Are They Getting It? Seeking Evidence of Students' Research Behavior Over Time

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Abstract

Librarians and faculty at CSULB frequently complain about how poorly prepared freshmen are for college-level research. Freshmen overwhelmingly use Google to conduct their research. Bibliographies include references to Wikipedia. Students want information with little effort. They don't understand the research process. Five librarians at CSULB launched a study to examine this behavior. Will this research behavior change over time? Is it affected by librarians' instruction? This paper will present the preliminary results of a longitudinal study, which indicate that instruction does make a difference. In addition, we will give some practical advice on launching similar research. On the way to recruiting 400+ students, we learned what recruitment methods worked. This paper will touch on the potential minefields of institutional research protections and recruitment. We will relate the twists and turns of launching this study.

Introduction

Our story begins in the shared office of the librarians. One of the librarians asked the group, "Do you think these undergraduate students learn better research skills over the course of their time here at CSULB? A discussion ensued. Another question was raised, "Wouldn't it be interesting to follow these students from the time they were freshmen until they graduated? These questions were considered and discussed with the idea of starting a longitudinal study to follow a cohort of undergraduate students as they move through their years at CSULB. In this manner our research study was born.

We wanted to find out whether librarian instruction made a difference in students' use of Google and/or library sources in their research papers. We decided that our potential study participants would be the freshman class of 2008.

We received a research award from California Academic and Research Libraries (CARL) to help fund incentives for students to participate in the study. Then the challenges began, starting with learning the administrative intricacies of working with the university's foundation to administer the grant.

Over the course of the last two years, we have had to navigate the regulations of the Institutional Review Board for the Protection of Human Subjects (IRB) to study students' behaviors, and privacy laws affecting students to gain access to contact information for our population. Afterwards, we encountered the challenge of actually recruiting research participants. Not only were we faced with the known issues of sample design, but we also encountered many issues that were in unfamiliar territory. We had to enlist the support of various gatekeepers, from faculty to housing directors, manage both print and online versions of the surveys, and three technical systems. We learned how to both clean up the data we collected and to analyze it.

This paper, and the presentation we made at the CARL 2010 conference in Sacramento, discusses these very practical challenges in the hopes of easing the path for future researchers.

Literature Review

Quantitative and qualitative methodologies are described in detail in research-methods textbooks, with considerable attention paid to the advantages and disadvantages of each approach. Similarly, sampling issues are covered extensively in both textbooks and the journal literature.

Research-methods textbooks also cover, at least in a general way, the process of conducting studies using survey methodology. Although they may include some ideas on recruitment of research participants in an ideal setting, textbooks do not come close to describing the real-life pitfalls that inevitably face researchers.

Journal articles get into more detail on the methodologies used in a particular study. But, again, few get into the nitty-gritty of recruiting participants (Arcury & Quandt, 1999).

Those journal articles that do discuss recruitment methods in any substantial detail tend to be health care intervention studies or research with hidden populations, such as runaway youth or drug users (Bruzzese, Gallagher, McCann-Doyle, Reiss & Wijetunga, 2009; Leonard et al., 2003; Treweek et al., 2010). In the Annual Review of Public Health, Yancey, Ortega and Kumanyika review 95 studies published from 1999 to 2005 on recruitment of minorities into health-related research (2006). While some of these methods can carry over into other arenas of study, generally they are too specific and deal with problems irrelevant for other types of research, including a study of college students such as ours.

Scholars doing non-intervention studies, research on non-sensitive topics, or studies with seemingly accessible populations, such as college students, find little guidance in the literature about recruitment methods. The underlying assumptions appear to be that recruiting challenges are tacitly understood by other scholars.

This is particularly true when it comes to the effective and efficient recruitment of research participants and how that meshes with the protections for human subjects. For example, in a search of research methodology texts we found no information about the *efficiency* of various recruiting methods, in terms of time or cost. Nor did we find guidance on how long a period to allow for recruiting.

Another area where guidance is scarce is the challenge of working with gatekeepers to gain access to potential subjects. Again it is covered in a general way in textbooks and some of the journal literature, but details on dealing with gatekeepers and the practical impediments involved in approaching potential subjects—what Lindsay calls the "unacknowledged work" involved in "getting the numbers" of participants needed for a sound study (Lindsay, 2005)—is largely ignored.

For our mixed-method study, using quantitative methods for surveying our participants and a qualitative content analysis of the bibliographies of their research papers, we faced many unanticipated challenges as we sought to recruit research participants from the total population of a freshman cohort.

Methods

Our study uses two methodologies: surveys and citation analysis. Each semester we survey the study's participants on how many research papers they write, whether they have had librarian instruction, the kinds of source requirements made by their instructors, and their use of various resources and research strategies. In addition, we analyze the bibliographies from the research papers they submit.

Our original recruitment goal was to contact each of the 4,606 freshmen in the incoming 2008 class at California State University Long Beach (CSULB). Our main recruiting plan was to visit each of the mandatory University 100 classes. By contacting virtually the entire population, we would be bypassing the issues of random sampling. However, early on we were denied permission to recruit in these classes. As a result, we ended up using convenience sampling techniques, such as emailing students who had completed the CSULB Annual Freshman Survey (2008), and staffing tables in high traffic areas on campus, including at the bookstore, the library, and in the dorms.

Here are the recruitment methods we used, the challenges we faced with each method and the methods were most efficient and effective. Following a description of each method, are tables showing how many research participants we obtained and how many person-hours were involved with each recruitment avenue along with the number of valid participants compared with the number of students who gave informed consent.

Annual Freshman Survey

California State University Long Beach participates in the national freshman survey (Cooperative Institutional Research Program, 2009). For the 2008 freshman class at CSULB about 3,200 of the 4,606 freshmen took the survey. Of those, 1,460 said they were willing to be contacted for additional research, and they provided a Student ID number making their email addresses available. We emailed this group several times.

We gained access to this group by working with the director of Testing and Evaluation services on campus. Gaining IRB approval to contact this group was fairly simple because the Freshman Survey already had IRB approval and the students we contacted had given consent to be contacted.

The main challenges with this approach were technical. Administrators for the campus learning management system (e.g. Blackboard) set up an "organization" for our study and imported the student ID numbers from the Freshman Survey. We were then able to use the learning management system's email tool to contact students.

However, this communication tool in our version of the learning management system was cumbersome, and as a result, many students who signed up early on were contacted a few months later and signed up again. In addition, there was no way to prevent students from signing up for the study but not completing the first survey.

Class Visits

We visited 17 classes with high freshman enrollment to solicit participants. About half of these were library sessions for English 100 students. The remaining classes were in Sociology and Journalism.

Gaining access to these students involved two levels of gatekeepers: the department chair and the individual faculty members. We emailed department chairs for permission to contact faculty teaching freshman courses. We then emailed each faculty member teaching a section of the course. Many faculty members did not reply.

For those who did reply we had to gain written consent to submit to IRB. One of the challenges of this method was that we could not continue adding class sessions without submitting formal modifications to our IRB protocol. Another was that we had to provide IRB with scripts of what we would say in each class.

Tables in High-Traffic Areas on Campus

We staffed tables in the library lobby, in the common areas of residence halls, and in front of the bookstore during textbook buyback week.

The biggest challenge with this recruitment approach was the number of hours involved in staffing the tables. However, this approach allowed us to provide immediate rewards. We handed out $5 gift cards as students signed up.

We had to obtain written permission from the appropriate managers to submit to IRB, and then work out the logistics. The library dean and managers for the dorms and the bookstore were very cooperative.

One challenge was promoting the tables in the dorms. We did not allow enough lead time because we did not understand how communications filtered down from activities persons to resident assistants and dorm residents.

Another challenge of this recruitment vehicle was that some students signed up twice.

Email Link on Library Home Page

A link, in red type, was placed on the library home page for most of the duration of the recruiting period. The link took students to the informed-consent information about the study and to the first survey.

There were no special challenges for this.

Table 1.

Recruiting Method	Consent forms returned	Percentage of total sample
Email	188	32%
17 classes	86	14.7%
Tables in 2 dorms	61	10.4%
Library lobby tables	127	21.6%
Bookstore tables	103	17.5%
Library home page link	23	3.9%
TOTAL	588	100%

Table 2.

Recruitment Avenue	Total person-hours	Forms per person-hour
Library lobby table (first 2 days)	20	5.1

Class visits (17)	8.5	10
Residence Halls	13.5	4.5
Bookstore table	10	10.3
Library lobby table (last 2 days)	16	1.6
Email	4	47

Table 3

Avenue	Initial Sign-ups	Percentage
Total Consents	588	100%
Less Dupes and Bad IDs	-82	14%
Less Blank Surveys	-55	9%
VALID PARTICIPANTS	451	77%

Preliminary Research Results

Our preliminary analysis focused on four of the eight questions in our first semester's survey:

2) In which of [this semester's] courses did you receive library instruction <u>taught by a librarian</u>?

3) Which of [this semester's] courses required research papers or assignments with a list of references or bibliography?

5) "Thinking about all of your research papers this semester, how did you find the majority of the information you used in writing your papers?
- *--Using web search engines (e.g., Google, Yahoo)*
- *--Using journal articles*
- *--Using books*
- *--Other*

6.) Again, thinking of your research papers overall this past semester, where did you typically <u>START</u> your research?

- *--Google (or another web search engine)*
- *--Library resources (either print or online)*
- *--Other*

Of the 451 students in the study, 87% said they completed at least one paper or assignment requiring references. The vast majority of these papers were written in a handful of courses: English 100, University 100, remedial writing courses, or courses in Communication Studies, Psychology, Political Science, Engineering, History, or Sociology.

Of the students who wrote papers, 42.6% reported that they had received instruction from a librarian in their first semester. The other 57.4% should have received an online tutorial on library research in their mandatory University 100 course.

We then correlated the type of library instruction (librarian-taught or online tutorial) with the students' answers on where they started their research and what types of sources they used for the majority of the information in their papers.

Of the students who wrote papers and received only the online tutorial, 22% said they used library sources both to start their research and for the majority of the information in their papers.

Of the students who received library instruction from a librarian, 37% said that they used library sources to start their research and 35% said that the majority of the information in their papers came from books or journals.

We hope that this increase in the use of library resources by students who had librarian-taught instruction proves to be statistically significant with further analysis.

The vast majority of the remainder of the study participants reported using Google or another web search engine to start their research and that they found the majority of the information in their papers on the open web.

Conclusions

Conducting a longitudinal study is a challenge. Our research study group learned a great deal about the mechanics of setting up such a study. We frequently state that if we could start our study again we would do it differently. But you learn as you go. That is why it is important to find colleagues that have gone through the process and can assist you. Recruitment is critical for a longitudinal study. We gave it our best effort to recruit as many participants as possible. As the study continues our new challenge will be to retain the participants we have recruited. The preliminary data suggests that librarian instruction makes a difference in how the study participants conduct their research. As the study progresses, we will be able to make more concrete statements about these students' research behavior.

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