:A26)/12.

Once I obtained the linear feet measurement I could make estimates for future shelving. For simplicity's sake, let's assume that our collection of 25,000 volumes had an overall measurement of 24,000 inches.

- Total collection size in inches: 24,000 inches
- Total collection size in feet: 24,000/12 = 2,000 linear feet
- Total shelves needed if each shelf 100% full: 2,000/3 (feet) = 667 individual shelves
- Total shelving sections needed if each shelf is 100% full: 2,000/21 (feet) = 95.24 one-sided shelving sections. Remember, standard shelving sections contain 7 shelves, and each shelf is 3 feet wide. 7 x 3 = 21 feet.

If the ideal is to allow for 20% additional growth space in future, then the calculations change.

- Total collection size in inches: 24,000 inches
- Total collection size in feet: 24,000/12 = 2,000 linear feet
- Total shelves needed if each shelf 80% full: 2,000/2.4 (feet) = 834 individual shelves
- Total shelving sections needed if each shelf is 80% full: 2,000/16.8 (feet) = 119 one-sided shelving sections. Remember, standard 3-foot-wide shelving sections with 7 shelves per section are 21 linear feet. 80% of that is 16.8 feet.

This basic math can illustrate that to allow for 20% growth in a library collection of this size, it's necessary to plan for an additional 23 one-sided sections of shelving (119 – 96), which is significant and likely not attainable in most library settings. And since most situations involve moving into a space with less shelving capacity, the next step is to calculate the necessary reduction in the collection size.

Considerations for Shifting/Reducing—Teresa Slobuski

Penn State Brandywine's renovation required relocating two-fifths of the stacks on a new floor. Additionally, we hoped to reduce the total number of stacks to maintain sufficient student spaces. Once we determined the linear feet and number of shelves of our current collection, we began to calculate how to reduce the collection to fit into the new space. One thing to note is that architecture firms will refer to linear feet in their estimates, but this may be just the footprint; it's important to clarify. You may need to multiply this number by the number of shelves to get your total linear feet of shelving or divide this number by 3 to determine the number of sections. Using a floorplan or map that shows the anticipated shelving, it was easy to compare numbers to determine how much the collection will have to shrink.

Outside of understanding linear feet of shelving, we had to determine exactly how we would arrange the shelves. At Brandywine, we originally only used five of the available seven shelves in each section; we skipped the bottom and the top shelves to allow for future collection shifts. When considering the new space, however, we decided that excessive growth space was unnecessary. We planned to move our collection into a stack arrangement that contained fewer sections, but with six shelves per section instead of five. This meant that our collections could now fit on five-sixths of the amount of shelving that it did previously. When planning, people could easily figure in the other direction. Perhaps you have already been using all seven shelves and have been forced to carry out some tedious shifting projects. Then you may want to plan for empty shelves in the redesign. In Brandywine's example, if we had gone from a seven-shelf configuration to a five-shelf configuration, we would have needed to grow our shelving capacity to 140% of the original size.

Once we confirmed any shelving changes between the old and new location, we were ready to determine how much to weed to fit the collection in the new space. First, we needed to convert our collection size and new shelving size into the same units. To be consistent here, we'll use Scranton's measurements from the previous section. We knew we needed 119 sections for our collection of 24,000 inches (to plan for 20% growth). Brandywine's layout allowed for rows of shelving units (ranges) that consisted of 8 sections per side of the range. Each range is two-sided, which means that there are 16 sections per range. If our new stacks kept that shelving, we would need 8 of the ranges to cover the collection (119 sections/16 sections = 7.4375 ranges). Our goal, however, was to reduce the amount of shelving and to only use 7 ranges. In that case, we would only have 112 sections available to use (7 ranges x 16 sections = 112 sections), We also wanted to consider not using all 7 shelves in a section. Below are some calculations that helped us determine how much to weed.

First, we needed to determine how many sections our current collection would need given the addition of empty growth shelves.

$$Current\ Sections \times Changes\ in\ Shelving\ = New\ Sections\ Needed$$

$$119 \times \frac{7}{5} = 166$$

Then we can take the number of sections the new space will have and divide it by the new sections needed that we just determined to figure out how much of the collection will fit.

$$\frac{New\ Number\ of\ Sections}{New\ Sections\ Needed} \times 100\ = Percentage\ Size\ of\ Collection$$

$$\frac{112}{166} \times 100\ = 67.46\%$$

Once we had the percentage size of the collection, we used that number to calculate our maximum capacity in a new configuration.

$$Percentage\ Size\ of\ Collection\ \times\ Current\ Collection\ in\ Volumes$$

$$= Total\ Volumes\ for\ New\ Shelves$$

$$67.46\%\ \times\ 25{,}000\ Volumes\ = 16{,}867\ Total\ Volumes\ for\ New\ Shelves$$

Once we determined that we needed a total collection size of 16,867 volumes (give or take, depending on the thickness of the books, of course), then we were able to subtract this number from our existing collection size and determine approximately how many volumes we would need to deselect.

$$Current\ Collection\ in\ Volumes\ -\ Total\ Volumes\ for\ New\ Shelves\ =\ Weeding\ Goal$$

$$25{,}000\ Volumes\ -\ 16{,}867\ Total\ Volumes\ for\ New\ Shelves\ =\ 8{,}133\ Volumes\ to\ Weed$$

In this example, Brandywine needed to reduce our collection size by approximately 8,000 volumes. The next step was to evaluate how to distribute that deselection goal across our collection. For Brandywine, half of our weeding came from the Ps (literature) because it was such a large part of the collection. Once our weeding goals were met, we were able to start the shifting that we completed in-house with the confidence that the books would all fit on the smaller volume of shelving.

Conclusions

For both Penn State Scranton and Penn State Brandywine, the planning completed prior to moves made the next steps easier. At Scranton, the calculations allowed for the development of a clear plan and map for the external movers to use when returning the collection to the newly renovated space. For Brandywine, the preparation allowed for a smooth shift of volumes by library employees. Using these calculations and preparation, we were also able to map different fill ratios for different parts of the collection and provided detailed instructions to movers about where to start certain sections of books when reshelving. In both cases, of course, we had some unexpected discoveries, misshelved items, unusual formats, and nonstandard shelving. With some math on your side, however, you can be prepared to adjust as needed.

Notes

1. Shirien Chappell, *Moving Library Collections: Planning Shifts of Library Collections* (Eugene: University of Oregon Libraries, 2006), https://scholarsbank.uoregon.edu/xmlui/handle/1794/12208.

2. Steven Carl Fortriede, *Moving Your Library: Getting the Collection from Here to There* (Chicago: American Library Association, 2010). Note: we downloaded Fortreide's "layout spreadsheet" to generate estimates using our sample above for the 25,000-volume collection, and the results were identical. For those with larger or more complex collections, we recommend using these spreadsheets to calculate your needs.

3. Beth Daniel Lindsay, "Moving the New York University Abu Dhabi Library,"

Collection Management 42, no. 1 (2017): 48–56.

4. Matthew Goldberg and Claudene Sproles, "Moving a Large Collection Quickly: A Study in Chaos," *Journal of Access Services* 17, no. 1 (2020): 33–45.

5. William H. Weare, Paul Moffett, and John P. Cooper, "Preparing for Renovation: Estimating Shelf Occupancy to Inform Decision Making regarding the Redevelopment of Library Space," *Collection Management* 41, no. 3 (2016): 168–81.