

Lib-Value Report: Seton Hall Faculty



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Introduction

In an age of continually growing digitization, globalization, and abundant information, the value of scholarly information remains high to support the work of faculty members. Scholarly material adds value to the quality of their work and guides their future research. Academics 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 decisions 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. In order to determine the best method to provide faculty members with scholarly material, we need to determine: Why do faculty members read scholarly materials and 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, then, is the role and value of the college and university library in providing access to scholarly content in this 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. This report focuses on the results from the survey of faculty members at Seton Hall University.

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).

Previous Studies

Scholarly reading patterns and information-seeking behavior have been examined through surveys over the past thirty-five years. In 1977 and 1984, national surveys of scientists in the United States were conducted (King et al. 1981). The surveys have been conducted regularly in non-university settings since 1984. The first readership survey to be conducted solely in a university setting was completed in 1993 (Belefant-Miller and King 2001). In 2000, the surveys shifted to focus on changing patterns of journal use, due to e-journal publishing, and have been repeated in the U.S., Australia, Japan, and Finland (Tenopir et al. 2010). The surveys found that the increasing prevalence and availability of e-articles encouraged academics to read more articles, though the time spent reading each publication decreased. In the case of the United States and Finland, academics who read more articles published more works. However, although Australian academics reported the most e-reading, their reading patterns did not demonstrate a correlation between e-reading amounts and publication. In addition, researchers noted that all academics reported several reasons for readings and varied methods for discovering articles. In 2011, a reading survey was conducted at six United Kingdom higher learning institutions, which includes sections on reading from books and other publications and questions on use of social media (Tenopir et al. 2012).

Tenopir and King (2000) and King and Tenopir (2001) summarize reading patterns of science and non-science faculty members through the 1990s. They provide extensive literature reviews and serve as background for the data presented in this report. 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 (Talja and Maula 2003), and different disciplines have varying traditions of the importance of journals compared to other types of information (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). The results from the US and Australia in 2012 tend to confirm the earlier findings. A 2011 study by the Research Information Network (RIN) found a link between the library and the institution's research performance.

Many recent studies have reported on the future of e-books in academia. A report by CIBER (2009) 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 but 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. 2011). 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 are based on the background of the respondent; the questions include age, gender, percentage of work time spent on various activities, number of personal subscriptions, and two measures of recent academic success—publication record and record of recent awards.

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 faculty population of approximately 446. The message included an embedded link to a survey housed on the University of Tennessee’s server. We received 84 responses for a response rate of 18.8%. 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

Work Responsibilities

Academics at Seton Hall spend the most work time on teaching, followed by research and writing. Table 1 reflects this, showing half of respondents spend 40% of their work time on teaching and 25% on research and writing. Service to the community and administrative duties also take up large percentages of work time (16% and 11% respectively).

Table 1. Percentage of Work Time Spent by Seton Hall Faculty

		Teaching	Research & writing	Administrative	Service	Consulting /advising	Other
Mean		37	30	11	16	7	6
Median		40	25	5	10	5	0
Mode		50	40	15	25	10	5
Percentiles	25	20	20	0	10	0	0
	75	50	40	15	25	10	5

Academic Discipline

Thirty percent of the respondents are in the humanities or social science, and 28% of the respondents are in the physical, life, or medical sciences (Table 2). The remaining respondents are in business, psychology, and ‘other’ disciplines. We collapsed the disciplines into six categories for analysis (Table 3). We combined the disciplines based on similarities in their fields, and redistributed the ‘other’ disciplines into a corresponding category. Fine arts were combined with humanities; law, psychology, business, and education were combined with social sciences.

Table 2. Academic Disciplines of Seton Hall Faculty Respondents

	Frequency	Percent
Life sciences	5	7.8
Physical sciences	5	7.8
Medical science	14	21.9
Computer science	1	1.6
Mathematics	1	1.6
Engineering	0	0.0
Social sciences	13	20.3
Business	5	7.8
Psychology	4	6.3
Education	2	3.1
Humanities	14	21.9
Total	64	100.0

Table 3. Academic Disciplines of Seton Hall Faculty Respondents (Grouped)

	Frequency	Percent
Social Sciences	24	37.5
Sciences	10	15.6
Humanities	14	21.9
Engineering/Technology	2	3.1
Medical/Health	14	21.9
Total	64	100.0

A greater proportion of respondents from the arts and sciences and medical/health fields responded (Table 4). While somewhat comparable, these fields are smaller within the general faculty population.

Table 4. Academic Disciplines of Seton Hall Faculty Total (By College)¹

	Frequency	Percent
Arts and Sciences	195	43.7
Business	47	10.5
Diplomacy	15	3.4
Education	43	9.6
Medical/Health	38	8.5
Nursing	39	8.7
Theology	8	1.8
Law	61	13.7
Total	446	100.0

Position, Age, and Gender

One-third of the respondents are associate professors and one-quarter are professors (Table 5). The other 40% of respondents are assistant professor, instructor/lecturer, adjunct, or other. The other position is a visiting professor. This response distribution is comparable to the larger faculty population at Seton Hall.

Table 5. Job Title of Seton Hall Faculty

	Respondents		All Faculty	
	N	%	N	%
Professor	16	25.0	121	27.1
Associate Professor	23	35.9	155	34.8
Assistant Professor	15	23.4	111	24.9
Instructor / Lecturer	4	6.3	17	3.8
Adjunct	5	7.8	--	--
Other	1	1.6	42	9.4
Total	64	100.0	446	100.0

¹ Figures according to the 2010-2011 Seton Hall University Fact Book (Office of Institutional Research).

The majority of respondents who chose to identify their age are over 50 years of age (58%, 36 of 62). For analysis we grouped the ages by decade (Table 6). Nineteen percent of the respondents who identified their age are in their 30s, and 19% are in their 40s. Only 3% of the respondents are under 30 years of age.

The age range within each discipline has a similar distribution to the total respondents. One of the respondents under 30 years of age is in the social sciences and the other is in the humanities. At least half of the respondents in each discipline are over 50 years of age.

All of the professors are over 40 years of age, with 31% over 60 years of age (5 of 16); 38% in their 50s (6), and 31% in their 40s (5). Associate professors are evenly represented in each age range, except under 30. Twenty-six percent of associate professors are in their 40s (6 of 23), 39% are in their 50s (9), and 26% are over 60 years of age (6). Seventy-one percent of assistant professors are under 40 years of age (10 of 14). All the instructors/lecturers and 80% of the adjuncts (4 of 5) are over 50 years of age.

Table 6. Range of ages of Seton Hall Faculty

	Frequency	Percent
Under 30	2	3.2
31-40	12	19.4
41-50	12	19.4
51-60	23	37.1
Over 60	13	21.0
Total	62	100.0

Slightly over half (52%) of the respondents are male (Table 7).

Table 7. Gender of Seton Hall Faculty

	Frequency	Percent
Male	33	52.4
Female	30	47.6
Total	63	100.0

Sixty-nine percent of professors (11 of 16), 60% of adjuncts (3 of 5), 48% of associate professors (11 of 23), 47% of assistant professors (7 of 15), and 33% of instructor/lecturers (1 of 3) are male.

The two respondents under 30 years of age are female. Three-quarters of the respondents are in their 30s (9 of 12), 58% of those are in their 40s (7 of 12), 44% of those in their 50s (10 of 23), and 54% of those over 60 years of age are male.

Three-quarters of the respondents in the medical/health fields (9 of 12) and half the respondents in the social sciences (9 of 18) are female. Male respondents account for 70% of sciences (7 of 10), all of engineering/technology (2 of 2), and 64% of humanities (9 of 14).

Productivity as Measured by Authorship and Awards

Authorship has been used as a measure of productivity in past surveys of research universities and in non-university research settings. Over the years, it has been shown that faculty who publish more journal articles tend to read more (King et al. 2003). Seventy-two percent of the respondents published at least one refereed scholarly journal article in the past two years (Table 8). Fewer have published an entire book (11%), but 56% have published a book chapter and 31% have published in a conference proceeding. Taking all these methods of publication together, the average faculty member published six items in the past two years ($M=5.85$, $SD=7.807$). Eighty-one percent of the respondents have published at least one scholarly item in the past two years (Table 9).

Table 8. Number of Items Published in the Last 2 Years by Seton Hall Faculty

	Frequency	Percentage
Refereed Scholarly Journals	53	100.0
0	17	32.1
1 ~ 2	16	30.2
3 ~ 4	10	18.9
> 4	10	18.9
Non-Refereed Journals	54	100.0
0	37	68.5
1 ~ 2	12	22.3
> 2	5	9.2
Chapters in Books	57	100.0
0	25	43.9
1 ~ 2	28	49.1
> 2	4	7.0
Conference Proceedings, etc.	45	100.0
0	31	68.9
1 ~ 2	7	15.6
3~4	4	8.9
> 4	3	6.6
Entire Books	53	100.0
0	47	88.7
≥1	6	11.3

Table 9. Total Numbers of Publications in the Last 2 Years by Seton Hall Faculty

	Frequency	Percent
0	12	19.1
1-2	7	11.1
3-4	17	26.9
5-10	19	30.2
11-20	5	7.9
Over 20	3	4.8
Total	63	100.0

There are no differences between the number of publications and the respondent's discipline. However, the total number of publications is significantly associated with the respondent's age ($F=2.081$, $p=.095$) and gender ($F=5.237$, $p=.026$). On average, respondents in

their 30s publish the most material ($M=10.42$), while respondents in between 40 and 60 years of age publish five items ($M=5.1$), and respondents over 60 years of age publish the least ($M=3.77$). Male respondents, on average, published more material than female respondents ($M_{\text{male}}=7.52$, $M_{\text{female}}=3.66$).

Another measure of productivity is whether a respondent has received awards or recognition for their work. We asked respondents whether they received any awards or recognition in the past two years, and then prompted them to describe their award. Thirty-nine percent of respondents received an award (25 of 87). The awards and recognitions included seven awards for excellence in teaching, six awards for research, five awards for writing, and the remaining six awards varied and could not be classified.

Personal Subscriptions

We asked respondents how many personal subscriptions to professional journals (in print or electronic form) they receive, including those paid by him or her, received free, or purchased by a grant or other source for personal or shared use. Only 15% of respondents do not have a personal subscription, and the average number of personal subscriptions is four ($M=4.34$, $SD=3.35$).

Our findings support earlier findings showing that print is still the predominant form for personal subscriptions (Tenopir et al. 2009). Two-thirds of respondents have a print subscription, while only 39% of respondents have an electronic subscription (Table 10). Sixty percent of respondents have a subscription that includes a print and electronic version.

Table 10. Number of Personal Subscriptions for Seton Hall Faculty

	Frequency	Percentage
Print-only Subscriptions	58	100.0
0	19	32.8
1	8	13.8
2	6	10.3
3	14	24.1
4	3	5.2
5	2	3.4
≥ 6	6	10.3
Electronic-only subscriptions	61	100.0
0	37	60.7
1	7	11.5
2	7	11.5
3	2	3.2
>3	8	13.1
Print and Electronic Subscriptions	60	100.0
0	24	40.0
1	10	16.7
2	8	13.3
3	8	13.3
4	5	8.3
5	3	5.0
>5	2	3.4

The number of personal subscriptions has been declining steadily in surveys over the past thirty-five years among U.S. academics, our findings in 2011 among U.K. academics follows this trend (Tenopir et al. 2009, 2012). The decrease over the past thirty-five years may be a result of an increase in free web and open access material or a decline in membership to professional societies, which often include subscriptions as part of the membership benefits.

The age of the respondent does not influence the number of personal subscriptions. Humanities respondents have the fewest personal subscriptions (M=2.92), while respondents in the other disciplines have, on average, five personal subscriptions.

Last Information Source Used

When asked respondents, “*What source did you use for the last substantive piece of information in your work?*”, we found that journal articles were the most frequent source (Table 11). A book or book chapter was the second most frequent source (20%).

Table 11. Last Information Source Used by Seton Hall Faculty

	Frequency	Percent
Journal article	47	73.4
Conference proceeding	1	1.6
Web site	2	3.1
Book or book chapter	13	20.3
Personal contact	1	1.6
Total	64	100.0

Journal articles are the most frequently used source of information in all disciplines, with the exception for humanities faculty members. Over half (57%) of the last information sources used by humanists are books or book chapters, followed by 43% from journal articles. Eighty-five percent of the last information sources by respondents in the medical/health discipline are journal articles; 83% by social scientists; and 80% by scientists.

Article Reading

Total Amount of Article Reading

One of the questions in all of the Tenopir and King surveys from 1977 to the present is an estimate of the total number of articles read in the last month by each respondent. The results provide an approximation of how many articles that a respondent reads in a year and allows us to compare over time and across populations.

Since the question relies on personal recollection, 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. We also 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 not as important as 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.

In the last month, the faculty members at Seton Hall read an average of twenty-two articles (M=22.39, SD=19.38).² Extrapolated to an entire year, the average faculty member reads 264 articles. Excluding humanities respondents (in order to compare over time with other Tenopir & King surveys which did not include humanities staff), the average is twenty-five readings per month.

Last Incident of Reading and Date of Publication

The next set of questions asked the respondents to focus on the last scholarly article they read. 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 faculty members. 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 reading may not be typical, but will help us establish the range of reading patterns across a range of*

² Excludes one outlier over 120. Including outliers the mean is 24.50.

academic staff, disciplines, and institutions.” 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 the critical incident questions.

The next question asked for the publication or posting date of the last article reading. In the surveys in the U.S. from 1977 to 2005, we have seen an increase in reading of articles older than the first year of publication, though reading is still skewed to the most recent articles (King et al. 2009). In the surveys in the U.S. and Australia in 2005, we found an increase in the reading of older articles, with just half of readings within the first year of publication, and in the U.K. in 2011, nearly half of the readings are from articles in their first eighteen months of publication (Tenopir et al. 2012). This differs from older studies, which found about two-thirds of reading within the first year of publication (Tenopir et al. 2005). The change may be a result of availability of electronic back files, an increase in the respondent’s searching capabilities to identify older articles, and/or search system features such as relevance ranking that allows older articles to be more accessible. There are, of course, some differences based on subject discipline, with medical staff reading a higher proportion of current articles.

Half of article readings are in their first eighteen months of publication (Table 12). Since the survey concluded in the spring of 2012, we only included the first six months of the year in our analysis. The year of publication ranges from as early as 1965, with 10% published before 1997. While there is a range of dates, the concentration is still within five years of publication (74%).

Table 12. Age of Article Read by Seton Hall Faculty Arranged by Date Groupings

Year	Frequency	Percentage
Over 15 years (Before 1997)	7	10.1
11 ~ 15 years (1997-2001)	3	4.3
6 ~ 10 years (2002-2006)	8	11.6
2 ~ 5 years (2007-2010)	16	23.2
Less than 2 years (2011-1/2 of 2012)	35	50.7
Total	69	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 percent of readings over five years old (33%, 34), while only a quarter of readings by graduate students (25%, 27) and one-quarter (26%, 18) of the readings by faculty members are over five-years-old.

Studies done by Guthrie (2000), Odlyzko (2000), and Herman (2004) provide further research on the life of a journal article and its half-life. They found many older articles are heavily used when they are conveniently accessible; however, academics tend to cite more recent articles in order to seem current and up-to-date in their field. Their research further suggests that back files are a key investment in addition to current subscriptions.

Novelty of Information in the Reading

Since this is a random sample of article readings, the article may have been previously read. In this study, 17% of the article readings are re-readings (12 of 70). 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 if articles

are often used as sources of new information. Seventy-three percent of the respondents say they knew parts of the information in the article prior to this reading, but none of the respondents knew all (or a majority) of the information.

To further determine the novelty and value of articles as sources of new information, we asked those who knew about all or part of the information in the article reading where they originally found it. Another journal article and a conference/workshop are the main sources of information found in articles (Table 13). None of the respondents first found the information in an e-mail or a preprint/e-print service. There is a wide-range of ‘other’ sources not listed in our answer selection. They include: a book, doctoral seminar, on a TV show, personal knowledge, a student, and unspecified searching.

Table 13. Source of Information Not Obtained Through Last Article Reading by Seton Hall Faculty

	Frequency	Percent
Conference or workshop	8	15.7
Informal discussion with colleagues	1	2.0
Listserv or blog	3	5.9
Journal article	21	41.2
Web site of author	1	2.0
Institutional Repository	1	2.0
Other	16	31.4
Total	51	100.0

Thoroughness of Last Article Reading and Time Spent Reading

Economist Fritz Machlup (1979) described two types of value in the information context: purchase or exchange value and use value. Time spent represents an ‘exchange value,’ assuming faculty members 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.

Nearly all (79%, 55 of 70) of the readings are read with great care and attention to all or parts of the article. Only 6% of the readings are skimmed (Table 14). There is a significant difference between whether a reading is a first time reading or re-reading and thoroughness of the reading ($\chi^2=6.774$, $p=.148$). All of the re-readings are read with great care to all or parts of the article (12). While the majority of first-time readings are also read with great care to all or parts of the article (74%, 43 of 58), 17% (10) are read with attention to the main points and 7% (4) are skimmed.

Table 14. Thoroughness of Last Article Reading by Seton Hall Faculty

	Frequency	Percent
I read all of it with great care	28	40.0
I read parts of it with great care	27	38.6
I read it with attention to the main points	10	14.3
I read only specific sections	1	1.4
I skimmed it just to get the idea	4	5.7
Total	70	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-eight minutes ($M=37.91$, $SD=33.32$)³ with a range of five minutes to two and a half hours. Sixteen percent of readings are over an hour (Table 15). In previous surveys in the U.S., we had seen a declining trend in the time spent reading. In 1977, U.S. scientists reported spending 48 minutes per reading, while in 2005 in the U.S., the average time per article reading had declined to 31 minutes (Tenopir et al. 2009). However, faculty members at Seton Hall spend slightly longer per reading than those surveyed in 2005.

³ Excludes one outlier over 200. Including outlier the mean is 40.66.

Table 15. Average Time Spent Per Article Reading by Seton Hall Faculty

Minutes	Frequency	Percent
1-10	8	11.4
11-30	40	57.1
31-60	11	15.7
61-90	4	5.7
91-120	4	5.7
Over 120	3	4.3
Total	70	100.0

Source of Article

An important part of our analysis of academic faculty 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 16). 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 faculty who may have had someone on their behalf seek out the information or who may not remember how they became aware of the article.

Over one-third (36%) of the articles are found through searching, and 19% of articles are found through browsing. Another 46% of the articles are found through one of the other listed methods, including a citation and another person. The other sources used to become aware of the last article reading include a social network, anthology, table of contents, information packet, letter to editor, and a student.

Table 16. How Seton Hall Faculty Initially Become Aware of Articles

	Frequency	Percent
Browsing	13	18.6 (100.0)
1. Electronic library subscription	(3)	(23.1)
2. Print personal subscription	(7)	(53.8)
3. Electronic personal subscription	(1)	(7.7)
4. Web site	(1)	(7.7)
5. Other	(1)	(7.7)
Searching	25	35.7 (100.0)
1. Electronic indexing/abstracting service	(16)	(64.0)
2. Web search engine	(7)	(28.0)
3. Online journal collection	(1)	(4.0)
4. Other	(1)	(4.0)
Other	32	45.7 (100)
1. Cited in another publication	(12)	(37.5)
2. Another person told me about it	(4)	(12.5)
3. Don't know /don't remember	(2)	(6.2)
4. Other	(14)	(43.8)
Total	70	100.0

Of the articles found through browsing, 23% came from an electronic library subscription and 54% came from a personal print subscription. The other source of browsing is a sample journal issue. All the articles found through searching came from an electronic source, including 64% from an electronic indexing/abstracting service, and 28% from a web search engine. None of the articles found through browsing came from a print index/abstract, a current awareness service, or a preprint/e-print service. The other source of searching could not be identified by the respondent's answer. 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 faculty members with access to more articles beyond their current information need. Many searching or browsing queries identify multiple articles, and we wondered 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, nine articles (M=8.68, SD=14.78). None of the respondents plan on reading any additional articles. Respondents who searched for the last article reading plan on reading ten additional articles (M=10.28), followed by a citation (M=6.40) and those who browsed for the last article (M=3.62).

We asked respondents how much time they spent browsing or searching for the last article reading. On average, browsing for an article takes more time (M=41.54) than searching for an article (M=22.20). Browsing for the last article reading took from fifteen minutes to over two hours. Searching for the last article took three minutes to an hour.

Obtaining the Article

Once the respondent became aware of the article, we asked them where they obtained it. Forty-four percent of the last article readings were obtained from a library subscription (Table 17). Many respondents praised the importance of library sources, including one respondent who says, “My teaching is in both natural sciences and humanities/social sciences, and I depend on...the online searchable databases in the university library.” Of the articles obtained from the library, nearly all are from the electronic collections (97%, 29 of 30). A personal subscription is the second most frequent response (19%), and 85% of the articles obtained from a personal

subscription are from a print journal (11 of 13). Only 7% of readings are from a free web journal or website. None of the article readings came from an institutional repository. Faculty members also used other sources to obtain the last article reading, include through a professional affiliation, a student, and a book anthology. Including all sources, 71% of the articles are obtained from an electronic source (49 of 69).

Table 17. How Seton Hall Faculty Obtain Articles

	Frequency	Percent
Personal subscription	13	18.8 (100.0)
• Print	(11)	(84.6)
• Electronic	(2)	(15.4)
Library subscription	30	43.5 (100.0)
• Print	(1)	(3.3)
• Electronic	(29)	(96.7)
Department/school	6	8.7 (100.0)
• Print	(2)	(33.3)
• Electronic	(4)	(66.7)
Free Web journal	3	4.3
Copy from a colleague, author, etc.	6	8.7 (100.0)
• Print	(3)	(60.0)
• Electronic	(2)	(40.0)
Interlibrary loan or document delivery service (electronic)	2	2.9
Other website	2	2.9
Other source	7	10.1 (100.0)
• Print	(3)	(42.9)
• Electronic	(4)	(57.1)
Total	69	100.0

Articles found by searching (56%) or citations (67%) are most likely to be obtained from a library subscription. Articles found by browsing are obtained from a personal subscription (39%) or a library subscription (39%). Half of the articles found through a colleague are obtained from a copy from a colleague.

In addition to the time spent becoming aware of an article, faculty members also spend time to obtain an article. We asked, “*After you identified this article, about how much time (in minutes) did you and/or someone else on your behalf spend in each of the following activities?: to obtain, request, receive, or downloaded and display, to photocopy or print, and other.*” The average time to obtain, request, receive, or download and display an article is seven minutes (M=7.16, SD=12.83), with a range of less than a minute to an hour. Respondents spend an average of two minutes (M=1.75, SD=3.002) to photocopy or print the article, with a range of zero to ten minutes. One respondent asks, “Please continue to support a wide range of journals through full-text databases. These subscriptions facilitate rapid acquisition of needed information for faculty and students.” Only one respondent spent time on any additional activities.

Use of Article Source

We also examined how the source they used to obtain readings influences their total reading and if academics are using the same source for multiple articles. We asked, “*From this same source (e.g., journal, author’s Web site, preprint archive), approximately how many articles did you read in the last twelve months (1 year)?*” Faculty members read an average (mean) of fourteen articles in the past year from the same source they obtained their last reading. Only 12% of readings come from a source from which they read no additional articles (8 of 68), and 36% of readings are from sources from which ten or more articles were read from the same source in the past year (Table 18).

Table 18. Article Readings from the Same Source in the Last 12 Months by Seton Hall Faculty

	Frequency	Percent
0	8	11.8
1-5	21	30.9
6-10	14	20.6
11-20	16	23.5
21-30	2	2.9
Over 30	7	10.3
Total	68	100.0

The number of articles read from the same source in the past year is not significantly associated with where they obtained the last article reading. Faculty members read an average of sixteen articles from the last library subscription they used and seventeen articles from the personal subscription. They read an average of three articles from the last free web journal and four articles from a colleague or another person.

Alternative Source to Obtain Article

Another measure of value is 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-four percent of the readings would be obtained from another source (56 of 67).

Another library is the most likely alternative source of article readings (Table 19). Fifteen percent of the readings would be obtained from a colleague, and only 5% would be

purchased. Faculty members would also use alternative sources not listed, including fifteen articles that would be obtained through interlibrary loan, four articles would be obtained online, and two articles would be obtained by contacting the author.

Table 19. Alternate Source of Article by Seton Hall Faculty

	Frequency	Percent
I would not obtain the information	11	16.4
From a colleague	10	14.9
Use/visit another library	22	32.9
Purchase copy	3	4.5
From another source	21	31.3
• Interlibrary loan	(15)	(22.4)
• other	(6)	(8.9)
Total	67	100.0

Regardless of the initial source, the majority of articles would be obtained from a library if the original source were not available. Articles originally obtained from a library would be obtained from another library (38%) or interlibrary loan (42%). Articles obtained from a personal subscription would be obtained from a library (40%), a colleague (30%), or another source (30%).

Obtaining the article from another source would cause many respondents to spend more time and/or money. We asked respondents, “*In order to obtain the same information, if this source was not available, you would expect to spend how many minutes and/or money?*” On average, respondents expect the alternative source to take thirty-seven minutes ($M=37.44$, $SD=50.479$) and cost six dollar ($M=6.00$, $SD=13.686$). Half of the respondents expect it will take at least twenty minutes to obtain the same information from an alternative source. Since respondents expect it will take only seven minutes, on average, to obtain the article from the original, having to obtain the information from a different source will take significantly longer.

Format of Article and Location of Reading

Although 71% of the article readings were obtained from an electronic source, this does not mean the articles were read on a computer screen. A third (34%) of the readings is read on-screen, and two-thirds are read as print-on-paper, either from a print journal or downloaded and printed from an electronic source. While faculty members prefer electronic sources to obtain information, print is still often preferred for final reading. Graduate students and undergraduate students at Seton Hall are more likely to read from a computer screen (54% and 76% respectively). Thirty-one percent of the readings are from a downloaded and printed article, and 28% of the readings are from a print article in a print journal (Table 20). While 4% of graduate students and 2% of undergraduate students at Seton Hall read the last article on a mobile or e-reader, none of the readings by faculty members are from a mobile, e-reader, or tablet screen. The other format is a PDF.

Table 20. Final Format of Last Article Reading by Seton Hall Faculty

	Frequency	Percent
Print article in a print journal	19	27.9
Photocopy or Fax copy	4	5.9
Online computer screen	14	20.6
Previously downloaded/saved and read on computer screen	9	13.2
Downloaded and printed on paper	21	30.9
Other	1	1.5
Total	68	100.0

Since faculty members are typically interacting with the library's electronic subscriptions, 47% of the readings obtained from the library are downloaded and printed (14 of 30) and 47% are read on a computer screen (14). In contrast, nearly all (92%) of the readings obtained from a personal subscription are read from a print journal (12 of 13).

In past surveys, we found a majority of readings are done in the office or lab of faculty members (Tenopir et al. 2009). While academics are using the library’s resources, they are often accessing the library’s resources remotely and are rarely reading in the library. Similarly, faculty members at Seton Hall do nearly all their readings in their home (50%) or office/lab (46%). Only 2% of the readings are read in the library, and 3% are read while traveling or commuting (Table 21). Location is no longer a major factor in a faculty member’s access to academic sources because the scholarly articles can be accessed and read from a variety of locations.

Table 21. Location of Article Reading by Seton Hall Faculty

	Frequency	Percent
Office or lab	31	45.6
Library	1	1.5
Home	34	50.0
Traveling or commuting	2	2.9
Total	68	100.0

None of the articles obtained from the library are read in the physical library; instead, half are read in the office or lab (15 of 30) and 43% are read at home (13). Nearly all (80%, 4 of 5) of the articles obtained from a colleague or another person and 62% of the articles obtained from a personal subscription are read at home (8 of 13). Two-thirds of the readings obtained from a school or department subscription are read in the office (4 of 6).

Since articles can be read in a variety of formats, academics are able to read in a variety of locations. All of the readings that occurred while traveling/commuting are from a downloaded and printed on paper article (2 of 2). Readings that occur in the home, office, or lab are split between computer screen and printed on paper. One-third of the readings that occur in the lab/office are from a print article in a print journal (10 of 31), and 29% are from a downloaded and printed copy (9). One-third of the readings in a office or lab are read on a

computer screen (10). In the home, 27% of the readings are from a print journal (9 of 34); 35% are from a computer screen (12), and 29% are downloaded and printed (10).

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?*” Over half (54%) of the readings are for the principal purpose of research and writing (Table 22). One respondent considers, “Scholarly articles [to be] the beginning, ending and middle of my mathematical research.” Articles are also read for teaching (22%) and current awareness (13%). The other principal purposes include ‘personal development’ and ‘library purchases’.

Table 22. Principal Purpose of Article Reading by Seton Hall Faculty

	Frequency	Percent
Research & Writing	37	54.4
Teaching	15	22.1
Current awareness/keeping up	9	13.2
Consulting, advising	2	2.9
Internal or external presentations	2	2.9
Continuing education for self	1	1.5
Other	2	2.9
Total	68	100.0

All of the readings for current awareness are in their first eighteen months of publication. Readings for research and writing expand a wide-range of publication years. Over a third of the readings for research and writing are in their first eighteen months of publication (35%, 13 of 37); 30% are two- to five-years-old (11); and 16% are over fifteen- years-old (6). The majority

of readings for teaching are in their first eighteen months of publication (57%, 8 of 14), and 36% are two- to ten-years old (5).

Respondents became aware of readings for research and writing by searching (46%) or through a citation (30%). Articles for teaching are often found by browsing (40%), searching (33%), and another method of becoming aware not listed in the answer selection (27%). Articles for current awareness are often found through one of the other methods not listed in the answer selection (56%) or by browsing (33%).

There is a significant association between principal purpose and where the article is obtained ($\chi^2=62.640$, $p=.091$) and time spent per reading ($F=1.346$, $p=.245$). On average, respondents spend the most time per reading for research ($M=56.97$), followed by teaching ($M=30.67$), and current awareness ($M=19.33$). The majority of articles obtained from the library are read for research and writing (73%, 22 of 30). Thirty-nine percent of the articles obtained from a personal subscription are read for current awareness (5 of 13), followed by research (23%, 3) and teaching (23%, 3). Forty percent of the readings obtained from a colleague are read for teaching (2 of 5).

There is no significant association between the principal purpose of reading and the location or format of reading. Half of the readings for research and writing (51%, 19 of 37) and half of the readings for teaching (53%, 8 of 15) are read in the office or lab. Two-thirds of the readings for current awareness (6 of 9) and all the readings for presentations (2) and consulting/advising (2) are read in the home.

Forty-one percent of the readings for research and writing (15 of 37) and 40% of reading for teaching (6 of 15) are read on a computer screen. Thirty-eight percent of the readings for research and writing are downloaded and printed (14) and 22% are from a printed journal or

photocopy (8). One-third of the readings for teaching are from a printed journal or photocopy (5 of 15) and 27% are downloaded and printed (4). Nearly all (89%, 8 of 9) of the readings for current awareness are from a print journal.

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 the 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’ (97%). Forty-two percent are considered ‘absolutely essential’ or ‘very important’ to the principal purpose (Table 23).

We received many comments on the importance of article reading. One respondent states, “They are critical to my success as a researcher and instructor.” Similarly, many respondents consider article readings ‘critical’, ‘indispensable’, and ‘key’ to their work activities. It is clear from their comments that scholarly articles are important to academic work beyond the principal purpose of reading.

Table 23. Importance of Article Reading to Principal Purpose to Seton Hall Faculty

	Frequency	Percent
Absolutely essential	12	17.9
Very important	16	23.9
Important	20	29.9
Somewhat important	17	25.4
Not at all important	2	3.0
Total	67	100.0

Readings for research and writing are considered more important to the principal purpose than readings for other purposes ($\chi^2=36.542$, $p=.129$). None of the readings for research, writing, or teaching are considered ‘not at all important’, but while 49% of readings for research and writing (18 of 37) are considered very important or absolutely essential, only a third of readings

for teaching (5 of 15) and a quarter of readings for current awareness (2 of 8) are considered very important or absolutely essential.

There is no significant association between the importance of the article reading and how the respondent becomes aware of it or where it is obtained. All of the readings obtained from the library are considered at least ‘somewhat important’, and 43% are considered ‘very important’ or ‘absolutely essential’. None of the readings obtained from a personal subscription are considered ‘absolutely essential’; 58% are considered ‘very important’ or ‘important’; and 17% are considered ‘not at all important’. Sixty percent of the articles obtained from a colleague are considered ‘somewhat important’.

Outcomes of Article Reading

In order to establish how the article was important to the principal purpose, we asked respondents to select one or more outcomes of the reading. Over half of the readings added to the respondent’s general knowledge, inspired new thinking, or improved the result (Table 24). In the open-ended comments, one respondent describes article readings as, “Crucial to maintaining understanding of debates in field; excellent source for short readings for undergraduate courses. Fundamental to teaching graduate students,” and another respondent says, “They are a resource I use daily to support all of my work.” None of the readings are considered a ‘waste of time’, and 1% of the readings made the respondent question his or her work. The other outcomes include ‘allowed me to counsel doctoral student’, ‘example of scientific practice and knowledge’, and ‘confirmed one of our statements.’

Table 24. Outcomes of Article Reading for Seton Hall Faculty*

	Frequency	Percent
It added to my general knowledge	38	54.3
Inspired new thinking	36	51.4
Improved the result	36	51.4
Narrowed/broadened/changed the focus	17	24.3
Saved time or resources	7	10.0
Resulted in faster completion	6	8.6
Resolved technical problems	5	7.1
Others	4	5.7
Resulted in collaboration/joint research	2	2.9
Made me question my work	1	1.4
Total	70	

*Respondents could select more than one outcome.

Half of the article reading have been or will be cited (Table 25). Slight over one-quarter (26.5%) will not be cited.

Table 25. Article Citation by Seton Hall Faculty

	Frequency	Percent
No	18	26.5
Maybe	16	23.5
Already did	12	17.6
Will in the future	22	32.4
Total	68	100.0

As the article reading's importance to the principal purpose increased, so does the chance it will be cited ($p=.281$).⁴ Seventy-eight percent of readings for research and writing have been or will be cited (29 of 37), while 20% of readings for teaching (3 of 15) and none of the readings for current awareness (9) have been or will be cited.

Differences of Article Reading Patterns by Demographics

Differences of Article Reading Patterns by Discipline

⁴ For all correlations, significance is at the 0.05 level unless otherwise noted.

The faculty member's discipline significantly influences the number of article readings ($F=1.747$, $p=.152$). On average, faculty in the medical/health disciplines ($M=34.31$) and sciences ($M=29.40$) read more articles per month than faculty in the humanities ($M=21.79$) and social sciences ($M=18.52$). However, science faculty spend, on average, the least amount of time per reading ($M=24.50$). Respondents in the medical/health fields spend forty-eight minutes per reading, followed by humanists ($M=43.85$) and social sciences ($M=40.04$).

Humanists read more articles older than five years than respondents in other disciplines, especially those in the sciences and medical/health disciplines. Over one-third (39%) of the readings by humanists is from an article over fifteen-years-old. Nearly all (90%) of readings by scientists and 84% of readings by faculty in the medical/health disciplines are from articles within five years of publication. Over one-quarter (26%) of the readings by social scientists are over five-years-old and 57% are in their first eighteen months of publication.

There are some variations between respondent's discipline and how the respondent becomes aware of an article. Scientists are most likely to find an article by searching (60%, 6 of 10). Respondents in the medical/health fields and social sciences find articles through a variety of methods. Thirty-nine percent of readings by faculty in the medical/health fields and 35% of readings by social scientists are found by searching, and 31% of readings by faculty in the medical/health disciplines and 13% by social scientists are found by browsing. Twenty-nine percent of readings by humanists and 17% of readings by social scientists are found through a citation.

Faculty in the sciences and medical/health disciplines are more likely to obtain an article from a library subscription ($\chi^2=26.115$, $p=.567$). Eighty percent of readings by scientists (8 of 10) and 62% of readings by faculty in the medical/health fields (8 of 13) are obtained from a

library subscription, while only 43% of readings by humanists (6 of 14) and 26% of readings by social scientists are obtained from a library subscription. Twenty-two percent of readings by social scientists are obtained from a personal subscription (5). All of the disciplines obtained the article from an electronic library subscription.

Scientists are the least likely to read from a print journal and the most likely to read from an online computer screen ($\chi^2=26.181$, $p=.160$). None of the readings by scientists are from a print journal; half are from an online computer screen; and 40% are from a downloaded and printed article. The other disciplines read from a variety of formats. Faculty in the medical/health fields read from a downloaded and printed copy (31%), print article/photocopy (31%), online computer screen (23%), and saved and read on a computer screen (15%). Social scientists read from a print article (30%), downloaded and printed on paper (30%), online computer screen (22%), and saved and read on computer screen (17%). Humanists read from a print article/photocopy (43%), downloaded and printed copy (29%), saved and read on computer screen (14%), and only 7% read on an online computer screen. There is no association between discipline and location of article reading.

Discipline influences the principal purpose of reading ($\chi^2=21.638$, $p=.789$). Scientists report the most readings for research and writing (80%), followed by teaching (20%). Humanists read for research and writing (64%) and teaching (21%). Social scientists read for research and writing (52%), current awareness (26%), and teaching (13%). Faculty in the medical/health disciplines read for research and writing (46%) and teaching (31%). There are no significant associations between discipline and the importance of the reading or whether it will be cited.

Differences of Article Reading Patterns by Position, Age, Gender, and Productivity

The faculty member's position does not influence the number of article readings, time spent per reading, how s/he becomes aware of the article, where it is obtained, location of article reading, format of reading, principal purpose of reading, and its importance. The majority of articles obtained by each position are obtained from a library subscription and support research and writing. Instructor/lecturers are the only position to read primarily for teaching (75%, 3 of 4).

We did not find a significant association between the respondent's age and the number of article readings, but faculty in their 30s and 40s spend more time per article reading than academics under-30 or over-40 ($F=2.626$, $p=.044$). Respondents between 30 and 50 years of age spend nearly an hour per reading ($M_{\text{thirties}}=57.92$, $M_{\text{forties}}=54.58$), while respondents under-30 spend, on average, twenty minutes and respondents over-50 spend slightly less than thirty minutes per reading ($M_{\text{fifties}}=29.61$, $M_{\text{over60}}=27.50$).

Approximately one-third of the readings in each age group (decade) are found by searching; however, older respondents are more likely to find an article by browsing and younger respondents are more likely to find an article through a citation or another person ($\chi^2=23.408$, $p=.269$). Twenty-six percent of readings by faculty in their 50s, 23% of readings by respondents over 60 years of age, and less than 10% of readings by faculty under 50 years of age are found by browsing. Faculty in their 30s also find articles through a citation (25%). Faculty in their 40s also find articles through citations (33%) and another person (17%). There is no significant association between the faculty member's age and where the article is obtained.

There is no association between the respondent's age and the location of article reading. The respondent's age is significantly associated with the format of reading ($\chi^2=16.381$, $p=.693$).

Older faculty are more likely to read from a print article in a print journal, and younger faculty are more likely to read from an article that is downloaded and printed on paper (Table 26).

Table 26. Format of Article by Seton Hall Faculty Age

	Print journal/ photocopy	Computer screen	Downloaded and printed on paper	Row Total
Under 40	3 23.1%	4 30.7%	6 46.2%	13 100.0%
41 ~ 50	5 41.6%	4 33.4%	3 25.0%	12 100.0%
51 ~ 60	6 26.0%	12 51.2%	5 21.7%	23 100.0%
Over 60	5 38.5%	4 30.7%	4 30.8%	13 100.0%
Column Total	19 31.2%	24 39.3%	18 29.5%	61 100.0%

Younger respondents are more likely to read for research and writing, while older respondents are more likely to read for teaching ($\chi^2=38.292$, $p=.093$). Nearly all of the readings by respondents under 50 years of age are for research and writing (92%, 23 of 25), and only one-third of the readings by respondents over-50 are for research and writing (12 of 36). Respondents over-50 also read for teaching (33%) and current awareness (19%). The respondent's age does not influence the importance of the article reading.

We found male respondents, on average, read fewer articles per month than females ($F=1.718$, $p=.195$). Females read twenty-eight articles, on average, while male respondents read twenty-one articles in the past month. We did not find any other associations between gender and reading patterns.

In past studies, we have found that academics who have won awards or received special recognition in the past two years read more articles (King et al. 2003). We found a similar association in this study ($F=3.038$, $p=.086$). Faculty who received an award or recognition in the past two years report an average of twenty-nine article readings per month, while faculty who

did not receive an award or recognition report an average of twenty-one article readings per month. We did not find a significant association between the number of article readings and the number of items a respondent published in the past two years or how the respondent spends his or her work time.

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. For this study, we also included readings from books, book chapters, and other publications. In this section of the report, we focus on book or book chapter readings.

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. Faculty members at Seton Hall University report an average of six book or book chapter readings per month or approximately 72 per year (M=6.27, SD=5.998).⁵

⁵ Excludes one outlier over 40. Including outlier the mean is 7.74.

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

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, faculty members read from a book or book chapter on six occasions (M=6.30, SD=5.204).⁶ Only 8% of book or book chapter readings occurred on only one occasion, while 46% were read on five or more occasions (Table 27).

Table 27. Occasions of Last Book Reading by Seton Hall Faculty

	Frequency	Percent
1 ~ 2	13	21.3
3 ~ 4	20	32.8
5 ~ 10	18	29.5
Over 10	10	16.4
Total	61	100.0

⁶ Excludes one outlier over 30. Including outlier the mean is 7.16.

The average time spent per reading, including on all occasions of reading, is two hours and twenty minutes (M=141.76, SD=146.950), with a range of fourteen minutes to ten hours. Over half (55%) of book readings take over one hour (Table 28). Only 5% of book or book chapter readings are fifteen minutes or less (3).

Table 28. Time Spent on Last Book Reading by Seton Hall Faculty

Minutes	Frequency	Percent
0 ~ 30	16	25.8
31 ~ 60	12	19.4
61 ~ 90	5	8.1
91 ~ 120	8	12.9
121 ~ 180	7	11.3
Over 180	14	22.6
Total	62	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 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: 18% through searching; 18% through a citation; and 13% through another person (Table 29). Twenty-eight percent are found through a source we did not list in our answer choices; these included four textbooks for a class, two books the respondent authored, and four books the respondent already owned. Some ‘other’ ways the respondent became aware of the book are: heard on NPR, book club, book review for organization, heard about from a conference or the author. We did not ask the respondents to tell us what sources they browse or search.

Table 29. How Seton Hall Faculty Initially Become Aware of Books

	Frequency	Percent
Found while browsing	5	8.2
Found while searching	11	18.0
Cited in another publication.	11	18.0
Another person told me about it	8	13.1
Promotional email or web advertisement	2	3.3
Don't know or don't remember	7	11.5
Other	17	27.9
Total	61	100.0

Respondents spend an average of fourteen minutes becoming aware of a book or book chapter reading ($M=13.90$, $SD=15.301$),⁷ with a range of less than a minute to an hour. Readings found by searching ($M=26.11$) or browsing ($M=15.00$) take, on average, more time to become aware of than those found through a citation ($M=13.50$) or another person ($M=10.38$).

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. Forty percent of the last book readings are purchased and 29% are from the publisher (Table 20). Only 13% of the books are obtained from the library collection and 8% are obtained from interlibrary loan. The other source to obtain the last book reading is an unspecified electronic copy.

⁷ Excludes one outlier over an hour. Including outlier the mean is 15.53.

Table 30. How Seton Hall Faculty Obtain Books

	Frequency	Percent
I bought it for myself	25	40.3 (100.0)
• Print	(23)	(92.0)
• Electronic	(2)	(8.0)
The library or archives collection (print)	8	12.9
Interlibrary loan or document delivery service (print)	5	8.1
School or department collection (print)	2	3.2
A colleague, author or other person provided it to me	3	4.8 (100.0)
• Print	(2)	(66.7)
• Electronic	(1)	(33.3)
A free, advance, or purchased copy from the publisher	17	27.4 (100.0)
• Print	(15)	(88.2)
• Electronic	(2)	(11.8)
Other source (Electronic)	2	3.2
Total	62	100.0

Much has been discussed recently about the future of electronic books. A 2009 CIBER report 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 11% of the book readings are obtained from an electronic source. All of the books obtained from the library, school or department collection, or interlibrary loan are print copies. Not all academics support the growth of e-books. One respondent says, “I always read books in print version and would never read them online. It is important to have physical copies of books available for research.” However, other faculty members are starting to read from e-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

Contingent valuation determines values by assuming if the information is important the respondent will try multiple methods to obtain the information, but their initial source is the most convenient. 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?*” Only 12% of respondents would not bother getting the information from another source and 88% of respondents would obtain the information from another source (7 and 54 of 61). We did not specify what alternative source they would use.

All of the readings obtained from the library or school/department collection would be obtained from another source. Two-thirds of the readings obtained from a colleague (2 of 3) and 13% of purchased books (3 of 24) would not be obtained from an alternative source.

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, research and writing is the most frequent principal purpose of reading (Table 31). Forty-two percent of the last book or book chapter readings are for the principal purpose of teaching and 3% are for current awareness/keeping up. None of the book readings are for consulting/advising or presentations. Book readings also support other purposes beside the choices listed in the answer selection (7%). These include writing a textbook, cultural literacy, and panel presentation.

Table 31. Principal Purpose of Book Reading by Seton Hall Faculty

	Frequency	Percent
Research & writing	27	43.6
Teaching	26	41.9
Administration	1	1.6
Current awareness/keeping up	2	3.2
Continuing education for self	2	3.2
Other	4	6.5
Total	62	100.0

When a respondent becomes aware of a book through a citation, it is most likely to be for research (73%). Readings found through searching are for research (46%) or teaching (46%).

Readings for the principal purpose of research are more likely to be obtained from the library ($\chi^2=36.486$, $p=.446$). Sixty-three percent of the readings obtained from the library are for research (5 of 8), followed by 25% for teaching (2). Purchased readings are read for a variety of purposes, including research (44%), teaching (32%), and administration (4%). The majority of readings from a publisher (71%), a colleague (67%), and school/department collection (100%) are read for teaching.

Academics spend the most time per reading for research or teaching ($F=1.427$, $p=.221$). On average, readings for research or teaching are approximately three hours per reading, while readings for the other principal purposes are less than an hour-and-a-half per reading.

In relation to the respondent's principal purpose we asked, "*How important is the information contained in this book to achieving your principal purpose?*" Nearly all (95%) of the book or book chapter readings are considered at least 'somewhat important' (Table 32). Two-thirds of the readings are considered 'absolutely essential' or 'very important' to the principal purpose (40 of 62).

Table 32. Importance of Book Reading to Principal Purpose of Seton Hall Faculty

	Frequency	Percent
Absolutely essential	23	37.1
Very Important	17	27.4
Important	9	14.5
Somewhat important	10	16.1
Not at all important	3	4.8
Total	62	100.0

Readings for teaching are considered more important to the principal purpose than readings for other purposes ($\chi^2=33.525$, $p=.093$). All of the readings for teaching are considered at least ‘somewhat important’, including 58% considered ‘absolutely essential’ and 27% considered ‘very important’. Over a third of the readings for research are considered ‘very important’ and 23% are considered ‘absolutely essential’. Only one reading for research is considered ‘not at all important’ while 23% are considered ‘somewhat important’.

Readings obtained from a publisher are considered more important to the principal purpose ($\chi^2=38.310$, $p=.032$). Fifty-nine percent of the readings obtained from a publisher are considered ‘absolutely essential’, and none of the readings are considered ‘not at all important’ or ‘somewhat important’ to the principal purpose. None of the readings obtained from the library are considered ‘absolutely essential’, but three-quarters are considered ‘very important’ or ‘important’. Twelve percent of the purchased readings are considered ‘not at all important’; 20% are considered ‘somewhat important’; 40% are considered ‘important’ or ‘very important’; and 28% are considered ‘absolutely essential’.

Outcomes of Book Reading

To better understand what influenced the book reading’s importance to the principal purpose, we asked, “*In what ways did the reading of the book affect the principal purpose?*” The

most frequent outcomes are: ‘improved the result’, ‘inspired new thinking’, and ‘saved time or resources’ (Table 33). None of the book readings are considered a waste of time, and only 2% made the respondent question his or her work. The other outcomes include: increased my awareness, provided foundational information, is a useful teaching tool, and are not sure of the outcome.

Table 33. Outcome of Book Reading for Seton Hall Faculty*

	Frequency	Percent
Improved the result	36	57.1
Inspired new thinking	35	55.6
Saved time or resources	13	20.6
Narrowed/broadened/changed the focus	11	17.5
Resulted in faster completion	8	12.5
Resolved technical problems	7	11.1
Others	6	9.5
Resulted in collaboration/joint research	6	9.5
It made me question my work	1	1.6
Total	63	

*Respondents could select more than one outcome.

Forty-seven percent of the book or book chapter readings will be cited or have been cited (Table 34). One-third of the readings will not be cited.

Table 34. Citation of Last Book Reading by Seton Hall Faculty

	Frequency	Percent
No	21	33.9
Maybe	12	19.4
Already cited	16	25.8
Will in the future	13	21.0
Total	62	100.0

There is no correlation between the importance of the reading to the principal purpose and its likelihood of being cited. Readings for research and writing are more likely to be cited than readings for other purposes ($p = -.394$). Eighty-one percent of book readings for research

have been or will be cited (22 of 27). Sixty-two percent of readings for teaching will not be cited, and only 15% have been or will be cited (16 and 4 of 26).

Differences of Book Reading Patterns by Demographics

Differences of Reading Patterns by Discipline

There is a significant association between discipline and number of book readings ($F=2.176$, $p=.083$), time spent per reading ($F=1.551$, $p=.201$), where the book is obtained ($\chi^2=26.655$, $p=.321$), and principal purpose of reading ($\chi^2=40.052$, $p=.021$). Humanists report the most book readings per month ($M=10.50$), followed by scientists ($M=6.50$), social scientists ($M=4.88$), and respondents in the medical/health fields ($M=4.62$). Respondents in the medical/health fields spend the most time per reading ($M=203.75$ minutes), followed by humanists ($M=132.69$ minutes), social scientists ($M=129.73$), and scientists ($M=68.50$).

The library collection is not the primary source of book readings for any disciplines; however, humanists (30%) and social scientists (27%) are more likely to obtain a book from the library than scientists (20%) or medical/health respondents (8%). Half of the readings by medical/health respondents and by scientists are from copies provided by the publisher, and one-quarter of the readings by scientists and 20% by medical/health faculty are purchased. Fifty-four percent of readings by humanists and 46% of readings by social scientists are purchased.

All of the readings by humanists and all but one reading by medical/health faculty (92%) and all but one reading by scientists (90%) are from print books, while four readings by social scientists (18%) are from e-books.

Book readings by scientists and humanists are the most likely to be for research and writing (70% and 77% respectively). Only 8% of readings by respondents in the medical/health

fields are for research and writing, and two-thirds are for teaching. Social scientists split their readings between research and writing (36%) and teaching (46%). We did not find a significant association between the respondent's discipline and the importance of the book reading or whether the reading will be cited.

Differences of Reading Patterns by Position, Age, Gender, and Productivity

There is an association between position and number of book readings ($F=1.129$, $p=.356$). Adjuncts ($M=3.00$), instructor/lecturers ($M=3.50$), and professors ($M=4.93$) report, on average, fewer book readings per month than associate professors ($M=7.36$) and assistant professors ($M=7.93$). There is no association between position and time spent per reading. We did not find any associations between respondent's age or gender and the number of book readings or time spent per reading.

We did not find a significant association between the respondent's position, age, or gender and how s/he became aware of the book, where it was obtained, or its importance. We did not find a significant association between position and principal purpose of reading, except all the readings by lecturers are for teaching, which is to be expected because of their work duties. Readings by the other positions are split between research and teaching.

Faculty who received an award or recognition for their work in the past two years read more books ($F=3.541$, $p=.065$). Award-winning faculty read, on average, eight books/book chapters per month, while those who did not receive an award read five books/book chapters. We did not find an association between academics who published more material in the past two years and the amount of book reading.

Overall, the largest influence on book reading patterns is a faculty member's discipline, and while we cannot claim a cause-and-effect relationship, faculty members who received a

certain level of success read more books and as we determined earlier also read more articles. Other demographic characteristics have little influence on the purpose, value, and outcomes of reading.

Other Publication Reading

This section focuses on the other types of publications that may inform academic work but which are not journal article or book readings. We left the definition relatively broad, and the ‘other publications’ encompass a wide range of items, including government documents, trade journals, and conference proceedings. The 2011 study in the United Kingdom is the first time the Tenopir and King surveys have included other publication readings (Tenopir et al. 2012).

Total Amount of Other Publication Reading

As in the previous sections, we started the section by defining terms and asking respondents to estimate total readings in the past month. We asked, “*In the past month (30 days), approximately how many other publications or parts of publications (non-article or book readings) have you read for your work? Include conference proceedings, government documents, technical reports, magazines, trade journals, etc.*” Faculty members in the United States and Australia read an average of ten other publications per month or 120 per year if multiplied by 12 for an approximation of the annual total (M=10.44, SD=25.700).⁸ Half of the respondents read five or more other publications per month.

Type of Other Publication Read and Total Time of Reading

⁸ Excludes one outlier over 200. Including outlier the mean is 18.09.

As in the article and book reading sections, we used the ‘critical incident’ technique to focus the questions on the other publication most recently read, regardless if it is typical. Since the type of publication could vary, we asked the respondents what type of other publication they most recently read. Nearly a third (32%) of the last other publication readings are from magazine/trade journals (Table 35). Respondents also read from news sources (28%), government documents/technical reports (15%), and conference proceedings (6%). Respondents also reported readings from other publications not listed in our answer choices; these include Ph.D. dissertations, ARL best practices document, websites, legal proceedings, and historical documents.

Table 35. Type of Last Other Publication Reading by Seton Hall Faculty

	Frequency	Percent
Conference proceeding	3	6.4
Government document or other technical report	7	14.9
Magazine/trade journal	15	31.9
News source	13	27.7
Other	9	19.1
Total	47	100.0

The average time spent per other publication reading is thirty minutes ($M=29.73$, $SD=26.746$).⁹ Two-thirds of the readings are between eleven and thirty minutes (Table 36).

Table 36. Time Spent on Last Other Publication Reading by Seton Hall Faculty

Minutes	Frequency	Percent
1-10	7	15.9
11-30	29	65.9
31-60	5	11.4
61-90	1	2.3
Over 90	2	4.5
Total	44	100.0

⁹ Excludes one outlier over 200. Including outlier the mean is 41.48.

Readings from government documents take more time on average than readings from other types of 'other publications' ($F=3.422$, $p=.017$). Government documents or other technical reports take an average of 59 minutes per reading, followed by news source ($M=26.00$), conference proceeding ($M=25.00$), and magazine/trade journal ($M=17.69$).

Time to Become Aware of and Obtain Other Publication

While we did not ask the respondents what source they used to become aware of the last other publication reading, we did ask, "About how much time did you or someone on your behalf spend becoming aware of this publication?" On average, faculty members spend less time becoming aware of other publications than articles or books. The average time to become aware of the other publication is seven minutes ($M=7.49$, $SD=10.674$). Over half (58%) of the other publication readings took less than five minutes, and 11% of the readings take at least thirty minutes for respondents to become aware of them. Readings for government documents/technical reports not only take the most time, on average, per reading, they also take the most time to find ($F=3.724$, $p=.011$). On average, the respondents spent the most time becoming aware of government documents/technical reports ($M=20.14$), followed by magazine/trade journal and news source ($M=4.85$), and conference proceeding ($M=3.33$).

We then asked, "After you became aware of the publication, from where did you obtain it?" The majority of other publications are obtained from an electronic source (57%, 26 of 46). Over a third (37%) of the last other publication readings are obtained from a website (Table 37). Only 4% are obtained from the library (2). Other publications are also frequently purchased (33%). The other sources to obtain the other publication include conference packet, listserv, and e-mail.

Table 37. How Seton Hall Faculty Obtain Other Publications

	Frequency	Percent
I bought it for myself	15	32.6 (100.0)
• Print	(12)	(80.0)
• Electronic	(3)	(20.0)
Website	17	37.0
The library or archives	2	4.3 (100.0)
• Print	(1)	(50.0)
• Electronic	(1)	(50.0)
Interlibrary loan or document delivery service (Print)	2	4.3
A colleague, author or other person provided it to me (Electronic)	3	6.5
A free, advanced, or purchased copy from publisher (print)	2	4.3
Other	5	10.9 (100.0)
• Print	(3)	(60.0)
• Electronic	(2)	(40.0)
Total	46	100.0

Seventy-one percent of government documents, 39% of news sources, and 29% of magazine/trade journals are obtained from a website. The majority of magazine/trade journals (57%) and news sources (54%) are purchased. One conference proceeding and one magazine/trade journal was obtained from the library.

Alternative Source to Obtain Other Publication

Based on the *contingent valuation*, value can also be measured based on whether the respondent would obtain the reading from another source (Imholz and Arns 2007). To help gauge value we asked, “Thinking back to where you obtained the publication, where would you obtain the information if that source were not available?” Two-thirds of the other publications would be obtained from another source (29 of 45). There is no significant difference between the original source of the publication and whether it would be obtained from an alternative

source. All (2) of other publications obtained from a library would be obtained from an alternative source if the library were no longer available collection; however, none (2) of the publications obtained from interlibrary loan would be obtained. The majority of other publications from a website (76%), a colleague (67%), a publisher (100%), or purchased publications (57%) would be obtained from an alternative source if the original source were no longer available.

There is a significant association between the type of other publication and if it would be obtained from an alternative source ($\chi^2=2.288$, $p=.683$). Government documents are the least likely to be obtained from an alternative source. Fifty-seven percent of government documents, 31% of magazine/trade journals, 39% of news sources, and 33% of conference proceedings would not be obtained from an alternative source if the original source were no longer available.

Purpose and Value of Other Publication Reading

The principal purpose of the information in the reading provides a picture of the purpose, value and outcomes from the reading, which usage data cannot provide. Unlike the last article or book reading, other publication readings are more likely to be for current awareness (33%) and continuing education (22%) (Table 38). Over one-quarter (26%) of the other publication readings are for research and writing. None of the other publication readings are read for administration or consulting/advising.

Table 38. Principal Purpose of Other Publication Reading by Seton Hall Faculty

	Frequency	Percent
Research & writing	12	26.0
Teaching	8	17.4
Current awareness/keeping up	15	32.6
Internal or external presentations	1	2.2
Continuing education for self	10	21.7
Total	46	100.0

The type of other publication significantly influences the principal purpose or reading ($\chi^2=29.083$, $p=.086$). All of the readings from conference proceedings support research and writing (3). Government documents are read for research and writing (57%), current awareness (29%), and continuing education (14%). Magazine/trade journals are often read for current awareness (50%) and continuing education (36%). News sources are read for teaching (31%), current awareness (31%), continuing education (23%), and research (15%).

Purchased other publications support current awareness (47%) and continuing education (40%). Readings obtained from a website support research and writing (47%) and current awareness (29%).

To learn how the reading affects the principal purpose, we posed a series of questions starting with, “*How important is the information contained in this publication to achieving your principal purpose?*” Unlike the article and book readings, other publication readings tend to be considered ‘somewhat important’ and ‘important’ to the principal purpose, rather than ‘very important’ or ‘absolutely essential’ (Table 39). None of other publication readings are considered ‘not at all important’. Over three-quarters of the other publications are considered ‘somewhat important’ or ‘important’ (25 of 46). Thirteen percent are considered ‘absolutely essential’.

Table 39. Importance of Other Publication Reading to Principal Purpose of Seton Hall Faculty

	Frequency	Percent
Somewhat important	19	41.3
Important	16	34.8
Very important	5	10.9
Absolutely essential	6	13.0
Total	46	100.0

There are some significant differences based on the type of other publication ($\chi^2=14.068$, $p=.296$) and the principal purpose of reading ($\chi^2=24.595$, $p=.056$). Forty-three percent of government documents, one-third of conference proceedings, 7% of magazine/trade journals, and 15% of news sources are considered ‘very important’ or ‘absolutely essential’. Fifty-seven percent of magazine/trade journals and 46% of news sources are considered ‘not at all important’ or ‘somewhat important’.

Half of readings for research and writing (6 of 12) and 37% of readings for teaching (3 of 8) are considered ‘absolutely essential’ or ‘very important’, while only 7% of readings for current awareness/keeping up (1 of 15) and none of the readings for continuing education are considered the same.

The specific outcomes of the reading also provide insight into its importance and value. Other publications often inspired new thinking, improved the result, and saved time or resources (Table 40). None of the readings are considered a waste of time or resolved technical problems. The other outcome of the other publication reading is ‘provided information related to curriculum.’

Table 40. Outcomes of Other Publication Reading for Seton Hall Faculty*

	Frequency	Percent
Inspired new thinking	30	62.5
Improved the result	16	33.3
Saved time or resources	7	14.6
Narrowed/broadened/changed the focus	3	6.3
Made me question my work	3	6.3
Resulted in collaboration/joint research	3	6.3
Resulted in faster completion	2	4.2
Others	1	2.1
Total	48	

*Respondents could select more than one.

Also unlike article or book readings, other publications are less likely to be cited. Less than a quarter (24%) of the other publication readings have been cited or will be cited (Table 41). Over half (57%) of the readings will not be cited. Two-thirds of the readings for research and writing have been or will be cited (8 of 12).

Table 41. Citation of Last Other Publication Reading by Seton Hall Faculty

	Frequency	Percent
No	26	56.5
Maybe	9	19.6
Already cited	2	4.3
Will in the future	9	19.6
Total	46	100.0

Government documents are the most likely to be cited ($\chi^2=18.261$, $p=.108$) with 71% having been or intended to be cited in the future. One-third of conference proceedings (1 of 3), 25% of magazine/trade journals (1 of 4), and 8% of news sources (1 of 13) have been or will be cited.

Differences of Other Publication Reading Patterns by Demographics

Differences of Reading Patterns by Discipline

We did not find a significant association between discipline and the number of other publication readings, time spent per reading, or type of publication. One respondent explains the importance of other publications in their field, “Please note that research in most of Computer Science (and a few areas of Mathematics) recognizes the refereed conference (and even the refereed workshop) as an equal or near-equal venue to refereed journal proceedings.” Academics in every discipline are reading a variety of other publications with a focus on government documents, magazine/trade journals, and news sources.

Readings by faculty members in every discipline are split between being purchased and obtained from websites. The two readings obtained from the library are from faculty in the medical/health fields.

Readings in each discipline are read for a variety of principal purposes. Humanists read for research and writing (30%), teaching (20%), and current awareness (20%). Social scientists read for current awareness (33%), research (28%), and teaching (17%). Faculty in the medical/health fields read for current awareness (50%), research (20%), and teaching (20%). Other publications support all aspects of academic work.

Social scientists are more likely to consider the other publication reading important to the principal purpose than other disciplines ($\chi^2=27.400$, $p=.007$). Forty-four percent of readings by social scientists are considered ‘very important’ or ‘absolutely essential’; 39% are considered ‘important’, and 17% are considered ‘somewhat important’. On the other hand, 80% of readings by humanists and by scientists are considered ‘somewhat important’ and none of the readings are considered ‘very important’ or ‘absolutely essential’. Seventy percent of readings by faculty in the medical/health fields are considered ‘somewhat important’ or ‘important’.

Differences of Reading Patterns by Position, Age, Gender, and Productivity

We did find a significant association between the number of other publication readings or time spent per reading and the respondent's position, age, gender, or productivity. We did not find the respondent's position to influence other publication reading patterns. We did not find any associations between respondent's age and the principal purpose or importance of other publication reading.

There are some variations between respondent's age and type of other publication reading ($\chi^2=24.469$, $p=.080$). While respondents in each age group (decade) read all types of other publications, we found a focus on certain types of other publications that varied between decades. Respondents in their 30s read government documents (43%) and magazine/trade journals (29%). Respondents in their 40s read magazine/trade journals (40%). Respondents in their 50s read new sources (48%), magazine/trade journals (27%), and government documents (16%). Respondents over-60 read magazine/trade journals (38%) and news sources (38%).

Respondents under 50 years of age are more likely to obtain the other publication from a website, while respondents over-50 are more likely to purchase the publication ($\chi^2=35.825$, $p=.057$). Half of the readings by respondents in their 40s and 57% of readings by respondents in their 30s are obtained from a website. Forty-seven percent of readings by respondents in their 50s and 63% of readings by respondents over-60 are purchased. None of the readings by respondents in their 40s and only 14% of readings by respondents in their 30s are purchased.

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 examined the influence of social media on the reading of

traditional materials. Social media or Web 2.0 technologies are collaborative, innovated user-generated content. According to the JISC website (2010), social media or Web 2.0 technologies are “innovative online tools designed to enhance communication and collaboration.” Social media includes blogs, twitter, online videos, and social networks.

A 2010 study by the Research Information Network (RIN) 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

We asked, “*How often do you read, view, or access each of the following for work related purposes (Teaching, research, etc.)?*” and “*How often do you create each of the following for work related purposes (teaching, research, etc.)?*” We specified ten social media tools—blogging (e.g., WordPress, Blogster), microblogging (e.g., Twitter), RSS feeds, social networking (e.g., LinkedIn), social tagging (e.g., Delicious), collaborative authoring (e.g.,

Google docs, CiteULike), user comments in articles, image sharing (e.g., Flickr), audio sharing (e.g., podcasts), and video sharing (e.g., YouTube). Their responses ranged from daily, weekly, monthly, occasionally, or never.

Faculty members participate in social media more than they create it; however, their use and creation is more often occasional rather than on a regular basis. Other faculty members confirmed the idea that social media may help spread some ideas and provoke thoughts but are not as valuable as traditional scholarly material. Only 6% of the respondents do not participate in any of the social media tools at least occasionally (4 of 64).

Video sharing (e.g., YouTube), user comments in online articles, and social networking (e.g., Facebook), and are the most frequently used; however, their use tends to be on the occasional rather than regular basis (Table 42). Thirty-one percent participate in video sharing; 22% participate in social networking; and 17% participate in comments in articles on a daily or weekly basis. Social tagging (e.g., Delicious), microblogging (e.g., Twitter), and RSS feeds are the least frequently used.

Table 42. Participation in Social Media by Seton Hall Faculty

	Daily	Weekly	Monthly	Occasionally	Never	Total
Blogging	9 14.1%	8 12.5%	2 3.1%	13 20.3%	32 50.0%	64 100.0%
Microblogging	5 7.8%	0 0.0%	1 1.6%	5 7.8%	53 82.8%	64 100.0%
RSS Feeds	2 3.1%	5 7.8%	1 1.6%	12 18.8%	44 68.8%	64 100.0%
Social Networking	9 14.3%	5 7.9%	2 3.2%	21 33.3%	26 41.3%	63 100.0%
Social Tagging	2 3.2%	1 1.6%	0 0.0%	5 7.9%	55 87.3%	63 100.0%
Collaborative Authoring	1 1.6%	5 7.8%	2 3.1%	22 34.4%	34 53.1%	64 100.0%
Comments in articles	4 6.3%	7 10.9%	7 10.9%	22 34.4%	24 37.5%	64 100.0%
Image sharing	1 1.6%	3 4.7%	2 3.1%	17 26.6%	41 64.1%	64 100.0%
Audio sharing	2 3.2%	1 1.6%	5 8.1%	21 33.9%	33 53.2%	62 100.0%
Video sharing	7 10.9%	13 20.3%	7 10.9%	19 29.7%	18 28.1%	64 100.0%

Fewer faculty members report that they create social media, and their creation is on an occasional rather than regular basis. User comments in online articles, collaborative authoring (e.g., Google Docs), and social networking are the most frequently created (Table 43). As with participation in social media, social tagging, RSS feeds, and microblogging are the least frequently created tools. Only 28% of respondents do not create any of the social media tools at least occasionally (18 of 64).

Table 43. Creation of Social Media by Seton Hall Faculty

	Daily	Weekly	Monthly	Occasionally	Never	Total
Blogging	1 1.6%	2 3.1%	4 6.3%	8 12.5%	49 76.6%	64 100.0%
Microblogging	1 1.6%	2 3.1%	0 0.0%	4 6.3%	57 89.1%	64 100.0%
RSS Feeds	0 0.0%	1 1.6%	0 0.0%	5 7.8%	58 90.6%	64 100.0%
Social Networking	2 3.1%	1 1.6%	3 4.7%	14 21.9%	44 68.8%	64 100.0%
Social Tagging	2 3.2%	0 0.0%	0 0.0%	4 6.5%	56 90.3%	62 100.0%
Collaborative Authoring	0 0.0%	3 4.8%	4 6.3%	15 23.8%	41 65.1%	63 100.0%
Comments in articles	1 1.6%	6 9.5%	3 4.8%	15 23.8%	38 60.3%	63 100.0%
Image sharing	1 1.6%	3 4.8%	2 3.2%	4 6.3%	53 84.1%	63 100.0%
Audio sharing	0 0.0%	0 0.0%	2 3.2%	6 9.5%	55 87.3%	63 100.0%
Video sharing	1 1.6%	2 3.2%	0 0.0%	8 12.9%	51 82.3%	62 100.0%

Scholarly Reading and Participation and Creation of Social Media

One reason we examined the use and creation of social media was to see how it influenced the use of traditional scholarly material. Are academics using social media for information instead of journal articles? Are academics using and creating social media as a form of collaboration and to share ideas? Is social media replacing traditional material? Do academics 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 a significant association between the amount of scholarly reading and participation in or creation of social media.

Participation in Social Media and Demographics

For our analysis we define participation and use of social media as using the tool occasionally to monthly, weekly, or daily. We did not find any significant associations between discipline and participation in any of the social media tools. Overall, social scientists tend to participate the most frequently in each of the tools (Table 44). Video sharing, social networking, and blogging are the most popular tools in each discipline.

Table 44. Percentage of Seton Hall Faculty Who Participate in Social Media by Discipline

	Social Sciences	Humanities	Sciences	Medical/Health
Blogging	14 58.3%	9 64.3%	4 40.0%	4 30.8%
Microblogging	8 33.3%	0 0.0%	1 10.0%	2 15.4%
RSS Feeds	10 41.7%	2 14.3%	2 20.0%	6 46.2%
Social Networking	17 70.8%	6 46.2%	4 40.0%	9 69.2%
Social Tagging	6 25.0%	0 0.0%	0 0.0%	2 16.7%
Collaborative Authoring	11 45.8%	5 35.7%	6 60.0%	7 53.8%
Comments in articles	19 79.2%	9 64.3%	3 30.0%	8 61.5%
Image sharing	10 41.7%	5 35.7%	4 40.0%	4 30.8%
Audio sharing	13 54.2%	5 38.5%	3 33.3%	8 61.5%
Video sharing	18 75.0%	10 71.4%	7 70.0%	10 76.9%

The respondent’s age influences the use of microblogging ($\chi^2=13.191$, $p=.010$). Forty-three percent of respondents under-40 participate in microblogging on a daily to occasional basis, while only 17% of respondents in their 50s participate in it (Table 45). We did not find any other significant associations between the respondent’s age and the participation in the other social

media tools listed. Comments in articles, social networking, and video sharing are frequently used in each age grouping (decade).

Table 45. Percentage of Seton Hall Faculty Who Participate in Social Media by Age

	Under 40	41-50	51-60	Over 60
Blogging	8 57.1%	7 58.3%	12 52.2%	4 30.8%
Microblogging	6 42.9%	1 8.3%	4 17.4%	0 0.0%
RSS Feeds	6 42.9%	1 8.3%	11 47.8%	2 15.4%
Social Networking	7 50.0%	5 41.7%	17 77.3%	8 61.5%
Social Tagging	1 7.1%	0 0.0%	4 18.2%	3 23.1%
Collaborative Authoring	7 50.0%	5 41.7%	12 52.2%	5 38.5%
Comments in articles	9 64.3%	6 50.0%	16 69.6%	7 53.8%
Image sharing	5 35.7%	2 16.7%	10 43.5%	4 30.8%
Audio sharing	7 50.0%	3 25.0%	13 59.1%	5 41.7%
Video sharing	11 78.6%	10 83.3%	17 73.9%	6 46.2%

Creation of Social Media and Demographics

For our analysis, we defined the *creation* of social media as daily, weekly, monthly, or occasionally. We did not find any significant associations between discipline and the creation of any of the social media tools. As with the participation in social media, social scientists tend to create social media more frequently than the other disciplines. Social scientists are the only creators of RSS feeds; 25% of social scientists create RSS feeds at least occasionally, while no respondents in the other disciplines create it. User comments in articles and collaborative

authoring are the most frequently created in each discipline; however, their creation is still more occasional than frequent.

Respondent's age significantly influences the creation of user comments in online articles (12.357, $p=.015$). Nearly two-thirds (64%) of respondents under 40 years of age (9 of 14) create user comments at least occasionally, while 30% of respondents over-40 (14 of 47) create them. We did not find any significant associations between age of the respondent and creation of the other social media tools. Social networking and collaborative authoring are the most frequently created within each age grouping (decade); however, their creation is more occasional than frequent.

Open-Ended Questions

At the end of the survey, we asked, "*What role do scholarly articles play in your research, teaching, or other scholarly activities?*" and "*Final Comments.*" We hoped the open-ended questions would provide a 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 59 comments to the first question.

The following are responses we received for "*What role do scholarly articles play in your research, teaching, or other scholarly activities?*" The majority of the comments describe the importance of articles in their work. We separated the comments into three categories—descriptive only, role in research and teaching, and role in work beyond research and teaching.

Descriptive Only:

- *A major part*
- *A significant amount*

- *A considerable role*
- *Essential for my research*
- *Essential to both research and teaching*
- *Essential to both.*
- *Essential.*
- *Major*
- *Major role*
- *They are essential*
- *They are essential.*
- *Very important*
- *They are important and essential*
- *Very important!*
- *Useful when needed*
- *You are lost without them.*

Role in their research and teaching:

- *I read every day for my research. Poor access was the main reason I left previous institution. I think academic position in institutions with poor access are an exercise in futility.*
- *I use them to stay relevant and factual when teaching.*
- *I write textbooks, conduct research and publish journal articles, and teach. All three rely heavily on scholarly articles.*
- *I have undergraduate students read and report on one to make sure that they are bringing research into the classroom.*
- *Most important for research.*
- *Obviously quite important to research and teaching.*
- *Scholarly articles are an integral part of my every day work in teaching, research and book/chapter writing and giving professional presentations.*

- *Scholarly articles are the beginning, ending and middle of my mathematical research. My collaborative work with people outside of mathematics is mostly data analysis, and so scholarly articles are less important to my work there.*
- *Scholarly articles are very important in my teaching.*
- *Scholarly articles play essential role for my research and teaching.*
- *Substantive role in refining details for teaching. Required for performing clinical research.*
- *They are a resource I use daily to support all of my work.*
- *They are absolutely indispensable for my research. They are useful for teaching.*
- *They are critical to my success as a researcher and instructor.*
- *They are essential to all of my activities in research, teaching and other scholarship.*
- *They are essential to my research because the subject of my research is the scholarly record. They help me know my teaching by giving breadth to my knowledge.*
- *They are very important for my research. They are necessary for all of my research and writing projects for refereed journals. They are also essential for the research that goes into my professional conference presentations. As for teaching, most of my courses involve some minimal use of scholarly articles for students to read.*
- *They are vital to my research and teaching.*
- *They inform the content of my teaching, and influence my thinking related to my research*
- *They play a huge role in my research and teaching. Scholarly articles whether in journals or book collections are a form of information exchange I could not function without and online resources at this point are indispensable.*
- *They're irreplaceable in both research and teaching. They form the largest part of the scholarly conversation in my area of research.*
- *Use scholarly articles for ideas for teaching and as the basis for my own scholarly work.*

Role in work beyond research and teaching:

- *A lot. Constantly updating and looking for new information and better ways to help students learn.*

- *Absolutely essential. My only peer-reviewed publications to date are journal publications.*
- *Critical--working with collaborators on and off campus.*
- *Crucial to maintaining understanding of debates in field; excellent source for short readings for undergraduate courses. Fundamental to teaching graduate students.*
- *I cite no less than 88% of scholarly articles in my published scholarly journal articles. I utilize scholarly articles at least 60% of the time in my teaching and my students' term/Research papers must have 100% scholarly articles as sources to support claims in their papers.*
- *I edit a scholarly journal and read a lot of manuscripts before passing the worthwhile ones to the editorial board for decision. I also peruse books before sending them out for review.*
- *Important though not extremely important. All buttressed by journalistic media.*
- *It lays the foundation for all I do*
- *Major role. Very useful when access to top-notch journals is free.*
- *My area of expertise is psychiatric mental health nursing scholarly journals are imperative to keep me informed of advances in the field and best practices.*
- *New Ideas, argumentation, phenomenological descriptions, etc.*
- *The majority of time spent in preparation for teaching, research and conference materials relies on access to multiple databases supporting a variety and depth of scholarly articles in the health sciences and education.*
- *They are extremely important in stimulating ideas, supporting research and writing and informing classroom presentations.*
- *They help to shape and focus my work.*
- *They play an important role, keeping me abreast of advances in my field.*
- *They provide topical overviews as well as specific research for my own papers and or teaching advancement.*
- *Use them for literature reviews and to inform work.*
- *Very important as they provide me with the cutting-edge in my field.*

- *Very important. Research and pubs keep me actively engaged in academic and research community; keep me empowered and updated in teaching. Play a role model to junior faculty on commitment to scholarship.*
- *Vital. I cannot be informed or position my scholarship within my discipline without extensive reading in scholarly articles. I also use them as part of my syllabi and to learn about methods for teaching. As a member of the editorial board of a journal, I need to be informed about what's current.*

The following are final comments we received from Seton Hall faculty members:

- *I don't use new technology for research (such as twitter, I-pads, kindle, etc.). I do sometimes download articles from JSTOR and read them on my computer, but I always read books in print version and would never read them online. It is important to have physical copies of books available for research.*
- *Since I subscribe to various journals such as the American Historical Review and serve on the editorial board of various journals, which I receive for reading manuscripts I read whatever is in what I get. I am also asked to read manuscripts by various presses for whom I review submissions- there is no way to note that in this survey. I also continue to write and research and in order to do that read material on line and in print. Since publication can take time that is not shown in this survey.*
- *Interlibrary loan does not always work.*
- *My teaching is in both natural sciences and humanities/social sciences, and I depend on both professional journals and high end news media (NY-er, NY Review of Books, NY Times) as well as the online searchable databases in the university library*
- *Need for institutional access to more tier 1 journals*
- *Please note that research in most of Computer Science (and a few areas of Mathematics) recognizes the refereed conference (and even the refereed workshop) as an equal or near-equal venue to refereed journal proceedings. My reported numbers of publications would have been much different if the question were asked differently.*

- *Some of the questions as to how many minutes spent gathering materials were very hard to recall/judge. I probably spend more time cruising databases and bibliographies than indicated.*
- *The question on the use of books was oddly phrased. I do seek books from the library or request books through interlibrary loan, primarily for historical support of a topic I am engaged in. The wording forced me to answer the question based on a textbook I use for a course this semester and I am not sure that this response was the intent of the question. Please continue to support a wide range of journals through full-text databases. These subscriptions facilitate rapid acquisition of needed information for faculty and students.*

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. Nearly all respondents noted their importance to researching and teaching roles, with many faculty members calling them "essential." Others stressed their importance in keeping up-to-date with developments in their field. Faculty appreciate the convenience and accessibility of e-resources as fundamental to their work. One respondent observed, an "academic position in institutions with poor access are [*sic*] an exercise in futility."

Role of Library Collections

We re-categorized how someone obtains scholarly reading material into three basic categories: library-provided, personal subscription/purchase, and other. We included interlibrary loan, library collections/subscriptions, and school/department collections with the library-provided material. Personal sources include purchased copies and personal subscriptions. The other sources include websites, institutional repository, free web journals, colleagues, and publishers.

Since 1977 we have found an increasing reliance on library-provided articles and a decrease in personal journal subscriptions in the United States (King et al. 2003). A majority of scholarly article readings are obtained from the library (55%), a finding that is consistent with previous studies (King et al. 2003). Nineteen percent of article readings are from a personal subscription, which is higher than our findings at the other universities surveyed in 2012 (Table 46). Unlike article readings, book readings are more likely to be obtained from a personal source (40%), and only 24% of book readings are obtained from the library collection. The majority of other publications are from an ‘other’ source (59%); these include a website (37%), publisher (4%), or colleague (7%).

Table 46. Source of Reading by Seton Hall Faculty

	Article		Book		Other Publication	
	N	%	N	%	N	%
Library-provided	38	55.1	15	23.8	4	8.7
Personal source	13	18.8	25	39.7	15	32.6
Others	18	26.1	23	36.5	27	58.7
Total	69	100.0	63	100.0	46	100.0

A 2011 RIN study found a relationship between the institution’s library and its research performance. The RIN study concludes that easy access to high-quality content is a key foundation for good research, and when the library works in partnership with researchers it enables better library services and creates top researchers. We found a similar association between the library’s resources and its support of research ($\chi^2 = 31.850, p = .004$).¹⁰ Nearly three-quarters (74%) of articles obtained from the library are read for the principal purpose of research and writing (Table 47). Twenty-three percent of articles obtained from a personal subscription and 35% of articles from other sources are for the principal purpose of research and writing.

¹⁰ 43.3% of cells have expected count less than 5. The likelihood ratio was used.

Table 47. Association between Principal Purpose of Reading and Source of Article

		Library Provided	Personal Subscription	Others	Row Total
Principal Purpose	Research & Writing	28 73.7%	3 23.1%	6 35.3%	37 54.4%
	Teaching	6 15.8%	3 23.1%	6 35.3%	15 22.1%
	Current awareness	1 2.6%	5 38.5%	3 17.6%	9 13.2%
	Others	3 7.9%	2 15.4%	2 11.8%	7 10.3%
	Column Total	38 100.0%	13 100.0%	17 100.0%	68 100.0%

Books obtained from the library are more likely to be for research and writing than readings from other sources ($\chi^2=21.374$, $p=.045$). While 60% of library-provided books are for the principal purpose of research and writing, only 44% of purchased books and 33% of books obtained from other sources are for research and writing. Nearly two-thirds (64%) of books obtained from other sources and 32% of purchased books are for teaching. One respondent proves the importance of library-provided research material, “I read every day for my research. Poor access was the main reason I left previous institution. I think academic positions in institutions with poor access are an exercise in futility.” A well-stocked library can be an incentive to attract faculty members.

The library’s collection also benefits the faculty members because it provides a wide-range of materials. The library’s collections provide access to older articles in addition to the current collections (Table 48). Regardless of the age of the publication, the majority of library-provided articles are from its electronic collections. Fifty-seven percent of the articles published over fifteen years ago are from a library subscription (4 of 7). All the readings from a personal subscription are in their first eighteen months of publication. Our findings show the library’s back files in addition to current subscriptions are a key investment.

Table 48. Association between Source of Article and Year of Publication

	Library Provided	Personal Subscription	Others	Row Total
Over 15 years (Before 1997)	4 10.8%	0 0.0%	3 16.7%	7 10.3%
11 ~ 15 years (1997-2001)	1 2.7%	0 0.0%	2 11.1%	3 4.4%
6 ~ 10 years (2002-2006)	7 18.9%	0 0.0%	1 5.6%	8 11.8%
2 ~ 5 years (2007-2010)	11 29.7%	0 0.0%	5 27.8%	16 23.5%
Less than 2 years (2011-1/2 of 2012)	14 37.8%	13 100.0%	7 38.9%	34 50.0%
Column Total	37 100.0%	13 100.0%	18 100.0%	68 100.0%

Value of the library for scholarly work and the research can be represented by how many hours per year each faculty member dedicates to library-provided reading. Based on past methodology that creates a formula to measure faculty 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 research, teaching, and other work activities (Luther 2008). We can illustrate the total amount of reading by each faculty member 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 faculty member devotes to library-based work (Table 49).

¹¹ Excludes outliers.

Table 49. Value of Library Resources to Seton Hall Faculty

	Time per reading (in minutes)	Number read per month	Multiplied by 12 months	Percent from library	TOTAL
Article	38	22	12	.55	92 hours
Book	142	6	12	.24	41 hours
Other Publication	30	10	12	.09	5 hours

Faculty members spend the most time on library-provided article readings, approximately ninety-two hours each year. They spend approximately forty-one hours on library-provided book readings and only five hours on library-provided other publication readings. Annually, faculty members spend 138 hours of their work time with library-provided material, or the equivalent of 17 eight-hour days. Clearly, the amount of time spent reading library-provided material has a profound impact on the quality and focus of academic work and research.

Academics at Seton Hall University read a variety of scholarly materials on a monthly basis. Their readings have a profound impact on their research and other work duties, often improving the quality and results. We see a connection between the success of faculty members and article and book reading. While the faculty's discipline influences reading patterns, each discipline believes scholarly reading is important to research and other work activities.

Academics have nearly instant access to the library's collections, e-mails with colleagues, social media, and other websites. The problem now is how to weed through all the material and figure out what is the most relevant and highest quality. Time becomes a major deciding factor.

Currently, the library's e-collections and discovery tools provide a convenient source of scholarly articles, and as a result, are the most likely source of articles. On the other hand, academics are not using the library as often for books and other publications, most likely because the other sources are more convenient. The library should use its electronic journal collections as a model for the future of its book and other publication collections. Academics are

responding well to electronic sources, from e-books to social media, and furthering the library's use of those mediums will only improve the value of the library.

The value of scholarly material is apparent from our study and continuing to improve the faculty's access to scholarly material will only help to improve the quality of research and work.

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