

The Perceived Impact of E-books on Student Reading Practices: A Local Study

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This study investigates the perceived impact of future e-book collections on student research and recreational reading habits at our institution through three questions: how students currently use library print collections, how students use e-books, and how these factors impact student perception of the effects of future library e-books on their research and recreational reading behavior. Students express a fairly high interest in e-books, although not without raising significant concerns. While students appreciate the ease of access provided by e-books, many imagine that research would be more difficult using e-books. Results will help the library better evaluate e-book options and navigate possible issues related to implementation.



Like academic librarians everywhere, librarians at our institution are evaluating emerging e-book options for our collection. However, anecdotal information, bolstered by informal student surveys, has suggested that a significant number of our students prefer print books to e-books. For example, students enrolled in a course taught by one of the authors, Books and Culture, conducted surveys of fellow students. The most recent survey of 175 students, conducted in the first week of January 2013, found that between 5 and 6 percent of students would choose an e-book over a printed book, up from 3 to 4 percent two years earlier.

Since our library offers very few e-books at this time, we found ourselves wondering how students saw themselves using e-books if we added them to the collection. To explore this question, we sought to understand first how students use library print books to see if using the library's print collection informed student perceptions of e-book use. Would students prefer books read for pleasure electronically? What about books used for research? How do students imagine using e-books might impact their research behavior? To better understand whether and how our students might use e-books if we were to add them to our collection, we conducted a study with the following questions in mind:

- How do students currently use our current print collection for both research and recreational purposes?
- How do students use e-books for these purposes, if at all?
- How do students predict that the availability of e-books in our collection might impact their research and recreational reading habits?

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Our purpose is to determine how students imagine they will use e-books for recreational and research purposes, using their current use of library print collections as a reference point. Ultimately, we are interested in how students think e-books might impact their use of current and future library collections. While the study only addresses the experiences of students at a single institution, we hope the results will raise interesting questions and provide a similar template for investigation at other institutions.

Literature Review

Though academic libraries have adopted e-books widely, many have encountered both an expressed preference for print among students and faculty and lack of awareness of e-book options.¹ One study found that a quarter of undergraduates at a large urban institution had experience reading e-books, though only a small percentage owned dedicated e-reading devices, which they used primarily for leisure reading. The same population was largely uninterested in borrowing e-books from their academic library and was largely unaware of its extensive e-book collection.² Interestingly, expressed attitudes may not predict actual behavior. A study conducted at a university in Northern Ireland found that library users expressed strong preferences for print; but, in actual practice, they were satisfied when using e-books for academic tasks.³

An extensive study at Miami University in Oxford, Ohio, conducted between 2007 and 2009 found four distinctive responses to e-books.⁴ Those whom they identified as “book lovers” were the largest category, at just over a third of respondents, followed by “printers” (who dislike reading on a screen), “technophiles” (who embrace the affordances of electronic media), and—the smallest category—“pragmatists” (who see advantages to both print and electronic media but care more about the content than the container). Differences among responses in terms of gender, major subject area, and status (such as undergraduate versus faculty) were noticeable, and many respondents expressed a preference for having access to *both* print and electronic formats for books because each medium offers benefits.

There appear to be differences among disciplines. A study at Colorado State University found that, overall, more patrons expressed a preference for print over e-books, but the largest group of respondents was indifferent about format. Interest in e-books varied according to subject, with respondents in business and most of the sciences more interested in e-books, and users in the humanities, social sciences, and agriculture and veterinary sciences preferring print.⁵ One study found business students embraced e-books because they typically are in search of factual information rather than extended arguments, essentially treating all books as if they are reference books.⁶

Some studies have looked at how students use e-books. In a study that used a talk-aloud protocol, students were confused by the variety of interfaces used by e-book platforms and found navigation within e-books difficult.⁷ Another small-scale study that used reading diaries found that students were more likely to annotate or take notes on texts that were in print form, finding them more conducive to concentration, than when they read electronic texts, which they were more likely to skim, though a great deal of their informal non-course-related reading of magazine articles and social media sites is done online.⁸ Though many studies have been published examining e-book use and patron preferences, these studies point to the fact that we actually know very little about how academic library patrons use printed books, making comparisons difficult.⁹ Our study seeks to fill this gap in the literature by investigating this question on a small scale among our patrons.

Institutional Context

Gustavus Adolphus College is a private, residential liberal arts college located in rural Minnesota and attracts primarily traditional college-aged students, largely from the upper Midwest. The library collection of around 300,000 volumes has been built with substantial faculty input, with between 4,000 and 5,000 volumes selected and added annually in recent years. Because of low user demand and concerns about cost, rights, and usability, e-books have not been in the mix, save a small number of electronic reference works and the Early English Books Online database. A limited number of open access e-books have been selected and added to the catalog. Both the library building and its collection are well used by students.

Methodology

To study how students use library print books, how they use e-books, and how they anticipate using any potential library e-book collections, the core of our study involves a survey of the student body. We developed the survey instrument (see appendix A) in spring 2012. Since we hoped to elicit a broad range of student perceptions, especially regarding e-books, the survey instrument primarily uses open-ended questions. We distributed a link to the SurveyMonkey site via e-mail to the entire student body. With 417 students out of 2,448 responding, we had a response rate of 17 percent. To analyze open-ended responses, one of the coauthors and a student researcher developed a coding scheme for responses (see appendix B). Survey data were imported into SPSS for analysis.

Since our study is an exploratory one, designed to investigate attitudes toward e-books on our campus, we gathered additional information through student interviews and our faculty through interviewing students and surveying our faculty. Two student researchers used a script to conduct face-to-face interviews of 13 students (see appendix C). The faculty survey, distributed at the same time as the student survey, had a much lower response rate of 9.7 percent (see appendix D). Although the information gleaned from these methods is not statistically significant, due to the small sample size, we include brief analyses of findings, both because they illuminate survey findings and also because they outline paths for future research.

Student survey respondents comprise a fairly representative sample of the student body, spanning all four years and representing a wide variety of majors, though women responded disproportionately. (Women make up 56 percent of the student body but account for 74.5 percent of respondents.) The majority of survey respondents visit the library at least monthly (89.1%), with one in ten respondents visiting seldom. Only a handful of respondents (0.7%) reported that they never visit the library.

Findings

Student Use of Print Books

The Gustavus library collection is fairly well used by survey respondents, primarily for research purposes. Over two-thirds of student respondents (68.6%) are at least somewhat likely to use books from the library if they are assigned a research project or paper for class. Almost half of those students (47.2%) say they are very likely to use library books. There are statistically significant differences in terms of student rate of library use and class year (see table 1).

Not surprisingly, students who visit the library more frequently are more likely to use library books for research. Over half of students who use the library daily (55.9%) or weekly (51.3%) are very likely to use library books for research. Students who use the library less frequently are less likely to use library books, with one in five who seldom use the library (22.0%) indicating they are somewhat unlikely and two-thirds of those who never use the library (66.7%) saying they are very unlikely to use library books.

TABLE 1
Likelihood of Using Library Books for Research by Library Usage (n = 417)
(percentage)

	Very Likely	Somewhat Likely	Hard to Say/ Depends on Topic	Somewhat Unlikely	Very Unlikely
Library Usage (Chi-square .000)					
Daily	55.9	23.5	16.2	4.4	0.0
Weekly	51.3	27.2	16.2	3.7	1.6
Monthly	41.7	15.5	32.0	9.7	1.0
Seldom	31.7	9.8	36.6	22.0	0.0
Never	0.0	0.0	33.3	0.0	66.7
Class Year (Chi-squared .091)					
First Year	41.4	24.2	27.3	7.1	0.0
Sophomore	47.4	23.7	18.4	8.8	1.8
Junior	46.1	23.5	22.6	4.3	0.0
Senior	57.1	13.0	22.1	3.5	0.0

The majority of all class years are at least somewhat likely to use library books in their research. Additionally, well over half of all seniors (57.1%) say they are very likely to use library books in their research. This is almost a ten-point jump over sophomores, who are the next highest very likely users. The finding is encouraging since seniors, who are presumably more likely to be doing the most sophisticated research in their years at college, believe they will find useful books in our collection.

Though the library has a browsing collection of popular books, most students use books in the library’s collection only for research purposes, not for pleasure reading. A sizable minority of students (38.8%) use library books for purposes other than research only once or twice a semester; nearly one-third of respondents (31.8%) report they never use the library in this manner. These findings are consistent with previous research on our students’ recreational reading behavior.¹⁰

Student Experiences of E-books

Since one of the major questions surrounding e-books involves access, we wanted to discern how many of our students actually own e-reader devices or software. Gustavus students are not quite evenly split in terms of whether or not they own an e-reader or tablet or have installed software for displaying e-books to their phone or computer. A sizable minority (42.2%) owns an e-reader or has installed e-reader software on their phone or computer. Amazon’s Kindle is top e-reader of choice for students, with 16.1 percent of respondents owning a Kindle; nearly one in ten (9.1%) owns a Nook, while the iPad rounds out the top three with 5.5 percent of respondents saying they read e-books on that device.¹¹ By contrast, nearly half of all respondents (49.4%) do not own an e-reader and have no plans of buying one soon. A small percentage (8.4%) do not have e-readers but are planning to buy one in the next year. There are no significant differences in terms of which students are more likely to own e-readers in terms of gender, major, class year, or frequency of library visits.

Examining the experiences and patterns of students with e-readers proves to be useful in determining emerging trends related to e-books on campus. Students who own an e-reader or had installed e-reader software on a phone or computer (n=176) shared their reading preferences and experiences with e-books. A large majority of respondents with e-readers (83.8%) read fiction on their e-readers and nearly half (47.2%) enjoy nonfiction on their e-readers. Over one-third of respondents (34.6%) read books assigned for class and one in five (20.1%) read books for research papers or other class projects on their e-readers. There are differences by gender, library use, and major in terms of who reads fiction on their e-readers (see table 2).

While two-thirds of men (64.6%) read fiction on their e-readers, almost all women (91.3%) do so, reflecting a well-established gender difference in reading tastes.¹² Interestingly enough, students who are less likely to visit the library (excluding those who never visit the library) are more likely to read fiction on their e-readers than students who use the library. Finally, although the finding is not statistically significant, humanities majors are more likely than their peers to read fiction on their e-readers. This, perhaps, could be accounted for by the fact that humanities majors might be more likely to be assigned fiction in their coursework.

Interestingly, those who own e-readers are more likely to check out library books for nonresearch purposes than students without e-readers (see table 3). About a third of students with e-readers report that they check out printed books for reasons other than research once a month or more. Students without e-readers were less likely to use library books for nonresearch purposes. This finding suggests that avid readers enjoy books in any format.

We asked students who have e-readers to comment on their experiences with e-books, both positive and negative. Not only are these students generally positive

	Yes	No
Gender (Chi-square .000)		
Women	91.3	8.7
Men	64.6	35.4
Library Usage (Chi-square .001)		
Daily	71.4	28.6
Weekly	84.3	15.7
Monthly	89.6	10.4
Seldom	100.0	0.0
Never	0.0	100.00
Major (Chi-square .479)		
Humanities	94.4	5.6
All others (averaged)	80.6	19.4

	No e-reader	Have an e-reader
Several times a month	6.7	12.0
Once or twice a month	8.8	20.0
Neutral/not sure	6.3	7.4
Once or twice a semester	44.8	30.9
Never	33.5	29.7

about their e-book experiences, they express various reasons for preferring e-books. Well over one-third of respondents (38.6%) say they like the portability of e-books; this was the top reason given: "It is so nice not to lug around the weight of five books but still have them with you." Over one-fourth (28.6%) simply say they like e-books. Students also report, to lesser degrees, that they find e-books to be easier to use (10.9%), that the prices of e-books are usually reasonable (7.0%), and that they find e-readers to be good for recreational reading (6.2%). A few students (7.8%) indicate that, even though they have e-readers, they still prefer to read hard copies of books: "Miss the feel of a real book."

Student Likelihood of Using Library E-books

We asked respondents to speculate whether or not they would use library-supplied e-books, regardless of whether or not they owned an e-reader. More than half of respondents (52.5%) indicated they would use e-books for research if the library provided them, with more than one-fourth of these (27.1%) saying they would be very likely to do so. Another fourth (24.4%) expressed doubt, saying they were not sure they would use e-books or that it would depend on the topic. Slightly less than one-fourth (23.1%) predicted that they were unlikely to use e-books for research, even if the library had them.

Respondents offer varying reasons for why they would or would not use e-books in their research. For those who say they are at least somewhat likely to use e-books, the top three reasons given were ease of access (6.0%), the fact that it would be easier in general (4.8%), and the portability of e-books (3.8%): "Easy access. If I could get a book for quick research from my room, that would be great." For those who would not use e-books, the top two reasons are the fact that respondents simply prefer hard copies of books over e-books (7.0%) and the fact that they do not currently own an e-reader (6.0%): "I prefer to read from a physical book. I would use an e-book if the actual book was already checked out or for a convenient way to get around using inter-library loan."

When we look at patterns regarding whether or not students would use library e-books for research, there are differences by gender, major, library usage and whether or not students have an e-reader (see table 4).

Men are more likely than women to say they are very likely to use e-books for research (35.5% compared to 24.9%) while women are more likely to be undecided in their use of e-books or suggest that it depends on the topic (26.6% compared to 17.6%). While it would be too big of a jump from this finding to suggest the existence of a gender gap in terms of technology, we do see evidence indicating men might adopt e-books more quickly than women. When we consider the reasons men and women give as to how likely they are to use e-books for research, more women say they prefer to use hard copies of books (13.6% of women give this answer compared to 4.3% of men). Even though men say they are more likely to use e-books for research, they did not give a single overwhelming answer that suggests a pattern for why they would prefer e-books more than women.

The majority of students who visit the library daily (55.9%), weekly (55.5%), and monthly (54.0%) say they are at least somewhat likely to use library e-books for research. There is a big drop in likelihood for students who visit the library seldom (34.2%) or never (33.3%). The finding suggests that, while library e-books would likely reach those students who use the library at least once a month, they would not necessarily be a big draw for those students who seldom or never use the library. In other words, students will not necessarily be drawn to use library e-books if they are not already frequent visitors to the library.

TABLE 4
Likelihood of Using Library E-books for Research (n = 417) (percentages)

	Very Likely	Somewhat Likely	Hard to Say/ Depends on Topic	Somewhat Unlikely	Very Unlikely
Gender (Chi-square .153)					
Women	24.9	26.6	26.6	7.6	14.3
Men	35.3	22.5	17.6	8.8	15.7
Library Usage (Chi-square .121)					
Daily	25.0	30.9	25.0	2.9	16.2
Weekly	28.8	26.7	23.0	7.3	14.1
Monthly	27.5	26.5	25.5	10.8	9.8
Seldom	24.4	9.8	26.8	12.2	26.8
Never	33.3	0.0	0.0	0.0	66.7
Major* (Chi-square .033)					
Education	17.6	33.3	21.6	11.8	15.7
Fine Arts	48.7	17.9	23.1	5.1	5.1
Humanities	22.2	27.8	20.8	13.9	15.3
Natural Sciences	27.6	29.3	26.7	2.6	13.8
Social Sciences	30.8	16.8	26.2	7.5	18.7
Undecided	10.5	31.6	21.1	15.8	21.1
E-reader Ownership (Chi-square .000)					
Have an e-reader	38.5	28.2	20.1	6.9	6.3
Don't have an e-reader	18.4	23.4	27.6	8.8	21.8

*These categories are somewhat misleading. Communication Studies, a popular major that focused largely on interpretation of texts, is part of the Fine Arts Division for historical reasons, but its curriculum is now more closely aligned with the humanities. The Education Division includes Nursing and the Health and Exercise Science program as well as the teacher training program.

Fine arts students (which includes Communication Studies majors) are the most likely to say they are at least somewhat likely to use e-books for research, followed by natural sciences students. About half of education students (50.9%) and humanities students (50.0%), as well as slightly less than half of social sciences students (47.6%), are at least somewhat likely to use e-books for research. Students who have not yet decided on a major (42.1%) are the least likely to say they would use e-books for research. Responses indicate that fine arts students and, to a slightly lesser degree, natural sciences students feel that e-books accommodate their research needs in ways that both relate to the specific kinds of research they do in their majors, as well as general needs that are not discipline-specific:

- "E-books are good for the environment." (Natural sciences)
- "I am a biology and environmental sciences major. I would need scientific articles. Primary literature." (Natural sciences)

- "It would be so much more convenient!" (Fine arts)
- "I am looking online for books all the time. Since I use my e-reader for pdfs for class already, I'm sure I would use it more for research." (Natural sciences)
- "I love being able to get as much research as I can, so this is just another option!" (Natural sciences)
- "Over J-term I checked out over twenty books for research. As such, carrying them everywhere was quite difficult. E-books would solve this issue." (Fine arts)

Two-thirds of students who have an e-reader are likely to use e-books for research, compared to less than half (41.8%) of students who do not. Students who do not own an e-reader say the top two reasons they would not use e-books for research is simply because they do not own an e-reader (15.4%) or that they prefer hard copies of books (6.8%). Interestingly enough, students who already own e-readers are even more likely to say they prefer reading hard copies of books (11.1%). Both students who have e-readers (6.8%) and those who do not (8.6%) think it would be easier to access e-books for research. The reasons that students give further indicate their reasons are not based solely on whether or not they already own an e-reader and suggest a complexity of preferences for and against e-books.

Students who say they are at least somewhat likely to use e-books for research express positive attributes, including the ability to access and carry more materials, the functionality of e-readers and perceived convenience:

- "It would be the same as accessing journal articles, just with books. I believe it would be very useful." (No e-reader)
- "For research I'm used to reading online sources more so that might be OK." (No e-reader)
- "I could easily highlight information and save pages that would help me on my project without ruining the book." (E-reader owner)
- "It would be nice to access books for research on my Kindle so I could search for keywords rather than paging through a book and hoping to get lucky." (E-reader owner)
- "You wouldn't have to go to the library to check them out." (No e-reader)
- "It's fast and easy for the most part and all I have to do is download it to my Kindle." (E-reader owner)

By contrast, students who say they are not likely to use e-books for research indicate concerns ranging from reliability to preference for print copies to navigation issues:

- "At this time, I do not trust e-readers to be accurate ...I have had experiences (in classes, embarrassingly enough) where the texts have been noticeably different." (E-reader owner)
- "I don't think I would like using my Nook for research. I am always underlining things and putting sticky notes all over while doing research, and I don't like the highlighting and bookmark tools on e-readers." (E-reader owner)
- "I like having the actual book. I feel like I soak in everything more when I can hold it in my hands." (No e-reader)
- "I really need to be able to flip quickly between documents and pages (in a non-linear fashion) when I am doing research." (E-reader owner)
- "It might be a little hard to navigate through the book if you were looking for a specific spot—I haven't tried this on my Kindle." (E-reader owner)
- "I like to have the physical book in front of me for research. Plus, I think it's easier to look up specific things in an actual book." (No e-reader)

Almost half of all respondents (48.4%), including those who do not own e-readers currently, say that if our library had e-books, they would use them for recreational reading. There were no discernible differences by gender, major, class year or rate of

library use. When asked why, students gave a variety of reasons. Ease of access (16.1%), the perception that e-books are simply easier (9.0%), and the fact that e-books are very portable (6.2%) were the top three reasons given: "It would be convenient if you could get them on your computer ...like over a weekend or something when on vacation and just check it out with your student ID." For the nearly one-third of respondents (31.3%) who are unlikely to read e-books, top reasons include lack of time for recreational reading (19.0%), the fact that they don't own an e-reader (18.5%), and preference for hard copies (14.7%): "Not only do I not have much time to do recreational reading, but I prefer hard copies."

(Perceived) Impact of E-books on Student Research Habits

Although it is beyond the scope of this study to measure directly the impact of e-books on student research habits, we investigate the degree to which students think that e-books might change how they do research. More students said they would not prefer e-books for doing research (39.3%) than those who thought they would prefer e-books to print (23.8%). A sizable percentage (36.9%) were not sure if they would prefer e-books or physical books for research. When asked to elaborate on their answers, students who would prefer to use e-books for research cited portability (13.3%), search capabilities (9.5%), and convenience (7.6%).

The leading reason for preferring print books is simple preference for print and the way it allows for comparison of more than one text (19.6%): "I like holding physical books and looking at multiple books at the same time." Some respondents elaborated on this theme, stating that they think it would be much easier to skim print books (15.2%) and that they like being able to write in the margins of print books (6.3%). Finally, a subset of respondents report that they would like to use both print and e-books (12.3%).

There are differences according to gender, major, and whether or not they have an e-reader (see table 5).

	Yes	No	Don't Know/Not Sure
Gender (Chi-square .005)			
Female	19.6	42.2	38.2
Male	36.9	30.1	33.0
Major (Chi-square .001)			
Education	21.6	54.9	23.5
Fine Arts	17.9	25.6	56.4
Humanities	16.7	55.6	27.8
Natural Science	29.9	33.3	36.8
Social Science	28.0	31.8	40.2
Undecided / Don't Know	5.3	42.1	52.6
E-reader Ownership (Chi-square .000)			
Yes	32.4	26.6	41.0
No	17.6	48.9	33.5

There is a striking gender difference, with over one-third of men (36.9%) saying they would prefer to use e-books for research compared to one in five women (19.6%). In terms of majors, Natural Science (29.9%) and Social Science (28.0%) majors are more likely than majors in other fields to prefer e-books for research. Not surprisingly, students who have e-readers are almost twice as likely as their peers to say they want to use e-books for research (48.9% compared to 26.6%). While almost a third of students who have e-readers (33.5%) indicate they are not sure, they are more likely than their peers to have an opinion on the matter, compared to a sizable minority (41.0%) of students without e-readers who are not sure.

We also asked students if they thought it would be easier or harder to use e-books for research than physical books. Students split almost evenly on this question, with over a third (37.8%) saying it would be easier to use e-books for research, slightly less than a third (31.9%) saying it would be harder, and another third (30.4%) saying they did not know. Students who think using e-books would be easier to use than physical books believe e-books would be easy to search (17.6%), more portable than physical books (17.0%), and easy to access (8.2%): "Experience tells me so. Using internet articles has ALWAYS been easier than hard copy articles." Students who think using e-books would be harder indicate that it is easier to skim print books (17.0%), that they would miss being able to write in the margins (8.8%), and that they generally prefer hard copies of books (6.3%): "It's harder to just scan [e-books] and you can't lay multiple books out on the table and have the same physical satisfaction as with real books." There are no differences by any of the demographic categories.

Additional Insights from the Survey

In open-ended comments, some students (perhaps accustomed to seeing a large variety of e-books available through Amazon and Google Books) assumed a move to acquire e-books would provide far more options for students, an optimistic prediction given our limited budget. As one wrote, "an ILL-like system for e-books would be really useful—you could get the information you need much sooner." Another hoped it would replace interlibrary loan altogether: "If e-books allow me to access info I would normally have to do an ILL for, then I'm all for it." Some argued that e-books are more environmentally friendly than printed books, though one wrote "it's a total waste of energy and electricity. Not a fan." Still others predicted technical glitches and problems with software upgrades or limited selection.

Some of the students raised issues familiar to librarians, such as whether interlibrary loan is possible with e-books and how long-term preservation might work. More than one student indicated they would only support the library adding e-books if it didn't interfere with acquiring printed books as well. One student wrote an eloquent brief for the open access movement, referring to the Elsevier boycott and the rise of open repositories such as arXiv, concluding, "I look forward to a time when research is available to anyone in the world who cares about it, not merely to the privileged few."

We asked students how they thought their research habits would change if they used e-books. Results from the open-ended question indicate a wide range of expectations. Students are drawn by the portable nature of e-books, with 16.2 percent of respondents (the top reason given) mentioning this feature specifically: "I could read my research materials whenever I have time and not have to plan which books to bring." Other students (12.3%) say they will use more resources in their research if they have access to e-books: "I might be able to use a larger amount of more diverse sources that would give my research a greater depth." A similar number (12.3%) respond that e-books are easier to access and more available: Some respondents (8.7%) suggest they would not be tied to the library building to do research with books: "I could do research at hours

in which the library isn't open." Finally, 10.9 percent say e-books would not change their research habits at all.

Supplemental Interviews

In the supplemental interviews with thirteen students, students reported using books for a variety of projects, including oral presentations, lab reports, lesson plans, and to find information for class discussions as well as for research papers and senior theses or personal interests. All of the students reported discovering the books they used by searching the library catalog, though some reported drawing on suggestions from librarians and faculty or finding out about books during a Google search. Nearly half also reported browsing the shelves as a discovery strategy. While deciding which books would be most useful, they reported using navigational cues in the table of contents and index and skimmed relevant sections looking for content that would provide supporting material for an argument. They used a variety of methods for managing information, including marking passages with post-it notes or scraps of paper, taking notes with references to page numbers, typing the relevant material into a paper as they composed it, and scanning relevant pages for future reference.

When comparing their experience with e-books to printed books, students reported that they liked the copy-and-paste ability and full-text search capabilities, but one said, "it's kind of nice to be able to take something back to your room and have something that's not on your computer screen." Others complained that they had trouble keeping track of where they were in an e-book, that scrolling online was more difficult for navigation than flipping pages. However, a majority expressed openness to the idea of using e-books for their research.

Finally, various potential features and constraints of e-books proposed by the interviewees met with mixed responses. To our surprise, students who were interviewed did not express a strong preference for being able to print sections of e-books. As one put it, "I'm usually pretty good at working on a computer screen so it probably wouldn't be a huge deal." Another said, "I guess [being unable to print would] be frustrating, but I think people would find a way around it." The possibility of being able to share highlighting and notes with other readers (a default feature in Kindle e-books) met with mixed feelings. Some interviewees were instantly hostile to the idea ("That's obnoxious!"), but others were intrigued by the possibility of sharing notes within a select group. As one student put it, "I wouldn't want to see everybody's ideas because that's a little much, but it'd be kind of cool if you were in a group project." By and large, having to create an account or download software was seen as inconvenient and undesirable, but not a hindrance that would make them reject e-books out of hand.

The idea of being constrained to reading e-books in a browser was not well received. Though the ability to print wasn't a hard-and-fast requirement, several students expressed a strong preference for downloading PDFs for offline reading and for future reference. Given that the process several students described for using printed library books generally involved two distinct readings—an initial scan for noting relevant material followed by a return to the book when composing a paper, often selecting different passages to pay attention to than those that were first noted—it makes sense that students would want to be able to return to the text easily during the composing process. One student commented that it would be helpful to be able to copy and paste sections of a book, adding "not to just put it in directly into your paper obviously," but because it would be an effective way of taking notes. "I like to go from a lot of information to smaller, to smaller, to get it more specific. So I think I would use copying and pasting just to take notes first."

These supplemental interviews, while few in number and thus limited in the conclusions we can draw, suggest a significant difference between how students use books for research compared to the intensive and repetitive reading of textbooks and the immersive and relaxing experience of reading for pleasure. Further research on how students use long-form content at different parts of the research process and how they manage information found in books would clarify how well various e-book platforms might work in practice and which features are particularly desirable.

Faculty Perceptions

Although the response to a faculty survey was relatively low and thus cannot be used to draw broad conclusions, a brief analysis of data from the faculty survey reveals several emerging themes that might impact the use of e-books by students. First, the push for using e-books for course materials will not necessarily come from faculty. Very few faculty respondents (14.8%) report that they are likely to encourage students to acquire an e-book for class rather than a physical copy of the same book, compared to a vast majority (70.3%) who say they are unlikely to do so. Respondents give several reasons:

- “I teach image-heavy texts, and my experience with e-books indicates that the smaller images are harder to read, and magnifying images diminishes the impression of the whole page.” (humanities professor)
- “I don’t believe that they read as well electronically—less annotation, questioning, critical engagement of the text.” (social sciences professor)
- “I wouldn’t discourage it but I wouldn’t actively encourage it, either. Students with e-books can’t get to the page as quickly; other students can share with them in small group. I’m not convinced of the value.” (humanities professor)
- “It honestly does not even occur to me most of the time. I think I forget that it is even an option.” (humanities professor)

Second, faculty respondents indicate that they themselves would prefer to use physical books rather than e-books for their own research. Only one respondent reported a preference for e-books, while almost half (48.1%) say they prefer physical books, with the rest of the respondents saying it depends on the topic or they are not sure. When asked why, survey respondents gave a variety of answers:

- “I prefer to be able to move back and forth through the text, and to have MULTIPLE SOURCES available at once (more than one book open at a time!). I don’t think you can do that with e-books.” (humanities professor)
- “I prefer to have the physical book when I’m doing research because I like the ease of flipping from one section to another to reference different passages as needed. I also don’t know how easy it would be to flip from text to footnotes/bibliography with the e-book. My inclination is that it would be more difficult.” (fine arts professor)
- “I’d like to choose yes and no here. I like navigating in paper better, but being able to search the document electronically is priceless. So, I want both.” (natural sciences professor)

Finally, faculty express concerns over the ways e-books might impact student research behavior. While some faculty respondents believe students would adapt easily to using e-books for research, others worry that e-books might negatively influence student work:

- “I think they might be more likely to search for specific quotes using key term searches, rather than reading the entire text.” (humanities professor)
- “It would get even worse than it is now. Our students have INCREDIBLE difficulty focusing their attention and INCREDIBLE difficulty with a disciplined, serious engagement with ‘hard’ reading—or reading that they perceive as hard.

They need to learn to annotate, underline, compare/contrast—they DON'T need to be even more passive 'consumers' than they already are." (humanities professor)

- "I think the quality of their notetaking would decrease (and it already needs work). I think they would also miss out on some of the unexpected finds that we come across when not searching for one exact title. For instance, when I look for a journal article, it's interesting to see the table of contents for the issue—I might find something I didn't know I was looking for or wanted to read. With e-journals this info is available, but I think students might lose the discovery of the unexpected." (humanities professor)

Though the small number of faculty who responded to this survey limits conclusions, exploring faculty perspectives further would be valuable when choosing e-book collections and platforms given that students look to their instructors for research guidance.

Discussion

In this study, we sought to determine the degree to which students used library print collections, the degree to which they used e-books and their perceptions of how they thought library e-books would impact their research behavior. We are encouraged to find that student respondents do make use of library print collections for research; use varies by rate of library use and class year. Consistent with other findings, students are not very likely to use library print collections for purposes other than research, like recreational reading. Results from this part of the study will serve as baseline assessment measures should we wish to evaluate the impact of any future e-book collections on our print collections. Results also indicate that student familiarity with print books has an impact on perceived benefits of a possible library e-book collection.

E-books are a complex beast, one that has the potential to both enrich and alter our students' research behavior. Our findings suggest that students are perhaps more open to using e-books for their research than we had assumed, based on previous informal investigations. Students are split almost evenly into thirds as to whether or not they would prefer to use e-books for research, with one third unsure. For those who indicated an interest, their top reasons for favoring e-books is that they are portable, more convenient to search, or simply "easier." For those who expressed a preference for print, many said they find skimming books easier when they are in print or simply prefer "a real book." Some indicated that print books were preferable because they like to write in the margins. Since that's not encouraged with library books, we suspect survey respondents sometimes failed to distinguish between library books and textbooks when discussing their preferences and practices. Students seem especially interested in the possibility of reading e-books for pleasure.

Adoption of e-readers does not seem to be a strong factor in student attitudes. Almost half of our students said they didn't have dedicated reading devices and weren't planning to get one. Those who do have readers indicated they are far more likely to use them for pleasure reading than for coursework. Indeed, e-books may be more associated with pleasure reading than academic research, in large part because of the popularity of Amazon's Kindle and the instant availability of popular titles. About half of the students expressed interest in having e-books available for non-research purposes, which raises vexing issues for collection development. Given that popular titles from the largest trade publishers are often not available to libraries on favorable terms, providing recreational reading electronically could be prohibitively expensive, and previous research found that our students enjoy reading for pleasure but rarely engage in it during the school year because of time pressures.¹³ It may be worth exploring ways to make students who are interested in downloading e-books

aware of what is available from the public library, which provides electronic access to many popular e-books.

Another finding to consider is that the students who are the heaviest users of our book collection are also frequent visitors to the library. Many of our interview subjects described browsing as a helpful discovery strategy when searching for books. It would be interesting to know whether the convenience of e-books would outweigh the discovery potential of browsing the stacks for our students, given that it is a residential campus where the library building is a popular site for academic work.

At this point, we are not racing to add more e-books to our collection, despite fairly positive student reactions to that possibility. While our hesitation primarily stems from budget and licensing concerns, we also recognize the additional complexities that adding e-books to the collection pose, including ensuring ease of access for all users and instruction on ways to best use e-books for research. We are encouraged, however, by responses by characteristics such as gender, major, and library usage, which indicate that different students will use e-books differently for different reasons. While this statement is obvious, it also suggests that many of our students will find e-books enriching in a variety of ways.

Future Research

While our survey found a third of our students were interested in e-books and another third had no preference for print books over e-books, it was clear in comments that many students either overestimated our capacity to increase access to whatever books they might need or expressed reservations about the technical knowhow required. Though we encouraged students and faculty to focus on their experiences with library books, it proved difficult for them to separate their practices when using library books for research from the ways they use textbooks for more intensive study. Many students expressed dissatisfaction with electronic textbooks or were frustrated when they tried to substitute commercially available or free e-books for course texts, finding them awkward to use in class because of lack of pagination or variations in editions. We had hoped, with this study, to learn more about student practices and preferences in using *library* books, especially as to how those preferences impact potential e-book use, but were not entirely successful in disentangling those experiences and expectations from the textbook experience.

Though our findings suggest greater student receptivity to e-books than we anticipated, we are left with a number of questions:

- How important is browsing for discovery and do e-book platforms provide adequate electronic alternatives to simple keyword searches?
- How will different forms of navigation within texts affect students' ability to select sources and skim them for the gist? Do printed books offer advantages in this area, or does the familiarity of full-text searching offer distinct advantages for undergraduates as they make choices and synthesize knowledge from several sources?
- As they compose using sources, how important is it for students to have durable copies of texts that they can compare and annotate? Will full-text searches of long-form texts encourage quote-mining and patchwriting, or are these practices already an entrenched feature of student writing?
- How influential are faculty attitudes? Given that their advice is more influential than librarians', what role will faculty play in helping students find and use books in a hybrid print-electronic library?
- Will the shift toward e-book acquisitions have an adverse effect on interlibrary loan and narrow the range of long-form materials available to students at small institutions?

- To what extent will devices designed for consumption (e-readers, tablets, mobile devices) affect equitable access to library content? Though currently a majority of our students rely on laptops rather than tablets or e-readers, will ownership of personal technology used to access library materials provide yet another point of difference in a world in which inequality is on the rise?

Though libraries face a number of challenges with e-books, such as how to align limited resources with new collection options, provide an integrated discovery system, market new resources, and educate users about the quirks of various platforms, we also need to know more about how our community members actually use the content we provide. Downloads and circulation figures don't tell us nearly enough about the actual practices and preferences of readers and researchers. A richer body of research on user experiences could help us not only decide what new products to acquire but could help us decide what the future should look like.

Appendix A. Student Survey

1. Do you currently own an e-reader? (check all that apply)
 - Kindle (Amazon)
 - Nook (Barnes & Noble)
 - Kobo (Kobo)
 - Reader Pocket Edition (Sony)
 - iPad (Apple)
 - I have installed Kindle or other e-reader software on my phone
 - I have installed Kindle or other e-reader software on my computer
 - No, but I'm planning on purchasing one in the next year
 - No, and I'm not planning on buying one soon
 - Other (open ended)

(If respondent has an e-reader, he/she will be asked this question)
2. What type of material do you usually read on your e-reader? (select as many as apply)
 - Fiction (recreational)
 - Nonfiction (recreational)
 - Books assigned for class
 - Books for research papers or other class projects
 - Other (open ended)

(If respondent has an e-reader, he/she will be asked this question)
3. What's your experience been like using your e-reader? Please comment on anything related to likes, dislikes, etc. (open ended)
4. How often do you use library books for purposes other than research, like recreational reading? (select one)
 - Several times a month
 - Once or twice a month
 - Neutral/not sure
 - Once or twice a semester
 - Never
5. If you are assigned a research paper or project for a class, how likely are you to use books from the Gustavus library? (select one)
 - Very likely
 - Somewhat likely
 - Hard to say/depends on topic
 - Somewhat unlikely
 - Very unlikely

6. If the Gustavus library had e-books, how likely would you be to use them for **recreational reading**? (select one)
 - Very likely
 - Somewhat likely
 - Hard to say/depends on topic
 - Somewhat unlikely
 - Very unlikely6b. Why? (open ended)
7. If the Gustavus library had e-books, how likely would you be to use them for **research**? (select one)
 - Very likely
 - Somewhat likely
 - Hard to say/depends on topic
 - Somewhat unlikely
 - Very unlikely7b. Why? (open ended)
8. Would you prefer to use e-books for research rather than physical books?
 - Yes
 - No
 - Don't know/not sure8b. Why? (open ended)
9. Do you think it would be easier or harder to use e-books for research rather than physical books?
 - Much easier
 - Somewhat easier
 - Don't know/not sure
 - Somewhat harder
 - Much harder9b. Why?
10. In what ways do you think using e-books for research rather than physical books might change how you do research, if at all? (open ended)
11. What else would you like to tell us about e-books and library research? (open ended)
12. How often do you visit the library in a typical semester?
Daily Weekly Monthly Seldom Never
13. What is your sex?
Male Female Transgender
14. What year are you in school?
PSEO. First Year Sophomore Junior Senior
15. In which of the following area(s) is your major?
 - Education (e.g., Education, Nursing, HES)
 - Fine Arts (e.g., Art, Music, Comm Studies)
 - Humanities (e.g., Classics, English)
 - Natural Science/Mathematics (e.g., Biology, Chemistry)
 - Social Science (e.g., Economics, Psychology, Political Science)
 - Undecided/Don't know

Appendix B. Open-Ended Response Coding Scheme

Variable Name	Definition
Access	E-books are easy to access, are readily available.
Both	Respondent would like to use both e-books and print books.
Browsing	Using e-books means you wouldn't be able to browse library shelves to discover books.
Circ	Comments about how one could check out e-books without having to go to the actual library.
Citing	It is harder to cite page numbers in e-books.
Dictionary	E-books have a built-in dictionary.
Don't Enjoy	Respondent doesn't like to read.
Don't Know	Respondent says he/she doesn't know.
Don't Like	Respondent doesn't like using e-books.
Don't Own	Respondent doesn't own an e-reader.
Easier	Use for any generic comment where respondent says he/she thinks it is easier to use e-books without giving specific reasons.
Efficient	E-books would make the research process more efficient.
Electronic	Use for any answer that talks about the problems with e-books crashing or the technology not working.
Enjoy	Respondent likes to read.
Expensive	E-books are too expensive.
Familiar	Respondent is already familiar with reading/research online.
Green	E-books are more environmentally friendly.
Harder	E-books would make the research process harder.
Library	Respondent expresses concern that e-books would mean he/she wouldn't have to go to the library.
Like	Any generic comment about how they "like" e-books better than print books w/o giving a specific reason.
Marginalia	Print books give the option of writing notes/marginalia directly on the page.
Mark	E-books are easier to mark/annotate.
Misc	Use for anything that doesn't fit other categories.
More	Respondent would use more resources for research if using e-books.
Multiple	Using print books allows you to have multiple sources open/in use at once.
No	Using e-books wouldn't change how respondent does research.
PHC	Prefer hard copy. Stated preference for print books.
Portable	E-books are easier to carry around.
Price	E-books are affordable.
Rec	E-books/e-readers are good for recreational reading.
Screen	Respondent doesn't like reading off a screen.

Search	It is easier to do a keyword search to find content in e-books.
Skim	It is easier to skim print books.
Time	No time to read.
Topic	Respondent says it depends on the topic.
User	E-books allow for multiple users at once.

Appendix C. Student Interview Script

1. In general, how likely are you to use library books to complete a research paper or project?
2. When working on a research paper or project, how do you decide if library books would be useful tools to help you complete your work?
3. Have you used library books for other types of assignments? Which ones?
4. Tell me a little about the most recent research project you conducted for which you used library books.
5. How did you find the books you ended up using? Please comment on anything from how you became aware of the book's existence to how you found a copy of the book.
6. Thinking about that same project, how did you determine if the books you found would be useful to you?
7. How did you decide what information in the books you chose would be most useful?
8. How did you keep track of those parts of the book in order to refer to them later?
9. What did your writing process look like with this research project?
10. Tell me about the decision-making process you followed when you incorporated ideas from books into your project.
11. Did you use online articles or information from websites in your project, too?
12. How did you find those online articles or information from websites?
13. As you think about the ways you incorporated information from articles or websites into your paper, do you recall if you used them differently in some way than you used books? If so, can you describe how?
14. Have you ever used online books in your research? What were the advantages and drawbacks?
15. If the library had books online instead of in print, do you think it would be easier or harder to use them in your research? Why?
16. I'm going to read you a list of features related to e-books and I'd like you to tell me if the feature would make you more or less likely to use them:
 - You have to create an account before you can browse them.
 - You have to download special software to use them.
 - You can highlight and take notes in them that only you can see.
 - You can see what other people have highlighted and their notes and you can share yours.
 - You can't print any part of the book.
 - You can print a chapter at a time.
 - You can save a copy of the book.
 - You can only read the book in a web browser.
 - You can use a text-to-speech feature to have the book read to you.
17. In general, how do you feel about using e-books versus print books?
18. Is there anything else you'd like to tell us?

Appendix D. Faculty Survey

1. In a typical class, how many of your students appear to read most or all materials assigned for class on an e-reader or laptop?
 - None
 - A handful
 - More than half
 - Almost all
 - Not sure
2. How likely are you currently to encourage students to acquire an e-book rather than a physical copy of the same book?
 - Very likely
 - Somewhat likely
 - Hard to say/depends on topic
 - Somewhat unlikely
 - Very unlikely

2b. Why? (open ended)
3. In the future, what do you anticipate is the likelihood that scholarly materials (including books) in your discipline will be available primarily online and not in print at all?
 - Very likely
 - Somewhat likely
 - Hard to say/depends on topic
 - Somewhat unlikely
 - Very unlikely

3b. Why? (open ended)
4. Do you currently own an e-reader? (check all that apply)
 - Kindle (Amazon)
 - Nook (Barnes & Noble)
 - Kobo (Kobo)
 - Reader Pocket Edition (Sony)
 - iPad (Apple)
 - I have installed Kindle or other e-reader software on my phone
 - I have installed Kindle or other e-reader software on my computer
 - No, but I'm planning on purchasing one in the next year
 - No, and I'm not planning on buying one soon
 - Other (open ended)

(If respondent has an e-reader, he/she will be asked this question)
5. What type of material do you usually read on your e-reader? (select as many as apply)
 - Fiction (recreational)
 - Nonfiction (recreational)
 - Materials for professional work
 - Other (open ended)

(If respondent has an e-reader, he/she will be asked this question)
6. What's your experience been like using your e-reader? Please comment on anything related to likes, dislikes, etc. (open ended)
7. How important is it for you to develop your personal and/or professional library with physical books rather than e-books?
 - Very important
 - Important
 - Neutral/not sure

- Unimportant
 - Very unimportant
8. If the Gustavus library offered e-books for you to borrow, how likely would you be to use them **in your research**? (select one)
- Very likely
 - Somewhat likely
 - Hard to say/depends on topic
 - Somewhat unlikely
 - Very unlikely
- 8b. Why? (open ended)
9. If the Gustavus library had e-books, how likely would you be to use them for recreational reading? (select one)
- Very likely
 - Somewhat likely
 - Hard to say/depends on topic
 - Somewhat unlikely
 - Very unlikely
- 9b. Why? (open ended)
10. Would you prefer to do research using e-books, rather than physical books?
- Yes
 - No
 - Depends on topic
 - Don't know/not sure
- 10b. Why? (open ended)
11. Do you think it would be easier to do research using e-books rather than physical books?
- Much easier
 - Somewhat easier
 - Don't know/not sure
 - Somewhat harder
 - Much harder
- 11b. Why? (open ended)
12. How do you anticipate **your students'** research process would change, if at all, if they used e-books for their research instead of physical books? (open ended)
13. How do you anticipate **your** research process would change, if at all, if you used e-books for your research instead of physical books? (open ended)
14. What else would you like to tell us about e-books? (open ended)
15. How often do you visit the library in a typical semester?
- Daily
 - Weekly
 - Monthly
 - Seldom
 - Never
16. How often do you use the library's electronic resources (databases, etc.) in a typical semester, either in the library building or in your office/off campus?
- Daily
 - Weekly
 - Monthly
 - Seldom
 - Never
17. How long have you been employed at Gustavus?

- 0–5 years
 - 6–10 years
 - 11–15 years
 - 15–20 years
 - More than 20 years
18. What is your sex?
- Male Female Transgender
19. What is your division?
- Humanities
 - Education
 - Fine Arts
 - Natural Sciences
 - Social Sciences
-

Notes

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10. Julie Gilbert and Barbara Fister, "Reading, Risk, and Reality: Undergraduates and Reading for Pleasure," *College & Research Libraries* 72, no. 5 (Sept. 2011): 474–95.
11. We provided students with a wide range of e-reader options because we were curious if there were differences of opinion between users of different readers (for instance, do Kindle users think differently from Nook users?). When we looked at results, we saw that the spread of responses across various types of readers was not large enough to warrant analysis by type of e-reader. Since our primary interest lies in difference between those who have access to e-books and those who do not, rather than differences in experiences with various e-book readers, we created a new variable to separate those who have e-book readers (or read e-books on other devices) from those who do not.
12. A number of studies have found significant gender differences in fiction and nonfiction preferences. See, for example, Steven J. Tepper, "Fiction Reading in America: Explaining the Gender Gap," *Poetics* 27, no. 4 (May 2000): 255–75.
13. *Ibid.*