**2015-2016 Council of Library Deans (COLD)**

**Assessment Team (AT)**

**Results of a Pilot-Study Using a Multi-Method Approach to Exploring the Potential Impact of Library Services on Student Outcomes**

1. **INTRODUCTION**

In 2013, the Social Science Research Center (SSRC) at California State University Fullerton was commissioned by the Chancellor’s Office, on behalf of the Council of Library Dean’s Assessment Team (COLD CAT), to assist in the development and implementation of a pilot study. The purpose of the study was to address whetherthe use of library services correlate with student outcomes. The results of the pilot study would also be used by CAT to assess the feasibility and usefulness of replicating similar studies on a wider scale. Two CSU campuses collaborated with the SSRC on the development and implementation of the current study, California State University, Northridge (CSUN) and California State University, Fresno. For each campus, two librarians with expertise in assessment in higher education served as participating collaborators and were involved in all processes related to the development and implementation of the pilot study described herein.

1. **METHOD**
   1. **Population of Inference and Study Sample**

The population of inference for the current study is first-time freshmen entering the CSU system during the 2015/16 Academic Year (AY). As this was a pilot study, only first-time freshmen enrolled at CSUN or Fresno State during the fall 2015 semester served as potential participants for the current study. Rather than pull a sample from all first-time freshmen enrolled in one of these two campuses during the study period, a sample design whereby students enrolled in one of several pre-determined courses at either campus was adopted. Because one of the main student outcomes of interest was information literacy, courses requiring students access, analyze, and synthesize scholarly information to produce a final research paper were chosen. For Fresno State two courses, English 10 and English 5B were selected from which to sample students. From CSUN, Approaches to University Writing, as well as Approaches to University Writing A, B, N and P were chosen.

After receiving IRB approval for the current study, the administration at both campuses furnished the SSRC with a complete list of students enrolled in either one of these courses along with a corresponding email address. These lists served as the sample frame for the current study. The list also contained information on student race/ethnicity, gender, parent level of education[[1]](#footnote-1), college of study[[2]](#footnote-2), high school GPA, and ACT/SAT scores.

In total, CSUN furnished the SSRC with a list of 5,447 students, while Fresno state provided a list with 1,515 students. Of the students contained in the Fresno State sample frame, 385 (25.4%) were continuing students. The 6,962 students contained in both lists were assigned a unique Study ID to protect confidentiality and track participation in the study the semester. All students contained in this list received an email invitation requesting they participate in the current study.

* 1. **Data Collection and Survey Instruments**

Potential study participants were asked to complete a survey at two points in time, once at the beginning of the semester (a pre-test survey) and another at the end of it (a post-test survey).  The pre-test survey was administered during the first two to three weeks of the fall 2015 semester and assessed student information literacy, academic expectations for the semester and other factors known to contribute to academic success (e.g. the number of hours worked, availability of transportation, caregiving responsibilities, etc). The post-test survey, administered at the conclusion of the survey, assessed student library use, academic behavior behavior (e.g. timed spent studying, etc), information literacy, and perceived academic performance.  Both the pre and post-test, reproduced in Appendix A, were developed by the SSRC in collaboration with participating librarians and select CAT members.

Because it is well known that students tend to overestimate their own academic success, other sources of data beyond self-reported academic performance were sought.  To this end, an item at the end of the post-test asked students whether they would be willing to submit their final term paper for English 10/ 5B (for Fresno State students) or Approaches to University Writing (for CSUN students).  Students who consented to doing so, were emailed a separate link where they were instructed to upload their final paper.  All submitted papers were stripped of identifying information and designated the same unique assigned to their survey data. These papers were then delivered to a team of librarians who rated the quality of the paper on several factors. At the end of the data collection period a third source of data was added to the final data file, overall semester GPA and grades earned on English 10/ 5B (for Fresno State) or Approaches to University Writing (for CSUN students).

* 1. **Procedures for Rating Student Work Samples**

All student papers were rated using the UC Irvine (UCI) Libraries Information Literacy (IL) Rubric (revised 3.27.2012) which was chosen after thoughtfully reviewing several others rubrics.[[3]](#footnote-3),[[4]](#footnote-4) The UCI Libraries IL Rubric is designed to measure five Association of College & Research Libraries (ACRL) standards. Each standard is measured by between two to five criteria, for a total of 18 criteria. For each of the 18 criteria, student samples are assigned a value between one and four, where 1 = the lowest rating possible and 4 = the highest. For example, ACRL Standard #1 addresses how much a student is able to determine the extent of information needed for their research paper. In the UCI Libraries IL Rubric, three criteria are used to measure the extent to which a student has met this standard, the first of which is the quality of their paper’s topic statement. On this criteria, the rater can assign the writing sample one of four possible values:

*1 = “Topic is unfocused.”*

*2 = “Topic is somewhat focused.”*

*3 = “Topic is mostly focused.”*

*4 = “Clear and focused topic.”*

The rubric follows the same format for all 18 criteria, although the definition used for each rating value differs. A reproduction of the rubric can be found in Appendix B.

Four independent raters, two librarians from Fresno State and two from California State CSUN, rated the writing samples after undergoing a systematic norming process. Through facilitated conference calls, this team of librarians engaged in a guided discussion about the meaning of the rubric criteria. They then applied the rubric to a random sample of ten student papers. When this exercise was concluded, they came together in a second facilitated conference call to discuss discrepancies in scoring and attempted to establish consensus. The rating exercise was completed again on another random selection of ten student samples.

Although over 90% of the 180 ratings (10 papers \* 18 criteria) were within +/- one point of each other, it was determined that exact agreement would be impossible to obtain given the diverse nature of the student samples. Moreover, the inter-item reliability (a measure of consistency across items within the same scale) also varied from a low of α = -.007 for Rater #3 on ACRL Standard #3B to a high of α = .926 for Rater #1 on ACRL Standard 2. Averaging the value of these statistics across all four raters, we note that the three criteria used to assess ACRL Standard #3B generated the lowest level of inter-item agreement (α = .432) and that the five that assessing ACRL Standard #5 generated the highest (α = .829)[[5]](#footnote-5). When looking at the inter-item reliability of all 18 items when combined, we observed a value of α = .725 for Rater #2 and α = .874 for Rater #1. Given the limited reliability observed both across and within raters, the researchers adopted a “measurement estimate” approach to address inter-rater reliability. This approach is based on the belief that one should use all of the information from all judges (including discrepant ratings) when attempting to create a summary score for each respondent (Stemler, 2004).

* 1. **Representativeness of Study Sample (All Stages)**

Table 1 depicts the demographic and academic characteristics of students in the sample frame and those who participated in various stages of the pilot-study. It is important to note that only students who participated in a prior stage were invited to participate in the following one. For example, only the 1,977 students who completed a pre-test were recruited to complete a post-test survey. Table 1 illustrates the fact that Fresno state students are over-represented in the study sample, while the opposite is true of CSUN students. This finding is due to the fact that Fresno State took a more active approach to recruiting students to participate in the pilot study, offering extra credit to students who participated, for example. Females are also vastly over represented in the current study, a finding that is consistent with social science research in general. Given that Fresno State students are over-represented, it comes as no surprise that students enrolled in English 5B or English 10 are over-represented in the study sample. African American students are under-represented in the study sample, while Asian students are over-represented. White students are over-represented among the sub-set of the study sample who volunteered to submit a writing sample. Among Fresno State student, those is certain majors are under-represented (CSB and CAH), while others are over-represented (CHHS and KSOEHD). Students with one or more parent who had attended some college are slightly over-represented in the study sample, while those with both parents having a high school diploma or less and under-represented. Looking at high school GPA, we note that those participating in the pilot study earned slightly higher scores than those who did not. The SAT scores of students participating in various stages of the pilot study are not noticeably different with the exception of those who volunteered a writing sample. Those who volunteered a writing sample had earned higher SAT scores, on average, than those who did not.

**Table 1. Demographic and Academic Characteristics of Students in the Sample Frame and Study Sample**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Student Characteristics** | **Sample Frame**  **(*N* = 6,962)** | **Pre-Test Completers**  **(*N* = 1,977)** | **Post-Test Completers**  **(*N* = 1,065)** | **Submitted Writing Sample**  **(*N* = 114)** |
| ***Campus Attended - Count (%)*** | | | | |
| Fresno State | 1,515 (21.8) | 604 (30.6) | 335(31.5) | 38 (33.3) |
| CSUN | 5,447 (78.2) | 1,373 (69.4) | 730 (68.5) | 76 (66.7) |
| ***Gender – Count (%)*** | | | | |
| Female | 3,685 (52.9) | 1,238 (62.6) | 705 (66.2) | 71 (62.3) |
| ***Course Name – Count (%)*** | | | | |
| Approaches to University Writing | 2,169 (31.2) | 529 (26.8) | 301 (28.3) | 34 (29.8) |
| Approaches to University Writing A | 2,569 (36.9) | 687 (34.7) | 342 (32.1) | 32 (28.1) |
| Approaches to University Writing B | 350 (5.0) | 83 (4.2) | 49 (4.6) | 4 (3.5) |
| Approaches to University Writing N | 70 (1.0) | 16 (0.8) | 9 (0.8) | 3 (2.6) |
| Approaches to University Writing P | 290 (4.2) | 58 (2.9) | 29 (2.7) | 3 (2.6) |
| English 10 | 1,282 (18.4) | 498 (25.2) | 283 (26.6) | 32 (28.1) |
| English 5 B | 23 (3.3) | 106 (5.4) | 52 (4.9) | 6 (5.3) |
| ***Enrollment Status – Count (%)*** | | | | |
| FTF | 6,539 (93.9) | 1,833 (92.7) | 993 (93.2) | 103 (90.4) |
| Returning | 423 (6.1) | 144 (7.3) | 72 (6.8) | 11 (9.6) |
| **Ethnicity/Race *– Count (%)*** | | | | |
| Hispanic/Latino | 3,824 (54.9) | 1,095 (55.4) | 594 (55.8) | 58 (50.9) |
| White | 874 (12.6) | 245 (12.4) | 133 (12.5) | 22 (19.3) |
| Asian/Pacific Islander | 748 (10.7) | 271 (13.7) | 146 (13.7) | 15 (13.2) |
| International | 734 (10.5) | 182 (9.2) | 105 (9.9) | 8 (7.0) |
| African American | 384 (5.5) | 75 (3.8) | 33 (3.1) | 3 (2.6) |
| Unknown | 201 (2.9) | 59 (3.0) | 32 (3.0) | 7 (6.1) |
| Biracial | 197 (2.8) | 50 (2.5) | 22 (2.1) | 1 (0.9) |
| ***College (Fresno Only) – Count (%)*** | | | | |
| CSM | 306 (20.2) | 126 (20.9) | 74 (22.1) | 7 (18.4) |
| CHHS | 295 (19.5) | 143 (23.7) | 93 (27.8) | 10 (26.3) |
| LCOE | 215 (14.2) | 72 (11.9) | 33 (9.9) | 5 (13.2) |
| CSB | 172 (11.4) | 60 (9.9) | 33 (9.9) | 3 (7.9) |
| COSS | 139 (9.2) | 58 (9.6) | 32 (9.6) | 3 (7.9) |
| SPE | 130 (8.6) | 44 (7.3) | 20 (6.0) | 4 (10.5) |
| CAH | 108 (7.1) | 38 (6.3) | 19 (5.7) | 1 (2.6) |
| JCAST | 96 (6.3) | 33 (5.5) | 14 (4.2) | 3 (7.9) |
| KSOEHD | 54 (3.6) | 30 (5.0) | 17 (5.1) | 2 (5.3) |
| ***Parent Level of Education (CSUN Only) – Count (%)*** | | | | |
| Both parents: High school or less | 2969 (54.5) | 730 (53.2) | 392 (53.7) | 34 (44.7) |
| One or both parents: Some college | 1110 (20.4) | 264 (19.2) | 147 (20.1) | 20 (26.3) |
| One or both parents: Four year college | 1250 (23.0) | 96 (21.6) | 142 (19.5) | 19 (25.0) |
| Unknown | 391 (7.2) | 83 (6.0) | 49 (6.7) | 3 (3.9) |
| ***HS GPA – Measures of Central Tendency*** | | | | |
| Mean  Median  Count | 3.19  3.16  6864 | 3.26  3.23  1,976 | 3.30  3.27  1,064 | 3.30  3.36  114 |
| ***SAT Score – Measures of Central Tendency*** | | | | |
| Mean  Median  Count | 882.1  890.0  6,079 | 870.14  895.00  1,880 | 868.7  900.0  1,006 | 932.4  950.0  109 |

1. **RESULTS**
   1. **Student Writing Samples**

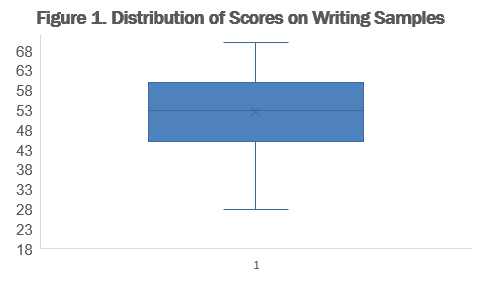
Summing the values assigned across all 18 criteria, scores on the writing samples could be as low as 18 (18 criteria \* value of 1) points and as high as 72 points (18 criteria \* value of 4). As shown in Figure 1, the observed scores in the student samples ranged from 28 (*n* = 1; 1.1%) to 70 (*n* = 2; 2.2%), while the average was 52 and the median was 53. Fifty percent of the scores fell between the values of 45 and 60 points. 

Table 2 presents the minimum, maximum, mean, and median of the average scores for each ACRL standard separately. As shown, students performed **best** on Standard #3A and **worst** on Standard #1.

**Table 2. Average Score of Each Standard**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ACRL Standard | Mean | Median | Min | Max |
| 1 | **2.59** | 2.67 | 1.00 | 3.37 |
| 2 | 2.80 | 2.67 | 1.00 | 4.00 |
| 3A | **3.15** | 3.17 | 1.00 | 4.00 |
| 3B | 2.75 | 2.75 | 1.00 | 4.00 |
| 4 | 2.89 | 3.00 | 1.50 | 4.00 |
| 5 | 3.10 | 3.30 | 1.20 | 4.00 |

Table 3 illustrates the fact that the average scores for each ACRL standard are highly correlated with one another, as would be expected.

**Table 3. Relationship Between ACRL Standards 1-5**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ACRL Standard | 1 | 2 | 3a | 3b | 4 | 5 |
| 1 | - |  |  |  |  |  |
| 2 | .689\*\* | - |  |  |  |  |
| 3a | .403\*\* | .506\*\* | - |  |  |  |
| 3b | .609\*\* | .526\*\* | .408\*\* | - |  |  |
| 4 | .705\*\* | .601\*\* | .479\*\* | .683\*\* | - |  |
| 5 | .348\*\* | .459\*\* | .419\*\* | .616\*\* | .593\*\* | - |

\*\* *p* < .01

As shown in Table 4, student scores on ACRL Standards 1, 3B, 4, and 5 are **positively** related to the final grade obtained in the course for which the paper was written. That this relationship is not stronger should not be surprising, as final course grades are also determined by other factors including test scores, attendance, and participation. The scores obtained on ACRL Standard 2 were **positively** related to the self-reported number of hours students spent working on their papers. Meanwhile scores on Standards 1, 2, 3A, and 3B were **negatively** correlated with when in the semester students started writing their paper on a scale from one to four, where 1 = “a month or two before it was due,” 2 = “two weeks before it was due,” 3 = “one week before it was due,” and 4 = “the night before it was due.” That is, those that procrastinated more earned lower scores on each of these four criteria. These two findings taken together suggest that the number of hours spend on a research paper may not be as important as how those hours are distributed over the semester.

**Table 4. Relationship Between ACRL Standards 1-5, Effort, and**

**Course Outcomes**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *Other Student Outcomes* | ACRL Standards | | | | | | Sum of Scores |
| 1 | 2 | 3a | 3b | 4 | 5 |
| *Course Grade* | **.223\*** | .135 | .055 | **.232\*** | **.326\*\*** | **.270\*\*** | **.273\*\*** |
| *Hours Spent on Paper* | .202 | **.293\*\*** | .174 | .062 | .053 | .137 | .203 |
| *When Paper Was Started* | **-.218\*** | **-.211\*** | **-.251\*** | **-.267\*** | -.192 | -.147 | **-.242\*** |

* *p* < .05

\*\* *p* < .01

* 1. ***Physical Use of the Library & Overall Ratings Received on UCI Rubric*** 
     1. **Identifying Potential Confounding Variables**

Before examining the role of library use on scores assigned student writing samples using the UCI Libraries Rubric, an analysis was conducted to determine which variables might serve as potential confounding variables. Confounding variables are those that are related to the indicator variable (in this case library use) and the outcome variable (in this case student scores) such that not taking them into account could lead to spurious results.

Neither student gender, ethnicity (White vs. Nonwhite)[[6]](#footnote-6), nor the presence of a parent with some college education were related to the scores students obtained on their samples. While the university students attended was unrelated to the scores they received on their paper, those majoring in the fields of Social & Behavioral Sciences (*M* = 57.3, *n* = 8), Natural Science, Agriculture & Mathematics (*M* = 56.7; *n* = 16), SPE (M = 55.3; *n* = 4) as well as those who were undeclared (*M* = 52.7, *n* = 8) earned higher scores, on average, than those in the Colleges of Business & Economics (*M* = 50.6; *n* = 12), Health and Human Development. (*M* = 50.3, *n* = 20), Arts/ Humanities/ Communication/ Media (*M* = 47.3; *n* = 11), and Engineering and Computer Science (*M* = 51.8; *n* = 13). While not statistically significant, these differences may be explained by variance in the nature of assignments required by discipline.

While high school GPA was unrelated to student scores on their final paper submissions, those with higher SAT scores earned higher scores, on average, than those with lower scores. Exposure to Information Literacy (IL) instruction prior to enrolling at their four year institution was unrelated to the scores students received on their final paper submission.

Scores received on the student samples were unrelated to the grades they expected to receive in their composition course as well as the grade they expected to receive on their final paper more specifically. Nor were these scores related to students’ expectations for obtaining a post-baccalaureate degree. They were however, positively related to the number of papers requiring at least three sources they were expected to complete during the fall semester and the number of units they were attempting.

Finally the scores students received on their samples were unrelated to the number of hours they worked during the semester, whether they lived on campus or whether they had caretaking responsibilities.

Based on these results, subsequent data analyses examining the relationship between library use and scores obtained on writing samples incorporated the variables presented in Table 5.

**Table 5. List of Variables to Serve as Covariates in Statistical Analyses**

|  |  |
| --- | --- |
| Covariate | Variable Type |
| College Major | Dichotomous  1 = “Social & Behavioral Sciences/ Natural Science & Mathematics/ SPE/ Undeclared  2 = “Engineering & Computer Science/ Health and Human Development/Business and Economics/ Arts, Humanities & Communication |
| SAT Scores | Numerical |
| Number of papers requiring at least three sources to be completed during the fall semester. | Numerical |
| Number of units attempted in the fall | Numerical |

* + 1. **Frequency of Physical Visits to the Library During the Fall**

The survey completed by students assessed the extent to which the students used the library physically, as well as remotely.

Looking first at physical visits to the library, an item on the survey instrument inquired, “During the fall semester, how often did you visit the library physically. Response options for this item ranged from zero to five, where 0 = “not at all,” 1 = “a few times during the semester,” 2 = “once a month,” 4 = “once a week,” and 5 = “several times a week or more.” Table 6 illustrates that 41.3% of students in this sample reported visiting the library “several times a week or more” during the fall semester.

**Table 6. During the fall semester, how often did you visit the library physically?**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Not at all | A few times during the semester | Once a month | A few times a month | Once a week | Several times a week or more |
| 2  (2.2%) | 23  (25.0%) | 4  (4.3%) | 21  (21.7%) | 5  (5.4%) | 38  (41.3%) |

On average, Fresno State University (FSU) students reported visiting the library more frequently (*M*  = 4.79, or between once a week and several times a week, *n* = 34) than those attending CSU Northridge (*M*  = 3.97, or nearly once a week, *n* = 85), a difference that is statistically significant at *p*< .05. Although not statistically significant, females on average reported visiting the library more frequently than males. Students who had never received information literacy instruction before enrolling in CSUN or FSU visited the library more frequently, on average, compared to those who had, again a finding that is not statistically significant. Students not living on campus also visited the library more frequently, on average, than those who did. While not statistically significant, this finding suggests that the library provides a vital space to commuter students. Finally, students with caretaking responsibilities report visiting the library more frequently on average than those without these responsibilities. This is likely due to the fact that students with caretaking responsibilities are less able to study or do research for a course in their own household.

Looking at the types of services used during physical visits to the library, Figure 2 shows that students were **most likely** to go to the library to study, do research for an assignment, hangout, use the copier/printing services, and use the computers/ computer lab. They were **least likely** to visit the library to attend a sponsored event, check out an iPad/lap top, and to attend an appointment with a librarian.[[7]](#footnote-7),[[8]](#footnote-8)

Very often

Not at all

Figure 3 illustrates that FSU students visited the library to hang out and use the copier/printer services more frequently than did CSUN students did during the fall semester. Conversely, CSUN students physically visited the library in order to pick up course material on reserve more frequently than FSU students did during the same time period. The remaining 11 services are not depicted in Figure 3, as the frequency with which they were utilized did not differ by campus.

Not at all

Very

often

Among those who reported physically visiting the library at least once, the number of services used ranged from one to 12, with a mean of 4.73 services. While FSU students visited the library more frequently than CSUN students overall, there was no differences in the number of library services utilized between students attending each campus.

* + 1. **Frequency of Remote Use of the Library During the Fall**

As shown in Table 7, the largest proportion of students reported using the library remotely “a few times during the semester,” lower than expected. In fact, comparing Tables 6 and 7, it appears that students physically visited the library more frequently than they used the library’s resources from another location—a finding that runs counter to what was expected. Consistent with the findings pertaining to physical use of the library, FSU students reported using the library’s services remotely more frequently (*Mean* = 3.56 or a little more than halfway between a few times a month and once a week, *n* = 31) that CSUN students did (*Mean* = 2.64 or near a few times a month; *n* = 58).

**Table 7. During the fall semester, how often did you…?** [[9]](#footnote-9)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Use the library resources from a physical location other than the library | Not at all | A few times during the semester | Once a month | A few times a month | Once a week | Several times a week or more |
| 19  (20.7) | 33  (35.9%) | 4  (4.3%) | 19  (20.7%) | 1  (1.1%) | 16  (17.4%) |

Interestingly, the frequency with which students reported using the library remotely was unrelated to the frequency with which they used three specific remote services the library offers: 1) speaking with a librarian online; 2) speaking with a librarian over the phone; and 3) sending a question to a librarian via text. Upon further inspection, we note that 90.1%, 95.7%, and 97.8% of students in the study sample reported never speaking with a librarian on line, over the phone or via text during the fall semester. The lack of variance in the distribution of responses to these three survey items help explain the lack of relationship between them and the frequency with which students reported using remote library services overall.

* + 1. **Frequency With Which Other Library Services Were Used**

The frequency with which six additional library services were utilized by students during the fall semester was also assessed on the post-test survey. These services include the library’s: 1) home page; 2) available subject guides; 3) “how to” guides and tutorials; 4) OneSearch Tool/Search Box; 5) data bases; and 6) catalog. Table 8 depicts the frequency of responses in ascending order of the proportion of students indicating they did not use the service at all. As shown, students utilized the library’s databases and home page **most frequently** and the subject guides and how to guides/tutorials **least frequently**. In fact, a little more than half of the study sample reports never having used these services during the fall semester.

**Table 8. Frequency with Which Students Used Other Remote Library Services**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Service | Not at all  Count  (%) | A few times during the semester  Count  (%) | Once a month  Count  (%) | A few times a month  Count  (%) | Once a week or more  Count  (%) |
| Library databases | 10  (10.9%) | 28  (30.4%) | 4  (4.3%) | 27  (29.3%) | **23**  **(25.0%)** |
| Library home page | 11  (12.0%) | 28  (30.4%) | 8  (8.7%) | 23  (25.0%) | **22**  **(23.9%)** |
| OneSearch tool/library search box | 29  (32.2%) | 23  (25.6%) | 4  (4.4%) | 18  (20.0%) | 16  (17.8%) |
| Library catalog | 31  (33.7%) | 28  (30.4%) | 5  (5.4%) | 15  (16.3%) | 13  (14.1%) |
| How to guides/tutorials | 47  (51.1%) | 29  (31.5%) | 6  (6.5%) | 5  (5.4%) | **5**  **(5.4%)** |
| Subject guides | 53  (57.6%) | 20  (21.7%) | 4  (4.3%) | 11  (12.0%) | **4**  **(4.4%)** |

FSU students reported using the library’s databases more often (*M*ean = 3.97, between once and a few times a month; *n* = 34) than CSUN students (*Mean* = 3.16, closer to once a month; *n* = 58).

As shown in Table 9, the extent to which students reported using the library’s remote resources overall was related to the frequency with they reported using each of the six additional services depicted in Table 8. As also shown, the frequency with which students used each service was positively related to how often they used the other services. This relationship was strongest between the frequency with which students used the library’s home page and their data bases (***r* = .690**), the library’s subject guides and “how to” guides/tutorials (***r* = .603**), and the OneSearch tool and the library’s catalog (***r* = .623**)

**Table 9. Relationship Between the Types of Library Services Used**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Remote use, overall | Library home page | Subject guides | How to guides/tutorials | Onesearch Tool | Databases | Library catalog |
| Remote use, overall | - | .704\*\* | .432\*\* | .396\*\* | .365\*\* | .704\*\* | .505\*\* |
| Library home page |  | - | .388\*\* | .359\*\* | .509\*\* | **.690\*\*** | .588\*\* |
| Subject guides |  |  | - | **.603\*\*** | .435\*\* | .364\*\* | .436\*\* |
| How to guides/tutorials |  |  |  | - | .489\*\* | .342\*\* | .396\*\* |
| Oncesearch Tool |  |  |  |  | - | .584\*\* | .560\*\* |
| Databases |  |  |  |  |  | - | .623\*\* |
| Library catalog |  |  |  |  |  |  | - |

\*\**p*<.05

1. **The Impact of Library Use on Scores Overall Scores: Physical Use**

To explore the impact of library use on student outcomes, a series of analyses were conducted. The first involved a regression analysis using the sum of the scores received across all 18 criteria (scores ranged from 18 to 72, with lower scores indicating poorer performance) as the outcome variable and the frequency with which students visited the library during the fall semester overall and each of the 14 different services independently as the independent variable. To control for the effect of potential confounding variables, three additional variables were added into the model: 1) College; 2) SAT scores; and 3) number of papers requiring sources that students expected to write during the fall semester. Because the number of students in the study sample was small, college was treated as a dichotomous variable were 1 = “Social & Behavioral Sciences/ Natural Science & Mathematics/ SPE & 2 = “Engineering & Computer Science/ Health and Human Development/Business and Economics/ Arts, Humanities & Communication. Running the aforementioned analysis, we note that the frequency with which the library was visited overall was unrelated to student scores using the UCI Libraries Rubric.

Next fourteen separate analyses were run to see if the frequency with which any of the 14 services received/used was related to this outcome variable. The only statistically significant finding suggested that the frequency with which students visited the library to pick up materials on reserve was negatively related to the scores they received on their writing samples. While the sample of students in each campus was too small for meaningful follow-up analyses, exploratory analysis revealed that this relationship was driven primarily by CSUN students.

Finally it is noted that the number of services utilized while visiting the library was unrelated to the scores received on the student writing samples. However, follow-up analyses suggest that the number of services used by CSUN students was negatively related to their scores, while this was not the case for FSU students.

1. **The Impact of Library Use on Scores for ACRL Standard #1**

Running the same analysis using ACRL Standard #1 as the outcome variable, we note that the frequency with which the library’s study tooms were used was negatively related to the scores students received on ACRL Standard #1, such that those who visited more frequently earned lower scores, on average, than those who did so less frequently. The extent to which they visited the library in order to check out material placed on reserve was also negatively related to scores received on this standard. Again, follow-up exploratory analysis suggest that CSUN students might be driving these relationships.

1. **The Impact of Library Use on Scores for ACRL Standard #2**

Similar to what was observed when using ACRL Standard #1 as an outcome variable, the frequency with which students visited the library to check out material placed on reserve was negatively related to scores obtained on ACRL Standard #2. Again, an informal look at the data suggest that this finding is being driven by CSUN students.

1. **The Impact of Library Use on Scores for ACRL Standards #3A and B**

Students who used the library’s’ computers/computer labs more frequently scored higher on ACRL Standard #3A than did those who did so less frequently. The relationship between these two variables is shown in Figure 4. Frequency of library use was unrelated to scores obtained on ACRL Standard #3B.

Very Often

Not at all

1. **The Impact of Library Use on Scores for ACRL Standard #4**

On average, students who visited the library to make use of the Group Study Rooms more frequently fared worse on ACRL Standard #4 than those who did so less often. This relationship appears to be primarily driven by FSU students.

Consistent with other findings, those who visited the library to pick up materials placed on reserve by their instructors more frequently scored lower on this standard relative to those who did so less often, a finding that appears to be driven by CSUN students. Frequent attendance of library sponsored events was also negatively related to scores on this standards, such those who frequented such events more often performed worse than those who did less so.

The number of library services utilized during the fall semester was negatively related to the scores obtained on ACRL Standard #4, however, follow-up analyses revealed a negative relationship between these two variables amongst CSUN students. No such relationship was present among FSU students.

1. **The Impact of Library Use on Scores for ACRL Standard #5**

As with ACRL Standard #4, the frequency with which students attended library sponsored events was negatively related with scores obtained on Standard #5.

The number of library services utilized during the fall semester was negatively to the scores obtained on ACRL Standard #5, however, follow-up analyses revealed a negative relationship between these two variables amongst CSUN students. No such relationship was present among FSU students.

1. **The Impact of Library Use on Overall Scores: Remote and Other Usage**

Re-running the same series of analysis using the frequency with which students used the library’s services remotely, we note that no effect on the overall scores students received on their writing samples.

Because of the large proportion of students who reported never having spoken with a library online, via telephone or text, these three variables were not treated as separate indicator variables in this set of statistical analyses. The frequency with which the remaining six services were utilized (the library’s home page, subject guides, how-to guides/tutorials, OneSearch Tool, library databases, and the library catalog) was not related to overall scores assigned the student writing samples. Nor were the scores obtained on the student writing samples related to the total number of services utilized by students in the study sample.

1. **The Impact of Library Use on Scores for ACRL Standard #1**

The frequency with which students reported using the library’s suite of remote services was unrelated to the scores obtained on their writing samples when looking at ACRL Standard #1.

1. **The Impact of Library Use on Scores for ACRL Standard #2**

As shown in Figure 4, the frequency with which students utilized library databases was positively related to the scores they received on ACRL Standard #2 of their writing samples, such that those who used them more frequently earned higher scores on their samples.

Very often

Not at all

1. **The Impact of Library Use on Scores for ACRL Standards #3A and B**

The frequency with which the library’s remote services were utilized were unrelated to scores received on ACRL Standard #3A. The frequency with which students reported using the library catalog was positively related to the scores they received on ACRL Standard 3B, but this difference was not statistically significant. Re-running the analysis separately for each campus we see that the positive relationship is only present in the CSUN sample, and it is statistically significant. Looking more closely at students attending CSUN, we note that the frequency with which students reported using the library’s OneSearch Tool was also positively related with the scores they obtained using this Standard of the UCI IL Rubric. This relationship was not present among FSU students. The relationship between the frequency with which these two services were used and scores obtained on ARCL Standard #3B for CSUN students is presented in Figure 5.

Very Often

Not at all

1. **The Impact of Library Use on Scores for ACRL Standard #4**

The frequency with which students used library services remotely was unrelated to the scores they received on ACRL Standard #4.

1. **The Impact of Library Use on Scores for ACRL Standard #5**

The frequency with which students used library services remotely was unrelated to the scores they received on ACRL Standard #5.

1. **CONCLUSION**

The results of the pilot study suggest that physical use of the library had negligible effect on the rating students received on their writing sample using the UCI Libraries ILL Rubric. If anything, the frequency with which Group Study Rooms were used was negatively related to the scores assigned student writing samples. The same was true for the frequency with which students visited the library to pick up course material placed on reserve by their faculty. Interestingly these negative relationships were primarily driven by CSUN students in the study sample.

Conversely, the frequency with which the library’s remote and other services were used was positively related to the quality of student samples submitted. More specifically, the frequency with which students used the library’s date bases, catalogs, and OneSearch/ search tool was positively related on the scores obtained on ACRL Standards #2 and 3B.

Because the number of students contained in the sample for each campus was small (only 34 FSU students were represented in the overall study sample), separate analysis for each campuses was not warranted. Despite this, exploratory analyses suggest that the impact of library services is not uniform across campuses. These differences could be due to factors that are unique to the students attending specific campuses, factors that are unique to each library, as well as factors that are unique to the campuses overall.

That the frequency with which library services are utilized had differential impacts on the outcomes of interest suggest that assessments of library services need to clearly articulate which services are assumed to impact specific outcomes and the underlying causal mechanism driving those assumptions. Furthermore, the assessment of library services can be enhanced by the adoption of qualitative data collection methods which could shed light on the processes by which students use library services.

Caution should be warranted when interpreting these results due to several limitations experienced during the implementation of this pilot study. Firstly a sample size of 92 may have been inadequate to detect smaller statistically significant differences. Aside from trying to detect small effect sizes, the heterogeneity of the sample also had the effect of reducing statistical power. The students in this sample came from two CSUs, several disciplines, and multiple composition courses offered by various instructors at different times of day/week. Should further pilot studies be conducted, efforts should be made to increase the number of students who consent to volunteer their samples.

Furthermore, small but noteworthy differences between the students who volunteered to submit their writing samples for the purpose of the pilot study and those who did not were noted. A larger proportion of students who submitted a writing sample were Caucasian and had parents with at least some college education relative to those who did not. Furthermore, students who volunteered their writing samples earned higher scores on their SATs on average and earned better scores in their composition course at the end of the semester than did those who did not.

Another limitation of the current study stems from the possibility that the rubric chosen to rate the student samples was not ideal for the purpose of the pilot study. Because the students in this sample came from multiple course sessions, each representing a writing composition course, the diversity in the types of samples received was noteworthy. Furthermore, raters did not have access to the instructions that students received for the purpose of developing the samples. Whether the instructions students received to develop the student samples emphasized the same criteria measured by the UCI Libraries IL Rubric in their instructions to the students was unknown. Finally, the research team experienced some difficulty in norming the rating process such that exact agreement was a rare observation in this process. Assuming the CSU would like to adopt a more uniform approach to assessment, efforts to develop a rubric that is more tailored to the academic standards consistent with the system and that can be applied to a broad range of student samples might be worthwhile.

1. **CITATIONS**

Stemler, S.E. (2004). A comparison of consensus, consistency, and measurement approaches to estimating interrater reliability. Practical Assessment, Research, and Evaluation, 9(4). Retrieved January 1, 2009, from http://pareonline. net/getvn.asp?v=9&n=4

1. This information was only available for CSUN students [↑](#footnote-ref-1)
2. This information was only available for Fresno State students [↑](#footnote-ref-2)
3. http://jfmueller.faculty.noctrl.edu/ucirvinerubric.pdf [↑](#footnote-ref-3)
4. Other rubrics considered for the pilot study included the WCU Library Services Sample Information Literacy Assessment Rubric, the Information Literacy VALUE Rubric, and the ULS Information Literacy Rubric, [↑](#footnote-ref-4)
5. As inter-item reliability is maximized as the number of items increase, this finding is not surprising. [↑](#footnote-ref-5)
6. Because the sample size for these analyses were small, ethnicity was recoded into a dichotomous variable. [↑](#footnote-ref-6)
7. This item was not asked of the two students who reported they did not visit the library at all during the semester. [↑](#footnote-ref-7)
8. The response options for this item ranged from zero to five, where 0 = “not at all,” 1 = “not very often,” 3 = “somewhat often,” 4 = “often,” and 5 = “very often.” [↑](#footnote-ref-8)
9. *N* = 92 [↑](#footnote-ref-9)