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Popular with whom? Usage demographics of popular science nonfiction at an academic library

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ABSTRACT

There is a large body of nonfiction written for a general audience which is infrequently promoted in popular reading collections at academic libraries. The aim of this research is to look at the usage of nonfiction science literature at a large university library in comparison to the science collection as a whole. This information can help librarians to not only determine how best to prioritize the collection of nonfiction science literature, but it can also be used to provide insight into how popular nonfiction science books can be most effectively promoted to library patrons.

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Introduction

The Harold B. Lee Library at Brigham Young University has a browsable popular reading collection that is separated from the rest of the library's collections. These items are checked out far more heavily than the library collection as a whole. Here, we investigated the extent to which this might be true of popular nonfiction titles found in the regular stacks and sought to better understand who from the University community is using these materials. We focused specifically on the Q (science) call numbers as designated by the Library of Congress' classification system. In this paper, popular reading is referred to synonymously as leisure reading, recreational reading, and reading for pleasure. This information will be used to determine how to better collect and promote the material in our library. We also hope our data can be used to inform the management of nonfiction popular reading materials outside of the sciences and in other academic libraries.

Literature review

Collecting

Despite all of the demands on their time, popular reading is surprisingly common among university students. In a 2011 study conducted at Gustavus

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Adolphus College in St. Peter Minnesota, 90% of students reported engaging in at least some recreational reading on a weekly basis (Gilbert and Fister 2011). A 2009 survey conducted at UCLA showed that 63.3% of graduating seniors read recreationally each week (Franke et al. 2010).

Although libraries at academic institutions have a primary role of supporting research, there are compelling reasons to provide leisure reading material in an academic library. Pleasure reading is good for students academically. There is a positive relationship between the times students spend reading for pleasure and their academic achievement. According to a 2004 study by the National Survey of Student Engagement, “about a third (31%) of top-quartile deep learners reported reading five or more books for their own personal enjoyment or academic enrichment during the school year as compared to only 17% of students in the lower quartiles.” Recreational reading has been correlated with improved writing skills, vocabulary, spelling, grammar, and reading comprehension (Dahlen and Watkins 2013; Gauder, Giglierano, and Schramm 2007). It is also correlated with increased empathy and better citizenship (Dewan 2013). Pleasure readers are also more likely to participate in volunteer work, attend cultural events, visit museums, and work in more financially rewarding jobs (Dewan 2015).

The research on the value of recreational reading for students tends to focus specifically on fiction, however there is a huge body of popular non-fiction literature that warrants attention (Dewan 2013). Many types of non-fiction are well suited to pleasure reading because they employ the literary techniques of fiction to tell a story about real events, phenomenon, people, and places (Alpert 2006). Like fiction, nonfiction also provides an opportunity for readers to experience other people’s lives, and to get transported to other times and places. In this sense, the line between recreational fiction and nonfiction is somewhat fuzzy.

Even though students are generally required to read nonfiction texts as part of their academic endeavors, they are still commonly choosing to read nonfiction for pleasure. One study found that of those college students who read for pleasure, 31% include nonfiction titles among their preferences. This percentage was consistent in both genders and in all majors across campus (Gilbert and Fister 2011). In another study, the number was even higher where 45% of university students self-reported regularly choosing nonfiction books for leisure reading (Salter and Brook 2007).

Popular science literature has the power to make difficult scientific topics easier to understand (Funkhouser and Maccoby 1971). Students struggling with a difficult text may look for help by seeking out material that is more accessible. One course paired an academic textbook with readings from the popular nonfiction book *A Short History of Nearly Everything* by Bill Bryson and found that student engagement was positively affected.

“The human story that framed the science concepts truly engaged students in learning the science – they even requested more readings from the book because it helped them understand course concepts!” (Austin, Menasco, and Vannette 2008). With clear student interest and a strong correlation to academic achievement, there appears to be a value in collecting popular nonfiction literature in an academic library.

Promoting

A large percentage of pleasure readers are browsers and come to the library open to suggestion (Baker 1996). Gilbert and Fister found that college students would welcome efforts from academic libraries to help them discover recreational reading material (Gilbert and Fister 2011). Many academic libraries provide browsable collections for popular reading material (Elliott 2009); however, these collections tend to be heavily weighted towards fiction. A Florida survey of academic libraries found that among the 38 respondents, 30 focused their popular reading collections completely or primarily on fiction, four were an equal mix, while only four focused on nonfiction materials (Rokusek and Enomoto 2016). Their results are similar to a 1980 study by Paul B. Wiener which found that the median percentage of fiction in recreation reading collections among 51 academic libraries was 72.5%. The same study also found that 36% of academic libraries interfiled all of their recreational reading materials within the general library stacks (Wiener 1982). Many studies have shown that increasing the visibility of selected titles can increase their circulation. When the impact of creating featured display shelves was measured in regard to circulation activity, business librarians at Brigham Young University found that the usage of the business and economics collections increased by 58% (Camacho, Spackman, and Cluff 2014). Library personnel at James Madison University East Campus also increased circulation of certain books by increasing their visibility and accessibility. Circulation numbers essentially doubled for those books featured on displays in the high traffic lobby browsing book collection and markedly increased for books highlighted in other displays (Jones et al. 2011). Without promotion, only the most determined browsers are likely to walk away with a nonfiction book for recreational reading.

Methods

This study focuses specifically on science nonfiction print materials that were written for a general audience. It seeks to discover how these titles are used in relation to the collection as a whole and to better understand who from the University community is using these materials.

Collection of book data

This study was limited to the collection of titles within the library that have been cataloged as Class Q (Science) as designated by the Library of Congress. Although there are many books that can be considered popular science literature outside of this collection, restricting this study to the Q collection decreased the subjectivity of determining whether a book should be classified as science literature. The Q class includes general science, mathematics, astronomy, physics, chemistry, geology, natural history, botany, zoology, human anatomy, physiology, and microbiology. It does not include other fields that are often included within the sciences, such as medicine, technology, engineering, etc.

In order to identify the percentage of popular science books in the Q collection, a random sample of 400 titles was identified from among all available titles. The 400 titles were then categorized to determine which titles were written for a popular audience. Popular science titles were distinguished from the rest of the Q titles using the following criteria:

- Any nonfiction book written for a general audience.
- Textbooks were excluded, however introductory books such as “Physics for Dummies” were included.
- Field guides for non-experts, biographies of scientists, and histories of scientific topics were included.

In order to collect and analyze the demographic data for those that check-out popular science books in the library, we first created a list of the most heavily checked out popular books for 2014–2015. Books with four or more checkouts over the course of 2014 and 2015 were identified as highly circulated. A list of all titles in the Q call number range with at least four checkouts during this period was reviewed and those titles that met the above criteria for popular science literature were identified. This resulted in a list of 100 that was then analyzed in more detail using anonymized demographic data.

Collection of demographic data

We collected anonymized demographic data associated with patron transactions and compared the data to demographic data obtained from University records. For each transaction, the following data was collected:

- Date of checkout, covering the time period 2014–2016;
- Gender;
- Status: student/faculty/staff/admin/other;
- For students,

- Declared major;
- Class in school: freshman/sophomore/junior/senior/master/doctorate;
- GPA;
- For faculty/staff/admin/other,
- Employee college, when applicable;
- Employee classification, full or part time.

Results and discussion

Collection

As shown in [Table 1](#), seven of the 400 randomly selected titles were written for a popular audience. It can be said with 95% accuracy that popular science titles make up a total of 1.75% of the library's Q collection (margin of error of 4.9). However, they account for 20% of the use. Less than 10% of the 400 titles were used in either 2014 or 2015. The seven titles identified as popular science literature constituted 12 of the total of 59 checkouts over both of these years. The relatively heavy use of these materials indicates that there is a clear interest in science literature written for a general audience. We did not determine if this material was used for recreational or academic purposes such as acquiring background information or suggested reading for a class. This would be a possible avenue for further research.

Within the set of 100 most used titles in the full Q Class collection, we separated the popularity of material by LC Subclass. As shown in [Figure 1](#), the four most frequently checked out subject areas were physics, geology, general science, and astronomy. The least checked out subject areas were physiology, chemistry, botany, and human anatomy. Microbiology did not receive any checkouts because there were no popular science titles identified within the QRs held by the library.

Demographics

Among the three general subject areas, the largest segment of use came from, as might be expected, those with declared majors in the sciences. As shown in [Figure 2](#), 61% of student checkouts came from science majors. The remaining 39% was divided by 19% from humanities majors and 20% from those majoring in the social sciences. Although not equal, it is clear that there is consistent demand for popular science titles across all disciplines.

Table 1. Usage of randomly selected titles between January 2014 and December 2015.

	Number of titles	Number of checkouts
Randomly selected titles	400	59
Non-popular titles with at least one checkout	32	47
Popular titles (all had at least one checkout)	7	12

Figure 1. LC subclass distribution of 100 most popular titles.

Figure 2. Popular checkouts by discipline of student declared major.

Overall, the use of the popular Q books was 58% male and 42% female. Compared to the University breakdown of 53% male to 47% female, there was significantly more use of popular nonfiction titles by male students than by female students. Table 2 shows the way each general subject area was split compared to University demographics. The breakdown in checkouts by Science students is very close to the demographic breakdown for all Science majors. Usage from those in the Humanities was flipped with significantly more females than males checking out popular science titles. This strayed from University demographics with 4% more female students checking out popular science titles than the total with a declared major in that area. Usage from the social sciences strayed the most from University demographics with a variance of 5 percentage points more male students

Table 2. Percent of male vs. female undergraduate students in popular science checkouts and university demographics by area of major.

	Percent male	Percent female
Popular checkouts by humanities majors	34	66
Declared humanities majors	38	62
Popular checkouts by science majors	66	34
Declared science majors	67	33
Popular checkouts by social science majors	57	43
Declared social science majors	52	48

checking out popular science titles than total majoring in that area. Although there were small variations from the University demographics within each subject area, on the whole the statistics show that there is consistent demand for these titles across all disciplines.

Usage by student undergraduate rank appears to increase as students progress through their education. As shown in [Figure 3](#), freshmen made up 14% of use but comprised 20% of the student body. Sophomores made up 15% of use and comprised 17% of the student body while juniors made up 20% of use and 21% of the student body. Interestingly, checkouts numbers more than doubled for students in their senior year. Much of this large jump was accounted for in university demographics, where seniors make up 42% of the student body, but this group still checks out the largest percentage of popular science material with 51% of all undergraduate checkouts.

The average GPA among those who checked out popular science materials was 3.46, which is slightly higher than the University average of 3.43 for graduating students. The average high school GPA for admitted students was 3.85. As shown in [Figure 4](#), students with a grade point average in the A or B range were the greatest users of the material by a substantial margin. This is unsurprising when considering previous research which revealed that students who read for enjoyment are more likely to be in the top quartile of academic performers (NSSE 2004).

The University's academic calendar is divided into two main semesters, Fall (September through December) and Winter (January through April) and two shorter terms, Spring (May and June) and Summer (July and August). [Figure 5](#) shows that usage was high at the beginning of each semester and then tapered off as each semester progressed. There was a considerable drop in use during the Spring and Summer terms when the student population decreases. Compared with student use, employee checkouts were fewer and more consistent throughout the year. The usage peaks within this data can indicate when prime opportunities for promotion occur throughout the year.

In contrast to student use, [Figure 6](#) shows that most usage by employees came from those employees who worked outside the science departments. In fact, employees within the science departments made up the lowest category of employee users with only 15% of circulation activity. This may

Figure 3. Popular checkouts by student rank compared to university demographics.

Figure 4. Percent of popular checkouts by GPA.

indicate that employee use is predominantly for personal enjoyment rather than being tied to a work related purpose. One hypothesis for the lower usage in the science departments is that those employees are more likely to purchase rather than checkout those books that relate to their area of study. Almost two-thirds of the usage that was from fulltime employees came specifically from members of the faculty.

Promotion

The data suggest there is definitely a case for making these books more browsable. When the total number of available titles makes up less than 2%

Figure 5. Popular checkouts by month.

Figure 6. Employee popular checkouts by discipline and classification.

of the collection, it is difficult for students browsing our stacks to find them among all of the other titles. However, the high usage suggests that there is strong demand for this content and making it easier to find would only increase the usage.

Currently, the library has featured display shelves adjacent to some of the collections including the sciences. Capitalizing on the high use of popular science materials to cross-promote more scholarly works on the same topics may help to increase circulation of other parts of the collection as well. Where physical display shelves are not available, a virtual site for browsing popular titles can meet some of this need. The library has created a virtual bookshelf for popular science titles which students and faculty can

use as a jumping off point to find a title that interests them. Featuring this virtual bookshelf on targeted LibGuides helps to increase the visibility of these titles even further.

Unfortunately, both of these methods of promotion primarily target students with majors in the sciences as they are the most likely to be visiting the science shelves and science LibGuides. How might the library target students outside of the sciences? Humanities and social science students currently checkout 46% of the popular science material. Would this be higher if there was more done to make them aware of these titles? The library could consider making recommended reading lists available outside of department specific areas, perhaps at the circulation desk for any patron to take.

Promotion is just one solution for helping students discover popular nonfiction literature in academic libraries. Another is to actively collect these materials. With such high student interest, there is a case to be made for developing selection criteria and including popular materials in collection development policies. Librarians may choose not to collect popular science literature because the material is not written at an academic level, however, this is likely a reason why students seek out the material. One suggestion is to increase the number of popular science nonfiction titles held in the library's Popular Reading collection. As the primary area for cross disciplinary browsing, this would be a good option for exposing additional patrons to these materials.

Conclusion

In conclusion, our data provide strong evidence that popular nonfiction science literature is in demand. This information can be useful by other academic libraries when determining how to prioritize the collection of popular nonfiction materials both in and outside the sciences. It also provides a demographic picture of the students and employees who are using the material. This can be useful when determining how to market it and make it most discoverable to those that might have an interest.

This study did not look into how these material are being used. Use of popular materials for academic purposes, such as assigned or supplemental course readings or for background research, is an area that merits further research. Additionally, the study was limited to popular materials in the print collection. Expanding this to include electronic materials would bring in another aspect to consider and is worth pursuing.

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