

Lib-Value Report: Seton Hall Undergraduate Students



Carol Tenopir and Rachel Volentine
With the assistance of Lisa Christian and Liz Whitson

Center for Information and Communication Studies
University of Tennessee, Knoxville

Spring 2012

Funding by the Institute of Museum and Library Services (IMLS)



Introduction

Undergraduate students now have many choices of where and how to access scholarly articles, books, or other materials. In order to determine the best method to provide undergraduate students with scholarly material, we need to determine: How does the library role and value compare to the role and value of other sources for scholarly readings? Why do undergraduate students read scholarly materials? Do reading patterns vary according to purpose of reading, source of reading, or individual characteristics of readers such as academic discipline, status, or age? How do the reading patterns of undergraduate students differ from graduate students or faculty members? What is the role and value of the academic library in providing access to scholarly content in a changing digital landscape?

The Value, Outcome, and Return on Investment of Academic Libraries project (Lib-Value) is a three-year study funded by the Institute of Museum and Library Services (IMLS). Part of the project seeks to measure the value of 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 undergraduate students 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

Since 1977, Tenopir and King have conducted reading surveys of scientists and faculty in the university and non-university setting (King et al. 1981; Belefant-Miller and King 2001). In 2003 these surveys were expanded to include undergraduate science students' electronic journal reading patterns as part of an NSF-funded National Science Digital Library project (Tenopir 2003). The study found that undergraduate students turn to electronic sources first, in particular the Web, for their coursework, and requirements in their courses and instructions from professors guide their understanding and use of scholarly journals (Madden and Jones 2002; Tenopir et al. 2003).

Recent studies have shown that undergraduate students often use the sources that are most convenient to them, rather than those that are of the highest quality (Tenopir 1999). Easy availability of full-texts of articles is the most important deciding factor for undergraduates when selecting a digital resource for research (Tenopir 1999). In 2004-2006, Tenopir and King conducted reading surveys of graduate and undergraduate students in the United States, Australia, Finland, and Japan (Tenopir et al. 2010). The surveys found that lower-division undergraduate students often do not use scholarly articles unless specifically required for an assignment, although upper-division undergraduates writing a thesis report using more articles (Wolverton and Tenopir 2006). The majority of these articles were from e-journals; in all cases, students recognized convenience as a factor in using electronic resources.

The earlier studies focused on scholarly article readings and the use of e-journals, while this study expands the scope to include scholarly book readings and social media. The results from Seton Hall University are a part of a larger scale study of universities in the United States, the United Kingdom, and Australia.

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

Methodology

This survey examines the reading of scholarly articles, 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 with earlier reading surveys. The questions are based on two principal sections—reader-related (demographics) and reading-related. Reader-related questions focus on the demographics of the respondent; the questions include age, gender, and major.

The reading-related questions mostly use 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 undergraduate student population of approximately 5,000. The message included an embedded link to a survey housed on the University of Tennessee’s server. We received 149 responses for a response rate of 2.9%. The low response rate may make it hard to generalize across the population, and while our results are not weighted, weighting the results may help improve the accuracy of the responses. Since respondents were allowed to leave the survey at any time, skip questions, or were timed out automatically if they began the questionnaire and did not complete it, most of the questions have a lower number of responses. All respondents for a particular question equal 100% for that question.

Demographics of Respondents

Academic Major

Undergraduate students were asked to list their major. For analysis, we collapsed the majors into six categories, based on similarities in their fields (Table 1). Fine arts were combined with humanities; law, psychology, business, and education were combined with social

sciences. Forty-three percent of the respondents are in the social sciences; 20% are in the medical/health fields, and 16% are in the sciences. The remaining ‘other’ disciplines are interdisciplinary fields (i.e., ‘political science and philosophy’) or disciplines that did not clearly fit into one of the larger categories (e.g., ‘athletic training’).

Table 1. Academic Disciplines of Seton Hall Undergraduate Students

	Respondents		All Undergraduates	
	N	%	N	%
Social Sciences	42	43.3	1775	34.8
Sciences	15	15.5	799	15.7
Humanities	8	8.2	841	16.5
Engineering/Technology	4	4.1	51	1.0
Medical/Health	19	19.6	837	16.4
Undecided	3	3.1	270	5.3
Others	6	6.2	523	10.3
Total	97	100.0	5096	100.0

The most popular fields of study at Seton Hall University are law, nursing, international relations, education, and business management or administration. Our responses reflect the fields of study at Seton Hall, with a larger percent of respondents in the most popular fields of study.

Status, Age, and Gender

We asked the respondents for their year of study (Table 2). Each class was represented in the responses. Thirty percent of the undergraduate students are in their senior year; 26% in their junior year; 24% in their sophomore year; and 21% in their freshman year. Nearly all (97.9%, 94 of 96) of the respondents are full-time students.

Table 2. Academic Status of Seton Hall Undergraduates

	Respondents		All Undergraduates	
	N	%	N	%
Freshman	20	20.6	1662	32.9
Sophomore	23	23.7	1090	21.6
Junior	25	25.8	1175	23.3
Senior	29	29.9	1124	22.3
Total	97	100.0	5051	100.0

The majority of respondents are under twenty-two years of age (Table 3). Only 8% are over thirty years of age. The respondents' ages range from eighteen to sixty-two years of age.

Table 3. Age Range of Seton Hall Undergraduates

	Frequency	Percent
Under 20	28	29.2
20 ~ 22	52	54.2
23 ~30	8	8.3
Over 30	8	8.3
Total	96	100.0

Freshman respondents are nearly all under twenty years (85%, 17 of 20), while 44% of sophomores are under twenty and 48% are between twenty and twenty-two years of age (10 and 11 of 23 respectively). Juniors (84%, 21 of 25) and seniors (71%, 20 of 28) are primarily between twenty and twenty-two years of age. Half of the respondents over thirty years of age are seniors (4 of 8). Because we do not have access to data on the age breakdown of the total student population, we are unable to comment on how representative our respondents are in age to the total student body.

In our study, 72% of the respondents are female (Table 4). The 2012 student population, including undergraduate and graduate students at Seton Hall, is 59% female and 41% male.

Table 4. Gender of Seton Hall Undergraduates

	Frequency	Percent
Male	27	28.1
Female	69	71.9
Total	96	100.0

There are some differences based on discipline. Male respondents account for three-quarters of humanities, half of engineering/technology, one-third of social sciences, slightly less than one-third of sciences, and none of medical/health respondents. Nearly all of the medical/health students are nursing majors, which may explain the gender gap.

Information Sources Used

We asked respondents, “*What sources did you use the last time you needed important information?*” Respondents could select more than one answer. Websites, journal articles, and book/book chapters are popular sources for information (Table 5). Respondents sought information from an instructor (35%) or a friend (18%) more often than a librarian (13%). The other sources for information include: social media, newspapers, and databases.

Table 5. Information Sources Used by Seton Hall Undergraduates*

	Frequency	Percent
Web site	73	73.7
Journal article	68	68.7
Book or book chapter	61	61.6
An instructor	35	35.4
A friend or someone I know	18	18.2
A librarian	13	13.1
Magazine article	12	12.1
Other	4	4.0
Total	99	

*Respondents could select more than one.

Students in all disciplines, except those in the medical/health fields, most frequently refer to websites, followed by journal articles, and then book/book chapters for information. Students in the medical/health fields first turned to book or book chapters (63%, 12 of 19), then journal articles (58%, 11) and websites (53%, 10). This may reflect more emphasis on textbooks in the medical/health fields among undergraduates.

Article Reading

Total Amount of Article Reading

An initial step in exploring journal article reading patterns is determining the total number of article readings in the past month. To improve the accuracy of their response and minimize the inherent bias of self-reporting, we asked for a relatively short period of time (one month) rather than asking the respondents to reflect back over a longer period of time and we define the key terms very specifically. We distributed the survey in March, and we assume the last month is an accurate representation of a typical month of reading. The first question stated, “*In the **past month (30 days)**, approximately how many scholarly articles have you read? (Articles can include those found in journal issues, Web sites, or separate copies such as preprints, reprints, and other electronic or paper copies. Reading is defined as going beyond the table of contents, title, and abstract to the body of the article).*” The actual number is less important than the relative amounts among types of respondents and over time. For convenience, we often report results from faculty and graduate students as readings per year, by taking the monthly number reported by the respondent and multiplying it by 12. Since undergraduate students who do not take summer school classes are unlikely to read as many scholarly articles in the summer, multiplying by 9 or 10 months may be more realistic.

As expected, there is a wide-range of responses, with students reporting from zero to 200 readings in the past month. Only 7% of the respondents did not report any article readings in the past month, and over one-third (38%) report more than ten readings (Table 6). In the last month, the undergraduate students read an average of fifteen articles (M=14.78, SD=20.890).¹ Zero readings are included in the average. The average undergraduate student reads 135 articles in a nine-month year.

Table 6. Number of Article Readings by Seton Hall Undergraduate Students

Article Readings Per Month	Frequency	Percentage
0	10	6.8
1 ~ 2	12	8.2
3 ~ 4	15	10.2
5 ~ 10	54	36.7
11 ~ 15	14	9.5
16 ~ 30	29	19.7
31 ~ 45	5	3.4
Over 45	8	5.4
Total	148	100.0

We asked respondents how many of the readings were for a class and determined the percentage of readings for class by dividing the respondent's total number of article readings by the number of readings for class. On average, the majority of the respondent's readings are for a class (Table 7). Two-thirds of the respondents read over half of the articles for a class (90 of 136), and only 16% of the respondents read less than one-quarter of the articles for a class (22).

Table 7. Percent of Article Readings for Class by Seton Hall Undergraduate Students

Percent of readings for class	Frequency	Percentage
< 25%	22	16.2
25 ~50%	24	17.6
51 ~ 75%	15	11.1
>75%	75	55.1
Total	136	100.0

¹ Excludes one outlier over 250. Including outlier the mean is 20.72.

Regardless of students' majors, the majority of readings are for class (approximately 60-75%). Freshman and senior students read more articles outside of class ($F=2.468$, $p=.067$). On average, only 57% of readings by freshman and 63% of article readings by seniors are for class. Sophomore and junior students tend to read fewer articles outside of class—on average, 81% of readings by sophomores and 78% of readings by juniors are for class.

Last Incident of Reading and Date of Publication

The next set of questions asked students 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 undergraduate students. We asked, "*The following questions in this section refer to the SCHOLARLY ARTICLE YOU READ MOST RECENTLY, even if you had read the article previously. Note that this last reading may not be typical, but will help us establish the range of reading patterns.*" We then asked for the title or topic of the journal article from which the last reading took place in order to focus their minds on the article for the rest of the critical incident questions.

Forty-two percent of the article readings by graduate students at Seton Hall are in the first eighteen months of publication, and to see how undergraduate students compared we asked, "*What year was the last article you read published/posted?*" Similarly, we found 43% of the readings are within the first eighteen months of publication (Table 8). Since the survey was conducted in the spring of 2012, we included the first six months of the year in our analysis. The year of publication ranges from 1845 and 1957 to 2012 with 15% of the articles fifteen-years-old or older.

Table 8. Age of Article Readings by Undergraduate Students at Seton Hall

Year	Frequency	Percentage
Over 15 years (Before 1997)	15	14.7
11 ~ 15 years (1997-2001)	5	4.9
6 ~ 10 years (2002-2006)	14	13.7
2 ~ 5 years (2007-2010)	24	23.5
Less than 2 years (2011-1/2 of 2012)	44	43.1
Total	102	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 one-quarter of readings by graduate students (25%, 27) and one-quarter (26%, 18) of the readings by faculty members are over five years old.

Thoroughness of Last Article Reading and Time Spent Reading

Since this is a random sample of article readings, the article may have been previously read. For undergraduate students at Seton Hall, however, the majority (92%, 88 of 96) of the article readings are first time readings.

Economist Fritz Machlup described two types of value in the information context: purchase or exchange value and use value (1979). Time spent represents an ‘exchange value,’ assuming scholars 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 students to describe the thoroughness of their last scholarly article reading and how much time they spent on

the reading. Fifty-nine percent of the readings are read with great care and attention to all or parts of the article. Only 6% of the readings are reported to be skimmed (Table 9).

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

	Frequency	Percent
I read all of it with great care	32	30.8
I read parts of it with great care	30	28.8
I read it with attention to the main points	32	30.8
I read only specific sections	4	3.8
I skimmed it just to get the idea	6	5.8
Total	104	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 twenty-nine minutes ($M=29.02$, $SD=29.44$) with a range of three minutes to two and a half hours. Only 6% of readings are over an hour (Table 10).

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

Minutes	Frequency	Percent
1-10	25	26.0
11-30	50	52.1
31-60	15	15.6
61-90	2	2.1
Over 90	4	4.2
Total	96	100.0

Undergraduate students at Seton Hall University spend less time, on average, on article readings than graduate students or faculty members. The average time spent per article reading by graduate students at Seton Hall was thirty-nine minutes and the average time spent per article reading by faculty members was thirty-eight minutes.

Source of Article

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

Approximately 39% of the readings are found through searching, and 34% are found through browsing. The other sources of browsing are a database and the ‘Yahoo front page’. Another 28% of the readings are found through one of the other listed methods, including a citation, an instructor, or course outline/reading list. Other sources to become aware of readings include physically receiving it from a professor, cited in a lecture, and work discussion.

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

	Frequency	Percent
Browsing	32	33.7 (100.0)
1. Print library subscription	(0)	(0.0)
2. Electronic library subscription	(8)	(25.0)
3. Print personal subscription	(1)	(3.1)
4. Electronic personal subscription	(3)	(9.4)
5. Web site	(12)	(37.5)
5. Print school, department subscription	(1)	(3.1)
6. Electronic school, department subscription	(5)	(15.6)
7. Other (electronic)	(2)	(6.3)
Searching	37	38.9 (100.0)
1. Databases on the library website	(24)	(64.9)
2. Web search engine	(9)	(24.3)
3. Online journal collection	(4)	(10.8)
5. Print index or abstract	(0)	(0.0)
Other	26	27.4 (100.0)
1. Cited in another publication	(2)	(7.7)
2. An instructor told me about it	(5)	(19.2)
3. Course outline/reading list	(8)	(30.8)
4. Don't know /don't remember	(1)	(3.8)
5. Other	(10)	(38.5)
Total	95	100.0

All of the articles found through searching and a majority of articles found by browsing (94%) are from an electronic source. Two-thirds of the articles found through searching are found through the library website (24 of 37); 24% are found through a web search engine, and 11% are found through an online journal collection. Respondents are browsing many sources, including websites (38%), electronic library subscriptions (25%), and electronic school/department subscriptions (16%).

Obtaining the Article

Once an undergraduate student becomes aware of an article, they must choose a source to obtain it. Twenty-seven percent of article readings are obtained from a library subscription and 11% are from a department/school subscription (Table 12). In many cases the articles, which students thought were from a department/school subscription, are actually from a library subscription, and for our analysis we combined the library and school/department subscription responses.² Undergraduate students also obtain articles from free web journals (27%) and websites (15%). Other sources where students obtain articles are not always clear, but include a required book, Google Scholar, an iPad, e-mailed links to article, Blackboard, newspaper website and SHU archives.

Table 12. How Undergraduate Students at Seton Hall Obtain Articles

	Frequency	Percent
Personal subscription	4	4.2 (100.0)
• Print	(2)	(50.0)
• Electronic	(2)	(50.0)
Library subscription	26	27.4 (100.0)
• Print	(1)	(3.8)
• Electronic	(25)	(96.2)
Department/school	10	10.5 (100.0)
• Print	(1)	(10.0)
• Electronic	(9)	(90.0)
Free Web journal	26	27.4
Copy from a colleague, instructor, author, etc.	5	5.3 (100.0)
• Print	(4)	(80.0)
• Electronic	(1)	(20.0)
Interlibrary loan or document delivery service (print)	1	1.1
Website	14	14.7
Other source	9	9.5 (100.0)
• Print	(2)	(22.2)
• Electronic	(7)	(77.8)
Total	95	100.0

² We assume the number of articles from a library/school/department subscription is in fact higher because students are confusing what's 'free on the web' with what is actually from the library.

The majority of article readings by undergraduate students at Seton Hall are obtained from an electronic source (88%, 84 of 95). The library plays a role in helping respondents obtain the last article, mainly in an electronic form (e.g., online journal collection, electronic library subscription). One respondent comments, “[E-articles] help speed research for class and for my own benefits. This speed allows me to learn even faster and can help me wander into new [sic] and unlearned fields.” All but two of the articles obtained from a library or school/department subscription are electronic. The majority of articles obtained from a colleague or instructor are print (80%).

How undergraduate students become aware of articles does not influence where the article is obtained. Articles found by browsing are obtained from a library subscription (41%, 13 of 32), a website (25%, 8), or a free web journal (22%, 7). Articles found by searching are obtained from a library/school/department subscription (43%, 16 of 37), a free web journal (41%, 15), or a website (11%, 4).

Alternative Source to Obtain Article

Another measure of value is the contingent valuation, which measures value based on whether someone 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?” Nearly three-quarters of the readings would be obtained from another source (73%, 70 of 96).

One-quarter of articles originally obtained from a library/school/department subscription (9 of 36), 29% from a website (4 of 14), and 23% from a free web journal (6 of 26) would not be obtained from an alternative source. Value would be lost if these original sources were not available because undergraduate students would either not receive the same information or would have to spend additional money or time to use an alternative source.

Format of Article and Location of Reading

Just because 88% of the article readings are obtained from an electronic source does not mean the articles are read on a computer screen. In separate surveys of Seton Hall faculty and graduate students (reported separately), we found that only a third (34%) of the readings by faculty members (23 of 68) and slightly over half (54%) of the readings by graduate students (56 of 105) are on a computer screen, even though 71% of readings by faculty members and 91% of readings by graduate students were obtained from an electronic source. On the other hand, over three-quarters (76%) of the readings by undergraduate students are read on-screen, while the rest are read on print-on-paper, either from a print journal or downloaded and printed out. The computer screen is a preferred method of reading for undergraduate students; however, some students still complained about reading on a computer screen. One respondent comments, “I prefer obtaining information online initially although I often times prefer to read it in print once it has been located.” Another respondent says, “[e-resources play] a vital role. It is a quick way to read articles online and gather important information online however I do prefer hard books over e-resources.” Only 9% of the readings are from a downloaded and printed article, and 10%

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

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

	Frequency	Percent
Print article in a print journal	10	10.4
Photocopy or Fax copy	2	2.1
Online computer screen	61	63.5
Previously downloaded/saved and read on computer screen	10	10.4
On a mobile, e-reader or tablet screen	2	2.1
Downloaded and printed on paper	9	9.4
Other	2	2.1
Total	96	100.0

The majority of readings obtained from a library/school/department subscription are read on an online computer screen (56%, 20 of 36), and only 8% are read from a print journal (3). All of the readings from a website and 73% of the readings obtained from a free web journal are read from on an online computer screen.

Purpose and Value of Article Reading

Survey data provides a picture of the purpose, value, and outcomes of article readings. 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 the readings help complete a course assignment or paper (Table 14). Article readings also are required reading for course (11%) or for personal interest (15%). The other principal purposes are all required readings for a work program or internship. Article readings support nearly all of undergraduate class activities.

Table 14. Principal Purpose of Article Reading by Seton Hall Undergraduate Students

	Frequency	Percent
Required reading for course	11	11.5
Helped complete assignment/paper	53	55.2
For thesis or dissertation	8	8.3
To keep informed	7	7.3
Personal interest	14	14.6
Other	3	3.1
Total	96	100.0

There is no significant association between the principal purpose of reading and how the respondent become aware of the article or where the article is obtained. All of the readings found through an instructor and three-quarters of the readings found on the course outline/reading list are required readings or help complete a course assignment/paper. One-quarter of the article readings found by browsing are for personal interest and just over half (53%) help complete a course assignment/paper. Over three-quarters (76%) of the articles found by searching are to help complete a course assignment or paper and 14% are for a thesis/dissertation.

Seventy-eight percent of the articles obtained from the library/school/department subscription, 58% of those obtained from a free web journal, and 43% of those obtained from a website are read to help complete a course assignment or paper. Over two-thirds (36%) of the articles obtained from a website are read for personal interest and 21% are read to keep informed in their field of study.

Differences of Article Reading Patterns by Demographics

Differences of Article Reading Patterns by Discipline

We found a slight association between discipline and the number of article readings ($F=.998, p=.432$). Undergraduates in the sciences read, on average, the most articles per month ($M=25.07$), followed by social sciences ($M=16.56$), humanities ($M=14.87$), and medical/health ($M=9.47$). In addition to reading the most articles, scientists also spend, on average, more time per reading than the other disciplines ($F=.939, p=.472$). The average reading by respondents in the sciences takes over an hour and a half ($M=104.62$ minutes), followed by average readings by humanities undergraduates ($M=41.63$), medical/health undergraduates ($M=32.60$), and undergraduates in the social sciences ($M=27.66$).

We found a similar association between the Seton Hall faculty member's discipline and number of article readings. Faculty members in the sciences report more article readings ($M=29.40$) and the least amount of time per reading ($M=24.50$ minutes). Faculty in the social sciences and humanities read fewer articles ($M=18.52$ and $M=21.79$ respectively) and spend more time per reading ($M=40.04$ and $M=43.85$ minutes respectively).

There are some differences between year of article publication and academic major ($\chi^2=27.004, p=.304$). Over half of the readings by undergraduates in the humanities are over fifteen-years-old (63%, 5 of 8). On the other hand, three-quarters of the readings by undergraduates in the engineering/technology disciplines are from articles in their first eighteen months (3 of 4). Readings by students in the social sciences and medical/health disciplines cover a wide range of publication dates. Forty-five percent of readings by students in the social sciences are in the first eighteen months of publication; 28% are two-to-five-years; 20% are six-to-fifteen years; and 8% are over fifteen-years-old. Thirty-six percent of readings by students in the medical/health disciplines are in the first eighteen months; 29% are two-to-five years; 21% are six-to-fifteen years; and 14% are over fifteen-years-old.

There is a slightly significant association between discipline and purpose of reading ($\chi^2=38.760$, $p=.131$). Readings by students in the humanities are more likely to be for personal interest (50%) than to help complete a course assignment or paper (38%). Undergraduates in the medical/health disciplines (73%) and sciences (69%) primarily read to help complete a course assignment or paper. Students in the social sciences are reading to help complete a course assignment (52%), required reading (15%), and personal interest (14%).

The majority of readings in each discipline are read on a computer screen, but humanities students report more readings from a print journal (38%) than students in the other disciplines. Seventy-three percent of the readings by social scientist, 62% of readings by scientists, 60% of readings by undergraduates in the medical/health disciplines, and 38% of readings by students in the humanities are from an online computer screen.

We did not find any significant associations between academic disciplines and how the undergraduate student becomes aware of the article and how it is obtained.

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

There is no significant association between academic year and number of article readings, time per reading, year of publication, how they became aware of the article, where they obtained it, purpose of reading, or format of article.

Undergraduates between twenty and twenty-two years of age are the most likely to read for required reading ($\chi^2=21.900$, $p=.110$). Eighteen percent of readings by students twenty to twenty-two years of age are required readings, 47% are to help complete a course assignment, 12% are for thesis/dissertation, and 10% are for personal interest. Over two-thirds of readings (68%) by those under-twenty years are to help complete a course assignment, 20% are for

personal interest, and none are required readings. Seventy-one percent of readings by students over twenty-two years are to help complete a course assignment, 21% are for personal interest, and 7% are for required reading. There is no significant association between age and the number of article readings, time per reading, how they become aware of the article, or where it is obtained.

Male undergraduates read, on average, twenty-six articles while female undergraduates read twelve articles per month ($t=2.650$, $p=.009$). When normalizing for subject discipline however, there is no significant difference based on gender. Female social scientists and male social scientists, for example, report similar numbers of readings per month. We did not find any other significant associations between the respondent's gender and reading patterns.

Book Reading

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

Total Amount of Book 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 of reading than the actual number, and for convenience, we often report readings per year by multiplying the monthly total by 12.

Undergraduate students at Seton Hall University report an average of six book or book chapter readings per month or approximately seventy-two per 12-month year ($M=5.63$, $SD=5.026$) or 54 per 9-month year.³ Only 13% of the respondents did not report a book reading in the past month; zero readings were included in our average. A third of the respondents report over five book readings (Table 15).

Table 15. Number of Book Reading by Seton Hall Undergraduate Students

Readings per month	Frequency	Percent
0	13	13.1
1 ~ 2	15	15.1
3 ~ 5	38	38.4
6 ~ 10	18	18.2
Over 10	15	15.2
Total	99	100.0

We followed the same variation of ‘critical incident’ technique 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 them focus on the last reading from a book, book chapter, or part of a book.

³ Excludes outliers over 25. Including outliers the mean is 6.21.

Total Time of Book Reading

To get an indication of ‘exchange value’ we asked, “*About how much total time (in minutes) did you spend reading this book in the past month (30 days)?*” The average time spent per book reading is nearly three hours (M=172.54, SD=187.284),⁴ with a range of one minute to fifteen hours. Seventy-one percent of book readings by undergraduates take over one hour (Table 16). Only 9% of book or book chapter readings are fifteen minutes or less. Over a third (35%) of the readingstake over two hours.

Table 16. Time Spent on Last Book Reading by Seton Hall Undergraduate Students

Minutes	Frequency	Percent
0-15	7	8.5
16-30	13	15.9
31-45	4	4.9
46-60	9	11.0
61-90	6	7.3
91-120	14	17.1
Over 120	29	35.4
Total	82	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 majority of book or book chapter readings are found on the course outline or reading list (Table 17). Undergraduate students also become aware of books through

⁴ Excludes outliers over 900. Including outliers the mean is 210.56.

an instructor (16%), searching (11%), and browsing (8%). The other sources they used to become aware of books are a friend, read in high school, and at a bookstore. We did not ask the respondents to tell us what sources they browse or search.

Table 17. How Seton Hall Undergraduate Students Initially Become Aware of Books

	Frequency	Percent
Found while browsing	7	8.1
Found while searching	9	10.5
Cited in another publication.	2	2.3
An instructor told me about it	14	16.3
Course outline/reading list	50	58.1
Other	4	4.7
Total	86	100.0

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 article section for comparison, but the answer choices were modified to reflect the different sources for books. Over half of the book readings are purchased (Table 18) and may be textbooks required for a class. Twenty-seven percent of the readings are from a library or school/department collection, and 6% are obtained from a colleague, author, or other person. The other sources where the last book reading was obtained are the public library, ‘online’, rented, and part of an English textbook.

Table 18. How Seton Hall Undergraduate Students Obtain Books

	Frequency	Percent
I bought it for myself	47	55.3 (100.0)
• Print	(45)	(95.7)
• Electronic	(2)	(4.3)
The library or archives collection	13	15.3 (100.0)
• Print	(8)	(61.5)
• Electronic	(5)	(38.5)
Interlibrary loan or document delivery service (print)	3	3.5
School or department collection	10	11.8 (100.0)
• Print	(7)	(70.0)
• Electronic	(3)	(30.0)
A colleague, author or other person provided it to me (print)	5	5.9
A free, advance, or purchased copy from the publisher (electronic)	2	2.4
Other source	5	5.9 (100.0)
• Print	(3)	(60.0)
• Electronic	(2)	(40.0)
Total	85	100.0

Much has been discussed recently about the future of electronic books. A 2009 CIBER study in the United Kingdom 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 undergraduate and graduate students are reading from more e-books than faculty members. Fifteen percent of the book readings by graduate students (13 of 74) and 17% of the readings by undergraduate students (14 of 84) at Seton Hall University are obtained from an electronic source, while 11% of book readings by faculty members are from e-books. Over one-third (35%) of the undergraduate students' book readings obtained from the library/school/department collection are from an electronic copy (8 of 23). One respondent comments, "The nursing

department switched all its books to e-books thus our reading materials is read on the computer screen, iPad, iPhone, Android or other type of devices.” While electronic resources for books have yet to reach the popularity as journals, e-books are becoming a part of academic culture.

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?*” While articles are most likely to be read to help complete a course assignment or paper, required reading is the most frequent principal purpose of book reading for undergraduate students (Table 19). Twelve percent of book or book chapter readings are to help complete a course assignment or paper and 7% are of personal interest. The other principal purpose is ‘required reading and helped to complete an assignment’.

Table 19. Principal Purpose of Book Reading by Seton Hall Undergraduate Students

	Frequency	Percent
Required reading for course	63	74.1
Helped complete course assignment/paper	10	11.8
For thesis/dissertation	2	2.4
To keep informed	3	3.5
Personal interest	6	7.1
Other	1	1.2
Total	85	100.0

There is no significant association between the principal purpose and how the respondent becomes aware of the book or where it is obtained. Respondents become aware of over three-quarters of the required readings from the course outline/reading (76%, 48 of 63). Half of the

readings for personal interest and 40% of readings to help complete a course assignment/paper are found through searching.

Eighty-nine percent of the purchased books (42 of 47) and 80% of books obtained from a colleague or another person (4 of 5) are required reading. We have combined readings from the library and school/department collections for our analysis because we believe all those readings are actually from the library, but there is an interesting distinction students are making between the principal purpose of reading from those obtained from the library and those obtained from the school/department collection. All the book readings students think are obtained from a school/department collection are required reading (10), while none of the readings from the library are required reading. Instead, readings obtained from the library are most likely to be read to help complete a course assignment/paper (69%, 9 of 13).

There is discussion in the academic community about the use of e-books for textbooks to save or reduce cost. There seems to be some development in this area at Seton Hall. One respondent reports, “All my nursing texts are electronic,” and another respondent says, “All my textbooks are e-books.” Half of the e-books are read for required reading (7 of 14), and 30% are read to help complete a course assignment or paper. At Seton Hall, e--books are becoming a popular tool for required readings in undergraduate courses.

To measure value in relation to principal purpose we asked, “*How important is the information contained in this book to achieving your principal purpose?*” Seventy-eight percent of the book or book chapter readings are considered ‘important’ to ‘absolutely essential’ (Table 20). While no book readings by graduate students at Seton Hall are considered ‘not at all important’, 8% of the book readings by undergraduate students are considered ‘not at all

important' to the principal purpose. Over one-third of the readings by undergraduate students are considered 'absolutely essential'.

Table 20. Importance of Book Reading to Seton Hall Undergraduate Students' Principal Purpose

	Frequency	Percent
Absolutely essential	30	35.3
Very Important	19	22.4
Important	17	20.0
Somewhat important	12	14.1
Not at all important	7	8.2
Total	85	100.0

There is a significant association between the importance of the book reading and where it is obtained ($\chi^2=26.672$, $p=.320$). Readings obtained from the library/school/department collection are considered more important to the principal purpose than readings obtained from other sources. Over one-third (35%, 8 of 23) of readings obtained from the library/school/department collection are considered 'absolutely essential' and only 9% are considered 'somewhat important' or 'not at all important' (2). Forty percent of readings obtained from a colleague or another person (2 of 5) and 28% of purchased readings (13 of 47) are considered 'somewhat important' or 'not at all important'.

There are some differences between the principal purpose of reading and importance ($\chi^2=18.807$, $p=.534$). Eight percent of required readings are considered 'not at all important' (5 of 63), and 56% of required readings are considered 'very important' or 'absolutely essential' (35). On the other hand, none are considered 'not at all important', and 80% of the readings that help complete an assignment/paper are very important or absolutely essential. A third of the readings of personal interest are considered 'not at all important' and a third are considered 'absolutely essential' (2 and 2 of 6, respectively).

Outcomes of Book Reading

To look at value to principal purpose more closely, we asked, “*In what ways did the reading of the book affect the principal purpose?*” Respondents could select one or more outcomes. The most frequent outcomes of book readings are: improved the result, inspired new thinking, and narrowed/broadened/changed the focus (Table 21). While none of book readings by graduate students at Seton Hall are considered a waste of time, 5% of the readings by undergraduate students are considered a waste of time. Sixteen percent of the readings by undergraduate students made them question their work (14 of 85). The other effects of the book reading are ‘it didn’t affect me’ and ‘served as a topic for a book review’.

Table 21. Outcome of Book Reading for Undergraduate Students at Seton Hall*

	Frequency	Percent
Improved the result	62	70.9
Inspired new thinking	44	51.2
Narrowed/broadened/changed the focus	29	33.7
Resulted in faster completion	20	23.3
It made me question my work	14	16.3
Saved time or resources	11	12.8
Resulted in collaboration/joint research	6	7.0
Resolved technical problems	5	5.8
Wasted time	4	4.7
Others	2	2.3
Total	86	

*Respondents could select more than one outcome.

Differences of Book Reading Patterns by Demographics

Differences of Reading Patterns by Discipline

There are no significant differences between academic discipline and number of book readings. Undergraduates in the social sciences and sciences spend, on average however, the least amount of time per book reading ($F=1.859$, $p=.100$). Book readings by social scientists, on

average, are slightly over two hours (M=129.64 minutes), followed by undergraduates in the sciences (M=174.82 minutes), humanities (M=202.86 minutes), and medical/health fields (M=249.33 minutes).

The majority of book readings in each discipline are found through the course outline and are purchased, and over two-thirds of readings in each discipline are required reading. Students in the social sciences (37%, 10 of 37) obtain the most books from the library, school, or department collection. None of the readings by undergraduates in the sciences or humanities is from an e-book, while 19% of readings in social sciences (7 of 36) and 31% in medical/health (5 of 16) are from an e-book. There is no association between academic discipline and how the reading is found, where it is obtained, principal purpose of reading, or its importance.

Differences of Reading Patterns by Status, Age, and Gender

Book readings by students in their junior and senior years take, on average, more time than readings by freshman and sophomore students ($F=2.342$, $p=.080$). Book readings by freshman are slightly under an hour-and-a-half (M=84.20 minutes), followed by sophomores (M=147.55 minutes), juniors (M=240.67 minutes), and seniors (M=194.38 minutes). There are no significant associations between the number of book readings and respondent's status, age, or gender.

The majority of readings by academic rank are found on the course outline/reading list. The majority of readings by every year are purchased. One-quarter of readings by freshmen, 24% by sophomores, 24% by juniors, and 23% by seniors are obtained from the library, school, or department collection. None of the readings by freshmen are from e-books, while 14% by sophomores, 35% by juniors, and 15% by seniors are from electronic books. Three-quarters of the readings by freshmen, 71% by sophomores, 86% by juniors, and 65% by seniors are required

readings. Nineteen percent of readings by seniors are to help complete a course assignment/paper.

Seniors (54%) and juniors (38%) are more likely to consider the reading absolutely essential than sophomores (24%) and freshmen (19%) ($\chi^2=18.576$, $p=.099$). Thirty-eight percent of readings by sophomores and 31% by freshmen are considered very important. Freshmen (19%) and sophomores (10%) are more likely to consider the reading 'not at all important' than juniors (5%), and seniors (0%).

Older undergraduates spend more time per book reading ($F=2.005$, $p=.120$). Readings by those under twenty years of age, on average, are nearly two hours ($M=111.30$ minutes), followed by students twenty to twenty-two years of age ($M=179.65$ minutes), twenty-three to thirty years of age ($M=283.50$ minutes), and over thirty years of age ($M=230.00$ minutes).

The majority of readings by each age grouping are on the reading list/course outline, including all the readings by undergraduates over thirty years. Older students are more likely to consider the reading very important or absolutely essential to their purpose of reading than younger students ($\chi^2=10.331$, $p=.587$). Sixteen percent of readings by undergraduates under twenty years of age and 5% of readings by those twenty to twenty-two years of age are considered 'not at all important' while none of the readings by students over twenty-three years of age are considered 'not at all important'. Eighty percent of readings by undergraduates over twenty-two years of age are considered 'very important' or 'absolutely essential' compared to 48% of readings by those under-twenty years and 57% by those twenty to twenty-two years of age. We did not find a significant association between the age of student and how they become aware of the book, where it is obtained, principal purpose, nor did we find any associations between book reading and the respondent's gender.

Social Media: Participation and Creation

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

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

Social networking (e.g., Facebook), video sharing (e.g., YouTube), and collaborative authoring (e.g., Google docs) are the most frequently used social media by undergraduate students (Table 22). Over half of undergraduates at Seton Hall report they participate in a social network daily (56%, 53 of 94), and 30% participate in microblogging (e.g., Twitter) on a daily basis (28 of 95). Social tagging (e.g., Delicious) and RSS feeds are used the least. Overall, undergraduate students at Seton Hall participate more frequently in social media than graduate students and faculty. Only 7% of undergraduates do not participate in any of the social media tools we listed at least occasionally.

Table 22. Participation in Social Media by Seton Hall Undergraduate Students

	Daily	Weekly	Monthly	Occasionally	Never	Total
Blogging	9 9.4%	9 9.4%	3 3.1%	19 19.8%	56 58.3%	96 100.0%
Microblogging	28 29.5%	5 5.3%	3 3.2%	11 11.6%	48 50.5%	95 100.0%
RSS Feeds	3 3.4%	2 2.3%	5 5.7%	15 17.2%	62 71.3%	87 100.0%
Social Networking	53 56.4%	6 6.4%	9 9.6%	8 8.5%	18 19.1%	94 100.0%
Social Tagging	4 4.2%	3 3.1%	3 3.1%	8 8.3%	78 81.3%	96 100.0%
Collaborative Authoring	15 15.6%	13 13.5%	13 13.5%	27 28.1%	28 29.2%	96 100.0%
Comments in articles	8 8.3%	10 10.4%	11 11.5%	15 15.6%	52 54.2%	96 100.0%
Image sharing	7 7.3%	13 13.5%	5 5.2%	21 21.9%	50 52.1%	96 100.0%
Video sharing	19 20.0%	24 25.3%	10 10.5%	17 17.9%	25 26.3%	95 100.0%
Audio sharing	4 4.2%	8 8.4%	8 8.4%	15 15.8%	60 63.2%	95 100.0%

Undergraduate students participate in social media more than they create it. Nearly a third (32%) of undergraduates do not create any of the social media tools listed at least occasionally. When students create social media, it is occasional rather than regular. Social

networking, collaborative authoring, microblogging, and user comments in articles are the most frequently created (Table 23). Twenty percent of undergraduates create content on social networking sites on a daily basis. Less than 10% create content on RSS feeds.

Table 23. Creation of Social Media by Seton Hall Undergraduate Students

	Daily	Weekly	Monthly	Occasionally	Never	Total
Blogging	2 2.1%	4 4.2%	1 1.0%	14 14.6%	75 78.1%	96 100.0%
Microblogging	13 13.5%	5 5.2%	2 2.1%	12 12.5%	64 66.7%	96 100.0%
RSS Feeds	0 0.0%	1 1.1%	3 3.2%	5 5.3%	85 90.4%	94 100.0%
Social Networking	19 20.2%	8 8.5%	5 5.3%	14 14.9%	48 51.1%	94 100.0%
Social Tagging	0 0.0%	3 3.2%	3 3.2%	5 5.3%	84 88.4%	95 100.0%
Collaborative Authoring	8 8.3%	6 6.3%	10 10.4%	15 15.6%	57 59.4%	96 100.0%
Comments in articles	1 1.1%	4 4.2%	6 6.3%	19 20.0%	65 68.4%	95 100.0%
Image sharing	2 2.1%	2 2.1%	3 3.1%	6 6.3%	83 86.5%	96 100.0%
Audio sharing	0 0.0%	3 3.1%	2 2.1%	7 7.3%	84 87.5%	96 100.0%
Video sharing	1 1.0%	6 6.3%	4 4.2%	14 14.6%	71 74.0%	96 100.0%

Participation in Social Media and Demographics

For our analysis we defined participation as using social media daily to occasionally (less than monthly). We did not find any significant associations between academic discipline and the participation in any of the social media tools. Table 24 shows the number and percentage of undergraduates in each discipline who participate daily to occasionally in each social media tool. Social networking and collaborative authoring are the most popular tools in each discipline, while microblogging and social tagging are the least frequently used. Overall, undergraduates in the sciences tend to participate in less social media than the other disciplines.

Table 24. Participation in Social Media of Seton Hall Undergraduates by Discipline

	Social Sciences	Humanities	Sciences	Medical/Health
Blogging	15 37.5%	4 50.0%	6 40.0%	9 47.4%
Microblogging	25 62.5%	2 25.0%	6 40.0%	9 50.0%
RSS Feeds	14 37.8%	3 37.5%	2 14.3%	2 14.3%
Social Networking	32 82.1%	5 71.4%	13 86.7%	18 94.7%
Social Tagging	8 20.0%	1 12.5%	4 26.7%	3 15.8%
Collaborative Authoring	30 75.0%	4 50.0%	10 66.7%	15 78.9%
Comments in articles	21 52.5%	4 50.0%	3 20.0%	11 57.9%
Image sharing	21 52.5%	3 37.5%	5 33.3%	12 63.2%
Audio sharing	18 45.0%	3 42.9%	2 13.3%	8 42.1%
Video sharing	33 84.6%	5 62.5%	10 66.7%	13 68.4%

We did not find any associations between participation in social media and the student's status or age.

Creation of Social Media and Demographics

For our analysis, we defined creation as using social media daily to weekly, monthly, or occasionally. We did not find any significant associations between academic discipline and the creation of social media tools. Overall, social scientists create the most social media. Table 25 shows the number and percentage of undergraduates in each discipline who create each social media tool on a daily to occasional basis.

Table 25. Percentage of Seton Hall Undergraduate Students Who Create Social Media by Discipline

	Social Sciences	Humanities	Sciences	Medical/ Health
Blogging	8 19.5%	2 25.0%	3 20.0%	4 21.1%
Microblogging	18 43.9%	0 0.0%	5 22.2%	6 31.6%
RSS Feeds	5 12.5%	1 12.5%	0 0.0%	1 5.6%
Social Networking	22 56.4%	2 25.0%	9 60.0%	9 47.4%
Social Tagging	5 12.2%	0 0.0%	3 20.0%	1 5.3%
Collaborative Authoring	21 51.2%	3 37.5%	4 26.7%	6 31.6%
Comments in articles	12 29.3%	3 37.5%	4 26.7%	7 36.8%
Image sharing	8 19.5%	0 0.0%	0 0.0%	3 15.8%
Audio sharing	6 14.6%	0 0.0%	0 0.0%	3 15.8%
Video sharing	13 31.7%	2 25.0%	4 26.7%	3 15.8%

We did not find any associations between creation of social media and the student’s status or age.

Open-Ended Questions

At the end of the survey, we asked, “*What role do e-resources play in your school work?*” We hoped the open-ended questions would provide the forum for the respondents to address any issues or topics that were not addressed in the survey. In addition, the open-ended comments provide another dimension to understand the value of scholarly reading and library resources. We received 78 responses.

The majority of the comments praised the role of scholarly articles in their coursework activities, and especially noted the important of the library’s electronic collections. Many

comments cite the importance of electronic articles and material because professors post articles and information online. Many undergraduates consider e-resources the first port of call. They note articles are absolutely essential because they keep them up-to-date and electronic access is convenient and a time-saver. The following are the responses we received in response to the question, “*What role do e-resources play in your school work?*”:

- *A big role*
- *A big role in research projects and papers*
- *A big role they help me to find articles for my papers*
- *A huge role, I need access to biological journals, and I wouldn't be able to access them without SHU database access.*
- *A huge role. They really help me to complete papers and current event articles for many classes.*
- *A large one*
- *A major role- I like to use print items but I do most of my research online or find print resources using the internet first*
- *A very big role.*
- *A very large role. My major asks me to complete copious research papers and e-resources make researching articles much easier.*
- *A vital role it is a quick way to read articles online and gather important information online however I do prefer hard books over e-resources.*
- *All of my nursing texts are electronic.*
- *all of my text books are e books*
- *Comprise a good deal of my research, seeing as its most expedient.*
- *E-resources allow me to broaden my horizons (with respect to my major)*
- *E-resources are the main resource I use to obtain information.*
- *It tends to be more trust worthy and content specific.*
- *E-resources play a significant if not critical role in my education. It is from this i am able to locate sources of research both electronic and print. As well as broaden my focus and knowledge on a subject.*

- *E-resources play a tremendous role. Reading journal articles online is one of my primary research methods as I begin to work on my senior thesis.*
- *easier access to information when needed but takes alot of my money*
- *E-Books are terrible. the worst thing ever; i would rather buy a book i will own in my library or resell; ebooks are just a way to take my money and give me no voice in my learning; worst idea ever Seton Hall.*
- *English core, that is it*
- *Essential. Without them, I would not be able to complete the assignments in as much time as I have been.*
- *Help in writing core papers*
- *Help learning*
- *Help me get some work done*
- *Help speed research for class and for my own benefits. This speed allows me to learn even faster and can help me wander into knew and unlearned fields.*
- *Highly Important and valuable for literary research - I could not do without them.*
- *Huge role*
- *I continue to read them to attain knowledge about a topic or discussion I may have in class.*
- *I do not use them*
- *I prefer obtaining information online initially although I often times prefer to read it in print once it has been located.*
- *I use e-resources to research for school papers.*
- *I use JSTOR and other scholarly journals for research. They are easy to access and priceless when it comes to researching large topics.*
- *I use my teacher's website to print out my lab assignments and I use blackboard for my English class.*
- *I USE THEM EVERYDAY FOR MORE THAN 1 HOUR.*
- *I use them for writing papers and completing projects.*
- *I use them on almost a daily bases to assist me in homework, research, self-knowledge, etc.*

- *I utilize them often as a means to understand and back up course material so that I can achieve a better knowledge of studied subjects. The library is very helpful in obtaining these and providing sources. My favorite search engine for articles is Ebscohost and academic search premier.*
- *I very high role, i use the internet on most assignments i do.*
- *I've used online databases extensively, particularly in my search for sources for my thesis project.*
- *If I am looking for information or an article I will go to the e-resources first.*
- *If I need an article for a class I will access it through the library but I much prefer hard copies, it makes focusing either. I am not a fan of e-anything. I love books, I enjoy the feel of books, academic or otherwise so I minimize the time I spend reading something on the computer. If I can print it, I will print it and make notes there rather than on-screen.*
- *Important and easy to access*
- *It would be impossible to do my work without it.*
- *It's very important and convenient.*
- *Large role*
- *Major role*
- *Makes researching for papers much easier and simpler*
- *My textbooks are now all digital*
- *None*
- *Not very much*
- *Paper writing.*
- *Reinforced the material learned in class.*
- *Research*
- *Serve as a great resource for research papers*
- *So, far not much. My required materials are in printed versions.*
- *They aid in the completion of essays and other school work*
- *They allow me to make strong arguments and support my ideas in paper.*
- *They are my education!*

- *They are necessary for research papers as well as speeches and presentations I am required to make.*
- *They are where i get my journal articles from*
- *They assist greatly in the completion of papers and other assignments*
- *They assist me by providing valuable information for term papers I write*
- *They help disseminate knowledge that would have otherwise have been unavailable. E-resources have played an integral part in my ability to bridge the gap between the theoretical concepts learned within the classroom to the practical realities.*
- *They help with research!*
- *They make it easier to obtain information*
- *They play a huge role in my everyday academics. They are reliable and enable me to complete my essays and journals with the content available. Overall, very helpful.*
- *They play a large role.*
- *They're everything... Books are so old fashioned... yes they are good in some cases because you can see the facts in their original sources but they are much less convenient and more expensive*
- *They're necessary for my coursework.*
- *Very big, The nursing department switched all it's books to ebooks thus our reading materials is read on the computer screen, ipad, iphone, adroid or other type of devices*
- *Very important for research*
- *Very important help me complete work*
- *Very important role*
- *Very important, I use the internet almost every day because my professors post articles online and our homework is majorly on the internet and using web resources.*
- *Very important!!*
- *Without e-resources I would have no resources.*
- *Without the internet, I believe I would fail all my courses because I would not have the patience to find what I am looking for in a non-electronic source.*

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

Role of Library Collections

We re-categorized how someone obtains scholarly reading material into three basic categories: library-provided, personal subscription/purchase, and other. Library-provided includes readings from the library’s print or electronic collections, interlibrary loan, and school/department subscriptions. The other sources include free web journal, publisher, course reserves, and a colleague. Most scholarly article readings are obtained from other sources (57%), including 28% obtained from a free web journal, and we assume some of these are actually library-provided subscriptions but undergraduates are not always able to distinguish what is free on the web with library-provided. Thirty-nine percent of article readings are obtained from the library, and 31% of book readings are obtained from a library collection (Table 26). Only 4% of article readings are obtained from a personal subscription, while book readings are most likely to be purchased (55%).

Table 26. Source of Reading by Seton Hall Undergraduate Students

	Article		Book	
	N	%	N	%
Library-provided	38	38.8	26	30.6
Personal source	4	4.1	47	55.3
Others	56	57.1	12	14.1
Total	98	100.0	85	100.0

The library's collections provide access to older articles in addition to the current collections. Readings from older articles are more likely to be from a library collection ($\chi^2=11.362$, $p=.182$). Only 27% of the library-provided articles are in their first eighteen months (Table 27). Regardless of the age of the publication, the majority of library-provided articles are from its electronic collections. Nearly one-quarter (24%) of the library provided articles are over fifteen-years-old, while none of the articles obtained from a personal subscription and 11% of those obtained from another source are over fifteen- years-old. Readings from a personal subscription are most likely to be in their first eighteen months of publication (75%). Our findings show the library's back files in addition to current subscriptions are a key investment.

Table 27. Association between Source of Article and Year of Publication for Seton Hall Undergraduate Students

	Library Provided	Personal Subscription	Others	Row Total
Over 15 years (Before 1997)	9 24.3%	0 0.0%	6 10.9%	15 15.6%
11 ~ 15 years (1997-2001)	3 8.1%	0 0.0%	2 3.6%	5 5.2%
6 ~ 10 years (2002-2006)	6 16.2%	1 25.0%	6 10.9%	13 13.5%
2 ~ 5 years (2007-2010)	9 24.3%	0 0.0%	14 25.5%	23 24.0%
Less than 2 years (2011-1/2 of 2012)	10 27.0%	3 75%	27 49.1%	40 41.7%
Column Total	37 100.0%	4 100.0%	55 100.0%	96 100.0%

We found a significant association between the principal purpose of reading and the source of the article reading ($\chi^2=32.491$ and $p<.0001$) and source of the book reading ($\chi^2=30.165$, $p=.001$). Library-provided articles most likely are read to help complete a course assignment or course paper (76%), while only 41% of articles from other sources and 25% of those obtained

from a personal source are read for a course assignment or paper. An additional 16% of library provided articles are read for thesis or dissertation work. Half of the articles provided by personal subscription and 21% from other sources are just of personal interest, while only 3% of library-provided articles are for personal interest. Overall, library-provided articles support course activities more than articles obtained from other sources.

While the majority of book readings obtained from a personal source (89%) and other source (75%) are required readings, only 46% of library-provided books are required readings. Instead, library-provided book readings help complete a course assignment or course paper (35%), while only 2% of the purchased books and none of the books from other sources help complete a course assignment. Since the library does not usually carry textbooks (required readings), that explains why there is a lower percentage of library-provided article and book readings; instead, what it shows is that students turn to the library for course material because they depend on the library for material to support course work but not specifically assigned.

One measure of value of the library for scholarly work and the research can be represented by how many hours per year each undergraduate student dedicates to library-provided reading. Earlier in the report we looked at the ‘exchange value’ of scholarly reading, and in this section we narrow it to look at the exchange value of library-provided readings. We measured the library’s value by the time spent using library reading material, assuming that scholarly readings are important for quality undergraduate work and their professional development. We can illustrate the total amount of reading by each undergraduate student by using a simple formula of time spent reading each material multiplied by the number of each material read per month multiplied by 9 to calculate a school year total.⁵ We then multiple the

⁵ Excludes outliers.

total amount by the percent obtained from the library to determine the number of hours per 9-month year each undergraduate student devotes to library-based work (Table 28).

Table 28. Value of Library Resources to Seton Hall Undergraduate Students

	Time per reading (in minutes)	Number read per month	Multiplied by 12 months	Percent from library	TOTAL
Article	29	15	9	.39	25 hours
Book	172	6	9	.31	48 hours

Of the 155 hours undergraduate students spend on book readings each 9-month school year, they spend approximately 48 of those hours dedicated to library-provided book readings. They spend approximately 25 hours on library-provided article readings of the 65 hours dedicated to article readings from all sources. In an average school year, undergraduate students spend 73 hours of their work time with library-provided material, or the equivalent of 9 eight-hour days. Clearly, the amount of time spent reading library-provided material has a profound impact on the quality and focus of undergraduate work.

We assume that undergraduate students spend less time per academic year (nine months) with library-provided articles compared to faculty and graduate students at Seton Hall University (92 and 97 hours respectively), but they spend more time with library-provided books. While faculty spend approximately 41 hours per year and graduate students spend 26 hours per year, undergraduate students spend on average 64 hours per nine months dedicated to library-provided books. These differences are because undergraduate students obtain fewer articles from the library than graduates (54%) and faculty (55%), and read slightly fewer articles than graduates (M=23) and faculty (M=22). Undergraduates also obtain more books from the library than graduate students (20%) and faculty (24%).

Undergraduate students are profuse readers of journal articles and books, and the library is an important resource for them. They often face strict personal budgets and are pressed for

time, and the library's collections, in particular its e-collections, provide free resources in a timely manner. By expanding the amount of resources they have available to them through the e-collections, the library can further their professional development and improve the quality of work at the university.

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

Bibliography

- Andrews, J. "The Use of the Critical Incident Research Technique in an Academic Library." *Library & Information Research News* 14, no. 50 (1991): 22-27.
- Belefant-Miller, Helen and Donald W. King. "How, What and Why Science Faculty Read." *Science and Technology Libraries* 19, no. 2 (2001): 91-112.
- Brown, Cecelia M. "The Role of Electronic Preprints in Chemical Communication: Analysis of Citation, Usage and Acceptance in the Journal Literature." *Journal of the American Society of Information Science and Technology* 54, no. 5 (2003): 362-371.
- Chrzastowski, Tina E. "Assessing the Value of Ebooks to Academic Libraries and Users." Proceedings of the 9th Northumbria International Conference on Performance Measurement in Libraries and Information Services. University of York, United Kingdom. 2011. In Press. <http://www.ideals.illinois.edu/handle/2142/28612>.
- CIBER. *JISC National E-Books Observatory Project: Key Findings and Recommendations Final Report*. London: CIBER, 2009. <http://observatory.jiscebooks.org/reports/jisc-national-e-books-observatory-project-key-findings-and-recommendations/>.
- Flanagan, J.C. "The Critical Incident Technique." *Psychological Bulletin* 52, no. 4 (1954): 327-358.
- Folb, Barbara L., Charles B. Wessel, and Leslie J. Czechowski. "Clinical and Academic Use of Electronic and Print Books: The Health Sciences Library System E-book Study at the University of Pittsburgh." *Journal of the Medical Library Association* 9, no. 3 (2011): 218-228. doi: 10.3163/1536-5050.99.3.009.
- Griffiths, J.M. and Donald W. King. *A Manual on the Evaluation of Information Centers and Services: NATO, AGARD*. New York: American Institute of Aeronautics and Astronautics, 1991.
- Imholz, Susan and Jennifer Weil Arns. "Worth Their Weight: An Assessment of the Evolving Field of Library Valuation." New York: Americans for Libraries Council, 2007. www.ala.org/research/files/librarystats/worththeirweight.pdf.
- JISC. "Activities by Topic: Web 2.0." Last modified 20 September 2010. <http://www.jisc.ac.uk/whatwedo/topics/web2.aspx>.
- King, Donald W., Dennis D. McDonald, and Nancy K. Roderer. *Scientific Journals in the United*

- States: Their Production, Use and Economics*. Stroudsburg, PA: Hutchinson Ross Publishing Company (Division of Academic Press), 1981.
- Machlup, Fritz. "Uses, Value, and Benefits of Knowledge." *Science Communication* 1, no. 1 (1979): 62-81. doi: 10.1177/107554707900100104.
- Madden, Mary and Steve Jones. "The Internet Goes to College." *The Pew Internet & American Life Project*, September 15, 2002. Accessed July 26, 2012. <http://www.pewinternet.org/reports/2002/The-Internet-Goes-to-College.aspx>.
- Office of Institutional Research. "Seton Hall University Fact Book 2010-2011." Seton Hall University, 2011. <http://www.shu.edu/offices/institutional-research-fact-book.cfm>.
- Radford, M.L. "The Critical Incident Technique and the Qualitative Evaluation of the Connecting Libraries and Schools Projects," *Library Trends* 55, no. 1 (2006): 46-64.
- Research Information Network (RIN). *If You Build It, Will They Come? How Researchers Perceive and Use Web 2.0*. London: A RIN Report, July 2010.
- Seton Hall University. "About Seton Hall." http://www.shu.edu/about/fast_facts.cfm.
- Shelburne W.A. "E-book Usage in an Academic Library: User Attitudes and Behaviors." *Library Collections, Acquisitions, & Technical Services* 33, no. 2-3 (2009): 59-72. doi: 10.1016/j.lcats.2009.04.002.
- Tenopir, Carol. "Database Use in Academic Libraries." *Library Journal* 124, no 36 (1999): 38.
- Tenopir, Carol. *Increasing Effective Student Use of the Scientific Journal Literature: Phase I Final Report, Volumes 1 and 2*. April 1, 2003. <http://web.utk.edu/~tenopir/nsf/presentations.html>
- Tenopir, Carol, Concepcion S. Wilson, Pertti Vakkari, Sanna Talja, and Donald W. King. "Cross Country Comparison of Scholarly E-Reading Patterns in Australia, Finland and the United States." *Australian Academic & Research Libraries* 41, no. 1 (March 2010): 26-41.
- Tenopir, Carol, Rachel Volentine, and Donald W. King. *UK Scholarly Reading and the Value of Library Resources: Summary Results of the Study Conducted Spring 2011* Study on behalf of JISC Collections, 2012. <http://www.jisc-collections.ac.uk/reports/>

ukscholarlyreadingreport/.

Tenopir, Carol, Richard Pollard, Peiling Wang, Dan Greene, Elizabeth Kline, and Julia Krummen. "Undergraduate Science Students and Electronic Scholarly Journals." *Proceedings of the American Society of Information Science and Technology (ASIST)* 40, no 1 (October 2003): 291-297, doi: 10.1002/meet.1450400136.

Wolverton, Robert and Carol Tenopir. "Conference Report – Discovering the Magic: Faculty and Student Use of Electronic Journals." *The Serials Librarian*. 49, no.3 (2006): 159-164. doi: 10.1300/J123v49n03_14.