

# Librarians Leading the Charge: Collaborating with Faculty to Design Evidenced-Based Instruction

Presented at the California Academic & Research Libraries 2014 Conference  
April 4-6, 2014  
San Jose, California

Sharon Radcliff, Reference and Instruction Librarian Saint Mary's College of California  
Elise Y. Wong, Cataloging and Reference Librarian, Saint Mary's College of California

## **Abstract**

Librarians at Saint Mary's College of California presented part two of their study, following their 2012 CARL conference presentation: "English Composition Students: How Are They Using Their Sources?" Having discovered through this research that students do have problems paraphrasing, quoting, integrating and citing their sources, librarians, in collaboration with English Composition faculty, designed a new study to test out three instructional methods (behaviorist, cognitivist, and social constructivist) on teaching integration and citing of sources in six sections of advanced English Composition classes. Results of the three methods were evaluated through pre/post test scores and a content analysis of the students' research papers. The results of the content analysis were used to compare past studies' results and presented to English Composition faculty. All three methods and the lesson plans were made available for faculty to use with the knowledge of how effective the methods are in relation to specific student learning outcomes.

## **Introduction**

Learning theorists often debate which instructional method(s) is the most effective for learners. Based on the results presented at the 2012 CARL conference: "English Composition Students: How Are They Using Their Sources?" (Radcliff & Wong), librarians and Composition faculty members at Saint Mary's College of California concluded that students need to improve their skills on paraphrasing, quoting, integrating and citing their sources. This discovery led to their collaboration to design a new study in assessing the influence of varied instructional methods on students' research and writing proficiency. Six Composition faculty members participated in this study to use three instructional methods (based on the behaviorist, cognitivist, and social constructivist learning theories) on teaching integration and citing of sources in six sections of advanced English Composition (ENGL 5) classes.

### *Research Question*

Our research question was: What are the effects of varied instructional methods on student learning outcomes? We limited the scope of this study to comparing three instructional methods derived from three major schools in learning theories: behaviorist, cognitivist, and social constructivist. For each learning theory group, students were given pre/post tests to measure their understanding of the purpose of citing and the basic mechanics of integrating (i.e.

paraphrasing and quoting) sources in MLA format. In addition, we also conducted content analysis of the student papers to assess the impact of the three teaching methods on student performance in citing and integrating sources. We compared the in-text citations and the bibliographic entries in the work-cited page for accuracy and consistency. As part of the data collection, we also compiled the types of sources used in the work-cited page. We analyzed all quotations and paraphrases in the student papers to see if we could identify a pattern in students' citing behaviors. For each learning theory group, we want to know: (1) Whether students have a preference between quoting and paraphrasing; (2) How students integrate quotations into their writing, specifically, if the quotations are properly introduced and analyzed.

### *Saint Mary's College of California*

Saint Mary's College of California (SMC) is a Catholic, Lasallian, and liberal arts college. The College offers undergraduate and graduate programs. According to the 2014 statistics (SMC facts and figures), the total enrollment is 4,257, consisting of traditional undergraduates and graduate students, as well as students enrolled in professional programs. Among the incoming SMC students in fall 2013, 87% of freshmen are from California. 59% are female, 41% are male. 43% of freshmen are minorities, including 25% Latino, 14% Asian, and 2% African-American/Black; 43% are White.

The SMC new core curriculum was launched in fall 2012. One of the learning goals of the curriculum, Information Evaluation and Research Practices, states in its learning outcomes that students will learn to judge the authenticity, validity, reliability, and originality of the sources of information they use. In fulfilling this learning goal, students will be able to do the research necessary to weigh evidence objectively in traditional and electronic formats (SMC Core Curriculum, 2012). The new core curriculum also specifies that in addition to English Composition courses, an upper-division course in a specific discipline would need to have a research and writing component built into the course.

There are three levels of writing requirements at SMC Composition program: ENGL 3 Practice in Writing (exempt for most students), ENGL 4 Composition, and ENGL 5 Argument and Research. SMC Composition program aligned their learning outcomes according to the three SMC core curriculum's learning goals: Critical Thinking, Written Communication, and Information Evaluation and Research Practices. Our research focused on the Information Evaluation and Research Practices learning outcomes as defined in ENG 5 (SMC Composition, 2012), as stated in the following:

- Develop search strategies and use library resources to locate relevant materials
- Practice evaluating sources critically
- Evaluate and synthesize evidence
- Properly integrating and citing sources

### **Literature Review**

We explored various learning theories before we decided to limit the scope of our research to three major schools: behaviorist, cognitivist, and social constructivist. For each school, we constructed an overview of the learning theory by identifying the prominent theorists and the key concepts associated with the theory.

### *Behaviorist Models*

According to the behaviorists, learning is shaped by a change in behavior. The prominent behaviorists are Edward Thorndike, John Watson, & B. F. Skinner. Behaviorism is rooted in classical and operant conditioning theories. The key concepts are stimulus-response, positive/negative reinforcement, rewards & punishment, behavior modification.

### *Cognitivist Models*

Cognitivists see learning as a mental process. The information processing schemas occur in stages. Mastery learning is the most effective when concept mapping and scaffolding are embedded throughout the learning process. Examples of prominent cognitivist theories are Component Display Theory (D. Merrill), Social Cognitivist Theory (A. Bandura), Stage Theory of Cognitive Development (J. Piaget), Elaboration theory (Reigeluth), and Conditions of Learning (R. Gagne).

### *Social Constructivist Models*

Social constructivists, such as, L. Vygotsky, J. Bruner, D. Kolb, C. Rogers, define learning as a group process. Learning is interactive, reciprocal, and collaborative. Popular social constructivist models are: Problem based learning, Discovery Learning, Social Development Theory, and Inquiry based learning. In all these models, the learner and the facilitator are situated in an experiential and peer-centered environment.

We also looked at some studies on the various way researchers applied learning theories into library instruction. Strategies have varying influences on student achievement depending on types of learning objectives (Sulaiman, 2002). Blummer's study focused on the collaboration between faculty and librarian in a library training unit for information literacy using direct instruction and inquiry-based approach (Blummer, 2010). Miranda argued that constructivism is not always better than Behaviorism (Miranda, 2009). In Yilmaz's study, faculty participants identified their teaching style more with cognitive and constructivist approach than the behaviorist approach (Yilmaz, 2008).

## **History of Collaboration in SMC**

Librarians and composition faculty have a long history of collaboration at Saint Mary's College. Typically, librarians do one to two sessions for each ENGL 5 class. Since the implementation of the new core curriculum in Fall 2012, library instruction is now required for ENGL 4. This means that librarians are teaching at least 60 library sessions for ENGL 4 and ENGL 5. Under the new core curriculum, library research and consultation are integrated into the Composition courses to satisfy the information literacy learning outcome. Library instruction for ENG 4 and 5 includes group work and tutorials on formulating search strategies, evaluating and citing sources. Librarians now have a bigger role in sharing their expertise with faculty to design the research component of the course and teach students the efficient ways to do research.

For the past 10 years, librarians and Composition faculty have also collaborated via research projects. The first being a bibliographic citation analysis which was piloted in 2004 (Radcliff & Birkenseer) and then continued in 2006 (Radcliff, Brown-Salazar, Birkenseer) with a larger study that included interviews with faculty and an analysis of their research assignments. Having grown out of a pilot study on internal citing (Radcliff, 2008), the 2012 study investigated on how students were using their sources based on content analysis of student research papers.

## **Methodology**

Our research project began in spring 2013. After we received IRB approval in the previous fall semester, we sent out a faculty survey to all Composition faculty members to solicit volunteers for our project. Once the design of the lesson plan for all three instructional methods (behaviorist, cognitivist, and social constructivist) was completed, faculty participants were given a brief orientation on using the classroom materials. Students were also given pre/post tests (designed in-house) to measure the difference of their performance. At the end of the semester, student research papers were collected and analyzed to assess their proficiency in MLA citing and integrating sources. The participating faculty members were also interviewed for feedback.

### *Faculty Survey*

There were 15 questions regarding faculty members' general classroom practice on MLA citing and integrating sources. The survey also included questions on whether instruction on these topics was conducted via group work, lecture, or individual exercises. The survey response rate was 12/28. The survey revealed that all respondents devote class time on integration of sources; 11 devote class time on MLA; 8 give take home assignments on integration of sources and MLA citing; 7 give at least one research paper. All faculty instructors require students to submit work-cited page; 11 require students to consult specific types of sources. 9 include quality of work cited page into grading rubric. 11 devote class time on ethical use of sources.

### *Instructional Methods*

Despite the varied methods of delivery, the content for all three methods (behaviorist, cognitivist, and social constructivist) was the same. The coverage of a 50 minute instruction includes integrating sources, quoting, paraphrasing, and MLA citation (in-text and bibliographic) Six participating faculty members randomly assigned to teach one of the following:

- Behaviorist: mostly direct lecture; students complete exercises individually in class; candies were used as incentives
- Cognitivist: series of mini-lectures/discussions, inter-woven with students working on examples with increasing levels of difficulty
- Social constructivist: brief introductory lecture; students then work on examples in groups

### *Pre/Post Tests*

The Pre/Post tests were given before and after the instruction during one class period. There were 10 questions per test. The learning objectives of both tests are:

- Understand the purpose of citing
- Identify the key components of a citation
- Identify basic format in MLA for in text and bibliographic citations
- Learn how to identify good uses of paraphrasing and quoting as part of integrating material from a source into a research paper

## **Results**

### *Pre/Post Tests*

The pre-post test scores showed statistically significant improvement for all students receiving all three types of instruction when a t-test was applied on the differences in means for all students. There were differences between means by type of instruction, but these differences were not found to be significant when an ANOVA test was applied to the results.

Table 1. *Pre and post-test means, standard deviations, and differences by learning theory and for all students.*

Learning Theory	Pre-test Mean	Pre-test SD	Post-test Mean	Post-Test SD	Difference in pre & post-test mean scores
Behaviorist n=33	8.09	1.55	8.70	1.13	.61
Cognitivist n=35	7.63	1.37	9.06	.94	1.43
Social Constructivist n=33	8.29	1.78	8.86	.81	.57
All N=103	8.0	1.4	8.87	.97	.87*

\*Statistically Significant at  $p < .05$

## *Student Papers*

We analyzed all papers and recorded:

- Content of bibliographies by item type.
- Percentage of bibliography items cited in paper.
- Number of factual items in paper not cited.
- Percentages of citations that are paraphrased, quoted and if quoted, introduced and /or analyzed.
- Rubric scores for format of in-text and bibliographic citations.

We collected papers only from students present during the instructional session. We analyzed the bibliographies by content type and percentage of bibliography cited.

Table 2. *Bibliographies of student papers by percentages of item type: web, journal, media, book, interview & percentage of items cited in the paper for each learning theory: Behaviorist, Cognitivist, and Social Constructivist.*

Learning Theory	Percent of Bibliography cited in paper	Percent Websites	Percent Journal	Percent Media	Percent Books	Percent Interviews
Behaviorist n=33	91.56	19.72	48.36	3.76	23.94	3.76
Cognitivist n=33	84.64	24.26	55.41	3.61	16.74	0
Social Constructivist n=30	74.58	17.52	49.55	5.44	22.66	3.93
All N=96	84.57	20.49	51.35	4.36	20.85	2.47

We rated the format of the bibliographies, finding that students who received the social constructivist instruction had the highest ranking at 3.44, out of 4, followed by behaviorist instruction at 3.27, and then cognitivist at 3.06. We also looked at in-text citing and our rankings for in-text formatting were highest for cognitivist students at 2.65, next were behaviorist students

with 2.42 and then social constructivists with 2.37. Overall these differences were not significant although clearly students had more difficulty with in-text citation format than with bibliographic format.

We also looked at how well students integrated their sources into their papers and whether they cited all data within their papers successfully. We found that cognitivists performed best in this area with 11.21 % not cited; behaviorists came in next at 13.31 not cited and social constructivists performed last with 13.64 % not cited. Over one tenth of the information in papers that should be cited was not cited or was cited in such a way that it did not uniquely identify any source in the bibliography.

We looked at whether students paraphrased or quoted their sources, and if quoting, did they include an introduction to the quote and/or an analysis.

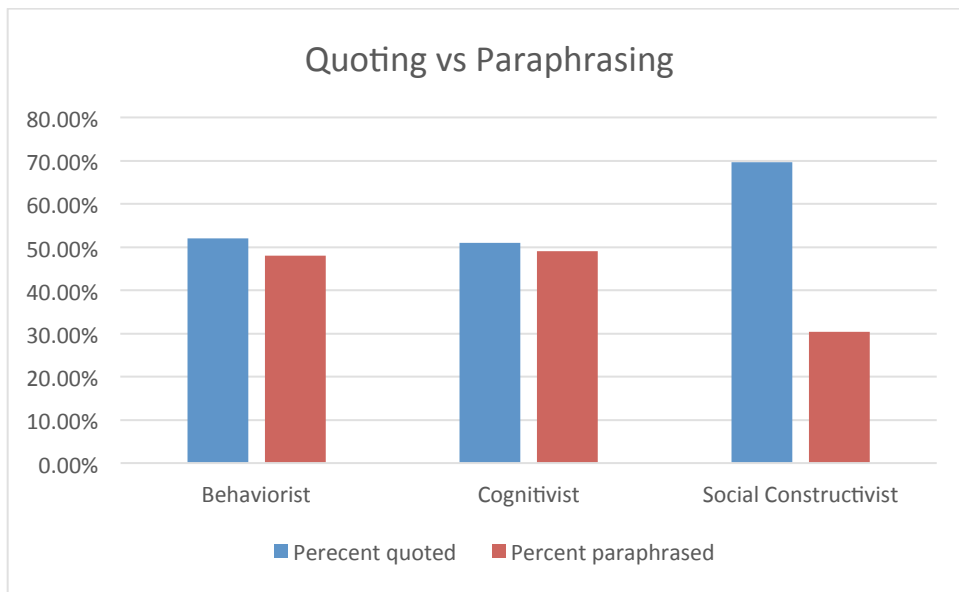


Figure 1. Quoting vs. paraphrasing by learning theory.

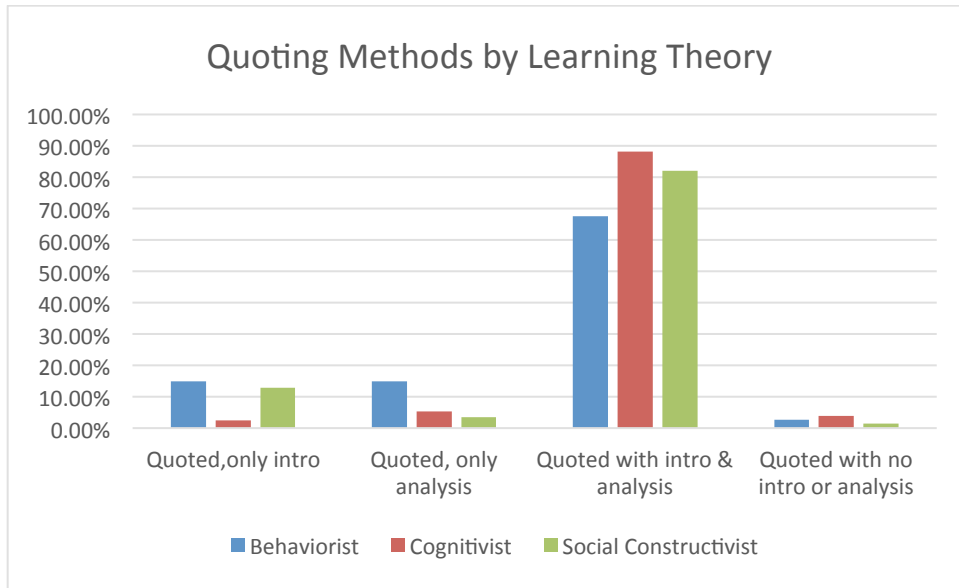


Figure 2: How students quoted by learning theory

### Analysis

Our analysis of the data showed that the social constructivist approach worked best in some significant areas, including: the formatting quality of the bibliographies and the ratio of paraphrasing to citing. The behaviorists did the best in one area: percentage of bibliography cited in the paper, while the cognitivists performed best in having the highest percentage of quotations having both an introduction and analysis. Overall, the social constructivist method seemed best when all the data was taken into account. The most telling conclusion was that all the methods improved students' performance, especially when compared to the 2010 study results in which students had not received any particular instruction other than what was traditionally offered by the composition faculty.

We conducted a preliminary comparison between the data we collected from student papers in 2010 and 2013. From the table below, one can see that use of these instructional methods did improve rates of citing data in papers, percentage of bibliography cited, and proper use of quotes; whereas overall ratio of paraphrasing to quoting changed little.



Table 3. *Preliminary data comparison between 2010 and 2013 citing studies*

	2010 Study	2013 Study
Paraphrasing/Quoting	60/40	58.12/41.88
Percent Bibliography Cited	78.0	86.8
Percent of Data not Cited	14	12.69
Proper Use of Quotes (IQA)	53	79.23

We will compare this whole group to the papers collected in 2010 (Radcliff & Wong, 2012) to see if there are statistically significant changes in terms of using, integrating, and citing sources.

## **Discussion**

### *Students Do Not Learn the Same Way*

We distributed the results of the study to Composition faculty, librarians, and writing center instructors. In addition to providing feedback and recommendations on improving students' research writing skills, we hope to create an ongoing dialogue on the application of learning theories in instructional design in a collaborative setting.

Faculty participants have favorable opinion on the instructional method they were assigned. Most comments on the quality of handouts and lesson plan were positive. Some participants mentioned that more challenging examples are needed in the lesson plan and that more time is needed to effectively teach these skills beyond the "one-hour one-shot." One faculty member suggested that a variety of learning strategies "in context" will enhance student learning process. The overall experience of participating faculty members was positive. They look forward to engage in future collaborations to design library workshops and tutorials.

Librarians agreed that there is no one instructional method that will fit all the students. A well-designed instruction should be flexible to adapt to different learning levels of students and their learning context. A blend of learning theories maybe the most effective approach in

facilitating a diverse classroom environment. Both librarians and faculty members agreed that library instruction and tutorials should be embedded and scaffolded in tandem with the course. On-going collaboration with faculty and writing center is essential.

### **Limitations of This Study**

This study was limited to Saint Mary's Students. Random selection was not possible as sections of English Composition have already been formed. The study might produce different results for other groups of students at other institutions. It is important to note that teacher variability might have impacted the differences between learning theory groups. Since librarians were not present during instruction, we were not able to observe the behavior of the instructor and the students, and interaction between them.

### **Directions for Future Research**

Learning theories is an important research topic in library instruction. More research could be done in this area by applying learning theories to instructional design and assessing the results. For example, the researchers of this study are also part of the first ACRL Assessment in Action project cohort. For this project they designed a new research project, which focused more on integrating critical thinking and information literacy skills in the ENGL 5 library research sessions by incorporating instruction in argument into the sessions. Instructional methods developed for the ACRL Assessment in Action Program have been adapted for another institution and also assessed.

### **References**

- Blummer, B., Kenton, J. M., & Liyan, S. (2010). The Design and Assessment of a Proposed Library Training Unit for Education Graduate Students. *Internet Reference Services Quarterly*, 15(4), 227-242.
- Miranda, M. V. (2009). Creating the Successful Community College Student: Using Behaviorism to Foster Constructivism. *Community College Enterprise*, 15(1), 21-38.
- Sulaiman, J. J., & Dwyer, F. F. (2002). The Effect of Varied Instructional Text Design Strategies on the Achievement of Different Educational Objectives. *International Journal of Instructional Media*, 29(2), 215-224.
- Yilmaz, K. (2008). Social Studies Teachers' Views of Learner-Centered Instruction. *European Journal of Teacher Education*, 31(1), 35-53.
- Radcliff, S. (2008). *Internal Citing of English Composition Students Pilot Study*. Presented at Saint Mary's College English Composition Conference. Moraga, California.

Radcliff, S. & Birkenseer, S. (2004). *Bibliographic Study of English Composition Students Research Papers: Pilot Study*. Presented to English Composition Faculty at Saint Mary's College of California.

Radcliff, S., Brown-Salazar, M. & Birkenseer, S. (2006). *Bibliographic Study of English Composition Student Research Papers*. Presented as a Poster Session at CLA Annual Conference 2006, Sacramento, CA.

Radcliff, S. & Wong, E. (2012). *English Composition students: How are they using their sources?* Paper presented at CARL Conference 2012, San Diego, CA, 5-7 April.

*SMC Composition*. (2012). Retrieved Apr. 13, 2014 from <http://www.stmarys-ca.edu/sites/default/files/attachments/files/learningoutcomesengl45.pdf>

*SMC Core Curriculum*. (2012). Retrieved Apr. 13, 2014 from <http://www.stmarys-ca.edu/academics/undergraduate/saint-marys-core-curriculum>

*SMC facts and figures*. (2014). Retrieved Apr. 13, 2014 from <http://www.stmarys-ca.edu/about-saint-marys-college/facts-figures>