The purpose of this study, conducted in Spring 2013, was to evaluate the effectiveness of the undergraduate library instruction program instituted as part of the first-year English 105 course at the University of North Carolina at Chapel Hill. ACRL's *Information Literacy Competency Standards for Higher Education* were used to develop learning outcomes to measure students' self-efficacy in an anonymous online survey. Also measured were students' emotional responses to doing research for a paper and level of procrastination. Results indicate that all student respondents felt at least moderately confident on eight tasks, but for four of the tasks, at least one student reported having no confidence. However, the role of the library instruction program in effecting these results is inconclusive. The lack of a pre-instruction survey, in combination with poor survey response, makes it impossible to generalize the results. Nevertheless, the results can provide a baseline of comparison for future research.

Headings:

Library instruction

Information literacy

Self-efficacy

Procrastination

Affect

Post-secondary education

MEASURING THE EFFECTIVENESS OF UNDERGRADUATE LIBRARY
INSTRUCTION

by
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Approved by

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Introduction

Research assignments are an intimidating endeavor at every level of education, from secondary to graduate school. Due to limited confidence in one's ability to complete the assignment, a student may procrastinate, resulting in a lower grade than could be achieved. However, greater awareness of what the research process entails through increased library instruction may serve to counteract this tendency.

At the University of North Carolina at Chapel Hill (UNC), library instruction for undergraduates is founded on the *Information Literacy Competency Standards for Higher Education* (hereafter referred to as the *Standards*) designed by the Association of College and Research Libraries (ACRL) in 2000. Mastery of the information literacy skills addressed by the *Standards*, such as the ability to recognize an information need and effectively locate, evaluate, and apply that information, goes a long way towards being able to do information research successfully.

ACRL (2000) determines five overarching standards for the "information literate student":

1) Determine the nature and extent of information needed;

2) Access needed information effectively and efficiently;

3) Evaluate information and its sources critically and incorporate selected information into his or her knowledge base and value system;

4) Use information effectively to accomplish a specific purpose, either individually or as a member of a group; and

5) Understand the economic, legal, and social issues surrounding the use of

information and access and use information ethically and legally.

In accordance with ACRL's (2012) *Characteristics of Programs of Information Literacy that Illustrate Best Practices: A Guideline*, UNC librarians provide undergraduates with instruction of the *Standards* by "contextualize[ing] information literacy within ongoing coursework appropriate to the academic program and course level" (ACRL, 2012, Category 7: Pedagogy). In the fall of 2012, UNC implemented a new composition and rhetoric course, English 105, in which research assignments along with library instruction is a required component. However, depending on who is teaching this course, not all students receive the same degree of instruction. Some professors assign their class only one session of library instruction, while others assign more.

The original idea for my study was to examine what effects increasing the number of library instruction sessions would have on student grades, procrastination, and self-efficacy. However, too few students responded to determine anything conclusive. Nevertheless, even with such a small sample, it was possible to begin to ascertain what students are feeling during the research process, how much they are procrastinating, and those information research tasks at which students feel most confident versus those in which they might need more instruction. In this paper, after going over the existing literature for undergraduate library instruction, self-efficacy, and procrastination, I discuss the method by which I conducted my study and then go through the results of the data. I examine the data to reveal any patterns, and I make some recommendations for improving undergraduate library instruction at UNC. Finally, I propose suggestions for a future study.

Literature Review

Undergraduate Library Instruction and Information Literacy

Since publication in 2000, ACRL's *Standards* have been widely accepted and implemented in colleges and universities across the United States (Bean, T. M. & Thomas, S. A., 2010; Gullikson, S. 2006). Nevertheless, while college instructors may and often do assume their students know the basics of how to do information research, the average student comes up short (Bean & Thomas, 2010; Gandhi, 2005; Gordon, 2002; Jacobs & Jacobs, 2009). In an assessment of Marshall University students' information literacy skills, Bean & Thomas (2010) reported that 55-62% of respondents were able to select appropriate research topics and questions for a given assignment, but that number shrunk to 32% who could determine if a given database was useful for a particular research project and select from it the best sources, and dwindled to a mere 11.5% who could select the most relevant Web site for a project. While Bean & Thomas (2010) acknowledge those figures may not be generalizable due to the small pool of respondents, testimony from Marshall's librarians regarding their experience supports the idea that few students know how to use library resources effectively, not least because they do not even know what is available. Gordon (2002) reported similar results, finding in a survey of 86 graduate students that although the majority (64%) claimed that they felt prepared to do independent research, their scores on questions regarding Boolean searching, databases, indexes, and other questions indicated that few actually possessed the information skills

necessary to do graduate work. This would suggest that both secondary school and undergraduate libraries are failing to provide adequate research instruction to students.

Most undergraduates receive some sort of library instruction, usually in a single introductory session early in their first year. In this traditional "one-shot" instructional model, the librarian attempts to pack as much information as possible about all the resources the library has to offer into a single class period (Bean & Thomas, 2010). This approach has been criticized by many studies as insufficient (Badke, 2009; Bean & Thomas, 2010; Gandhi, 2005; Jacobs & Jacobs, 2009). Bean & Thomas point out that one-shots "leave no time for in-depth coverage of any specific library resources or research skills" (p. 241). Similarly, Gandhi (2004) found that the one-shot model does not allow time for assessing students' individual research needs and skill levels. Furthermore, students tend to tune out if they regard the librarian as a "guest lecturer" rather than a co-teacher (Gandhi, 2004, p. 22). Badke (2009), who actually argues in favor of the one-shot as a useful introductory tool, still maintains, "we need to stop believing that anyone becomes information literate (even somewhat so) in an hour. It does not happen" (p. 42).

Gordon (2002) demonstrated that too many students simply "reported" the information they had found on research assignments, rather than analyzing and synthesizing it into new understandings. Yet the research process is not about simply collecting information or rearranging facts. This approach robs students of actually gaining understanding of their topic and developing their own personal perspective on it. However, Todd (2006) examined how in a guided inquiry project, students' knowledge of a topic could not only grow in terms of quantity of content but also qualitatively transform in structure as their understanding deepened.

Self-Efficacy

Self-efficacy refers to an individual's perception of his or her capacity to perform tasks and achieve goals (Bandura, 1977). Its significance cannot be understated, as it has been shown to impact choice of tasks, level of task difficulty, amount of effort exerted, and perseverance in task performance (Bandura, 1986, 1997). Self-efficacy is different from self-confidence in that while the latter is related to one's general sense of self-assuredness, the former is context-specific (Choi, 2005). An individual may have low self-efficacy in one particular domain—for example one's ability to play the piano—but maintain an overall sense of self-confidence if that ability is of little or no relevance to one's self-concept.

Four sources of information have been demonstrated to contribute to an individual's sense of self-efficacy: verbal persuasion, vicarious feedback, physiological feedback, and most importantly, mastery experience (Bandura, 1986). Mastery experience is a significant factor in that the outcome of an experience will determine future self-efficacy: an outcome interpreted as a success will lead to increased self-efficacy, while one that is interpreted as a failure will likely reduce self-efficacy.

The predictive power of self-efficacy on performance depends on the measurement of the self-efficacy construct. For example, to determine students' self-efficacy in a statistics course, it is not enough just to measure the general ability to learn statistics. Self-efficacy scales should include items that measure specific associated task skills, such as computing standard deviation. It is essential that the level of self-efficacy being measured correspond to the specific task performance being assessed in order for the construct to have high predictive validity (Choi, 2005). In such cases, self-efficacy

has been demonstrated to be a strong predictor of undergraduate student academic performance (Choi, N. 2005; Pajares, 1996).

Another reason to be concerned with self-efficacy is its effects on procrastination, discussed below. Bandura (1986) introduced the idea that procrastination is linked to self-efficacy beliefs, as self-efficacy is a significant factor in task initiation as well as persistence (Bandura, 1986; Schraw, Wadkins, & Olafson, 2007). Those with a lower sense of self-efficacy have an increased likelihood to procrastinate. Indeed, Tan et al., (2008) found there was a negative correlation between self-efficacy for self-regulated learning and procrastination. Students who lack confidence in their ability to self-regulate their learning tend to undermine their own efforts to deal with challenging situations effectively, which results in a self-defeating cycle of failure leading to reduced self-efficacy leading to procrastination and the increased likelihood of further failure.

Procrastination

Procrastination refers to the postponing of tasks necessary to achieving a particular goal. Irrational though such behavior is, it is all too common. In studies of undergraduate students, some estimates show that 80%-95% engage in some form of procrastination, approximately 75% regard themselves as procrastinators, and nearly 50% procrastinate habitually and problematically (Steel, 2007). According to Pychyl, Lee, Thibodeau, & Blunt (2000), the total amount of procrastination is significant, occupying over a third of students' daily lives, often spent playing, watching television, or sleeping. Students with learning disabilities have been shown to procrastinate at even higher levels than those without (Klassen, Krawchuk, Lynch, & Rajani, 2008). Moreover, high as these percentages already are, Steel (2007) reports that procrastination is on the rise. This may

be due to the fact that the current generation of college students has a relatively new but omnipresent source of distraction—the Internet—and multiple modes at their disposal (computers, smart phones, i-Pads, etc.) with which to log on. Unsurprisingly, procrastination tends to be problematic. Generally considered to be self-defeating, it results not only in wasted time and poor academic performance, but is also associated with low self-esteem and increased stress (Cao, 2012; Schraw et al., 2007).

On its surface, procrastination may appear to be the result of simple laziness, but the causes are far more complex. The main reasons for procrastination are usually task aversion and fear of failure (Solomon & Rothblum, 1984), but other contributing factors include perfectionism, low self-efficacy, low organization, distractibility, impulsiveness, and depression (Steel, 2007). Onwuegbuzie & Jiao (2000) found that academic procrastination was significantly positively related to several dimensions of library anxiety. Their study analyzed five dimensions of library anxiety: barriers with staff, affective barriers, comfort with the library, knowledge of the library, and mechanical barriers. Specifically, fear of failure was associated positively with affective barriers and comfort with the library, and task aversion was associated positively with affective barriers and knowledge of the library (Onwuegbuzie & Jiao, 2000). Of particular relevance to this study, undergraduate students reported procrastinating more often on assigned term papers (46%) than when reading weekly assignments (30%) or studying for examinations (28%) (Solomon & Rothblum, 1984).

However, there are ways to overcome the tendency to procrastinate and create supportive environments to assist students in doing so. Because the intention-action gap increases the further the two are temporally separated, Steel (2007) argues that one way

to address procrastination is to set incremental goals along the way to carrying out a larger endeavor. One of the objectives of my study was to determine if increasing the number of library instruction sessions could have the effect of reducing procrastination. While there is existing literature on both library instruction and procrastination, there is none on how one affects the other. Also, while studies have been done at other colleges and universities regarding their own library instruction's effectiveness, no similar study has yet been conducted at UNC to establish the value of our own undergraduate library instruction program.

Methodology

In order to measure the effectiveness of the undergraduate library instruction program, I initially proposed a longitudinal study in which students would take two surveys: one before they had received any library instruction at all, and one after they had received library instruction and completed a research paper assignment, applying the skills they had learned. Thus I would be able to separate student self-efficacy after they received the instruction from their self-efficacy from before, and be able to determine the instruction's effects. However, by the time I received approval for my study from the Institutional Review Board (IRB), it was too late to conduct the first survey.

Instrument

Ultimately, I conducted only one survey (see Appendix A), which was primarily of my own design. After respondents were asked their gender, age, grade on their first research paper assignment, and number of library instruction sessions they had received, there were two major sections to the survey: one regarding affect, the other regarding information research tasks. The former was a question asking respondents how they felt during the course of their research, which they could indicate by individually rating the strength of each of a list of emotions on a Likert scale. The idea for this was inspired by the work of Carol Kuhlthau and her study of affect in the Information Search Process (Kuhlthau, n.d.), However, it was not based on any particular questionnaire. The latter was a question asking respondents to measure their self-efficacy at information research tasks in terms of their confidence in their ability to do each one, again using a Likert

scale. The list of tasks was adapted from and compiled using the ACRL *Standards* and confirmed as desired learning outcomes with the undergraduate librarian in charge of instruction (ULCI). The questions concerning procrastination were customized to meet the specific aspects of the English 105 student experience. As an interim first step in completing their research papers, all students were assigned to prepare an annotated bibliography. As a measure of procrastination, students were asked to report how many days before this assignment was due that they began working on it, and how long it took them to complete it. Some modifications were also made to the last few questions about library consultation based on ULCI's comments. Students were asked to report whether or not they had consulted a librarian and how likely they would be to do so in the future.

Finally, I thought that students should be given the opportunity to write freely, offering their thoughts on the library instruction they had received, whether or not they were satisfied, or if they thought more sessions would have been helpful.

The survey was beta-tested by five School of Information and Library Science (SILS) students for content and time. The goal was to keep it under 15 minutes, and no one took more than 10.

Recruitment

An email was sent to potential participants in the study, all first-year students enrolled in English 105, after they had completed their first research assignment of the semester. Written by me, forwarded by ULCI, and finally sent to students by their professors, the email included an explanation of the study and a link to the survey on Qualtrics, which could be completed anonymously online in 10-15 minutes. As an incentive, students were offered a $5 gift card to Amazon.

The fact that I could not recruit students to participate in my study directly further complicated matters. Three degrees of separation from any potential participants probably contributed to poor subject response. I had neither direct access to the English 105 students themselves nor even to those teaching the course. Instead I worked through the undergraduate librarian in charge of instruction who served as an intermediary. The first invitations to participate in the survey were emailed on February 25, 2013. Ultimately the invitation to participate in the survey was extended to students in three classes. Because of my inability to communicate directly with faculty teaching the English 105 class, no follow-up reminders were sent. The survey closed on March 10, 2013.

Participants

Nine students responded to the survey, seven females (F1 through F7), two males (M1 and M2). Participation in the study was voluntary and anonymous. All respondents were first-year English 105 students between the ages of 18 and 20.

Results

At the time of the survey, four students (F1, F2, F5, and M1) had received two sessions of library instruction; the other five (F3, F4, F6, F7, and M2) received only one. On their research papers, six students (F4, F5, F6, F7, M1, and M2) all received a grade between 80 and 89 on their research papers. Only three students (F1, F2, and F3) received a grade over 90. The sample size is of course too small for it to mean anything of any statistical significance that two of these students were in the group to receive two sessions of library instruction. I shall indicate when the responses of any or all three of these students are notable, as well as the responses of those of the two male students.

Emotions

Students were given a list of a variety of emotions and asked to rate how strongly they felt them at any point during the research process on a Likert scale from 1 – 5, where 1 = Not at all Strong, 3 = Moderately Strong, and 5 = Very Strong. The list of emotions can be found in Table 1, along with the students' mean ratings and standard deviations for each emotion.

Table 1: Emotions during Information Research

Emotion	Mean	Standard Deviation
Anxious	2.00000	1.32288
Bored	2.55556	1.01379
Confident	3.33333	1.00000
Confused	2.44444	1.01379
Curious	3.00000	1.00000
Discouraged	1.77778	1.09291
Disappointed	1.66667	1.32288
Enthusiastic	2.22222	0.97183
Focused	3.77778	0.83333

Frustrated	2.77778	0.97183
Interested	2.44444	1.13039
Motivated	2.33333	0.70711
Optimistic	2.77778	0.97183
Overwhelmed	2.55556	1.50923
Prepared	3.33333	1.32288
Proud	2.33333	1.50000
Purposeful	2.66667	0.86603
Relieved	2.44444	1.01379
Satisfied	2.55556	1.23603
Stressed	2.77778	1.20185
Uncertain	2.66667	1.11803

In general, students reported having low anxiety about the research process,
reporting a mean rating of 2. Five students reported having no anxiety at only a 1, one
student reported having little at a 2, and another reported feeling moderately anxious at a
3. However, two students (F1 and F3) reported feeling somewhat strong anxiety rating
theirs as high as a 4.

Six respondents reported feeling moderate confidence at a 3. One student rated
their confidence at only a 2. Interestingly, the only students to rate their confidence as
very strong at a 5 were the two male respondents, M1 and M2.

Four students reported being moderately confused at a 3. One student (F2) rated
her confusion higher at a 4. Two students reported feeling little confusion at a 2. The two
male respondents, M1 and M2, proved again to be an exception as the only students who
reported no confusion at all at a 1.

Seven students indicated they felt little or no discouragement at all during the
research process, five students reporting only a 1 to indicate they felt no discouragement
at all, and two reporting they felt only a little discouraged at a 2. Another student (F3)

reported feeling moderately discouraged at a 3, but only one respondent (F1) indicated that she felt somewhat strongly discouraged at a 4.

Eight of the nine respondents reported feeling little or no disappointment about their research. Six reported feeling none at all at a 1, and two reported feeling only a little disappointment at a 2. Only one student (F2) reported feeling very strong disappointment at a 5.

No student reported being strongly enthusiastic about his or her research. The five students who reported the highest enthusiasm rated it only a 3 for moderate. One student reported feeling only a little enthusiasm at a 2, and three students reported feeling no enthusiasm at all at a 1, including F1 and F2.

For all their lack of enthusiasm, every student reported feeling at least moderately focused. Four students rated their focus at a 3 and two rated it a 4. F1 and F2 (who had rated their enthusiasm at a 1) rated their focus as high as 5 for very strong.

Seven students reported feeling only a little motivated about their research at a 2. One student (F3) reported feeling moderately so at 3. Only one student (M1) rated his motivation as somewhat strong at a 4.

M1 was also the only one to rate his feeling of optimism to be very strong at a 5. The other eight were less so, four reporting moderate optimism at 3, and four reporting only a little optimism at a 2, including F1 and F2.

Four students indicated they had no pride in their work, rating it a 1, and another student reported having only a little pride at a 2. F1 and F2 were among those to report a 1. Two students (including M1) reported feeling moderate proud at a 3, one student (M2)

reported feeling somewhat strongly proud at a 4, and finally F3 did report feeling very strongly proud at a 5.

Five students (including F3) reported feeling moderately purposeful in their research at a 3. F2 reported feeling somewhat strongly purposeful at a 4. Two students reported feeling only a little purposeful at a 2. F1 reported feeling no sense of purpose at all at a 1.

Only one student (M1) reported feeling somewhat strongly relieved at a 4, but four did report feeling moderately so at a 3. Two students reported feeling only a little relieved at a 2. F1 and F2 reported feeling no sense of relief at all at a 1.

Four students reported feeling moderately satisfied at a 3 (including F3), but two students reported feeling only a little satisfied at a 2 (including F2), and two students (F1 and M2) reported feeling no satisfaction at all at a 1. However, M1 rated his feeling of satisfaction as very strong at a 5.

F1, F2, and F3 reported feeling the most stress, rating it a 4 for somewhat strong. Three students reported feeling moderately stressed at a 3, and one student reported feeling only a little stressed at a 2. The two students to rate feeling no stress at all at a 1 were the male respondents, M1 and M2.

Four students reported feeling moderate uncertainty at a 3, and another three students reported feeling only a little uncertainty at a 2. Only one student, M1, felt no uncertainty at all. Finally, F2 indicated very strong feelings of uncertainty at a 5.

Tasks

Students were given a list of a number of information research tasks and asked to rate how confident they felt they could do them on a Likert scale from $1 - 5$, where $1 =$

Cannot do at all, 3 = Moderately Certain can do, and 5 = Highly Certain can do. The list

of tasks can be found in Table 2, along with the students' mean ratings and standard

deviations for each task.

Table 2: Student Confidence in Information Research Tasks

#	Task	Mean	Standard Deviation
1	Determine the nature and extent of the information needed.	3.77778	0.83333
2	Select a topic.	3.88889	0.78174
3	Access the needed information effectively and efficiently.	3.66667	1.41421
4	Develop a realistic overall research plan and timeline to acquire the needed information.	3.44444	1.13039
5	Identify keywords, synonyms, and related terms for the information needed.	4.55556	0.88192
6	Use various search systems to retrieve information in a variety of formats.	3.55556	1.01379
7	Assess the quantity, quality, and relevance of search results.	3.66667	1.11803
8	Explore the general information sources to increase familiarity with the topic.	4.11111	0.60093
9	Formulate questions about your topic and develop a focused perspective.	3.66667	1.22474
10	Develop a thesis statement.	3.44444	1.66667
11	Collect specific information pertinent to focused thesis.	3.55556	0.88192
12	Create a system for organizing the information.	3.88889	0.78174
13	Record all pertinent citation information for future reference.	4.00000	1.11803
14	Evaluate information and its sources critically.	3.77778	0.83333
15	Determine whether an information source contradicts or verifies information used from other sources.	3.66667	1.22474
16	Select information that provides evidence for your thesis.	4.33333	0.70711
17	Synthesize main ideas to construct new concepts.	4.00000	0.86603
18	Draw conclusions based upon information gathered.	3.88889	1.05409
19	Review the initial information need to clarify, revise, or refine your thesis.	3.55556	1.50923
20	Communicate your ideas effectively to others in a research paper or presentation or some other format.	3.33333	1.11803

All students reported being moderately certain or more so that they could do

Tasks 1 and 2. For Task 1, four students rated themselves at a 3, three students rated

themselves at a 4, and two students (M1 and F6) rated themselves at a 5. For Task 2,

three students rated themselves at a three, four students rated themselves at a 4, and two students (M1 and F6 again) rated themselves at a 5. M1 and F6 were joined by F3 in rating themselves at a 5 for Task 3, and again the only ones to do so for Task 4.

Task 5 had the highest mean rating of any of the tasks at 4.556, due to seven students rating themselves at a 5. The other two students (F3 and F4) rated themselves at a 3. Task 8 had another strong showing of confidence in students' responses. Six students rated themselves at a 4, two students rated themselves at a 5, and only one student rated herself at a 3.

All students reported being moderately certain or more so that they could do Tasks 12, 14, 16 and 17. For Task 12, three students rated themselves at a 3, four students rated themselves at a 4, and two students (F1 and M1) rated themselves at a 5. For Task 14, four students rated themselves at a 3, three students rated themselves at a 4, and two students (F2 and F3) rated themselves at a 5. For Task 16, only one student (F7) rated herself at a 3, four students rated themselves at a 4, and four students rated themselves at a 5. For Task 17, three students rated themselves at a 3, three students rated themselves at a 4, and three students rated themselves at a 5.

A majority of seven students rated themselves highly for Task 19: five students rated themselves at a 4, and two students (M2 and F6) rated themselves at a 5. However, two students (F1 and F7) rated themselves at a 1, indicating they had no confidence that they could do the task at all. Most students also reported being fairly confident with Task 20: six students rated themselves at a 4 and one student (F2) rated herself at a 3. Yet again, F1 and F7 rated themselves with low scores at a 1 and a 2, respectively.

Incidentally, Task 20, with the lowest mean rating of any of the tasks at 3.333, was the only task for which no student rated him or herself at a 5.

Procrastination

Students were given seven days to complete an annotated bibliography as an interim assignment for their research papers. Seven of the nine students began their assignments at least three days before the due date. Three students (F1, F2, and F7) began when first given the assignment seven days before the due date. The fact that two of these students (F1 and F2) also received a grade over a 90 on their research papers is of course statistically insignificant due to the small sample size. However, while F1 took only one day to complete the annotated bibliography, F2 and F7 took three. The two male respondents began their assignments the next soonest. M2 began his five days before the due date and took two days to complete it, while M1 began his four days before the due date and took one day to complete it. F3 and F6 began three days before the due date; F3 took two days to complete it and F6 only one. Finally, F4 and F5 both began only two days before the due date and both took only one day to complete it.

Library Consultation

Students were asked if they at any point consulted a librarian for help, in person, by email, via chat, and/or on the phone. Students were then asked how likely they thought would be to do so in the future on a scale from 1 – 7, where 1 = Very Unlikely, 4 = Undecided, and 7 = Very Likely. Only two students (M1 and F5) reported that they had consulted a librarian for help, both in person. However, while M1's response was a 5, indicating that he was somewhat likely to consult a librarian in the future, F5's response was only a 3, indicating that she was somewhat unlikely to do so. Two students (F1 and

F2, the unenthusiastic, unmotivated, pessimistic duo) responded with a 1 for very unlikely, and one student (F4) responded with a 2 for unlikely. However, including those of F3 and F6 along with that of M1, there were a total of three responses of a 5, and two students (M2 and F7) responded with a 6, indicating that they were likely to consult a librarian in the future.

Library Instruction Satisfaction

Finally, students were asked to write if there was anything more they would like to add regarding their satisfaction with their library instruction, if there was anything more they wish had been covered, and whether they thought more sessions would have been helpful. Six students responded.

The two male students were both satisfied, stating that their library instruction "gave a good range of sources for me to draw from" (M1), and "went over everything relevant to what we needed for our class" (M2).

F5 and F6 also agreed that library instruction was "helpful," but expressed dissatisfaction with their own efforts. F5, who did consult a librarian, stated, "All my uncertainties were originated in a lack of preparation on my part due to procrastination. Otherwise, my paper would have been very well researched and strong." Indeed, F5 reported beginning her annotated bibliography only two days before it was due, and she had indicated with a 1 that she was not proud of her work. F6, who did not consult a librarian but indicated with a 5 that she was somewhat likely to do so in the future, stated, "I would have liked to go the library more often because sometimes it is overwhelming to start researching by yourself on a really broad topic."

F2 and F7 both expressed a desire for more sessions of library instruction, stating "It's not that the sessions were ineffective, there just needs to be more of them" (F2), and "Library instruction was very helpful, but time was limited. Multiple sessions could have covered more specific ways to go about finding articles" (F7). F7 had also indicated with a 6 that she personally was likely to consult a librarian in the future. On the other hand, F2 indicated with a 1 that she was very unlikely to do so. She seemed to expect more from the library instruction itself, having also stated, "I feel like there is just too much information to cover in these sessions, so you just get a broad overview. Therefore, when I had to do it on my own, I found that it was not as easy as the instructor made it seem."

Discussion

   Due to the small size of the data set, it is impossible to discern the difference between having two sessions of library instruction versus only one in terms their effects on student self-efficacy in information research related tasks, procrastination, and grades. However, some patterns did emerge regarding differences in gender.

Male Students' Emotional Responses

   The male respondents M1 and M2 were the only students to report feeling very strong about their confidence at a 5. They were also the only respondents to report a 1 to indicate that they felt neither confusion nor stress at any time during the research process. Finally, M1, M2, and only one female respondent (F7) were the only students to report a 1 to indicate the absence of feeling overwhelmed.

M1 versus F2

   While certain features of the research process are similar for every student, nevertheless every experience is different, as a side-by-side comparison of two of the respondents, M1 and F2, will demonstrate. The most obvious difference of course, is that M1 is male and F2 is female. Also, M1 received a grade between 80 and 89 on his research paper, while F2 received over 90 on hers. M1 began his annotated bibliography four days before it was due, spending only one day completing it, while F2 began seven days before it was due but spent three days to complete it. Furthermore, they also differed on their experience of the library instruction, as demonstrated in their written responses. M1 not only expressed satisfaction with the class offering, he personally consulted a

librarian and reported being somewhat likely to doing so again in the future. On the other hand, F2 thought there should be more sessions of library instruction, but she did not seek consultation with a librarian herself, nor did she express any likelihood of doing so in the future.

In their emotional responses, M1 and F2 both reported having no anxiety at a 1, moderate boredom at a 3, and somewhat strong curiosity at a 4. They showed a similar lack of or little sense of discouragement, somewhat strong to very strong sense of focus, and moderate to somewhat strong sense of preparedness and purpose. That is where the similarities end.

M1 reported being very confident at a 5, while F2 reported only being moderately so at a 3. M1 reported having no confusion or uncertainty at a 1, while F2 reported having somewhat strong confusion at a 4 and very strong uncertainty at a 5. M1 felt no disappointment whatsoever at a 1, while F2 felt very strong disappointment at a 5, in seeming contradiction with the fact that she earned over a 90 on her research paper. M1 reported being moderately enthusiastic at a 3, while F2 reported none at a 1. Similarly, M1 showed somewhat strong interest at a 4, while F2 again displayed none at a 1. On the other hand, M1 reported having no frustration, stress, or feelings of being overwhelmed at a 1, while F2 reported somewhat strong frustration and stress at a 4, and very strong feelings of being overwhelmed at a 5, which would indicate some degree of engagement. M1 reported to being somewhat strongly motivated at a 4 and very strongly optimistic at a 5, while F2 reported to being little of either at a 2. These feelings could inform why M1 felt at least moderately proud at a 3, somewhat strongly relieved at a 4, and very strongly

satisfied at a 5, while F2 had no pride or relief whatsoever at a 1 and only a little satisfaction with her work at a 2.

While I am pointing out these gender differences because they appear to be so striking to me, the above analysis is merely a comparison of two individuals. Because they do not represent a statistically viable sample, I am not able to draw any general conclusions.

Tasks

Students rated themselves at a 3 or higher to indicate they all felt at least moderately confident in their ability to do Tasks 1, 2, 5, 8, 12, 14, 16, and 17. Notably, Task 5 had the highest mean rating of any of the tasks at 4.556, no doubt due to the fact that seven of the nine students rated themselves at a 5. This would indicate that identifying keywords, synonyms, and related terms for the information needed is one task at which students felt most confident. Whether this set of responses is due to the library instruction they received, or if they already felt confident when it came to these particular tasks, would require more study, such as the one I initially proposed.

There were only four tasks for which any students rated themselves at a 1: Tasks 3, 10, 19, and 20. Task 20 had the lowest mean rating of 3.333, suggesting that students find most challenging the last task in the research process, communicating one's ideas effectively to others in a research paper or presentation or some other format. While this may seem more like a writing task, it is important to consider Task 20 as the final step in research because without it, all that has come before has been done in vain. Of course, without all that has come before, Task 20 is not possible to do. For those tasks for which it would be impractical to cover in library instruction, such as Tasks 10, 19, and 20, I

would suggest collaborating with or recommending the UNC Writing Center. Otherwise,
I would suggest giving special attention to Tasks 3, 6, 7, 9, 11, 13, and 15, since those
were tasks not every respondent felt at least moderately confident they could do, and they
would be practical skills to teach in a relatively large instructional setting.

Suggestions for library instruction

- **Build on existing strengths**
    - M1 stated that library instruction "gave a good range of sources for me to draw from." Give students handout of what those sources are for later reference, and where they can be found on the UNC library website. Include screen caps.
    - M2 wrote, "They went over everything relevant to what we needed for our class." Give students outline of what is going to be covered in library instruction at *beginning* of session so they know what to expect and can follow along, and which they can use to take notes.
- **Encourage students to utilize library resources on their own—including librarians**
    - As F6 pointed out, "sometimes it is overwhelming to start researching by yourself on a really broad topic." Discussing ideas with a librarian can help narrow one's focus. Let students know they can come to librarians for that—it's what they're there for. Tell students specifically which librarians to go to for assistance and where they can be found, and if possible, invite those librarians to introduce themselves to students.
- **Offer instructional sessions outside of class targeting specific skills**

- o F7 suggested, "Multiple sessions could have covered more specific ways to go about finding articles." While this is the most ideal situation, to do so in association with a specific course such as English 105 requires coordination with the professor and potentially uses up valuable class time. Instead, offer instructional sessions anyone can attend that target a specific skill or skill set, such as Task 3: how to access the needed information effectively and efficiently, or Task 6: how to use various search systems to retrieve information in a variety of formats. Offer sessions repeatedly throughout semester.

Conclusion

With such a small sample and without a baseline for comparison, it is difficult to determine with certainty anything about the efficacy of the UNC undergraduate library instruction program. However, perhaps the data collected in this study can be applied as a baseline in itself as a standard of where library instruction currently stands based on students' responses of what they can and can't do.

My suggestions for a future longitudinal study would include a more streamlined method of communicating with students taking English 105. The ability to meet or email students directly would likely result in higher rates of participation and more timely responses. The study I would propose would be a simple experiment, with a control group and a treatment group. I would recommend recruiting a minimum of 20 but preferably 40 first-year English 105 students who have been assigned research papers. The control group would consist of students who receive only one session of library instruction, while the treatment group would consist of those who receive two sessions, to be decided by their English professors. All potential participants would be sent an email with a link to the first survey, before receiving any library instruction whatsoever. The researcher would ask them to predict their grades on their research paper assignments. The questions regarding emotions would be omitted, but those asking students to measure their self-efficacy by rating their confidence regarding their ability to do various research-related tasks would remain. This would establish a baseline as to what students felt they could or couldn't do before receiving any instruction. The first study should conclude

with a question asking students for their written response regarding what they hoped to learn in their library instruction session(s).

After students finish their assignments and receive a grade, those who responded to the first survey would receive another email with a link to a second survey, that would look essentially like Appendix A. With enough responses, it would be possible to discover if two sessions of library instruction were more effective than one. Most significantly, this study would be able to compare students' responses to the questions about self-efficacy on the second survey to their responses on the first, and determine if there was a pattern of improvement. This would be substantial evidence demonstrating the effectiveness of the library instruction.

Appendix A

Gender: F_____   M _____

Age: _____

ENGL 105 Instructor: _____

What grade did you get on your first research paper assignment?

   Below 60   60-69   70-79   80-89   90-100

As of now, how many sessions of library instruction have you had?

What emotions did you feel over the course of your experience doing information research? Please rate each of the following in terms of how strongly you felt them at any point during your research process, where 1 = not at all strong and 5 = very strong.

1	2	3	4	5
Not at all Strong		Moderately Strong		Very Strong

Emotion	Significance
Anxious	_____
Bored	_____
Confident	_____
Confused	_____
Curious	_____
Discouraged	_____
Disappointed	_____
Enthusiastic	_____
Focused	_____
Frustrated	_____
Interested	_____
Motivated	_____
Optimistic	_____
Overwhelmed	_____

Prepared	_____
Proud	_____
Purposeful	_____
Relieved	_____
Satisfied	_____
Stressed	_____
Uncertain	_____

The following is a list of different tasks which you might have performed in the course of researching your assignment. Please rate each statement in terms of how confident you are that you can do them as of now, where 1 = cannot do at all and 5 = highly certain I can do:

1	2	3	4	5
Cannot do at all		Moderately Certain can do		Highly Certain can do

	Task	Confidence (1-10)
1.	Determine the nature and extent of the information needed.	_____
2.	Select a topic.	_____
3.	Access the needed information effectively and efficiently.	_____
4.	Develop a realistic overall research plan and timeline to acquire the needed information.	_____
5.	Identify keywords, synonyms, and related terms for the information needed.	_____
6.	Use various search systems to retrieve information in a variety of formats.	_____
7.	Assess the quantity, quality, and relevance of search results.	_____
8.	Explore general information sources to increase familiarity with the topic.	_____
9.	Formulate questions about your topic and develop a focused perspective.	_____
10.	Develop a thesis statement.	_____
11.	Collect specific information pertinent to focused thesis.	_____
12.	Create a system for organizing the information.	_____
13.	Record all pertinent citation information for future reference.	_____
14.	Evaluate information and its sources critically.	_____

15. Determine whether an information source contradicts or verifies information used from other sources. _____

16. Select information that provides evidence for your thesis. _____

17. Synthesize main ideas to construct new concepts. _____

18. Draw conclusions based upon information gathered. _____

19. Review the initial information need to clarify, revise, or refine your thesis. _____

20. Communicate your ideas effectively to others in a research paper or presentation or some other format. _____

Approximately how many days before your annotated bibliography was due did you actively begin to search for information on your chosen topic? (Give your best estimate)

_____

How long did it take?

1 day   2 days   3 days   4 days   5+ days

At any point did you consult a librarian for help? **Yes**   **No**

If so, select all that apply:

☐ **In Person**

☐ **By Email**

☐ **Via Chat**

☐ **On the Phone**

How likely do you think you would be to do so in the future?

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Undecided	Somewhat Likely	Likely	Very Likely

Finally, is there anything else you would like to add? Were you satisfied with your library instruction or was there anything more you wish had been covered? Would more sessions have been helpful?

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