



# The Lasting Impact of a Library Credit Course

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**abstract:** This study found that there were statistically significant differences in citation use and grades between students who took a library credit course and students who did not. The results of independent samples t-tests indicated that the student group that took a library credit course cited more scholarly resources, produced fewer incomplete citations, and received higher grades for its papers and courses. The data included 836 citations produced by 120 student papers and the students' grades for their papers and courses in the fall of 2004. Additionally, the survey results revealed that the students' acquisition of bibliographic research and citation skills was directly attributable to the library credit course, whereas their counterparts tended to rely on informal sources. The evidence supports the lasting impact of a library credit course on student learning.

## Introduction

Over the decades, library credit courses have become prevalent in many colleges and universities. In 1986, Barbara Natale surveyed 63 academic libraries in Connecticut. Forty-six of these libraries offered library courses.<sup>1</sup> Another survey conducted in 1995 by LOEX Clearinghouse indicated that over 30 percent (188 of 631) of its institutions provided library courses for credit.<sup>2</sup> Mignon Adams and Jacquelyn Morris believe that library skills can be taught for credit, and giving academic credit is the way to legitimize learning and motivate students. They comment, "Aside from credit, a course format offers other advantages. Foremost is the time available for instruction. A course allows time for a structured and comprehensive approach toward learning."<sup>3</sup> However, the reactions to library credit courses are not always positive. Jeane Davidson's surveys reported that faculty and students considered library credit courses least helpful as compared to Web-based tutorials, workshops, and written guides or assignments.<sup>4</sup> What is the true value of library credit courses? Can a library credit course make a difference in student learning? The purpose of this study was to find out whether there was a lasting impact on student learning from a library



credit course as measured by the quality of the citations in student papers and the students' grades associated with their citations.

At Central Michigan University (CMU), a one-credit course, LIB 197 Introduction to Library Research and Information, has been offered since 1971. There are about eight to 10 concurrent sessions each semester except during summer sessions. Each class session has about 25 students and lasts eight weeks in each semester. The classes are often full. The majority of department programs do not require LIB 197, but two programs, human environmental studies and social work, recently listed LIB 197 as a required course for their students. Although different librarians teach the course, the content is basically the same, ranging in skill development from searching the library catalog and databases to documenting citations.

Most LIB 197 students are freshmen or juniors. What happens after these students take the course? Are they able to retain library research skills for later studies? Do students who completed the library course perform better than students who never took the course? This study tracked two groups—students who had previously taken the library course and students who had not taken the course—from 17 classes in the fall of 2004. By examining the citations produced by students' papers and the students' grades for their subject courses, the author intended to identify differences between the two groups. Hopefully, the results of this research can provide administrators and teaching faculty with data that support the positive lasting effects of library credit courses on student research skills.

## Literature Review

### Short-term Gains versus Long-term Retention

Various studies assessed library credit courses between the late 1970s and the earlier 1990s. Six studies from 1976 to 1994 all used pre/post-tests to examine effects of library credit courses.<sup>5</sup> Most of these reports showed empirical evidence of positive effects on student library skills and attitudes toward the use of libraries.

David Eyman and Alven Nunley's experimental study reported a different result. They found that the enrollment in a library course did not significantly improve the bibliographic skills of students over their fellow students who had not enrolled in the course. The authors even recommended that the library credit course should be removed from the curriculum of their institution or that the course should be developed within specific academic disciplines.<sup>6</sup> Maria Sugranes and James Neal used different assessment tools to evaluate a self-paced library course. Their assessments included credits that students received from the assignments and an end-of-course test with a student attitudinal survey. A statistical significance was found in all students' pre/post-test scores. The mean score of the post-test increased 6.49 points. The result of the 10-question survey also indicated students' positive attitudes toward the course.<sup>7</sup>

The most popular method used to test the effects of library credit courses in these studies mentioned above was the administration of pretests and post-tests. However, Richard Werking criticized this method as "short-term recall" because it did not focus on behavior in the actual use of libraries but on "a prescribed set of skills."<sup>8</sup> Furthermore, as Werking commented, "Another common complaint about objective tests is

that students are often tested immediately after receiving instruction, and that the significance of such short-term gains is not likely to be great."<sup>9</sup> Larry Hardesty, Nicholas Lovrich, and James Mannon agreed with Werking and noted that "the question of long-term retention of skills is a very important educational concern."<sup>10</sup> Adams and Morris expressed the same concern regarding the effectiveness of library credit courses.

Most of the information that we need in order to improve the teaching of a course, or its content and structure, can be obtained from feedback on assignments, student comments, or peer evaluation. However, as is true for library instruction in general, librarians often feel that library courses need to be justified. Are they worth the time? Do they make any lasting impact on students?<sup>11</sup>

A few studies have looked for such a lasting impact. A study by Celia Hales and Dianne Catlett collected students' responses to a credit library course at East Carolina University. Although the responses from 1,144 students were highly positive, with 92.38 percent of them favoring the overall value of this course, the two researchers were concerned that "though student evaluations are high when forms are filled out immediately at the conclusion of the course, the overall value of the course is often not recognized by students."<sup>12</sup> Their argument was that "students do not always retain the knowledge for application in later courses."<sup>13</sup>

Hardesty, Lovrich, and Mannon investigated the long-term retention of library skills in their study. They found that long-term retention was more highly associated with library instruction than SAT verbal scores and GPA.<sup>14</sup> Two more studies also noted the lasting impact of library courses. John Selegean, Martha Lou Thomas, and Marie Louise Richman tested two groups, a group of students who took a library course and a control group comprised of students who did not take the course. They found statistically significant differences between the two groups in GPA, measured on a 4-point scale, and persistence rates, defined as the number of quarters a student remained at the university after the library course was taken. On average, students who completed the library course were found to have 0.15-point higher GPAs and 2.9 more quarters of attendance than the control group. However, no significant difference was found between the groups for graduation rate.<sup>15</sup> Roland Person conducted a student opinion survey to assess the long-term effect of a semester-long library credit course and found that students appreciated the value of the formal course and that their appreciation remained high for years after the course was taken.<sup>16</sup>

### Citations—A Final Product to Measure Library Use

In his literature review, "Evaluating Bibliographic Education," Werking quoted James Benson: "I am more concerned with the presumed goal underlying that of improved abilities: changes in the *actual* use of libraries."<sup>17</sup> Continuing in this vein, Werking wrote, "More promising than objective tests are those measurement methods which go beyond the content of instruction to gauge student performance in the library."<sup>18</sup> The studies mentioned above looked for the lasting impact of library courses by using SAT scores, GPAs, retention rates, graduation rates, and students' appreciation. These methods had an advantage over pre/post-test methods because they measured student skills separate from the content of library instruction. They were not directly associated with the

*actual use* of libraries, however. An ideal method would incorporate both. Werking cited Thomas Kirk's assessment of students' bibliographies as such an example, "Instead of using only an objective test, Kirk had students write a short research paper—a product of their library use. Faculty evaluated the content, and Kirk assessed the bibliography on the basis of several criteria."<sup>19</sup> Assessment of bibliographic citations proved to be an ideal measurement method.

Two studies identified the effect of one short bibliographic instruction session (BI) through analyses of citation use. David King and John Ory observed a significant difference in the use of periodical indexes between an instructed group and an uninstructed group of students.<sup>20</sup> The former group used an average of twice the number of periodical indexes than did the latter group because of the emphasis on the use of indexes during instruction. In Amy Dykeman and Barbara King's study, two trained readers evaluated student research papers from two classes of Sociology of the Family. The two classes were divided into two groups, the experimental group exposed to the library instruction and the control group that was not. The experimental group received a total mean score of 121.88, whereas the total mean score for the control group was 115.36. The experimental group also scored higher on writing skills (70.67) than the control group (67.82). The two authors found that the experimental group not only produced better papers but also used a greater variety of sources than the control group.<sup>21</sup>

More recently, an analysis of citation use appeared in a well-known series of studies to examine the effect of the Web on undergraduate citations. Philip Davis and Suzanne Cohen's analysis of citation use reported a significant decrease of scholarly resources cited in student papers between 1996 and 1999.<sup>22</sup> Davis' 2000 update found a growth in the total number of citations using non-scholarly materials.<sup>23</sup> His 2003 follow-up study observed that scholarly bibliographies were returned when written "enforceable guidelines" were provided by the professor.<sup>24</sup> Provoked by Davis' research series, Andrew Robinson and Karen Schlegl tested the efficacy of instruction. Their experimental study supported Davis' conclusion that academic penalties from professors on the use of scholarly citations had significant effect. Interestingly, the two researchers found that the bibliographic instruction by librarians alone had a limited effect.<sup>25</sup>

## Hypotheses

The literature review reveals that there is no consensus from these researchers who evaluated library credit courses. Pre/post-test methods and objective tests were repeatedly used to evaluate "a prescribed set of skills."<sup>26</sup> On the other hand, analyses of citation use were only used to examine one-shot BIs but not library credit courses. No study has tackled the evaluation of the lasting impact of library credit courses on student learning with the analysis of citation use, a final product by which to measure library use. Therefore, this study assessed the quality of student bibliographic citations in their research papers, in addition to the students' grades associated with these papers and courses, to determine if the students who completed a library credit course performed better than the students who did not take the course and if there were a long term impact. The dependent variables were citation counts of scholarly resources, incomplete citations, and total citations in each student paper, students' paper grades,

and final course grades. The independent variable included two groups, the students who took the library course, LIB 197, and students who did not take the course.

The five null hypotheses posited in this research study were:

1. There would be no difference in citing scholarly resources between students who took the library course LIB197 and students who did not take the course.
2. There would be no difference in producing incomplete citations between the two groups.
3. There would be no difference in counts of the total bibliographic citations between the two groups.
4. There would be no difference in paper grades between the two groups.
5. There would be no difference in final course grades between the two groups.

## Methodology

LIB 197 is an elective course and open to all students at CMU. In general, students take it for various personal reasons, such as learning the use of the library or needing a credit for graduation. At the end of fall 2004, the study tracked CMU students who had previously taken LIB 197 in their subject courses across different disciplines including sociology, social work, political science, education, family studies, and human development. The number of students who took the library course ranged from two to 11 in these classes. The author used all students in a class who had previously taken LIB 197 and randomly selected students who had not completed the library course from the same class to match the former group. Sixty students who took the library credit course were found in 17 classes taught by 10 professors. Their 60 counterparts were matched from the same classes. A total of 120 participants were recruited. A total of 836 citations from these 120 students' papers were collected in late fall 2004, at the very end of the semester. Thus, all students were not evaluated for this study until their classes were almost over.

Although the 120 participants of two groups were from different classes, there were commonalities between the two groups. Not only were their numbers equally matched in each class but they also received the same assignments from the same professor within each class, and they were graded by the same professor.

The students evaluated in this study took the library credit course at different times from spring 1999 to the first eight weeks of fall 2004. The average length of time (the period between the time when these students took the library credit course and the fall of 2004) was 2.2 semesters. This means that, on average, each student took the library credit course about one year before writing papers for current classes.

A short survey was conducted in order to link each student's background to his/her bibliographic citations in each paper (see appendix). Each student's set of citations was counted in three categories:

1. The number of citations from scholarly resources
2. The number of incomplete citations
3. The total number of citations used in each paper

All categories were coded to correspond with the students' LIB 197 status and their course grades. Students' paper grades and course grades were collected anonymously after their grades were posted. (Note: In the student background survey, students were asked to voluntarily provide the last four digits of their social security numbers. Therefore, their grades could be collected using the 4 digit numbers without association with individual names.)

This study adopted Robinson and Schlegl's typology to define what is considered a citation of a scholarly resource. These two researchers modified Davis and Cohen's classification, adding government documents to the combination of book and journal as scholarly resource categories, regardless of electronic and print formats, and considering all citations from newspapers and magazines, either print or electronic, as nonscholarly.<sup>27</sup> The rationale for this came from Davis and Cohen's definition of scholarly periodicals as those "that contain primary research or substantial policy analysis."<sup>28</sup>

How students document their sources is another indicator of the sophistication of citation skills that were developed from formal training. The quality of student citations can be measured by completeness or incompleteness, which is crucial to accuracy. This study used Gloriana St. Clair and Rose Mary Magrill's definitions to categorize citations as "complete" and "incomplete." St. Clair and Magrill loosely defined complete as a book citation including author, title, publisher, and date, and a journal article citation containing author, title of the article, journal title, date, and page number. For other material formats, citations were deemed complete if the authors could locate or identify the source with the information provided.<sup>29</sup> In this study, one rule was added to St. Clair and Magrill's criteria for the category of other formats. If a Web source did not include a URL, it was considered incomplete, regardless of whether it could be located or not. The author checked all citations so that the citations could be classified consistently by one person. Student paper grades and course grades were also considered indicators of a synthetic use of research skills. In other words, student grades could be affected by what was cited in their papers.

The five dependent variables were measured by citation counts of scholarly resources, incomplete citations, total citations in each paper, and the students' grades for their papers and courses measured on an interval scale. Following the convention of the registrar's office at CMU, the grades were coded on a 12-point scale: A = 4, A- = 3.7, B+ = 3.3, B = 3, B- = 2.7, C+ = 2.3, C = 2, C- = 1.7, D+ = 1.3, D = 1, D- = 0.7, and E or under = 0. The independent variable included two groups with two discrete levels (0 = students who did not take LIB 197; 1 = students who took LIB 197).

The independent samples t-test was used because the purpose of the study was to look for differences between the two groups. According to Gail Gerlach and George Bieger, "The independent samples t-test compares the means of two samples. The two samples are normally from randomly assigned groups."<sup>30</sup> After running the histogram for normal distributions of the two groups, the shape of the normal curve was almost perfect in citing scholarly resources but not in incomplete citations, total citations, and the students' grades between the two groups. The numbers of the two groups were equal in this study. According to Joan Welkowitz, Robert Ewen, and Jacob Cohen, "The assumption concerning the equality of the two population variances can be practically

ignored as well if the two samples sizes are equal."<sup>31</sup> Although the two groups in other aspects were not normally distributed, the independent samples t-test was still used in this study because "the t-test is *robust* and can handle violations of the assumption of a normal distribution."<sup>32</sup>

## Results

With the confidence interval at 95 percent, the t-test results indicated that four of the five null hypotheses were rejected. The four rejected null hypotheses were:

1. There was no difference in citing scholarly resources between students who took the library course LIB 197 and students who did not take the course.
2. There was no difference in producing incomplete citations between the two groups.
3. There was no difference in paper grades between the two groups.
4. There was no difference in course final grades between the two groups.

The null hypothesis for total number of citations was retained. There were statistical differences between the two groups in citing scholarly resources, producing incomplete citations, the students' grades for their papers, and their final grades for their courses, but there was no significant difference in counts of the total citations between these two groups. The detailed results are presented in table 1. Under the heading LIB 197 Course, the label "no" represents the group of students who did not take LIB 197, and "yes" represents the group of students who took LIB 197.

The null hypothesis concerning the use of scholarly resources was rejected due to the result of an independent samples t-test comparing the mean scores of the two groups. There was a statistically significant difference between the means of the two groups ( $t(118) = -2.485, p < .05$ ). The mean score of scholarly resources cited by the students who completed the library credit course was significantly higher ( $m = 5.60, sd = 2.859$ ) than the mean score of the students who had never taken the library credit course ( $m = 4.37, sd = 2.571$ ). This result demonstrated that the group of students who took the library course used significantly more scholarly resources than their counterparts.

Likewise, the result of another independent samples t-test rejected the null hypothesis concerning incomplete citations between the two groups. The mean score of incomplete citations from the group of students who took the library course ( $m = .43, sd = .851$ ) was .33 points lower than those who did not ( $m = .10, sd = .354$ ). The difference was statistically significant ( $t(118) = 2.801, p < .05$ ). The difference in incomplete citations between the two groups indicated that the students who took the library course produced significantly fewer incomplete citations than the students who never took the course.

An independent samples t-test was calculated comparing the mean scores of the students' paper grades between the two groups. A significant difference was found between the two groups ( $t(118) = -2.122, p < .05$ ). The mean of the paper grades for students who took LIB 197 was significantly higher ( $m = 3.505, sd = .753$ ) than the mean of their counterparts ( $m = 3.160, sd = 1.009$ ). Thus, the null hypothesis for students' paper grades was rejected.



# Table 1

## Descriptive Statistic and Independent Samples T-Tests

Measure	LIB 197 Course		No		Yes		Comparison	
	<i>m</i>	<i>sd</i>	<i>m</i>	<i>sd</i>	<i>t</i>	<i>smd</i>	Sig. (2- tailed)	
Scholarly citation	4.37	2.571	5.60	2.859	-2.485	.454	.014*	
Incomplete citation	.43	.851	.10	.354	2.801	.553	.006*	
Total citation	6.67	2.856	7.27	2.974	-1.127	.206	.262	
Paper grade	3.160	1.009	3.505	.7532	-2.122	.392	.036*	
Course grade	3.083	.8979	3.368	.6083	-2.036	.378	.044*	

NOTE: Students who did not take LIB197  $n = 60$  and students who took LIB197  $n = 60$ . Degrees of freedom ( $df$ ) = 118. *smd* indicates the standardized mean difference obtained by dividing the score of mean difference by the standard deviation of the total population.

\* $p < .05$ .

As with the result of students' paper grades, after running an independent samples t-test, the last null hypothesis about students' course final grades was also rejected. There was a statistically significant difference between the two groups ( $t(118) = -2.036$ ,  $p < .05$ ). The mean of students' course final grades for the group of students who took LIB 197 was significantly higher ( $m = 3.368$ ,  $sd = .608$ ) than the mean score of the other group ( $m = 3.083$ ,  $sd = .898$ ).

However, the null hypothesis for the total citations was retained. Another t-test compared the mean scores of total citations in each paper between the two groups. Even though the mean of the total citations used by the students who took LIB 197 ( $m = 7.27$ ,  $sd = 2.974$ ) was higher than the mean of their fellow students who did not take the course ( $m = 6.67$ ,  $sd = 2.856$ ), no significant difference was found between the two groups ( $t(118) = -1.127$ ,  $p > .05$ ).

## Discussion

### Influence by the Size of the Group of Participants

Although the matching technique in sampling was used to equalize student numbers of the two groups within the same class, the number of participants taken from each class was different. For example, one class might have 10 students who took the library course, while another class would only contain two such students. The matching technique was supposed to balance out the unequal numbers, but it was unknown whether the sizes of the group of participants and the variety of classes were large enough to reduce the difference among participants. The study could have recruited more LIB 197

students and their counterparts from more classes if the author had realized the difficulty in tracking down LIB 197 students from different classes and obtaining citations and grades near the end of the semester. It would be interesting to see whether the result would change if a larger number of participants from more subject disciplines are included in a future study at a different institution.

### **Influence from Professors**

This study could not explicitly separate each intervening effect of professors, one-shot BIs, or students' personal attributes from the impact of the library credit courses—if there were such an effect. The strongest influence on students' academic performance comes from their professors. Davis' and Robinson and Schlegl's studies confirm that student citation behaviors are changed after professors provide enforceable guidelines and an academic penalty.<sup>33</sup> In this study, the author reviewed these professors' assignments. Most of these professors emphasized paper content rather than bibliographic citations. No academic penalty related to citation use was found in their guidelines. However, one of these professors wrote that a paper would be graded higher if it used scholarly research sources and provided accurate citations. Four out of 10 professors required their students to cite a certain number of references for their papers. As was noted earlier, there was no statistically significant difference in total citation counts between the two groups, although the mean of LIB 197 students' total citation counts scored higher than the other group. One reason that could explain the retention of the null hypothesis was precisely the fact that professors specifically required a certain number of citations. This seems parallel Davis' and Robinson and Schlegl's findings.

Although the percentage that paper grades counted into course final grades varied from 17 percent to 40 percent in different courses, the study results should be valid because the professors' guidelines were for all the students in the same class. In addition, these professors graded their students by their own criteria for their courses. Whether or not students took the LIB 197 course was never considered when they gave credits to their students.

### **Other Influences**

Two questions in the short survey (see appendix) were designed to examine how students learned bibliographic research and citation skills and whether there were any other possible intervening factors

In answering how they learned citation skills, 28 LIB 197 students believed that they learned citation skills from the library credit course (28/60, 47 percent). The next largest source for skill attainment, for both groups of students, was from professors (non-LIB 197 students = 24/60, 40 percent; LIB 197 students = 21/60 = 35 percent). The next largest selected source for both groups was self (non-LIB 197 students = 20/60, 33 percent; LIB 197 students = 8/60, 13 percent). This was followed by the use of an online citation tool (non-LIB 197 students = 7/60, 12 percent; LIB 197 students = 2/60, 3 percent). Table 2 displays the responses.

Fifty-four of the 60 students (90 percent) who took LIB 197 stated that they learned bibliographic research skills from the course. This indicates that the library credit course

## Table 2

### SURVEY RESULTS: “How did you learn to cite references?”

	LIB 197	BI	Professor	Librarian	Tutorial	Friend	Self	Online tool	TOTAL
LIB 197 YES									
(n=60)	28	0	21	1	0	0	8	2	60
	(47%)	(%)	(35%)	(2%)			(13%)	(3%)	(100%)
LIB 197 NO									
(n=60)	0	7	24	0	0	2	20	7	60
		(12%)	(40%)			(3%)	(33%)	(12%)	(100%)

had a profound impact on the students. The largest percentage of students who never took the course relied on informal sources such as on their own (27/60, 45 percent), from peers (9/60, 15 percent), or an online tutorial (1/60, 2 percent); none used the online citation tool. A small percentage of students who did not take LIB 197 gained research skills from more authoritative sources: 17 from one-shot BIs (28 percent), four from a professor (7 percent), and two from a librarian (3 percent). Table 3 displays the responses.

The survey results echoed the statistically significant findings. LIB 197 students acknowledged the library course as a major learning experience for gaining bibliographic and citation skills because they were exposed to intensive and systematic training. On the other hand, the students who did not take the library course tended to seek help from informal sources, which might be a cause of their less efficient performance.

A research process is extremely complex and personal.<sup>34</sup> Why did some students perform better than others? An answer could reside in personal attributes, including cognitive styles or individual preferences. Although this study could not identify how the library credit course was associated with student personal attributes and what happened during an individual research process, one of the speculations about the LIB 197 students' better performance might be that, by acquiring such skills and knowledge, they are perhaps more adaptive, resourceful, and confident when dealing with research challenges.

## Conclusion

The lasting impact of the library credit course LIB 197 was demonstrated by the difference between the performance of two groups of students at CMU in the fall of 2004. The study results show that the group of students who previously took the library course were not only able to cite more scholarly resources and produce fewer incomplete cita-

## Table 3

### SURVEY RESULTS: “How did you learn research skills?”

	LIB 197	BI	Professor	Librarian	Tutorial	Friend	Self	TOTAL
LIB 197 YES								
(n=60)	54	1	2	1	0	1	1	60
	(90%)	(2%)	(3%)	(%)		(2%)	(2%)	100%
LIB 197 NO								
(n=60)	0	17	4	2	1	9	27	60
		(28%)	(7%)	(3%)	(2%)	(15%)	(45%)	(100%)

tions but they were also able to obtain higher grades for their papers and courses than the group of students who did not take the course. It is noteworthy that these positive results were obtained about a year (on average 2.2. semesters for each student) after these students had taken LIB 197.

The most interesting finding was the statistically significant difference in the grades between the two groups. The higher grades seem to imply that the students who received formal and systematic training from the library course might be more skillful in locating appropriate resources for their papers and more sophisticated in citing their resources than those who were not trained. These findings were quite the opposite of Hales and Catlett’s argument that assumed “when the time does come in another course to prepare a term assignment, the students all too often ‘forget’ what they learned.”<sup>35</sup>

There seemed to be a sequence of logical connections among the three factors of student citations, paper grades, and course final grades. Student papers benefited from the higher quality of bibliographic citations. Consequently, better papers contributed to higher course final grades. Although the study could not prove that the difference in the grades between the groups were solely explained by taking the library course, the benefits of taking the library course and its long-term impact on student information literacy skills are noteworthy. Most of the students who completed LIB 197 identified the course as a major source for learning bibliographic and citation skills. The students who did not take the library course performed less efficiently, possibly due to a tendency to rely on informal modes of learning and a lack of intensive training.

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For future research, as discussed in the previous section, the study can be replicated at a different institution, using larger samples from more classes across more disciplines. Also, studies that can single out the lasting impact of library credit courses among other influences on student learning will be needed.

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## Appendix

### Survey

1. What is the course number of the class you are attending?
2. The last 4 digits of your social security number
3. Did you take the course, LIB 197, Introduction to Library and Information Research?
  - a. Yes
  - b. No
4. In what year did you take LIB 197?  
Year \_\_\_\_\_      Fall      Spring
5. Are you a
  - a. freshman
  - b. sophomore
  - c. junior
  - d. senior
6. Have you attended a library instruction session (about one hour) conducted by a librarian for this course?
  - a. Yes
  - b. No
7. Did you attend a library instruction session (about one hour) conducted by a librarian for other courses? If "yes" please indicate the name of course.
  - a. Yes
  - b. No
8. How did you learn to do research?
  - a. I learned it by taking LIB 197.
  - b. I learned it by attending a library instruction session.
  - c. I learned it from my professor.
  - d. I learned it by meeting a librarian individually.
  - e. I learned it by taking the online tutorial, PLOT.
  - f. I learned it from my friends.
  - g. I learned it by myself.

9. How did you learn to cite sources in references/bibliographies?
  - a. I learned it by taking LIB 197.
  - b. I learned it by attending a library instruction session.
  - c. I learned it from my professor.
  - d. I learned it by meeting a librarian individually.
  - e. I learned it by taking the online tutorial, PLOT.
  - f. I learned it from my friends.
  - g. I learned it by myself.
  - h. I used an online citation tool such as “NoodleTools” or “Citation Machine.”

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## Notes

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