

Lib-Value Report: Seton Hall Graduate Students



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Introduction

Graduate students now have many choices of where and how to access scholarly articles, books, or other materials. Time, cost, and electronic availability are all factors in their decision of which materials to select, and by providing the highest-quality material in a convenient manner we can ensure they are receiving the best material to improve their research and teaching. In order to determine the best method to provide graduate students with scholarly material, we need to determine: Why do graduate students read scholarly materials such as journal articles, books, and other materials? Do reading patterns vary according to purpose of reading, source of reading, or individual characteristics of readers such as academic discipline, status, or age? What is the role and value of the academic library in providing access to scholarly content in a changing digital landscape?

The Value, Outcome, and Return on Investment of Academic Libraries project (Lib-Value) is a three-year study funded by the Institute of Museum and Library Services (IMLS). Part of the project seeks to measure the value of the library's provision of access to scholarly materials by examining scholarly reading patterns and comparing use patterns of the library-provided resources with the use of scholarly materials accessed from other sources. Faculty members, graduate students, and undergraduate students were studied at several universities. The Lib-Value project is led by a research team at the University of Tennessee, the University of Illinois at Urbana-Champaign (UIUC), Syracuse University, and the Association of Research Libraries (ARL). The University of Illinois, Seton Hall University, University of Colorado (Boulder), and two universities in Australia—University of South Wales and the University of Queensland participated in the third phase. This report presents the findings from Seton Hall University.

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Previous Studies

Since 1977, Tenopir and King have conducted reading surveys of scientists and faculty in the university and non-university setting (King et al. 1981; Belefant-Miller and King 2001). In 2005, Tenopir and King conducted a reading survey of graduate and undergraduate students in the United States, and expanded it to Australia, Finland, and Japan (Tenopir et al. 2010). The early studies focused on scholarly article readings and the use of e-journals, and this study expands to include scholarly book readings and social media. The surveys found that faculty and graduate students are reading more articles per year and that the majority of these articles are from e-journals (Wolverton and Tenopir 2006). Furthermore, with the exception of science faculty, graduate students working on their theses or dissertations read more articles per year than any other group. The results from Seton Hall in 2012 tend to confirm the earlier findings. These results are a part of a larger scale study of universities in the United States, United Kingdom, and Australia.

Other multi-university studies focus on how faculty uses electronic journals, online resources, and libraries (Healy et al. 2002). Further studies show that access and convenience, especially electronic access, are important to academic faculty (Maughan 1999). Other studies show the huge impact subject discipline has on reading patterns, and different disciplines have varying traditions of the importance of journals compared to other types of information (Talja and Maula 2003; Fry and Talja 2004). In addition, faculty members in the sciences prefer and read more electronic journal articles than in humanities or social science disciplines (Brown

2003). A 2011 study by the Research Information Network (RIN) found a link between the library and the institution's research performance. These studies provide a basis for our findings with graduate students.

Many recent studies have reported on the future of e-books in academia. A 2009 CIBER report found that nearly two-thirds of teaching staff and students in the United Kingdom have used an e-book to support their work or study or for leisure purposes, and more than half of users said the last e-book they used was provided by their university library. A study at the Health Sciences Library System at Pittsburgh University discovered that over half the surveyed faculty, graduate students, and undergraduate students used library provided e-books for their job duties, and it concluded that respondents are willing to use alternative formats (Folb et al. 2011). Another study at the University of Illinois in 2008 shows that faculty, graduate students, and undergraduate students value the convenience and time saving capabilities this format offers them, as well as the ability to search full-text content of e-books although there are still disadvantages with its format on the screen (Shelburne 2009). Many other studies have reported similar findings, showing that e-books are becoming a valuable library resource (Chrzastowski 2011; Tenopir et al. 2012).

A report by CIBER on the use of social media in the research environment found that social media have found applications in the research process, and the most popular tools are those for collaborative authoring, conferencing, and scheduling meetings (Rowlands et al. 2001). The report did not find age to be a good predictor on social media use, but humanists and social scientists used more social media. It concludes social media do not replace traditional material.

Methodology

Earlier surveys examined just the reading of scholarly articles, but for this survey we expanded it to examine the reading of scholarly books and book chapters and the use and creation of social media. The survey maintained a consistent core of questions and maintained similar questions in each section in order to compare the survey results over time. The questions are based on two principal sections—reader-related (demographics) and reading-related. Reader-related questions focus on the demographics of the respondent; the questions include age, gender, and major.

The reading-related questions are based on the ‘critical incident technique’ first developed by Flanagan (1954). The ‘critical incident technique’ has since been applied to many contexts, including libraries and readings (Radford 2006; Andrews 1991). The survey used the last scholarly reading as the ‘critical’ incident of reading (Griffiths and King 1991). By asking about a specific most recent reading, respondents should have a better memory of that reading, rather than having to reflect back on multiple readings over a longer period of time. While the last reading may not be representative of a typical reading, it allows us to find details and patterns of reading and use. The questions cover many details of that reading, including time spent on the reading, source of reading, purpose of reading, and value of the reading to the purpose. A complete survey instrument is found in the appendix of this report.

In March 2012, a Seton Hall librarian sent an e-mail message to the graduate student population of approximately 4500. The message included an embedded link to a survey housed on the University of Tennessee’s server. We received 144 responses to the first question for a response rate 3.2%. Since respondents were allowed to leave the survey at any time, skip questions, or were timed out automatically if they began the questionnaire and did not complete

it, most of the questions have a lower number of responses. All respondents for a particular question equal 100% for that question.

Demographics of Respondents

Academic Major

We asked the graduate students to list their major, and for analysis we collapsed the majors into six categories (Table 1). We combined the majors based on the graduate programs offered at Seton Hall—Arts and Sciences, Business, Diplomacy and International Relations, Education and Human Services, Health and Medical Sciences, Nursing, and Theology, and then we further divided them by similarities in the fields. We separated them into sciences (e.g., chemistry, nursing), humanities (e.g., literature, language, history), professional studies (e.g., administration, communication, leadership), social studies (e.g., education, journalism, business), theology, and other (e.g., ‘research’). Of the one hundred respondents who chose to list their major, 27% are in the sciences, 23% in social sciences, and 23% in professional studies. The majority of respondents in the sciences are nursing students. The other discipline could not be identified (‘research’).

Table 1. Academic Majors of Seton Hall Graduate Students (Grouped)

	Respondents		All Graduates	
	N	%	N	%
Sciences	27	27.0	755	16.6
Social Sciences	23	23.0	1643	36.2
Humanities	6	6.0	107	2.4
Professional Studies	23	23.0	1533	33.9
Diplomacy/ Int’l Relations	12	12.0	188	4.1
Theology	7	7.0	215	4.7
Others	2	2.0	94	2.1
Total	100	100.0	4535	100.0

This breakdown corresponds roughly with the overall graduate population at Seton Hall, who lists the most students in the sciences (16.6%), social sciences (36.2%) and professional studies (33.9%). However, the response rate reflects a higher proportion of science respondents than the larger population.

Position, Age, and Gender

Seventy-two percent of the respondents are pursuing their Master’s degree, and 22% are doctoral students (Table 2). We did not receive any responses by JD or MD students. Some respondents identified their academic status as ‘other’; these include a certificate student and students who recently received their PhD.

Table 2. Academic Status of Seton Hall Graduate Students

	Respondents		All Graduates	
	N	%	N	%
Master’s student	73	71.6	2281	50.3
Doctoral student	22	21.6	562	12.4
Juris Doctor student	0	0.0	1049	23.1
Divinity student	0	0.0	99	2.2
Other	7	6.9	544	12.0
Total	102	100.0	4535	100.0

The overall graduate population shows the highest number of students ranked as Master’s and JD students with Doctoral and ‘other’ students comprising roughly the same portion of the population (Table 4). ‘Other’ includes certificate and non-matriculated students.

Nearly half (48%) of the respondents are under thirty years of age (Table 3). The respondents’ ages range from twenty to seventy-one years of age.

Table 3. Age Range of Seton Hall Graduate Student Respondents

	Frequency	Percent
18 ~ 24	26	25.7
25 ~ 30	23	22.8
31 ~ 45	20	19.8
Over 45	32	31.7
Total	101	100.0

According to the National Center for Education Statistics, in 2009, 60% of Master's degrees and 52% of doctoral degrees were awarded to females (U.S. Department of Education 2011). The 2012 student population at Seton Hall, including graduate and undergraduate students, is 57% female and 43% male. In our study 71% of the respondents are female (Table 4). 71% of Master's students (52 of 73) and 73% of Doctoral students (16 of 22) are female. Females make up the majority of respondents in the sciences (82%), social sciences (78%), professional studies (74%), and diplomacy/international relations (58%). There is an equal split between genders in humanities, and 57% of theology majors are male. There is no association between the age and gender of the respondent.

Table 4. Gender of Seton Hall Graduate Students

	Frequency	Percent
Male	29	28.7
Female	72	71.3
Total	101	100.0

Sixty-percent of the respondents are full-time students (Table 5). We expect full-time students to be heavier users of scholarly materials because they take more courses than part-time students.

Table 5. Status of Seton Hall Graduate Students

	Frequency	Percent
Full-time	60	60.6
Part-time	39	39.4
Total	99	100.0

The majority of respondents in diplomacy/international relations (83%), humanities (83%), social sciences (65%), and sciences (54%) are full-time. Half of respondents in professional studies and 57% of theology students are part-time. Part-time students are more likely to be older. Only 12% of respondents under 24 years of age are part-time, while 40% of respondents between 31 and 45 years of age and 70% of respondents over 45 of age are part-time.

Article Reading

Total Amount of Article Reading

An initial step in exploring journal article reading patterns is determining the total number of journal articles they read in the past month. To improve the accuracy of their response and minimize the inherent bias of self-reporting, we asked for a relatively short period of time (one month) rather than asking the respondents to reflect back over a longer period of time and we define the key terms very specifically. We assume the last month is an accurate representation of a typical month of reading. The first question stated, “*In the **past month (30 days)**, approximately how many scholarly articles have you read? (Articles can include those found in journal issues, Web sites, or separate copies such as preprints, reprints, and other electronic or paper copies. Reading is defined as going beyond the table of contents, title, and abstract to the body of the article).*” The actual number is less important than the relative amounts among types of respondents and over time. For convenience we often report results as

readings per year, by taking the monthly number reported by the respondent and multiplying it by 12.

As expected there is a wide-range of responses, with students reporting from zero to one hundred readings in the past month. In the last month, graduate students read an average of twenty-three articles (M=23.27, SD=20.64).¹ Half of the respondents read at least fifteen articles in the month. Extrapolated to an entire year, the average graduate student reads 279 articles.

We asked respondents how many of the readings were for class and determined the percentage of readings for class by dividing the respondent’s total number of article readings by the number of readings for class. The majority of respondents read over three-quarters of the articles in the past month for class (Table 6).

Table 6. Percent of Monthly Article Readings for Class by Seton Hall Graduate Students

Percent for class	Frequency	Percent
0-25%	15	11.1
26% ~ 50%	21	15.6
51% ~ 75%	21	15.6
Over 75%	78	57.8
Total	135	100.0

Last Incident of Reading and Date of Publication

The next set of questions asked the respondents to focus on the last scholarly article reading. This variation of the ‘critical incident’ technique assumes the last article reading is random and provides detailed information on a random sample of the readings by graduate students. We asked, “*The following questions in this section refer to the SCHOLARLY ARTICLE YOU READ MOST RECENTLY, even if you had read the article previously. Note that this last*

¹ Excludes outliers over 100 (3 standard deviations from the mean). Including outliers the mean is 25.38.

reading may not be typical, but will help us establish the range of reading patterns.” We then asked for the title or topic of the journal article from which the last reading took place in order to focus their minds on the article for the rest of critical incident questions.

Approximately half of the article readings by graduate students are in the first eighteen months of publication, and to see how graduate students compared we asked, “*What year was the last article you read published/posted?*” We found 42% of the readings are within the first eighteen months of publication (Table 7). Since the survey was conducted in the spring of 2012, we included the first six months of the year in our analysis. The year of publication ranges from 1980, with 6% of the articles fifteen-years-old or older.

Table 7. Age of Article Read by Seton Hall Graduate Students Arranged by Date Groupings

Year	Frequency	Percentage
Over 15 years (Before 1997)	6	5.6
11 ~ 15 years (1997-2001)	5	4.7
6 ~ 10 years (2002-2006)	16	15.0
2 ~ 5 years (2007-2010)	35	32.7
Less than 2 years (2011-1/2 of 2012)	45	42.1
Total	107	100.0

Faculty members at Seton Hall University report slightly more article readings in the first eighteen months of publication (50%, 35 of 69) than undergraduate students (43%, 44 of 102) or graduate students (42%, 45 of 107). Undergraduate students report the highest percentage of readings over five-years-old (33%, 34), while only one-quarter of readings by graduate students (25%, 27) and one-quarter (26%, 18) of the readings by faculty members are over five-years-old.

Novelty of Information in the Reading

Since this is a random sample of article readings, the article may have been previously read. Fourteen percent of the article readings by graduate students are re-readings (15 of 109). We also wanted to find out the reader's knowledge of the article content before this reading (i.e., was the information familiar to them before the reading). Together, these questions indicate how many articles are used as sources of new information. Forty-two percent of the respondents knew the information contained in the article before the first article reading (46 of 109).

We asked those who knew about all or part of the information in the article reading where they originally found it. Another journal article was the main source of information found in articles (Table 8). The 'other' responses include a book, an abstract, Google, and five respondents who first found the information through class work or discussion.

**Table 8. Source of Information Not Obtained Through Last Article Reading
By Seton Hall Graduate Students**

	Frequency	Percent
Conference or workshop	1	2.2
Informal discussion with colleagues	2	4.4
Listserv or news group	2	4.4
Journal article	23	51.1
E-mail from colleague	1	2.2
Preprint/e-print service (e.g., arXiv.org)	0	0.0
Web site of author	2	4.4
Institutional repository	1	2.2
Other	13	29.0
Total	45	100.0

Thoroughness of Last Article Reading and Time Spent Reading

Economist Fritz Machlup described two types of value in the information context: purchase or exchange value and use value (1979). Time spent represents an 'exchange value,' assuming graduate students spend a large portion of their work time on reading because they

consider it valuable. In order to get an indication of the ‘exchange value’ of reading, we asked respondents to describe the thoroughness of their last scholarly article reading and how much time they spent on the reading. Two-thirds of the readings are read with great care and attention to all or parts of the article. Only 4% of the readings are skimmed (Table 9). Eighty-seven percent of re-readings (13 of 15) and 63% of first-time readings (59 of 94) are read with great care and attention to all or parts of the article.

Table 9. Thoroughness of Last Article Reading by Seton Hall Graduate Students

	Frequency	Percent
I read all of it with great care	39	35.5
I read parts of it with great care	34	30.9
I read it with attention to the main points	29	26.4
I read only specific sections	4	3.6
I skimmed it just to get the idea	4	3.6
Total	110	100.0

Another aspect of the thoroughness of the article reading is the amount of time spent per reading. The average time spent per reading is thirty-nine minutes ($M=39.38$, $SD=36.94$),² with a range of three minutes to two hours. 16% of readings are over an hour (Table 10).

Table 10. Average Time Spent Per Article Reading by Seton Hall Graduate Students

Minutes	Frequency	Percent
1-10	14	13.6
11-30	54	52.4
31-60	19	18.4
61-90	2	2.0
91-120	11	10.7
Over 120	3	2.9
Total	103	100.0

² Excludes outliers over 180. Including outliers the mean is 41.88.

There are no significant differences in time spent per reading by respondent's discipline or academic status.

Source of Article

An important part of our analysis of graduate student reading patterns is determining how they become aware of articles. In the survey we asked, "*How did you or someone on your behalf become aware of this last article you read?*" There are many means of becoming aware of information, and their answers reflect their myriad of options (Table 11). We followed up the question by asking what source they searched or browsed, indicating whether it was a print or electronic source. For the purposes of the survey, we defined browsing as "without a specific objective in mind" and searching as having some sort of starting point such as author's name or by subject. We included a 'don't know/don't remember' option for those who may not remember how they became aware of the article.

Approximately one-third of the articles were found through searching, and 16% of articles were found through browsing. Half of the articles were found through one of the other listed methods, including a citation, an instructor, or course outline/reading list. The other sources include found while searching for a different topic/article, pre-reading for conference, and research for paper.

Table 11. How Seton Hall Graduate Students Initially Become Aware of Articles

	Frequency	Percent
Browsing	16	14.8 (100.0)
1. Library subscription	(3)	(18.8)
2. Personal subscription	(3)	(18.8)
3. School, department subscription	(2)	(12.5)
4. Website	(8)	(50.0)
Searching	38	35.2
1. Electronic indexing/abstracting service	(27)	(71.1)
2. Web search engine	(8)	(21.1)
3. Online journal collection	(2)	(5.3)
4. Print index or abstract	(1)	(2.6)
Other	(54)	(50.0)
1. Cited in another publication	9	8.3
2. An instructor told me about it	16	14.7
3. It was in the course outline/reading list	14	12.8
4. Don't know/Do not remember	4	3.7
5. Other	11	10.1
Total	108	100.0

Of the articles found through browsing, 18% came from the library subscription and 18% came from a personal subscription. Nearly half (47%) of articles found through browsing came from a website. Articles found through searching often came from an electronic source, including 71% from an electronic indexing/abstracting service, 21% from a web search engine, and 6% from an online journal collection. Only one article found by searching is from a print index. Overall, electronic sources seem to be the primary means of becoming aware of the last article reading, and while the library still plays a role in helping respondents become aware of the last article, it is mainly in an electronic form (e.g., online journal collection, electronic library subscription).

Influence of Source of Article

Electronic methods of becoming aware of articles provide graduate students with access to more articles beyond their current information need. Many searching or browsing queries identify multiple articles; to find out how that influences their total readings, we asked, “*As a result of searching or browsing for this article, how many other articles have you read or plan to read?*” Including all browsing and searching methods of becoming aware of the last article reading, respondents read, on average, eight additional articles ($M=8.24$, $SD=11.972$).³ Only 8% of respondents do not plan on reading any additional articles (8 of 101), and half of the respondents plan on reading at least four additional articles. Respondents who browsed for the last article reading plan on reading an average of seven additional articles ($M=7.35$), and those who searched for the last article reading plan on reading eleven articles ($M=11.38$). Respondents who were told of the last article reading from an instructor plan on reading ten additional articles ($M=10.08$), and readings on the course outline/reading list result in an additional five article readings, on average ($M=5.00$).

Respondents spent an average of twenty-two minutes browsing for the last article reading ($M=22.20$, $SD=19.303$),⁴ with a range of three minutes to an hour. Half of the articles took over ten minutes to become aware of through browsing.

Obtaining the Article

Once a graduate student becomes aware of the article, we asked them where they obtained it. Twenty-six percent of article readings are obtained from a library subscription and 26% are obtained from a department/school subscription (Table 12). In most cases, the article obtained from a perceived department/school subscription is actually a library subscription. This

³ Excludes outliers over 80. Including outliers the mean is 10.99.

⁴ Excludes outliers over two hours. Including outliers the mean is 35.81.

suggests that the Seton Hall library could better brand its collections to distinguish its collections from other electronic sources. For our analysis, we combined library and school/department subscriptions together.

Of the articles obtained from the library or school/department subscription, 93% is from the electronic collections (51 of 55). A free web journal is the second, but distant, most frequent response (15%). Six percent of the readings are from course reserves. Seven percent of readings are from a personal subscription, of which over half (57%) are from a print journal. Graduate students also used other sources to obtain the last article reading, including Blackboard, at work place, and e-mail by author. One respondent comments, “A majority of assigned readings are posted through Blackboard, and the e-reserves and online databases are essential to research papers.” Including all sources, 91% of the articles are obtained from an electronic source (96 of 106).

Table 12. How Seton Hall Graduate Students Obtain Articles

	Frequency	Percent
Personal subscription	7	6.6 (100.0)
• Print	(4)	(57.1)
• Electronic	(3)	(42.9)
Library subscription	28	26.4 (100.0)
• Print	(1)	(3.6)
• Electronic	(27)	(96.4)
Department/school	27	25.5 (100.0)
• Print	(3)	(11.1)
• Electronic	(24)	(88.9)
Course reserves	6	5.7 (100.0)
• Print	(0)	(0.0)
• Electronic	(6)	(100.0)
Free Web journal	16	15.1
Copy from a colleague, instructor, author, etc.	8	7.5 (100.0)
• Print	(1)	(12.5)
• Electronic	(7)	(87.5)
Interlibrary loan or document delivery service	2	1.9 (100.0)
• Print	(1)	(50.0)
• Electronic	(1)	(50.0)
An author's website	2	1.9
Other website	5	4.7
Other source	5	4.7 (100.0)
• Print	(0)	(0.0)
• Electronic	(5)	(100.0)
Total	106	100.0

Regardless of how the reading is found, the majority are obtained from the university library or school/department subscription. One respondent says, “[E-resources are] essential--I am always using the library databases and e-journals for all my research.” Readings found by searching (74%, 28 of 38) and cited in another publication (50%, 4 of 8), in particular, are likely to be obtained from a library or school/department subscription.

Alternative Source to Obtain Article

Another measure of value is the contingent valuation, which measures value on whether the respondent would obtain the information from another source if the original source was not available (Imholz and Arns 2007). This method assumes if the information is important the respondent will try multiple methods to obtain the information, but their initial source is the most convenient, either due to speed or low cost. We asked, “*Thinking back to the source of the article (e.g., library collection, department collection, interlibrary loan, etc.), where would you obtain the information if that source were not available?*” Eighty-two percent of the readings would be obtained from another source (86 of 105).

Twenty percent of articles originally obtained from a library subscription (11 of 55) and 13% from free web journal (2 of 16) would not be obtained from an alternative source. Value would be lost if these original sources were not available because graduate students would either not receive the same information or would have to spend additional money or time to use an alternative source. All of the articles obtained from course reserves would be obtained from an alternative source if course reserves were not available.

Format of Article and Location of Reading

Just because 91% of the article readings are obtained from an electronic source, does not mean the articles were read on a computer screen. We found that only one-third (34%) of the faculty members read from a computer screen (23 of 69). On the other hand, 54% of the readings by graduate students are read on-screen, and 46% are read on print-on-paper, either from a print journal or downloaded and printed from an electronic source. While graduate students prefer electronic sources to obtain articles, print is still a popular means for final reading. One-third of the readings are from a downloaded and printed article, and only 12% of

the readings are from a print article in a print journal (Table 13). Four percent of readings are read on a mobile, e-reader, or tablet screen.

Table 13. Final Format of Last Article Reading by Seton Hall Graduate Students

	Frequency	Percent
Print article in a print journal	13	12.4
Photocopy or Fax copy	1	1.0
Online computer screen	42	40.0
Previously downloaded/saved and read on computer screen	10	9.5
On a mobile, e-reader or tablet screen	4	3.8
Downloaded and printed on paper	35	33.3
Total	105	100.0

Half of the readings obtained from another person (4 of 8), 42% of the articles obtained from the library or school/department subscription (23 of 55), and 44% of the readings from a free web journal (7 of 16) are read from an online computer screen. Nine percent of the articles obtained from the library or school/department are read as print articles in a print journal (5).

While graduate students are using the library’s resources, they are often accessing the library’s resources remotely and are rarely reading articles in the library. The majority of article readings by graduate students take place outside the library (Table 14). Over two-thirds of the article readings take place at home (72%). While less than 2% of article readings by faculty at Seton Hall take place in the library (1 of 68), 13% of readings by graduate students occur in the library. One respondent states, “The majority of my doctoral dissertation has been completed from home using online resources.” Location is no longer a major factor in a graduate student’s access to academic sources because the scholarly articles can be accessed and read from a variety of locations. The other location of article reading is a café/coffee shop.

Table 14. Location of Article Reading by Seton Hall Graduate Students

	Frequency	Percent
Office or lab	12	11.4
Library	14	13.3
Home (off-campus)	76	72.4
Traveling or commuting	1	1.0
Elsewhere (cafe)	2	1.9
Total	105	100.0

Of the article readings obtained from a library or school/department subscription, only 16% are read in the library (9 of 55). The majority of library or school/department provided articles are read in the home (71%, 39). All of the articles obtained from course reserves and 71% of articles obtained from a personal subscription are read at home.

Since articles can be read in a variety of formats, academics are able to read in a variety of locations. Forty-three percent of the readings that take place in the library are from a downloaded and printed article (6 of 14) and 36% are from an online computer screen (5). Readings that occur in the home are either read on a computer screen (50%, 38 of 76), downloaded and printed (34%), or from a printed article in a print journal (11%).

Purpose and Value of Article Reading

Survey data provides a picture of the purpose, value, and outcomes of article readings, which usage data cannot provide. The first question in this series of questions was, “*For what principal purpose did you use, or do you plan to use, the information obtained from the article you last read?*” Half of the readings help complete a course assignment or paper (Table 15). Article readings also are required reading for course (16%) or for thesis or dissertation (14%). The other principal purposes include conference preparation, policy writing, and undefined ‘work related’. Article readings support nearly all of graduate work activities.

Table 15. Principal Purpose of Article Reading by Seton Hall Graduate Students

	Frequency	Percent
Required reading for course	17	16.3
Help complete assignment or paper	52	50.0
For thesis or dissertation	14	13.5
Assisted teaching duties	3	2.9
Keep informed	3	2.9
Personal interest	10	9.6
Writing proposals, reports, articles	2	1.9
Other	3	2.9
Total	104	100.0

Principal purpose of reading is significantly associated with the time spent per reading ($F=1.016, p=.425$). Article readings required in for a course take, on average, the most time per reading ($M=51.76$), followed by those to help complete an assignment or paper ($M=41.80$) and those for a thesis or dissertation ($M=34.29$). Article readings for personal interest take on average the least amount of time per reading ($M=22.80$).

Sixty percent of the readings obtained from the library or school/department subscription help complete an assignment or paper (33 of 55), and 16% are for a thesis or dissertation (9). Two-thirds of the articles obtained from course reserves (4 of 6) and 63% of articles obtained from another person (including instructor) (5 of 8) are required reading in a course.

After establishing the principal purpose, we asked respondents to describe the value of the article reading by ranking the article's importance to the principal purpose and the outcome the reading has on their work. Respondents ranked article reading on a five-point scale from 'absolutely essential' to 'not at all important'. Nearly all the readings are considered at least 'somewhat important' (98.1%). Over half of the readings are considered 'absolutely essential' or 'very important' to the principal purpose (Table 16).

We received many comments on the importance of article reading. One respondent states, “I need [e-journals] to survive.” Similarly, many respondents consider article readings ‘absolutely essential,’ ‘very important’, and ‘necessary’ to their school activities. It is clear from their comments that scholarly articles are important to graduate work beyond the principal purpose of reading.

Table 16. Importance of Article Reading to the Principal Purpose of Seton Hall Graduate Students

	Frequency	Percent
Absolutely essential	14	13.5
Very important	39	37.5
Important	31	29.8
Somewhat important	18	17.3
Not at all important	2	1.9
Total	104	100.0

There is a significant association between the principal purpose of reading and its importance to the principal purpose ($\chi^2=20.391$, $p=.850$).⁵ Readings for a course, either assigned or unassigned, are considered more important than readings for other purposes. Fifty-nine percent of readings that were required in a course (10 of 17), 54% of readings to help complete an assignment or paper (28 of 52), 42% of readings for a thesis or dissertation (6 of 14), and 40% of readings for personal interest (4 of 10) are considered very important to absolutely essential.

Outcomes of Article Reading

In order to establish how the article contributed to the principal purpose, we asked respondents to select one or more outcomes of the reading. The most frequent outcomes are ‘improved the result’, ‘inspired new thinking’, and ‘narrowed/broadened/changed the focus’

⁵ For all Chi-Square tests, the likelihood ratio is used unless otherwise noted.

(Table 17). Only 7% of readings made the respondent question his or her work, and none of the readings, including those that were considered ‘not at all important’ to the principal purpose, are considered a waste of time.

Table 17. Outcomes of Article Reading for Seton Hall Graduate Students*

	Frequency	Percent
Improved the result	57	55.3
Inspired new thinking	49	47.6
Narrowed/broadened/changed the focus	35	34.0
Saved time or resources	19	18.4
Resulted in faster completion	13	12.6
Others	8	7.8
Made me question my work	7	6.8
Resulted in collaboration/joint research	4	3.9
Resolved technical problems	1	1.0
Wasted time	0	0.0
Total	103	

*Respondents could select more than one outcome.

Two-thirds of the article reading have been or will be cited (Table 19). Only 12% will not be cited. As the article reading’s importance to the principal purpose increased, so does the chance it will be cited ($\chi^2=19.043$, $p=.088$).

Table 19. Article Citation by Seton Hall Graduate Students

	Frequency	Percent
No	12	11.7
Maybe	23	22.3
Already did	52	50.5
Will in the future	16	15.5
Total	103	100.0

Eighty-six percent of article readings for a thesis or dissertation and 88% of readings to help complete a course assignment or paper have been or will be cited. Only 41% of readings that are required for a course and 10% of readings for personal interest have been or will be cited.

Differences of Article Reading Patterns by Demographics

Differences of Article Reading Patterns by Discipline

The graduate student's discipline significantly influenced the number of article readings ($F=1.816$, $p=.105$), time spent reading ($F=3.866$, $p=.002$), year of article publication ($\chi^2=28.283$, $p=.248$), and where the article is obtained ($\chi^2=61.507$, $p=.225$). Respondents in the diplomacy/international relations ($M=37.17$) and professional studies ($M=32.70$) read the most articles, followed by social sciences ($M=24.87$), sciences ($M=22.15$), humanities ($M=16.20$), and theology ($M=9.33$).

Humanists and theology students, who read fewer articles, spend the most time per reading ($M_{\text{humanities}}=65.00$ and $M_{\text{theology}}=66.43$), followed by diplomacy/international relations ($M=53.18$). Scientists ($M=35.20$), social scientists ($M=31.87$), and professional studies ($M=21.14$) spend the least amount of time per article reading.

The concentration of reading in each discipline is of articles within five years of publication. However, scientists read the most articles in their first eighteen months of publication (58%) and 23% of their readings are two- to five-years-old. Forty-four percent of readings by students in professional studies, 43% of readings by theology students, a third of readings by humanists, 26% by social scientists, and only 10% of readings by diplomacy/international relations students are in their first eighteen months of publication. Forty-four percent of readings by social scientists, 39% of readings by professional studies, 30% of diplomacy/international relations, 29% of theology, and 17% of readings by humanists are two-to-five-years-old. Sixty percent of the readings by diplomacy/international relations students are over five-years-old.

There are some variations between discipline and where they obtained the article. Two-thirds of readings by humanists, 69% of readings by social scientists, 58% of readings by scientists, and 57% of readings by theology students are from a library, school, or department subscription. Slightly fewer readings by professional studies (44%) and diplomacy/international relations (27%) students are obtained from a library, school, or department subscription. Diplomacy/international relations students are just as likely to obtain the reading from course reserves (27%) or a free web journal (27%). Students in professional studies also rely on free web journals for article readings (26%). The majority of readings in each discipline are obtained from an electronic source.

No significance was found between the respondent's discipline and how the respondent became aware of the article, purpose, importance, location, or format of reading. The majority of readings in each discipline are read to help complete a course assignment or paper, and the majority of readings in each discipline occur in the home.

Differences of Article Reading Patterns by Status, Gender, and Age

We did not find any significant differences between the graduate student's enrollment status or gender and article reading patterns. The number of monthly article readings is significantly influenced by a respondent's full-time or part-time enrollment ($t=1.562$, $p=.122$). Full-time students, on average, read more articles ($M=29.46$) than part-time students ($M=22.16$). Full-time students also spend more time per reading, on average, than part-time students ($t=1.193$, $p=.236$). Full-time students spend, on average forty-one minutes per reading ($M=40.66$), while part-time students spend thirty-three minutes ($M=32.58$) per reading. We did

not find any other significant associations between full-time and part-time enrollment and article reading patterns.

In order to examine the differences in responses by age, respondents were grouped into two age categories: under-25 and 25 years and older. We found a significant difference in the number of article readings ($t=1.141$, $p=.257$) and time spent per reading ($t=1.036$, $p=.303$) by age group. On average, the younger age group report more article readings ($M=30.84$) and spend more time per reading ($M=42.80$ minutes) than the older group ($M=24.92$, $M=35.15$ minutes). No significance was found on the purpose of reading.

We did not find a significant association between respondent's age and how they became aware of the article, where the article was obtained, location of reading, format of reading, and principal purpose of reading.

Book Reading

In other Tenopir & King studies, the 'critical incident' of reading focused only on the last scholarly article reading. A 2011 study in the United Kingdom expanded the survey to examine the last book/book chapter and other publication readings of faculty members (Tenopir et al. 2012). This study is the first time we also included readings from books, book chapters, and other publications of graduate students. In this section of the report, we focus on book or book chapter readings by graduate students at Seton Hall.

Total Amount of Book Reading and Last Incident of Reading

As in the section on scholarly article reading, we started the section by carefully defining book reading and focusing the respondent on the books they recently read or read from. We

asked, “*In the past month (30 days) approximately from how many books or parts of books did you read for work? Include reading from a portion of the book such as skimming or reading a chapter. Include classroom text, scholarly, or review books read in print or electronic format.*”

We are more concerned with the relative amounts than the actual number, and for convenience, we often report readings per year by multiplying the monthly total by 12. Graduate students at Seton Hall University report an average of four book or book chapter readings per month or approximately 48 per year ($M=4.19$, $SD=3.881$).⁶ Half the respondents read at least four books in the past month.

We followed the same variation of ‘critical incident’ technique we used in the article section by asking respondents to focus on the last scholarly book reading. We explicitly stated, “*The following questions in this section refer to the BOOK FROM WHICH YOU READ MOST RECENTLY. Note that this last reading may not be typical, but will help us establish the range of reading patterns across a range of academic staff, disciplines, and institutions.*” We assume the book readings will be a random sample of readings and will give us detailed information on a wide range of scholarly book readings. We asked the respondents to list the title or topic of the last book or book chapter they read, in order to help the respondent focus on the last reading from a book, book chapter, or part of a book.

Total Time of Book Reading

To get an indication of ‘exchange value’ we asked, “*On how many occasions did you read from this book in the past month (30 days)*” and “*About how much total time (in minutes) did you spend reading this book in the past month (30 days)?*” We did not define what constitutes an occasion, and so an occasion could be any length of time. On average, graduate

⁶ Excludes outliers over 25. Including outliers the mean is 4.97.

students read from a book or book chapter on seven occasions (M=7.13, SD=6.145).⁷ Only 7% of book or book chapter readings occurred on only one occasion, while 59% were read on five or more occasions (Table 20).

Table 20. Occasions of Last Book Reading by Seton Hall Graduate Students

	Frequency	Percent
1-2	6	7.1
3-4	18	21.2
5-10	47	55.3
Over 10	14	16.4
Total	85	100.0

The average time spent reading, including on all occasions of reading, is nearly three hours (M=165.01, SD=160.341),⁸ with a range of five minutes to twelve hours. Two-thirds of book readings take over one hour (Table 21). Only 5% of book or book chapter readings are less than fifteen minutes. Respondents spend more time reading when they read the book over multiple occasions (p=.276).

Table 21. Time Spent on Last Book Reading by Seton Hall Graduate Students

Minutes	Frequency	Percent
0-15	4	5.0
16-30	8	10.0
31-45	5	6.3
46-60	11	13.8
61-90	4	5.0
91-120	15	18.8
Over 120	33	41.2
Total	80	100.0

Source of Book and Time to Become Aware

After establishing the last book reading and how long they spent per reading, we focused on how they became aware of the book from which they read. We asked, “*How did you or*

⁷ Excludes one outlier over 30. Including outlier the mean is 7.49.

⁸ Excludes outliers over 800. Including outliers the mean is 228.52.

someone on your behalf become aware of this last book from which you read?" We kept the question and answers similar to the last article reading, and maintained the same definitions of browsing and searching. The last book or book chapter readings are found through a variety of methods: 22% through searching, 14% through another person; and 5% through a citation (Table 22). Forty-six percent of book readings are found through a source we did not list in our answer choices; these include twenty-eight books were assigned for a class, three were recommended by a professor, two were already owned, two were considered personal interest, and one was found through an employer. We did not ask the respondents to tell us what sources they browse or search.

Table 22. How Seton Hall Graduate Students Initially Become Aware of Books

	Frequency	Percent
Found while browsing	4	5.1
Found while searching	17	21.8
Cited in another publication.	5	6.4
Another person told me about it	11	14.1
Promotional email or web advertisement	1	1.3
Don't know or don't remember	4	5.1
Other	36	46.2
Total	78	100.0

Graduate students spend an average of seventeen minutes becoming aware of a book or book chapter reading (M=16.56, SD=20.709).⁹ Twenty-nine percent of the readings took less than five minutes to become aware of (22 of 77). Readings found via a citation (M=37.40) or searching (M=29.38) take, on average, more time to become aware of than those found through another person (M=20.42), by browsing (M=16.00), or assigned for class/recommended by professor (M=6.61).

⁹ Excludes outliers over 120. Including outliers the mean is 19.79.

Obtaining the Book

We asked, “*After you became aware of this book, from where did you obtain it?*” The wording was kept similar to the other sections for comparison, but the answer choices were modified to reflect the different sources for books. Over two-thirds of the book readings are purchased (Table 23). Only 17% of the readings are from a library or school/department collection, and 7% are obtained from a colleague, author, or other person. The other sources where the last book reading was obtained are “library at home”, Amazon.com, and “online section.”

Table 23. How Seton Hall Graduate Students Obtain Books

	Frequency	Percent
I bought it for myself	58	66.7 (100.0)
• Print	(49)	(84.5)
• Electronic	(9)	(15.5)
The library or archives collection	12	13.8 (100.0)
• Print	(11)	(91.7)
• Electronic	(1)	(8.3)
Interlibrary loan or document delivery service (print)	2	2.3
School or department collection	3	3.4 (100.0)
• Print	(2)	(66.7)
• Electronic	(1)	(33.3)
A colleague, author or other person provided it to me	6	6.9 (100.0)
• Print	(5)	(83.3)
• Electronic	(1)	(16.7)
A free, advance, or purchased copy from the publisher (print)	2	2.3
Other source	4	4.6 (100.0)
• Print	(3)	(75.0)
• Electronic	(1)	(25.0)
Total	87	100.0

Much has been discussed recently about the future of electronic books. A 2009 CIBER study in the U.K. found that 65% of staff and students have read an e-book for work, study, or

leisure, and over half of those readings were obtained through the library (51.9%). Similar studies in the U.S. have also shown that e-books are gaining in popularity and are a valuable library resource (Shelburne 2009; Folb et al. 2011). In our study, we found graduate students are reading from more e-books than faculty members. Fifteen percent of the book readings by graduate students are obtained from an electronic source (13 of 74), while 11% of book readings by faculty members are from e-books. Only 13% of book readings from a library or school/department subscription are from e-books (2 of 15). One respondent comments, “I read almost everything online. I use the internet to access required articles and books for class” and another respondent reiterates, “I use online copies of journal articles and books.” While electronic resources for books have yet to reach the popularity as journals, e-books are becoming a part of academic culture.

Alternative to Obtain Book

To determine contingent valuation, we asked, “*Thinking back to where you obtained the book (e.g., library collection, department collection, interlibrary loan, etc.), where would you obtain the information if that source were not available?*” Ninety-two percent of the book readings would be obtained from an alternative source (80 of 87). We did not specify what alternative source they would use.

All of the books originally obtained from the library would be obtained from an alternative source. Seven percent of the books originally purchased (4 of 57) and one-third of the books originally given by a colleague or other person (2 of 6) would not be obtained from an alternative source. Most graduate students would obtain the information from another source, and we assume, therefore, that the information provided in the book readings are considered valuable.

Purpose and Value of Book Reading

The last set of questions focuses on the principal purpose of the last book reading and the value and importance of the reading. We asked, “*For what principal purpose did you use, or do you plan to use, the information obtained from the book you last read?*” As with article readings, required reading is the most frequent principal purpose of reading (Table 24). Twenty percent of the last book or book chapter readings are to help complete a course assignment or paper and 10% are of personal interest. Book readings also keep graduate students informed about developments in their field of study (6%) and assist in teaching duties (5%).

Table 24. Principal Purpose of Book Reading by Seton Hall Graduate Students

	Frequency	Percent
Required reading for course	43	48.9
Helped complete course assignment or paper	17	19.3
For thesis or dissertation	9	10.2
Assisted teaching duties	4	4.5
To keep informed	5	5.7
Personal interest	9	10.2
Writing proposals, reports, articles	1	1.1
Total	88	100.0

There is no significant association between the principal purpose of reading and how the respondent becomes aware of the book or where it is obtained. Book readings for a course assignment or for thesis/dissertation are often found through searching (53%, 9 of 17 and 44%, 4 of 9, respectively). Required book readings are found through their professor or class assignment (82%, 32 of 42). None of the required book readings are obtained from the library; instead, required book readings are more likely to be purchased (57%, 33 of 58). Book readings obtained from the library are to help complete a course assignment or paper (50%, 6 of 12),

personal interest (25%, 3), for thesis or dissertation (17%, 2), or to keep informed about field of study (8%, 1).

There is a slight association between principal purpose of reading and the time spent per book reading ($F=.909$, $p=.494$). Respondents spent the most time per reading for books to help complete course assignment or paper ($M=239.38$), followed by thesis or dissertation ($M=166.11$), and required reading in course ($M=152.31$).

To measure value in relation to principal purpose, we asked, “*How important is the information contained in this book to achieving your principal purpose?*” Eighty-six percent of the book or book chapter readings are considered ‘important’ to ‘absolutely essential’ (Table 25). None of the book readings were considered ‘not at all important’ to the principal purpose. Over one-third of the readings are considered absolutely essential to the principal purpose (31 of 88).

Table 25. Importance of Book Reading to the Principal Purpose of Seton Hall Graduate Students

	Frequency	Percent
Absolutely essential	31	35.2
Very Important	31	35.2
Important	14	15.9
Somewhat important	12	13.6
Total	88	100.0

There is not a significant association between where the book is found, obtained, or if the respondent would obtain the information from alternative source and its importance to the principal purpose. Three-quarters of the readings obtained from the library (9 of 12), and over two-thirds of the readings purchased are considered ‘very important’ or ‘absolutely essential’ (69%, 40 of 58).

There is a slight association between the principal purpose of reading and the importance ($\chi^2=33.836$, $p=.013$). Readings for personal interest or to assist teaching duties are more likely to

be considered ‘somewhat important’ or ‘not at all important’ (78%, 7 of 9 and 50%, 2 of 4, respectively). Two-thirds of readings for thesis or dissertation are considered ‘absolutely essential’ (6 of 9). Readings for required course work or to help complete an assignment/paper are more likely to be considered ‘very important’ to ‘absolutely essential’ (77%, 33 of 43 and 82%, 14 of 17, respectively).

Outcomes of Book Reading

To look at value to principal purpose more closely, we asked, “*In what ways did the reading of the book affect the principal purpose?*” Inspired new thinking, narrowed/broadened/changed the focus, and improved the result are the most frequent outcomes (Table 26). None of the book readings are considered a waste of time, and 8% made the respondent question his or her work. The other effects of the book reading are ‘helped me at work’, ‘helped me understand the lecture’, ‘introduced me’, and ‘helped with assignments’.

Table 26. Outcome of Book Reading for Seton Hall Graduate Students*

	Frequency	Percent
Improved the result	60	67.4
Inspired new thinking	52	58.4
Narrowed/broadened/changed the focus	25	28.1
Saved time or resources	18	20.2
Resulted in faster completion	17	19.1
Resolved technical problems	10	11.2
Resulted in collaboration/joint research	8	9.0
It made me question my work	7	7.9
Others	4	4.5
Wasted time	0	0.0
Total	143	

*Respondents could select more than one outcome.

Two-thirds of the book or book chapter readings will be cited or have been cited (Table 27). Only 22% of the readings will not be cited. Readings considered more important to the principal purpose are more likely to be cited ($p=.189$).

Table 27. Citation of Last Book Reading by Seton Hall Graduate Students

	Frequency	Percent
No	19	21.6
Maybe	11	12.5
Already cited	52	59.1
Will in the future	6	6.8
Total	88	100.0

There is an association between the principal purpose of reading and its citation ($\chi^2=30.589$, $p=.032$). Book readings for personal interest are the least likely to be have been cited or will be cited in the future (22%, 2 of 9). Nearly all (94%, 16 of 17) readings to help complete course assignment or paper and nearly two-thirds of required readings (63%, 27 of 43) have been or will be cited.

Differences of Book Reading Patterns by Demographics

Differences of Reading Patterns by Discipline

Academic discipline significantly influences the number of book readings ($F=2.193$, $p=.051$). Humanities ($M=6.83$) and students studying diplomacy/international relations ($M=5.91$) read more books, on average, than respondents in the other disciplines, which each average three to four monthly book readings. The discipline does not influence the time spent per book reading.

We did not find a significant association between discipline and how the respondent becomes aware of the book, where it is obtained, principal purpose, or importance of reading.

The majority of book readings in each discipline are purchased. Half of the readings in theology are obtained from the library and half are purchased (3 and 3 of 6). Thirty-seven percent of readings by graduate students in diplomacy/international relations are obtained from the library (4 of 11), while less than 12% of readings in the other disciplines are obtained from a library, school, or department collection. Thirty percent of book readings by respondents in professional studies (5 of 17) and 15% of readings by social scientists (3 of 21) are from e-books.

The majority of readings in humanities (60%), sciences (58%), social sciences (57%), and diplomacy/international relations (55%) are for required reading. Forty-one percent of readings by professional studies are for required reading and 18% are to help complete course assignment or paper. Students in professional studies are the most likely to read for personal interest (24%). Two-thirds of readings by theology students help complete course assignment or paper.

Differences of Reading Patterns by Status Gender, and Age,

We did not find any significant differences between graduate students' status or gender and book reading patterns. The student's enrollment status significantly influences the number of book readings ($t=2.303$, $p=.023$). In addition to reading more articles, full-time students read more books ($M=4.97$), on average, than part-time students ($M=3.13$). Unlike article readings, however, there is no association between the student's enrollment status and the time spent per book reading.

In order to examine the differences in responses by age, respondents were grouped into two age categories: under-25 and 25 years and older. As with article readings, we found a significant difference in the number of book readings by age group ($t=2.770$, $p=.007$). On average, the younger age group read more books ($M=5.96$) than the older group ($M=3.53$).

However, older respondents spend slightly more time per book reading than younger students ($t=-.827, p=.411$). The average book reading by respondents under twenty-five are two hours and twenty minutes, while reading by those 25-and-older are nearly three hours. No significance was found between the respondent's age and how they became aware of the book, where it was obtained, format, principal purpose, or importance of reading.

Social Media: Participation and Creation

The use of social media has increased in the last few years in both the academic and non-academic world. In this study, we wanted to see if use of social media has an influence on reading of traditional materials. According to the JISC website, social media or Web 2.0 technologies are “innovative online tools designed to enhance communication and collaboration” (2010). Social media includes blogs, twitter, online videos, social networks, and other online and electronic tools.

A 2010 RIN study found that social media tools (blogs, wikis, file-sharing services) are being used as supplements to the traditional forms of information (monographs, journal articles, etc.). Academics place value on the traditional publications because they receive recognition and rewards for their work. In the RIN study, only 13% of the respondents used social media tools frequently, and 39% did not use them at all. The study found that academics are supportive of social media because it allows them to freely share ideas and collaborate with a broader scholarly community. While they found a few slight associations between social media use and demographics, for the most part age, discipline, and position are not key factors. They concluded that while social media will continue as a supplement to traditional publications,

academics' lack of trust and quality will keep it from creating a radical change in scholarly communications (RIN 2010). Our findings support the 2010 RIN findings.

Participation and Creation of Social Media

Graduate students participate in social media more than they create it; however, their use and creation is more often occasional rather than on a regular basis. One respondent says, "I do not use technology that much in the classroom. I show movies from YouTube and Hulu sometimes." Other graduate students confirmed the idea that social media may help spread some ideas and provoke thoughts but are not as valuable as traditional scholarly material.

Only 7% of the respondents do not participate in any of the social media tools we listed (7 of 102). Social networking, video sharing (e.g., YouTube), and comments in online articles are the most frequently used (Table 28). Over half (55.5%) of respondents participate in social networking on a daily or weekly basis; 19% participate in video sharing; and 12% participate in comments in online articles on a daily or weekly basis. Social tagging (e.g., Delicious), microblogging (e.g., Twitter), and RSS feeds are the least frequently used. Overall the participation in social media is occasional rather than daily or weekly.

Table 28. Participation in Social Media by Seton Hall Graduate Students

	Daily	Weekly	Monthly	Occasionally	Never	Total
Blogging	7 7.0%	12 12.0%	5 5.0%	25 25.0%	51 51.0%	100 100.0%
Microblogging	7 7.1%	7 7.1%	2 2.0%	13 13.1%	70 70.7%	99 100.0%
RSS Feeds	6 6.2%	7 7.2%	1 1.0%	17 17.5%	66 68.0%	97 100.0%
Social Networking	42 41.6%	14 13.9%	3 3.0%	22 21.8%	20 19.8%	101 100.0%
Social Tagging	2 2.0%	3 3.0%	4 4.0%	12 12.0%	79 79.0%	100 100.0%
Collaborative Authoring	7 7.0%	9 9.0%	6 6.0%	23 23.0%	55 55.0%	100 100.0%
Comments in articles	2 2.0%	10 10.2%	8 8.2%	32 32.7%	46 46.9%	98 100.0%
Image sharing	3 3.1%	4 4.1%	3 3.1%	23 23.7%	64 66.0%	97 100.0%
Audio sharing	2 2.0%	9 9.0%	7 7.0%	19 19.0%	63 63.0%	100 100.0%
Video sharing	5 5.1%	14 14.1%	14 14.1%	29 29.3%	37 37.4%	99 100.0%

Fewer graduate students create social media, and 36% do not create any of the social media tools we listed (36 of 100). Social networking (e.g., Facebook), collaborative authoring (e.g., Google docs), and user comments in online articles are the most frequently created; however their creation is ‘occasional’ rather than ‘daily’ or ‘weekly’ (Table 29). Few respondents create any of the social media tools listed on a regular basis. Only 16% percent of respondents create information on a social network on a daily or weekly basis and 26% create information on a social network on a monthly or occasional basis. Twenty-nine percent of respondents create information on a collaborative authoring website and 29% create user comments in online articles on a daily to occasional basis. Less than 15% of the respondents ever generate information through microblogging (e.g., Twitter), social tagging (e.g., Delicious), RSS feeds, or image, video, or audio sharing.

Table 29. Creation of Social Media by Seton Hall Graduate Students

	Daily	Weekly	Monthly	Occasionally	Never	Total
Blogging	0 0.0%	3 3.0%	2 2.0%	14 14.0%	81 81.0%	100 100.0%
Microblogging	1 1.0%	4 4.0%	2 2.0%	7 7.0%	86 86.0%	100 100.0%
RSS Feeds	0 0.0%	1 1.0%	1 1.0%	7 7.1%	89 90.8%	98 100.0%
Social Networking	7 7.0%	9 9.0%	9 9.0%	17 17.0%	58 58.0%	100 100.0%
Social Tagging	0 0.0%	2 2.0%	3 3.0%	6 6.0%	89 89.0%	100 100.0%
Collaborative Authoring	3 3.0%	1 1.0%	1 1.0%	24 24.0%	71 71.0%	100 100.0%
Comments in articles	0 0.0%	5 5.0%	6 6.0%	18 18.0%	71 71.0%	100 100.0%
Image sharing	1 1.0%	1 1.0%	1 1.0%	10 10.1%	86 86.9%	99 100.0%
Audio sharing	0 0.0%	0 0.0%	1 1.0%	12 12.4%	84 86.6%	97 100.0%
Video sharing	1 1.0%	0 0.0%	3 3.0%	10 10.1%	85 85.9%	99 100.0%

Participation and Creation of Social Media and Scholarly Reading

One reason we examined the use and creation of social media was to see how it influenced the use of traditional scholarly material. Are graduate students using social media for information instead of journal articles? Are they using and creating social media as a form of collaboration and to share ideas? Is social media replacing traditional material? Do graduate students who participate and create social media read fewer articles, books, and other publications? By comparing the respondent's reading patterns with his or her use and creation of social media we hope to address these questions.

We did not find any significant associations between the participation or creation of social media and scholarly reading patterns.

Participation in Social Media and Demographics

For our analysis, we define participation and use of social media as using the tool occasionally to daily. We did not find any significant associations between the participation in social media and discipline except for RSS feeds ($\chi^2=12.524$, $p=.051$).

We did not find any significant differences between the graduate student's status and their creation of social media. Half of diplomacy/international relations students, half of theology students, and 46% of professional studies students participate in RSS feeds at least occasionally, while only 22% of social scientist, 20% of scientists, and no humanities students use RSS feeds. Social networking is frequently used by each discipline, while image sharing, microblogging, and social tagging are the least frequently used in each discipline.

In order to examine the differences in responses by age, respondents were grouped into two age categories: under-25 and 25 years and older (Table 30). We did not find any significant associations between the respondent's age and the participation in specific social media, except for user comments in articles ($\chi^2=1.511$, $p=.219$) and microblogging ($\chi^2=4.252$, $p=.039$).¹⁰ Older respondents are more likely to read user comments in articles (57%) than younger respondents (40%). On the other hand, younger respondents are more likely to participate with microblogging (46%) than older respondents (22%).

¹⁰ Chi-Square test computed only for a 2x2 table.

Table 30. Percentage of Seton Hall Graduate Students Who Participate in Social Media by Age

	Under 25	25 and older	Total
Blogging	12 46.2%	36 49.3%	48 48.5%
Microblogging	12 46.2%	16 22.2%	28 28.6%
RSS Feeds	7 26.9%	23 32.9%	30 31.3%
Social Networking	19 73.1%	61 82.4%	80 80.0%
Social Tagging	3 11.5%	17 23.3%	20 20.2%
Collaborative Authoring	14 53.8%	30 41.1%	44 44.4%
Comments in articles	10 40.0%	41 56.9%	51 52.6%
Image sharing	8 32.0%	24 33.8%	32 33.3%
Audio sharing	10 38.5%	26 35.6%	36 36.4%
Video sharing	17 65.4%	44 61.1%	61 62.2%

Male and female respondents did not significantly in their use of social media tools.

Creation of Social Media and Demographics

For our analysis, we defined the creation of social media as daily to occasionally. We found an association between discipline and the creation of collaborative authoring (10.549, $p=.103$) and user comments in online articles (15.539, $p=.016$). Students in diplomacy/international relations (50%) and professional studies (44%) create information through collaborative authoring sites than humanists (33%), social scientists (22%), theology (14%), and sciences (12%). In addition, students in professional studies (48%) and diplomacy/international relations (42%) create more user comments in online articles than social

scientists (22%), humanists (17%), theology (14%), and sciences (12%). We did not find any other associations between discipline and the creation of social media. Overall, the creation of social media is abundant in each discipline.

We did not find any significant differences between the graduate student's status and their creation of social media.

In order to examine the differences in responses by age, respondents were grouped into two age categories: under-25 and 25 years and older. We found a significant difference respondent's age and the creation of microblogging (4.856, $p=.028$). Younger respondents are more likely to author microblogging (28%) than older respondents (8%). We did not find any other associations between age and creation of social media. Social networking is the most frequently created by younger respondents (40%) and older respondents (42%).

Male and female respondents did not significantly in their creation of social media tools.

Open-Ended Questions

At the end of the survey, we asked, "*What role do e-resources play in your school work?*" We hoped the open-ended questions would provide the forum for the respondents to address any issues or topics that were not addressed in the survey. In addition, the open-ended comments provide another dimension to understand the value of scholarly reading and library resources. We received 94 comments to the two questions.

The majority of the comments praised the role of scholarly articles in their work activities, and especially noted the important of the library's electronic collections. We received many comments citing the importance of electronic articles and material because their classes take place online. They note articles are absolutely essential because they keep them up-to-date and electronic access is convenient and a time-saver.

The following are all the comments we received:

- *Required sources for discussion.*
- *50% of reading materials - books, article, news, etc.*
- *95% of sources for assignments.*
- *99% of the time I use e-resources for school*
- *A considerable role*
- *A great deal*
- *A large role to write papers and complete assignments.*
- *A lot, now all my textbooks are e-books*
- *A major role*
- *A major role in helping me research and write assigned papers effectively.*
- *A significant role*
- *Absolutely essential*
- *Absolutely essential. I couldn't be successful without them.*
- *Assignment completion, black board discussion. A major role*
- *Assist me in research needed for research papers/presentations*
- *Basically everything I do is facilitated by e-resources since a majority of my work is based on research articles.*
- *Big role*
- *Big role*
- *Central role*
- *Efficiently obtain articles for class, and more importantly, thesis research.*
- *Essential*
- *Essential for achieving goals. Time saver. Convenient.*
- *Essential--I am always using the library databases and e-journals for all my research*
- *Essential!!*
- *Essential!! I need access to e-resources or I would greatly struggle with completing my degree*
- *Essential.*

- *Extremely important - I work full-time AND attend school full-time. I rarely have the opportunity to use the library in person. I rely heavily on the access e-resources offer.*
- *Extremely valuable for online students*
- *Frequently, more important than print.*
- *Fundamental*
- *Huge role as I am always looking for new articles/information*
- *I am doing my program online so e-resources make up a vast majority of my school work.*
- *I am done with school work but try to do scholarly work and E-resources play a big role.*
- *I am using them more frequently. I find them to be very helpful.*
- *I complete my studies entirely online, so e-resources play a MAJOR role.*
- *I need them to survive*
- *I prefer hardcopy for most resources*
- *I read almost everything online. I use the internet to access required articles and books for class. I use it to find good sources when doing research for papers.*
- *I read online journals via the web and SHUs various databases very regularly*
- *I research necessary information to complete school assignments and learn about whatever topic I am discussing for the week*
- *I use e-resources to do all of my research for class*
- *I use online copies of journal articles and books. So I would say there is a heavy influence.*
- *I use them for research.*
- *I use them often for course reading and research.*
- *I use them all of the time.*
- *Important*
- *important in easy and convenient access to more material*
- *Important role*
- *Invaluable. A majority of assigned readings are posted through Blackboard, and the e-reserves and online databases are essential to research papers.*
- *It helps in answering every day questions*
- *It is absolutely essential*

- *It is important.*
- *It is very important as my studying and class work are entirely online.*
- *It's very important*
- *Large role*
- *main source of information about 90%*
- *major*
- *Major - it is the primary way for me to find articles*
- *majority*
- *minimal*
- *My work is completely online. Therefore e-resources play a very significant role in it.*
- *Nearly all of my school work is completed using e-resources.*
- *Necessary Role, needed for all class assignment*
- *Need them to incorporate in my responses to discussions*
- *None*
- *None. Although I did research curriculum throughout the country through the internet. I do not use technology that much in the classroom. I show movies from you-tube and hulu sometimes.*
- *Not a huge part unless you include online publications, that is where I focus most of my research.*
- *Online communication online tests and study guides lectures given in electronic form some print books have e resources*
- *Personal Research/Education Class Assignments*
- *References for papers and daily assignments*
- *Required References for supporting papers*
- *Research for papers and to answer questions regarding qualitative problem solving*
- *Research purposes*
- *Significant help with research.*
- *Sources for Research projects and papers, case studies, group projects*
- *Start point to do my work very essential to access the right information Provide me with important up to date data and knowledge*

- *Supplementary materials and lecture notes.*
- *The majority of my doctoral dissertation has been completed from home using online resources*
- *They are the primary role*
- *The majority of my research is done electronically*
- *They are essential. The majority of my research is conducted with the assistance of internet resources.*
- *They're useful in finding articles and allowing for collaboration with colleagues*
- *Use them in all of my research papers and studies.*
- *Used for completion of assignments*
- *Used on an as needed basis.*
- *Useful*
- *Very important*
- *Very important*
- *Very important for time management*
- *Very important, especially while doing research for classes and papers*
- *Very important. I usually use electronic, full-text articles exclusively.*
- *Very large role.*
- *Vital for research for academic papers*
- *Work information, research, investigation, type writing. all of this are for academic information*

Overall, the comments show a dependence on e-resources by graduate students. The advent of technology and the adaptation of the technology into coursework have made it almost essential for students to have access to e-resources to complete their coursework. Students appreciate the convenience and accessibility of e-resources, including those provided by the library, and e-resources are quickly becoming the first and often only source of scholarly information.

Role of Library Collections

We re-categorized how someone obtains scholarly reading material into three basic categories: library-provided, personal subscription/purchase, and other. Library-provided includes readings from the library’s print or electronic collections, interlibrary loan, and school/department subscriptions. The other sources include free web journal, publisher, course reserves, and a colleague. Most scholarly article readings are obtained from the library (54%), and only 20% of book readings are obtained from a library collection (Table 31). Only 7% of article readings are obtained from a personal subscription, while book readings are most likely to be purchased (67%).

Table 31. Source of Reading by Seton Hall Graduate Students

	Article		Book	
	N	%	N	%
Library-provided	57	53.8	17	19.5
Personal source	7	6.6	58	66.7
Others	42	39.6	12	13.8
Total	106	100.0	87	100.0

The library’s collections provide access to older articles in addition to the current collections. Readings from older articles are more likely to be from a library collection ($\chi^2=9.756$, $p=.283$). Sixty percent of the library-provided articles are eighteen-months-old or older (Table 32). Regardless of the age of the publication, the majority of library-provided articles are from its electronic collections. Nearly two-thirds of the articles published over five-years-ago are from a library subscription (63%, 17 of 27). Readings from a personal subscription are most likely to be in their first eighteen months of publication (71%), and none of the articles are more than five-years-old. Our findings show the library’s back files in addition to current subscriptions are a key investment.

Table 32. Association between Source of Article and Year of Publication

	Library Provided	Personal Subscription	Others	Row Total
Over 15 years (Before 1997)	5 9.1%	0 0.0%	1 2.4%	6 5.8%
11 ~ 15 years (1997-2001)	4 7.3%	0 0.0%	1 2.4%	5 4.8%
6 ~ 10 years (2002-2006)	8 14.5%	0 0.0%	8 19.0%	16 15.4%
2 ~ 5 years (2007-2010)	16 29.1%	2 28.6%	17 40.5%	35 33.7%
Less than 2 years (2011-1/2 of 2012)	22 40.0%	5 71.4%	15 35.7%	42 40.4%
Column Total	55 100.0%	7 100.0%	42 100.0%	104 100.0%

One measure of value of the library for scholarly work and the research can be represented by how many hours per year each graduate student dedicates to library-provided reading. Based on past methodology that creates a formula to measure graduate output based on library input, we measured the library's value by the time spent using library reading material, assuming that scholarly readings are important for quality graduate work and their professional development (Luther 2008). We can illustrate the total amount of reading by each graduate student by using a simple formula of time spent reading each material multiplied by the number of each material read per month multiplied by 12 to calculate an annual total.¹¹ We then multiple the total amount by the percent obtained from the library to determine the number of hours per year each graduate student devotes to library-based work (Table 33).

¹¹ Excludes outliers.

Table 33. Value of Library Resources to Seton Hall Graduate Students

	Time per reading (in minutes)	Number read per month	Multiplied by 12 months	Percent from library	TOTAL
Article	39	23	12	.54	97 hours
Book	165	4	12	.20	26 hours

Graduate students spend the most time on library-provided article readings, approximately 97 hours each year. They spend approximately 26 hours on library-provided book readings. Annually, graduate students spend 123 hours of their work time with library-provided material, or the equivalent of 15 eight-hour days. Clearly, the amount of time spent reading library-provided material has a profound impact on the quality and focus of graduate work.

Graduate students spend slightly more time per year with library-provided articles compared to faculty members at Seton Hall University (97 compared to 92 hours), but less time with library-provided books (26 compared to 41 hours). Graduate students are just as likely to obtain an article from the library as faculty members (54% compared to 55%). Graduate students report fewer book readings than faculty members but spend more time per reading, and they obtain slightly fewer book readings from the library than faculty members. This may be because graduate students' book readings are more likely to be for course work, and many textbooks are not available through the library.

Graduate students are profuse readers of journal articles and books, and the library is an important resource for them. They often face strict personal budgets and are pressed for time, and the library's collections, in particular its e-collections, provide free resources in a timely manner. By expanding the amount of resources they have available to them through the e-collections, the library can further their professional development and improve the quality of work at the university.

Scholarly reading will remain a vital part of graduate work, as the students increase their knowledge in their field, work on their own research, and start out in their academic career. Maintaining the quality of the library's collections will enable the budding professionals to have access to important information, and will improve the future of the academic endeavor.

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