



Studying Students

The Undergraduate Research Project at the University of Rochester



edited by
Nancy Fried Foster and Susan Gibbons

Studying Students: The Undergraduate Research Project at the University of Rochester

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Introduction to the Undergraduate Research Project

Nancy Fried Foster and Susan Gibbons

The University of Rochester's River Campus Libraries are known as innovative and forward thinking, especially in the areas of reference outreach, online catalogs, institutional repositories, and Web-based services. Still, the library staff wanted to do more to reach students and their instructors in support of the university's educational mission. But to do more, we realized we needed to know more about today's undergraduate students—their habits, the academic work they are required to do, and their library-related needs. In particular, we were interested in how students write their research papers and what services, resources, and facilities would be most useful to them. As Katie Clark, director of the Carlson Science and Engineering Library, remarked early in this project, "Papers happen," but we did not know how they happen.

Thus, in the summer of 2004, a group of librarians and the River Campus Libraries' lead anthropologist met at a park on the shore of Lake Ontario for lunch and a discussion of some research we might do to enlarge our knowledge of undergraduate work processes. Many of us had participated in a previous study, supported by a grant from the Institute for Museum and Library Services, to examine the work practices of faculty members in order to build a better institutional repository (Foster and Gibbons 2005). Based on the success of that study, we decided to use similar

anthropological and ethnographic methods to examine how undergraduate students write their research papers. The information collected in this study would guide the libraries' efforts to improve library facilities, reference outreach, and the libraries' Web presence.

Defining the Problem

Our first task was to identify one trenchant research question to guide the project. The question we developed was, What do students *really* do when they write their research papers? Between the assignment of a research paper and the finished, submitted product was a black box that largely concealed the processes undertaken by the student. We wanted to take a peek into that box to see what we could find. We felt that this question accurately reflected our ignorance of student work habits while providing a manageable focus for our information-gathering activities.

We took a general approach, avoiding pre-suppositions. We wanted to begin our project by exploring students' practices; we did not set out to prove a point. Our initial aim was to be able to describe in detail how students actually write their research papers. This would enable the library staff to develop new ways to help students meet faculty expectations for research papers and become adept researchers.

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Laying the Groundwork

Once we had decided to conduct the research, we submitted complete documentation of project goals, methodologies, and protocols to the University of Rochester's Research Subjects Review Board and received the board's approval for the study. Participation in the study was completely voluntary. Each student signed a consent form prior to participating and understood that s/he could withdraw at any time without explanation. Students also gave us permission to reproduce photographs, maps, and drawings in this book.

Approach

Before we actually talked to any students, we wanted to understand what their instructors expected of them, so we created a set of questions to ask faculty members. These questions concerned:

- Hallmarks of a good research paper
- How instructors expect students to find books and articles for their research papers and assignments
- How librarians can help students complete their research papers and assignments
- Obstacles to successful completion of research papers and assignments

In Chapter 1, Barbara Alvarez and Nora Dimmock review the methods, findings, and applications of this study of faculty expectations.

Once we were able to add an understanding of student practices with these faculty expectations, we anticipated that we would want to implement changes or improvements in three major areas: reference outreach, facilities, and Web services. Accordingly, we created three subteams to investigate the questions that seemed to us most important.

For example, in the area of reference outreach, we sought to learn:

- What steps students take when they work

through their assignments and write their papers

- Successful and unsuccessful research and planning strategies
- Library and nonlibrary resources that students commonly use
- The differences between the successful strategies of high-achieving students and the experiences of overwhelmed students
- Where students go for help

In Chapter 2, Vicki Burns and Kenn Harper describe interviews conducted at the reference desk and, later, in the student union, to understand how and why students approach the reference desk, when they avoid it, and where else they go to get help. Suzanne Bell and Alan Unsworth delve into the data in Chapter 3 to describe one particular pilot program in which librarians adjusted their hours to accommodate students by staying on the reference desk until 11 P.M. during student crunch times.

A second subteam examined how students use the libraries' facilities and other campus locations, and what effects space and furnishings have on student research and writing practices. We wanted to look at these issues:

- When and why students choose the library as a physical space, and when and why they work elsewhere
- Which parts of the library students like best or least, and why
- What students wish the library had, allowed, facilitated, or provided

In Chapter 4, Susan Gibbons and Nancy Fried Foster discuss the methods we used to collect this information, some of our insights, and the ways we are applying our new knowledge and skills in a major library renovation project.

The third subteam explored how students use our website and other websites, and how that information might help us improve our Web presence. We started out asking

- What students need to do on the Web
- How the library fits into their Web usage
- What students do online and what more they *wish* they could do online
- How the library website does or does not meet student needs for doing their research papers and assignments

Jane McCleneghan Smith and Katie Clark review the methods and results of the two student design workshops we held to answer these questions in Chapter 5.

Additional Investigations

There was so much we wanted to know that we added research activities. One of our greatest challenges was to learn more about the students' academic activities outside of the library and the nine-to-five workday. We had great success asking students to document these times and places for us and then engaging them in discussions about the resulting photos, maps, and drawings. We also conducted interviews late at night, in student dorms, to learn more about how students use their computers and to capture the sights and sounds of residential life.

In Chapter 6, Judi Briden reviews a method we developed for using student photographs as a means of learning more about those parts of their lives that are otherwise inaccessible to us. Katie Clark describes yet another approach we took to gain insight on the students' days in Chapter 7. Using campus maps, students traced out their movements for us during an entire day. In this chapter we see the method and some of our surprising findings.

What It All Means

The final four chapters of this book take a few steps back to discuss some of the project's higher-level findings. Some of these findings relate to our own staff and the effects of participation on their attitudes and understandings. In Chapter 8, Helen Anderson and Ann Marshall discuss the

inclusive nature of the project and how this led to new and better working relationships among library staff and to improved relations between library staff and students.

Today's undergraduate students are very different from past generations of college students. In Chapter 9, Sarada W. George pulls out some of the interesting characteristics of the undergraduates who participated in our study. She also reviews the literature on past and current generations of college students and discusses how our local findings accord with the conclusions of other studies.

In Chapter 10, Nancy Fried Foster draws on information gathered throughout the project to examine how service means different things to librarians and students and to draw out the implications of those differences for libraries.

Our concluding chapter suggests how local user studies, such as our Undergraduate Research Project, are a necessary component of any student-centered academic library.

Acknowledgements

The authors of these chapters write on behalf of a much larger group of people who attended meetings, held video camcorders, checked transcripts, brainstormed ideas, and participated in many other ways in this project. We acknowledge with gratitude the work of Jody Asbury, Margaret Becket, Charlie Bush, Sue Cardinal, Diane Cass, Ellen Cronk, Michael DiMauro, Chris Finger, Stephanie Frontz, Denise Hoagland, Mary Huth, Isabel Kaplan, David Lindahl, Diana Luce, Kathy McGowan, Lorraine Porcello, Shirley Ricker, Deborah Rossen-Knill, Nancy Speck, and Dan Watts. We thank Dean Ronald Dow and Associate Dean Stanley Wilder for material and moral support. And we thank more than one hundred students who graciously allowed us into their dorms, took photographs, made maps, drew pictures, and participated in interviews so that we could understand how they write their papers.

one. Faculty Expectations of Student Research

Barbara Alvarez and Nora Dimmock

Before we embarked on our study of how undergraduates at the University of Rochester research and write their papers, we needed a better sense of what students are asked to do when they are assigned research projects. Moreover, we needed more knowledge of the expectations of the faculty and instructors who evaluate the results of their work. Is there any consistency of those expectations across the institution or across disciplines? What kind of research materials are students expected to find and work with? What is a good research paper, anyway? We hoped that by answering these questions we would not only gain insight into what students are expected to accomplish but also discern the most effective ways librarians can help students meet faculty expectations for research papers and become adept researchers.

Findings of Previous Studies

Several studies have looked at faculty expectations of students' research using a variety of methodologies. Valentine (2001) interviewed both undergraduate students and their professors to identify connections, if there were any, between faculty expectations and student commitment. She found that faculty members assign research papers for a variety of reasons, including providing students with the experience of writing in the discipline and giving them a chance to be creative. They grade those papers on the basis of

subjective, intangible factors including "legitimate effort" (110). This led Valentine to conclude that faculty members have varied, and sometimes vague, expectations of student work, but that students strive to discern those expectations in order to get good grades.

A study at Bucknell University (Carlson 2006) showed that faculty expectations vary according to the academic discipline and, in general, are lower for introductory courses. Carlson looked at the citation behavior of students by class year and academic disciplines and concluded that instructors' expectations increase as students progress through the curriculum of their major. The academic discipline of the course students were enrolled in also proved an important factor. Students in humanities courses focused heavily on books. Students in social science courses cited more journal articles and websites and overall included more sources than students in the humanities and in foundation seminars.

Another study of the citation behavior of undergraduate students (Davis 2003) revealed the positive effect of faculty guidelines for research on the types and overall number of sources used. Davis looked at the bibliographies of students in an elementary economics class and discovered that the number of book citations dropped from 30 percent in 1996 to 16 percent in 2001, which he attributed to

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increased use of the Internet. However, when the professor provided guidelines on appropriate research sources, the number of Web resources dropped dramatically. Davis's study demonstrates how clearly stated faculty expectations can have a direct impact on students' attempts to find and use relevant scholarly literature.

The effect of library instruction on student research skills was the focus of a 2002/3 survey (Singh 2005). Singh surveyed more than four hundred faculty members teaching undergraduates. Although 55.2 percent of faculty believed that library instruction improved students' research processes and 33.8 percent "found their students' research skills to be poor," only 8.6 percent made library instruction a part of their coursework. Singh concluded that many faculty members expect students to have better library skills but few provide the necessary library instruction.

Methodology of Our Study

With the information from some of these past studies in hand, we sought a means to explore the expectations of the University of Rochester faculty for their students' research and writing abilities. To obtain the most exhaustive and, at the same time, most spontaneous answers to our questions, we opted for face-to-face interviews with faculty. A group of subject librarians volunteered to identify professors who had assigned research projects during the current semester and to approach them with interview requests. Fourteen faculty members from a wide range of academic disciplines (six in humanities, five in social sciences, and three in science/technology) agreed to participate in our study.

All of the librarians who volunteered to conduct faculty interviews attended a short training session in ethnographic interview techniques with the libraries' lead anthropologist. An interview protocol provided us with the main points

Table 1.1. Summary of Faculty Interview Responses

Hallmarks of a good paper
• meets goals of the assignment
• good topic: doable and interesting
• well thought out: clear thesis statement, well-developed arguments in relation to the sources used
• well written: no mechanical errors (grammar, spelling); appropriate style for the discipline; appropriate style and content for the intended audience
• well organized and presented: beginning, middle, end; right things in the right section of the paper
• appropriate, high-quality sources
• no plagiarism
• shows understanding of the subject, critical thought, interest, and creativity
How students are supposed to find resources
• independently
• work with other students
• follow instructor's suggestions on how and where to find sources (on syllabi, handouts, writing guides, and at individual meetings)
• use skills learned in a bibliographic instruction session
• ask a librarian for help
• use library's tools and services: databases, catalogs, interlibrary loan
• follow references cited in the textbook and other readings
• get resources from instructor's own collection of books and articles
• use Internet (as long as the quality of visited sites is acceptable)

Table 1.1. Summary of Faculty Interview Responses
What librarians can do to help students
• show how to search subject-specific and interdisciplinary databases
• create guides to subject literature
• explain different research methodologies
• restructure bibliographic instruction: offer more frequent and shorter sessions, more focused on a particular type of resource
• offer library tours at the beginning of the school year
• work closely with faculty
• help with identifying print sources and finding them in stacks
• help with interlibrary loan requests
• encourage persistence, nurture excitement for the topic
• offer reserves and required readings in multiple copies
• help with writing problems
Obstacles to good research papers
• poor time management skills
• problems with formulating arguments and developing a topic
• lack of critical judgment and of reflection upon the sources
• poor understanding of the material
• poor writing skills: declining grammar, inappropriate style for the discipline, no previous experience in scholarly writing, lack of clarity
• plagiarism, often unintentional
• poor choice of topic and lack of focus
• giving up easily
• not enough or poor-quality sources
• pursuing only sources in our collection or online (not using interlibrary loan)
• no experience in working with primary sources
• intimidation by resources
• not knowing how to work with references or cite sources

for discussion but also left room for any additional questions and comments the conversation would afford. Most of the subject librarians took advantage of this excellent opportunity and learned a great deal about student–faculty interaction—much more than we had anticipated at this early point in our project.

The timing of the interviews was crucial. Aiming for the end of the semester, when papers would be due, ensured that most of the faculty were engaged in the process of grading the research assignments and therefore could provide us the most authentic and detailed

information. But this timing also created a difficulty because our demand for their time was an added burden. We approached faculty with a strict time limit of forty-five minutes and reassured them at the beginning of the interview that we were cognizant of their time constraints and would be diligent in keeping to our agreed-upon time limit.

Interview Protocol

Our interview protocol had us focus on faculty members who expected to receive research papers from students within a few weeks. We asked them

about the hallmarks of a good research paper in general, and what they would look for in this term's papers. We also asked how these faculty members expected students to find books and articles as they worked on the assigned papers, and whether they expected students to get help, and from whom. Finally, we solicited ideas on the ways librarians at the reference desk might be most helpful at this point in the semester, when students were writing their research papers.

Findings

The results of faculty interviews were collected and disseminated to the project team. After looking at the tabulated results we immediately realized that, although there were common threads across all the interviews, our study revealed no evidence of any significant consistency of faculty expectations, either across the institution or at a discipline level. There were also as many distinct answers to each of the questions as there were interviews, and some were even contradictory (see Table 1.1). Such lack of consistency—confirmed later in interviews with students—often puts undergraduates at a loss when they are trying to understand what scholarly investigation and writing are all about. Professors agree that high school training is far from sufficient in preparing students for research pursuits at the college level. For example, two of the interviewed professors told us that they do not expect undergraduates to know how to find books and articles, and that they tend to provide all the materials necessary for the students' projects.

By and large, professors expect students to understand the purpose of the assignment, choose an appropriate topic, and write a cogent and well-supported paper. Frequently mentioned hallmarks of a good paper include an interesting topic, high-quality sources and their proper attribution, demonstrated understanding of the subject and critical thought, well-developed thesis and argumentation, good organization and presentation, and impeccable writing.

The faculty members share the general opinion that graduate students know how to do research, but they are unable to articulate to us how the students attain these skills as undergraduates. Some instructors assume that librarians are teaching research methods at some point, even if the instructors themselves do not request such instruction for their classes. Some assume that a required writing course or a single library session (or both) is sufficient as a basis for the student's entire college career. Consequently, most of the interviewed instructors expect their undergraduate students to know how to find research materials without ever teaching these skills or having any clear idea of how students are supposed to learn them.

In many cases, however, faculty expectations go beyond the mere basics of research and writing. One faculty member explained, "Actually, I expect the students to do something similar to what I do, which is a combination of library resources, . . . and what can be found on the Internet, and work with references." Not surprisingly, professors implicitly wish that students imitated their own research and writing styles. Yet their ways of conducting research are highly individual and often rely heavily on sources unavailable to students (e.g., peer groups) rather than on traditional library-based tools (Washington-Hoagland and Clougherty 2002, 127). Although they are experts in their own fields, faculty members are not necessarily expert searchers or heavy users of library catalogs and databases, and therefore they may not be prepared to train students in information-finding skills (Barry 1997). At the same time, many are also reluctant to give up scarce class time for bibliographic instruction offered by a librarian.

Even though the faculty members all agreed that locating appropriate scholarly sources is important, their opinions are divided as to the students' skills at finding good resources. Some professors believe that students are quite re-

sourceful and able to find things independently. Others assume that students are already familiar with the databases and Web resources in the subject area. Some do not expect students to do independent research; instead, these instructors provide students with all the materials they need or direct them to selected subject bibliographies. In the minority of classes where bibliographic instruction is taught by a librarian, the instructors believe the session in the library gives the students sufficient training in the use of subject-specific databases and prepares them to become proficient searchers.

When discussing their expectations, faculty commented more extensively on the problems of writing and critical thinking than on those related to locating the right sources. Evaluating and interpreting the information appear much more difficult for students than finding it. Without exception, all interviewed faculty agree that one of the main failures of the research papers they grade is lack of critical judgment. To start with, many students cannot discern the quality of the sources they find and, in consequence, make a poor selection. They lack the sophisticated analytical and interpretive skills they would need to see implicit and explicit relations between the sources or to distinguish between strong and weak arguments.

Second, students tend to summarize readings instead of reflecting upon them and writing critical, thoughtful papers. As one of the professors remarked, it is difficult “to get them to realize they’re not there to just repeat what someone else has said, but to internalize and spit back out in their own words, to provide their own ‘take’ on it ... a personal reaction, not just paraphrasing.” Trained in high school to write reports, undergraduates do not know how to formulate good research questions and work with the sources in a manner that will produce interesting and coherent answers. While working with the research materials, many students

do not understand the imperative of proper citations and may plagiarize, even if it is completely unintentional.

Finally, all interviewed faculty complained about mechanical problems that plague students’ writing: “florid, overwrought language, jumbled and verbose”; “grammar declining over the years”; spelling mistakes; lack of clarity; poor organization of the text; inappropriate style for the discipline or intended audience. In the faculty’s opinion, bad writing is an acute problem that turns out to be the main obstacle to students’ success in research.

Conclusions

The small number of interviews prevented us from making too many demands on the collected data, but our study led us to several interesting findings and pointed out areas for further exploration. The benefits from the interviews went beyond providing the groundwork for the Undergraduate Research Project by mapping the expectations faculty members have of their students. Most librarians used the interviews as an extension of their liaison activities and interviewed faculty members in their areas of subject expertise. The meetings with faculty offered librarians an excellent opportunity for developing existing relationships or for engaging with faculty they had not had a chance to work with earlier. The librarians learned a great deal more about the classes and assignments they had heard about at the reference desk. Prior to the interviews, two of the instructors did not understand what librarians could do for a class and for individual students. The interview with the subject librarian opened up a new avenue for collaboration and, in several cases, the interviews were followed by the faculty member requesting greater participation by the librarian in a course.

The faculty interviews also provided an opportunity for subject or reference librarians to look more holistically at the process students

go through to complete an assignment and to gain a better understanding of their common challenges. In this process, research and writing are deeply intertwined and cannot be separated from each other. Good researchers have to be good writers to present the fruits of their investigation to the scholarly community effectively. Therefore, the help we can offer students has to take into consideration all the elements of success: finding information, understanding and analyzing it, and presenting it in writing.

Librarians can help students in all the steps along the way, starting with bridging the gap of understanding by helping the student figure out “what the professor wants.” This requires us to be proactive in communication with faculty about their assignments and the educational goals of the course. It may also necessitate that we augment our methods of bibliographic instruction, offering it not only in more traditional “library sessions” but also in a variety of other fashions. For example, the interviews encouraged us to experiment with special office hours and reinforced the value of the library resource guides that we tailor for individual classes each semester.¹

Last but not least, the faculty interviews made clear the need for librarians to understand the pedagogy of writing in order to assist students through the final steps of preparing a well-crafted research paper. This conclusion has been reinforced by a collaboration with the University of Rochester College Writing Center.² The involvement of our librarians in the College Writing Center programs has been growing in recent years in such areas as research instruction for freshmen and upper-level writing courses, the training of new writing instructors, and the sharing of research and expertise.

As a result of this initial success, eight subject librarians undertook formal training as writing consultants; four now hold regular weekly tutoring hours in the writing center. The writing initiative led to the creation of a specialized tutoring service in Spanish, built upon the language skills and abilities of the modern languages and cultures librarian. Further efforts to connect research and writing led to hiring an undergraduate writing fellow to provide assistance at the reference desk and in bibliographic instruction sessions. In the fall 2007 semester, the libraries’ political science librarian will teach her first class as an official freshmen writing seminar instructor. These experiences have also inspired several of us to conduct research on library/writing program collaborations (e.g., Alvarez 2007; Marshall 2006; Ricker and Kaplan 2006).

Our writing center collaboration has been extremely positive, and the feedback suggests that the expansion of our expertise into writing is important, useful, and quite in line with our educational mission. As one librarian puts it, “The excursion into [writing] allows us to reevaluate our professional practice from a broader perspective so that we can support our students and faculty in the most meaningful way” (Alvarez 2006).

The faculty interviews, along with the many other activities associated with the Undergraduate Research Project, have provided us with an opportunity to look at our professional practice from a broader perspective and through the eyes of the students. This, in turn, has allowed us to align our programs and services with student needs and work practices and to provide truly student-centered support for learning.

Notes

1. <https://www.library.rochester.edu/index.cfm?page=courses>.
2. <http://writing.rochester.edu/help/wconsultants.html>.

two. Asking Students about Their Research

Vicki Burns and Kenn Harper

The staff of the River Campus Libraries believe that students' literature research can be significantly aided by consultation with information experts, in particular librarians. The Undergraduate Research Project provided us with a way to test that belief and improve the ways we make contact with students. Early in the project, we formed a reference subteam to evaluate students' experience seeking assistance from the reference desk. The subteam consisted of one library assistant and four librarians, representing the sciences and humanities; the project's anthropologist was an ex-officio member of the subteam.

Reference Desk Survey

The subteam began by designing a survey for undergraduates who came to the reference desk at either the main humanities and social sciences library or the science and engineering library to seek help with a research paper. The subteam designed the survey instrument (Appendix 2.1), drew up detailed procedures, and pretested the survey with two student employees to ensure that the questions were clear. The survey was designed to gather basic information about the student and the assignment that brought him/her to the reference desk, as well as the student's motivation to come to the desk and expected outcomes. Students were invited to complete the survey at the end of their encounter at the reference desk, and as a "thank-you" they received a small

flashlight in the shape of a carabiner with "River Campus Libraries" printed on it. To enhance the survey we sent each student two follow-up e-mails, one within a few days and one after the completion of the paper, to follow the student's progress. Thirteen reference staff volunteered to help conduct the survey.

During the middle part of the 2005 spring term, fifteen undergraduates were interviewed at the reference desks, and about a third of the students answered one or more of the e-mail follow-up queries. One student was interviewed in the science and engineering library, the remaining fourteen at the main humanities and social sciences library. Nearly all of the students were in classes that featured integrated library instruction; in one case, the professor was a member of the library staff. Most students were working under some time pressure, as indicated by reports of deadlines of one day to three weeks and by comments such as "the bibliography is due tomorrow," "paper is due," and "[need] to save time."

Some students were apparently feeling more than time pressure. One student explained, "It's hard to do research and I like to get help." Another reported, "I felt lost and overwhelmed about getting started." Although many students could correctly name the databases they had searched, others had developed their own terminology, such as "regular database" (the

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libraries' online catalog, Voyager), "searched online" (Google?), or "search engine" (Voyager). One or two students were regulars at the reference desk: "I always come to the desk." What students generally learned in the course of the reference interaction with the librarians was the existence of specialized databases or effective ways to use the indexing of the databases.

In addition, some interesting commonalities stood out. Every student had already made an attempt to find information before seeking assistance at the reference desk. Although 20 percent reported using only Google, over half had used one or more of the databases provided by the library. In addition, many had e-mailed the librarian for an appointment, already knew the reference staff they met at the desk, or had a prior familiarity with the reference desk. In sum, these findings suggest that the typical student in our survey sample was familiar with databases other than Google, was under a certain amount of time pressure, and was either familiar with the reference staff in general or had been encouraged by instructors, friends, or family to seek library assistance.

After the survey was completed we conducted a process review that included the planning subteam, those who had participated in the reference desk survey, and other interested staff. We especially looked for factors that influenced survey outcomes. One factor was that we missed some potential interviews because of busyness at the reference desk. We also discovered that, although the questions were clear, sometimes the answers were not. For example, we had recorded answers such as "It was easy" to the question "What made it easy or hard for you to come to the reference desk?" or "I looked online" to the question "What print or online resources, if any, have you already checked?" Some interviewees felt uncomfortable both providing the reference assistance and conducting the survey about it.

These discoveries led us to spend some extended time thinking about the design of the questions, survey procedures, and methodologies. Other data collected by the Undergraduate Research Project indicated that some students never considered asking for help from the reference staff. After some deliberation we decided that we would gain more useful information about students by surveying them outside of the libraries, to reach those who usually bypass the services of the reference desk.

"Outside the Library" Survey

Having decided to expand our investigations beyond the physical library, we conducted a survey one evening in two locations where undergraduates congregate: the food court at the student center, and the main student computer center on campus. In particular, we sought to target undergraduate students in these locations who were actively working on a research paper.

Aside from following a prescribed schedule of questions (Appendix 2.2), the methodology for this second survey was very different from the first. In the student center we used a student employee of the library to cruise the food court and invite students to participate in the survey. A librarian then screened these students to ensure that they met the desired profile, and a recent anthropology graduate conducted the actual interviews. In the computer center, our staff anthropologist undertook all three roles. Because nonlibrarians conducted the interviews themselves, we hoped that the students would be more candid in their responses.

The interviews lasted approximately twenty minutes, and as a "thank-you" we gave the participants their choice of cookies, pretzels, soft drinks, water, or juice. We interviewed a total of fifteen students in the two locations, capturing their responses in notes as opposed to transcribed recordings.

Eight men and seven women participated in the survey. We do not have the college year for all the students, but know we had at least two seniors, three freshmen, and one junior. Our library student worker encountered no problems in enlisting students to participate. In fact, he had to pace his recruitment efforts to prevent a long waiting time for the actual interview. The academic disciplines were represented as follows: African American history, 1; anthropology, 2; brain and cognitive science, 2; computer science, 1; English, 3; history, 2; mathematics, 1; physics, 2; and religion, 1

The questions asked in the interview addressed how the students felt about their assignment and the methods they employed to bring it to a successful conclusion. We raised the topic of the library and reference librarians late in the interview to keep the focus on the student work practices and attitudes. The student perspective was paramount for us.

Survey Responses

Question 1: Do you feel you have enough time to finish this paper/project?

The overwhelming majority (87 percent) of students responded that they had sufficient time in which to write their papers. The two seniors who were writing honors theses were the only ones concerned about completing everything in the time they had left. One senior reported, "I'm busy. I have other things I need to do for school, also need to relax, work, and do volunteering." Another responded that "it was assigned at beginning of semester so if rushed it is my own fault." Other students echoed this sentiment: they had the assignment early, and it was up to them to manage their work effectively to complete the assignment on time.

Question 2: How much do you really care about this paper/project?

All except three students cared "a lot" about this paper. Getting a good grade was important to

them. For some students, their concern for the paper was driven by their interest in the topic. One of the seniors reported, "It's a culmination of the work that I have done for the last two years." Another student liked her topic and was interested to see how it would turn out. One student reported, "Initially I didn't care about it much; I became more interested while working on it."

One of the students who did not care much about the paper was taking the course for personal enjoyment and, though he wanted a "decent grade," he had other priorities to which he was applying his energy and time. Another said the class was a "requirement for my major, at first the material was interesting but is boring now, and I don't really care anymore."

Question 2-B: How well do you think you are going to do on this assignment?

All the students expected to do well on the paper. Forty-seven percent specifically mentioned that they hoped to get an A grade on the paper. Others mentioned that it was important to write a successful paper because it was a large percentage of their final grade. An intriguing response came from the student quoted above who did not care about his paper: "I will probably get an A because writing a good paper and being interested are different; helps to be interested but not necessary. I am motivated enough to want to do well in the class. It is not much more effort to write a good paper than a mediocre one, so why not write a good one?"

Question 3: How is it going? Are you finding all your books and articles/data pretty easily?

Sixty percent of the students had found articles and books for their papers; 27 percent (four students) had not yet found enough appropriate material. Two students had not begun their research. Almost half the students (47 percent) received recommendations for books and articles from faculty; 73 percent also specifically mentioned

searching the library catalog and databases. Two students searched Google—one of whom said she had not yet searched the “library website.” Several students reported mining bibliographies for additional sources. Some students found it difficult to find the “right” material for their papers.

The students had greater confidence about finding materials than they did about organizing and writing their papers:

“Just the fact that you weren’t given a topic, no questions to answer, makes it a little stressful at this time in the semester.”

“Lack of clarity from professor about the topic makes it difficult to come up with my own paper topic.”

“The biggest challenge is figuring out what to say; that is not clear in my mind yet, but I have general idea that I am moving toward. I find devoting time and reading as much as possible is most helpful in getting to ideas.”

“Coherency is the biggest challenge in writing. I have too much to say and find it hard to organize it. I think faster than I write. I put a lot of ideas down and it gets too random.”

“The fact that I hate writing and feel pressure because I want to do well. It makes me not want to work.”

These students understand the difficulty of writing the coherent, focused papers their instructors expect and report greater concern about organizing and writing than they do about finding books and articles.

Question 4: Have you asked anyone to help you with this?

Half of the students had consulted their professor or teaching assistant or planned to do so. Several commented that the professor was the best person to go to for help. Some students expected that their professor would review their papers before they turned in the final version. The other half had not consulted anyone. One student said that she “would just never ask for help unless [she] was completely clueless.”

Twenty-six percent of the students mentioned that they planned to go to the writing center for assistance with their papers. These students were seeking assistance for the part of the paper they were finding the most difficult: the organization and presentation of their ideas.

Question 4-e: Did you think of talking with a librarian?

Of the fourteen students who answered this question, 79 percent had not talked with a librarian. Interestingly, 85 percent had worked with librarians in the past. From these responses we can see that once students have a research paper assigned they do not head straight to the reference desk for help. In fact, several in our sample lacked a clear understanding of the ways a librarian can assist them. Some students identified librarians only with print and with locating materials in the library collection.

Students reported successful assistance from librarians in the past. Our notes record one student saying, “Yes, librarians give more information about topic and give me more directions. Librarians are good.” But the student quoted above as saying she would ask for help only when she was “clueless,” responded, “I haven’t used librarians; I would talk to a librarian when I need to find books. I can’t imagine anything else I would need them for. If I was bad with technology, I would ask how to use the computer.”

Another student responded: “I see them as people to help me find materials on paper. I

probably asked a librarian at some point but found it mostly myself or from professor or other specialist. I went to the professor because they are the specialist in the subject area; I don't see librarians as specialists. They just know about general information. They are knowledgeable about search engines."

Question 5—When was the last time you worked on the paper? When's the next time...?

These students believe the idea that papers are written the night before they are due. It is clear from their responses that they divide the larger assignment into smaller tasks. One responded, "I worked on it today and this weekend I will find a source and do some reading." Another: "I haven't started; I will start by making sure I have articles by the end of the day—four days ahead and may start writing it then." Several noted that they would return to the research paper once they had other work completed. The responses to this question provide further evidence that these students manage their assignments well. They appear to maintain fairly good control of their academic work.

Survey Conclusions

Our goal was to learn about students, so we did everything we could to focus on their work habits and not on our workplace or ourselves. We met the students on their turf during their working hours (late evening) and inquired mainly about their work habits.

The students report that they are in control of their research and writing assignments. They are confident that they will do well, even when they have concerns about the organization of the paper. Those interviewed report that they work systematically through the research and writing process and organize their work so that they will complete their paper in the assigned time period.

These students depend upon library books, journals, and databases for their academic re-

search. Although they may begin a project with an Internet search, they understand that this search is not sufficient for their assignments. Many students are confident that they can find books and articles on their own, but they often look for recommendations from their professors and teaching assistants, whom they consider to be subject experts.

Some students, especially those who meet a librarian in a class, consult with a reference librarian about their research. Other students do not understand the role of a reference/subject librarian and associate librarians only with hard-copy materials and stack locations.

Outcomes

The students tell us that faculty are the subject experts. But although a professor may refer a student to a specific article or book and sometimes to a database such as JSTOR, s/he may not provide good direction for getting the student into the literature of the discipline. We consider this a vital professional responsibility for reference librarians, who know about current databases and library materials available to the university community. One of our greatest challenges, then, is to increase the undergraduates' awareness of librarians' subject expertise.

The most direct way to the undergraduates is through the faculty. Traditionally subject librarians have met with faculty members and attended faculty meetings, conferences, and seminars, serving as the main conduit of information about the library's programs and collections. Now we are expanding our librarian liaison role. Several subject librarians have office hours outside of the library, in their respective academic departments, where they meet with faculty and graduate students. Others are auditing entire classes, which enables faculty and students to get to know the librarians while the librarians get an inside view of classes and academic expectations. Strengthening the con-

nection between faculty and subject librarians is a critical path to the students.

Our collaboration with the College Writing Center is expanding as well. Reference librarians have provided class-specific library instruction in the first-year writing classes for many years. In 2006 some librarians began serving as writing tutors. At the request of the director of the writing center, additional subject librarians will become tutors. In exchange, librarians give library research training to the other tutors, to the first-year writing instructors, and to the undergraduate writing fellows. We find that writing tutoring has helped with our work at the reference desk, particularly when the research and writing tasks are not differentiated by a student.

Several years ago we developed course pages with direct links to e-reserves that presented selected library resources appropriate for class assignments and a photograph and contact information for the subject librarian.¹ Many students request appointments directly from these pages. A similar program will be part of the Blackboard course-management system the university is now adopting.

We emphasized the role of subject librarians in two entertaining ways this academic year. Students told us that their parents often edit their papers and advise them about assign-

ments, so we decided to get to know parents through the libraries' sponsorship of the parent breakfast held during the class of 2010 orientation. With posters combining Beatles songs and the theme "every class has a librarian," we discussed library programs and campus life with many parents and students. In addition, each year the libraries' host a Halloween Scare Fair. In the most recent fair, a fortune-teller asked students about their majors and then gave them a "ticket for success," which highlighted "their" librarian, a wise saying, and some trinkets. Believe it or not, students stood in a long line to meet the fortune-teller.

The Undergraduate Research Project has provided unique insights into the ways students do research and write their papers. We used the findings reported above, and other data collected in the overall project, to inform our public services retreat last year, at which we generated several innovative project ideas. We are meeting the students in new venues and building broader coalitions with campus departments. Although the Undergraduate Research Project has formally ended, we continue to use the skills we learned to update our understanding and gather new information about our students so that we may provide them with the best possible reference services.

Note

1. <http://www.library.rochester.edu/index.cfm?page=courses>.

Appendix 2.1. Undergraduate Reference Survey Worksheet

Place of survey: RR - Carlson - e-mail - Chat - Other

Surveyor: _____ Date/Time: _____

Person Surveyed

Name: E-mail:

Major(s): _____ Year in School: _____

Course: When is the paper (etc.) due? _____

Topic of the paper/project: _____

When did they get their Gift? _Follow-up Dates 1) _____ 2) _____

Question 1: What print or online resources, if any, have you already checked?

Question 2: Did you ask anyone else for help before you came to the Reference Desk?

Question 3: What did you learn during our session that was new?

Question 4: Why did you come to talk to the Reference Desk at this particular time?

Question 5: What made it easy or hard for you to come to the Reference Desk?

Remember the gift for the student and to request permission to follow up in 3 days.

Follow-up Questions

Initial Follow-up—Send by e-mail on third day after original survey.

Follow-up 1: After our session what additional resources did you look at—who else to you speak to?

Follow-up 2: Has another information question related to your paper/lab come up since we spoke and how did you go about seeking answers?

Follow-up 3: After you have turned in your paper, may I e-mail you with some wrap-up questions?

Final Follow-up Questions—Send by e-mail after the paper/project is complete.

Final 1: Over all how did the paper go?

Final 2: How did the help that I give you help you with the paper?

Final 3: Do you think that your grade was/will be influenced by the help that I gave you?

Appendix 2.2. “Outside the Library” Interview Questions

1. Do you feel like you have enough time to finish this paper/project? [Are you feeling totally rushed? Do you have time to do this properly?]

2. How much do you really care about this paper/project?
 - a. Why? What do you really want to get out of it? [prompt for grades, knowledge, other, if necessary]
 - b. How well do you think you’re going to do [What are you going for? Is this as important as other assignments, or do you just want to get an acceptable grade and spend more time on other things?]

3. How is it going? Are you finding all your books and articles/data pretty easily?
 - a. If yes—how have you been finding them? [What have you found? How did you find it?]
 - b. If no—what have you tried? What has the problem been?
 - c. All: Is anything else about writing the paper hard? Is anything else slowing you down or giving you trouble?

4. Have you asked anyone to help you with this?
 - a. If yes—who?
 - b. If no—do you have a reason for not asking anyone to help you?
 - c. All: Who do you wish you could get help from? What prevents you from asking?
 - d. Rather than face-to-face, would you like it better if you could get help on your paper/project through IM? Phone? Other technology?
 - e. All: Did you think of talking to a librarian? Why didn’t you? Would anything make you want to get help from a librarian? Have you ever talked to a librarian? Can you tell me where it was?

5. When is the last time you worked on your paper? How much later do you think you’ll be up tonight? Will you work on this paper tonight? When’s the next time you think you’ll work on this paper? Where do you think you’ll be the next time you work on this paper?

three. Night Owl Librarians: Shifting the Reference Clock

Suzanne Bell and Alan Unsworth

As librarians on a college campus, we often feel isolated from the lives of undergraduate students. They are our most numerous and visible patrons, but they have lifestyles and concerns very unlike ours. There is growing evidence that they study in different ways than we do and approach research in a different fashion. By their own account, they stay up much later than we do, fit many more activities into a day, and stay in constant touch with each other via cell phones, instant messaging, and other electronic tools. By the time they are ready to do research and writing, the librarians have gone home. Google, of course, never sleeps.

This is a professional problem, as well as the source of some social awkwardness. When combined with fewer reference interviews, declining circulation statistics, but a rising gate count, it suggests that we are becoming obsolete. As a building and a meeting place, the library is more popular than ever; as a provider of reference services, however, it is largely ignored.

How should we deal with this? At the River Campus Libraries we concluded that it would help if we understood our undergraduate students better. Many of us extrapolate from our own college careers to get some idea of the pressures (and the freedoms) undergraduates experience today. But a more current perspective is needed here, for technology and changing social norms are transforming college life. Through the Undergraduate Research Project we studied the behavior of undergraduates in

several ways. After many months of covieving and sifting the accumulated data, we arrived at a crucial point. We needed to turn our findings into a few specific courses of action, and do it quickly, or we would miss our chance for the spring 2006 semester.

Since earlier studies indicated that many students use the library late at night (Albanese 2005), which was confirmed by our mapping diaries (see Chapter 7), we decided to pilot offering services on a schedule somewhat closer to theirs, to try to reach some of those late-working students. Librarians volunteered to take blocks of reference desk time from 9 to 11 p.m. to see if our services were in more demand then. Actually matching the students' schedules would have kept us in the libraries until 3 a.m., and we were not quite equal to that challenge. We struck a compromise between our aspirations and reality by staying until eleven.

We dubbed the pilot "Night Owl Librarians" and timed it for the end of the spring 2006 semester. The name was a particularly appropriate double entendre since the main social sciences and humanities library is known for the owl motif that appears in carved statues on its tower and in various grillwork and bas reliefs inside. It was a plan that was simple, inexpensive, and could be implemented in a hurry.

Planning: When, Where, How Late

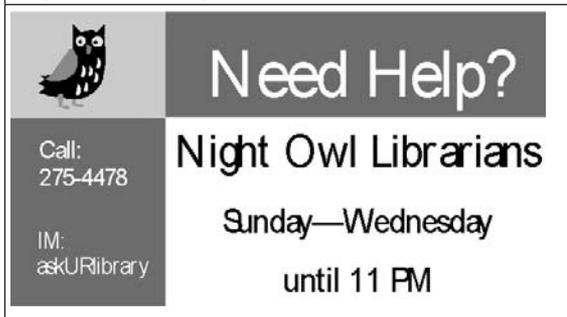
Planning took only a couple of meetings and a small flurry of e-mail. The pilot Night Owl project

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would consist of librarians staying until eleven on Sunday through Wednesday nights. Experience and data indicated that gate counts in the library were too low to warrant staying late Thursday through Saturday nights. Both the main and science and engineering libraries participated. In addition to our physical presence, all of our publicity included the reference desk phone number and an IM screen name (askURlibrary), in case students preferred those methods of communication.

We determined to run the pilot for two weeks—the last week of March and the first week of April—the tenth and eleventh weeks, respectively, of our fifteen-week semester. Students arrived back from spring break the week before our first set of late nights. We knew that several classes would have paper deadlines approaching in that period and hoped that our intensive flyer campaign would make an impression in the week prior to Night Owl Librarian launch.

Figure 3.1. Night Owl table tent



Publicity

It is a standard marketing concept that it takes at least five impressions to fix a product or name in consumers' consciousness. The one drawback to our schedule was that there probably was not sufficient time to advertise the new service to students. We did our best with the time available, and the materials devised by our reference department assistant, Diana Luce, certainly scored high on the "cute yet classy" scale (Figs. 3.1, 3.2). Using the basic owl design elements, she created flyers, signs to post

Figure 3.2. Night Owl advertisement

in the book stacks, table tents, and name badges. Hundreds of copies of the flyers were distributed to the residence assistants in all the dormitories and posted in the student center. Seemingly every level surface in both libraries got a table tent, and signs were posted throughout the book stack areas in both buildings. The flyer also worked perfectly as camera-ready copy for an ad in the student newspaper; one of the few identifiable expenses for the whole project was the \$60 we paid for a 1/8-page ad. We also asked the editor of the student paper if the paper would be interested in running a feature story about the new service, a broad hint that was graciously received and promptly followed up on. The write-up was excellent: accurate and helpful. Unfortunately, both the ad and the story appeared in the March 30 issue of the paper, in between the two Night Owl sessions. It was not optimal, but at least it had immediacy.

Outcomes of the Pilot and Subsequent Sessions

After all our preparation and efforts at publicity, the experience of working during the later shifts

Session	Date	Sundays 4 hrs	Mondays 2 hrs	Tuesdays 2 hrs	Wednesdays 2 hrs
Initial Pilot	Week of March 26	2	2	1	.5
	Week of April 2	2.25	2	2.5	1
Unofficial add-on	Week of April 23	3.3	0	–	–
	Week of April 30	1.3	2	2	1.5
Fall '06 Re-run, Sunday/Monday only	Week of Nov. 19	2.75	1.5		
	Week of Nov. 26	Holiday	4		
	Week of Dec. 3	3.75	4		
	Week of Dec. 10	4	5		

turned out to be similar to our regular service hours. Students did not approach us because they had seen our signs, table tents, and so on or read the article in the student newspaper. They approached us because they happened to have a need, and we happened to be there, just as during regular reference hours. We did provide help to several people. The question that lingers for us (and that applies to all the subsequent times we have been Night Owls) is, Did we reach *different* people than we do during our regular hours? Because we did not quiz each student we worked with, we do not have an answer to that question.

The number of questions the desk fielded per hour is given in Table 3.1. It would not be appropriate to apply any sort of statistical analysis to these numbers, but we can at least say with some confidence that Sundays are a good night to be on duty into the later hours, whereas Wednesdays are not. Mondays and Tuesdays are mixed; they do not provide a discernable pattern. The amount of traffic we received during the two weeks of the pilot run of the Night Owls was enough, however, to make us respond positively to students' suggestions that we run the service again at the end of the term.

Sunday 4/23/06	Sunday 4/30/06	Monday 5/1/06	Tuesday 5/2/06	Wednesday 5/3/06
1.4	1.6	4.16	3	3.8

That period, dubbed “Unofficial add-on” in Table 3.1, was an almost completely ad hoc effort. It occurred in the fourteenth and fifteenth weeks of the semester and only on nights we were able to recruit volunteers—thus the irregularity in the nights and data. We did not do any publicity, not even table tents in the library. What does make these data interesting is that we have usage statistics for our regular working hours (9 A.M. to 9 P.M.) for the same days (Table 3.2). With them, we see an interesting jump in activity during the extended reference hours on Sunday, April 23: questions per hour during the day had averaged only 1.4, but from 7 to 11 P.M. we were helping an average of 3.3 people per hour. The same was not true for the next Sunday, however, and during the final days leading up to the end of classes the number of people seeking us out during the day was consistently higher than during our late night hours.

The fall 2006 Night Owls appeared with much less fanfare but far greater success, if we measure success by level of activity. The publicity consisted of flyers posted around campus, along with table tents throughout the main library, and having our icon (the owl) and announcement appear in the news section of the library homepage. In this round, librarians staffed the reference desk until eleven only on Sunday and Monday nights, for the

last four weeks of the semester (weeks 12–15). We started the weekend before Thanksgiving (November 19) and continued until December 11, with the exception of the Sunday of Thanksgiving weekend. As noted in the “Fall ’06 Re-run” section of Table 3.1, the busiest nights were the last two nights, the last week of the semester.

In general, this most recent iteration of the project showed more activity than any of the previous sessions, with the one anomaly of the third Monday night. The last two nights, representing the beginning of the last week of the semester, were our busiest yet. With our latest experiences, we think we may have found the right days and timing in the semester: Sundays and Mondays of the last four weeks of the semester. In all, our results are definitely enough to make us keep offering the Night Owl service.

Conclusion

Hindsight is, of course, always 20–20. Perhaps if we had started our advertising blitz before spring break, more students would have deliberately sought us out rather than find us by serendipity. But can we be sure that students would remember us after a week in the sun? We should not flatter ourselves by believing that students are thinking about librarians much of the time, if at all, and certainly not over break. Funding for one more round of the ad might have been helpful as well. On the other hand, academia does not handle on-again/off-again services very well. Moreover, neither students nor faculty are big on forward planning; they simply need you when they need you. So timing is everything. As it turned out in our pilot project, we did not hit the prime paper-writing time, despite our best efforts. To make up for this, we repeated our late nights during the last week of the semester, earning a moderate success.

In trying to decide the timing for the service, the most scientific method we discussed involved combing through every syllabus we could get our hands on, making a spreadsheet of paper due dates, and using that to determine the best weeks to run the service. Unfortunately, we have yet to do that analysis, and the best alternative seemed to be simply to try to cover smaller portions of more weeks at the end of the semester.

We have certainly learned that we do not need to keep the reference desk open all four nights. As noted above, the Night Owls appeared again in the fall 2006 semester, but just on Sunday and Monday nights. This reduced schedule helped because fewer volunteers were required (so we have fewer bleary-eyed librarians in the days following), which allowed us to offer the late-night service for several weeks rather than just two.

Sadly, even with the provision of free coffee and cookies during the pilot project, students at the science and engineering library remained stubbornly independent. Our Science Night Owls had only one encounter during the whole program, and they decided it did not make sense for them to offer the service again.

Finally, we learned that, although students are in constant touch with each other, their parents, and friends via instant messaging, our generic library IM name was not an effective way to reach them—or rather, for them to reach us. It got almost no use. What surprised us more was that the reference desk phone numbers got almost no use either. We know that people frequently get lost and confused in our stacks, and we thought they might welcome the idea of using their ever-present cell phones to call for help. But that did not happen either. In a way it is a positive: they are willing to come all the way back to the desk for the benefit of human assistance. However often it occurs, reference remains a social, person-to-person activity.

four. Library Design and Ethnography

Susan Gibbons and Nancy Fried Foster

In the very early stages of the Undergraduate Research Project it became evident that we would learn a great deal about the interplay of environments and physical facilities in the research and writing processes of students. Specifically, we saw an opportunity to learn more about where students like to study and why, with whom, and when. Consequently, three members of the project team formed a facilities subteam, which included other librarians and library staff whenever time and their schedules allowed. Initially, the subteam met weekly to coview student interviews, jointly analyze photographs, maps, and other artifacts, and share insights about the ways student research and writing are supported or constrained by libraries and other campus facilities. Our findings ranged from the expected to the surprising.

Impact of Library Facilities

We knew that a student's typical day started and ended later than the library staff's, but we were surprised to learn that there was almost a full twelve-hour difference between the beginning of a librarian's workday and when students generally begin their academic work. The main library opens at 8 A.M. and closes at 3 A.M.; the reference desk is open from 9 A.M. to 9 P.M. on weekdays, closing earlier on weekends. The students, however, settle into their research, writing, studying, and homework at around 10 P.M. and work very

late into the night. This "night owl" schedule results from a combination of constraints and choices. After attending classes, working one or more part-time jobs, and engaging in such extracurricular activities as the Debate Club and the Medieval Society, students have literally run out of daylight hours. Between the demands of their schedules and the tendency for young adults to stay up at night, students adopt flexible schedules that change on a daily basis, getting up early one day, getting up late the next, sleeping on weekends, and working until one or two in the morning most nights. How can a library fully support the learning and research needs of students if it closes its reference desk precisely when students finally approach it? This is a dilemma that all academic libraries must face in the coming years.

We also learned about the different "zones" in our libraries. In some rooms, such as our Messenger Periodical Reading Room, you can hear the proverbial pin drop, even when full to capacity with 144 students. The reference area, in contrast, has a constant buzz and murmur. Level 500m in the stacks is quiet, but Level 300 is quite the party floor. Level A, to the left of the elevators, is for quiet, individual study, but group study can always be found nearby, to the right of the elevators. These zones are neither determined nor enforced by the library staff. Rather, the students develop and enforce them. Oldtim-

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ers teach newcomers the established protocols through an occasional verbal warning, but most students tell us that they learned the rules as freshmen when upperclassmen gave them “the stare,” a scowl or glare that communicates “be quiet!” Scores of signs reminding students to be quiet are not nearly as effective as one disapproving stare from a fellow student.

Through a variety of information-gathering techniques, we confirmed many of our hunches about student use of library space. For example, we put flipcharts out in public areas of the libraries with the following questions written on top: “Why do you like to come here? What is missing?” The thirty-eight responses students scrawled on the flipchart paper reiterated the need for additional power outlets throughout the building and better lighting in certain areas. The atmosphere, people, and quiet study areas were the most common answers to why the students liked to come to the libraries.

On the basis of these early insights, we made some changes and tried out some new ideas. For example, the Night Owl service, described in Chapter 3, is an attempt to address the time differences between the students’ activity and the libraries’ reference service hours. In addition, we created a new webpage that indicates the location of good study spaces within the main library.¹ The spaces are arranged by the “zones” that we discovered in the building: “Quiet,” “Collaborative,” and “Comfy.” The webpage also identifies the locations of electrical outlets. Student comments on the flipchart suggested the need for stand-up, quick-use computers, where students could easily check their e-mail or look up a call number in the catalog. Consequently, we added three stand-up workstations near the main entrance of the stack tower.

The greatest impact of the Undergraduate Research Project on library facilities came in the second year of the project, which coincided

with the initiation of a \$5 million renovation of the east wing of Rush Rhees Library, the main humanities and social sciences library. Generously funded by the Gleason Foundation, the renovation project had two core objectives: to convert approximately 23,000 square feet of backroom library staff space into a collaborative study space for students; and to build a grand staircase to link the university’s main student computer center, located on the ground floor of Rush Rhees Library, with the new collaborative study space to be built on the first floor.

Design Workshops

Although we had known for several years that the campus lacked appropriate spaces for group study and project collaboration, we had not known how to construct and outfit such a place. Now that our undergraduate project was learning so much about students and their work practices, the facilities subteam saw an opportunity to assist in the design of the space by bringing student perspectives and a student voice into the process. When we brought this idea to the dean of the libraries, he not only granted our wish but also upped the ante, charging us with finding ways to ensure that the space would meet the real, rather than the perceived, needs of students. Consequently, unlike a typical renovation project, we did not provide the architects with a formal space program that defined how the space was to be used, the numbers and types of seating, and so on. Instead, we asked the architects to work with us in finding ways to let the students drive the design.

We shied away from forming an official student renovation committee for fear that the formality might cause students to be narrow and too constrained in their thinking. Instead we crafted a more creative way to bring students into the design process, by inviting them to attend charrette-style workshops. A charrette is a technique in which stakeholders help to draft solutions to a design problem. In our

case, the students designed ideal library spaces. Specifically, they were given a large poster-board, markers, pencils, sticky notes, and other supplies and asked to respond to the following scenario:

Imagine that the library has a big, new, empty space—about the size of Douglass Dining Center—and they ask YOU to design it. You can put up walls or not have walls. You can buy furniture, hire staff, have the amenities and comforts that you want. It will be part of the library and it will be your place to use the library.

So you design the space and overnight it is built. It is exactly the way you wanted it to be and you love it and want to go there a lot. Show us what it looks like.

We e-mailed several of the students involved in the Undergraduate Research Project to ask for twenty minutes of their time in exchange for some food, beverages, and \$5. A few students showed up as a result of the e-mail, but we were far more successful in soliciting volunteers by simply putting up signs that read “\$5 and Free Food for 20 Minutes of Your Time, This Way ➔.” By the end of the two-hour period, we had nineteen fascinating designs by an unexpectedly diverse cross section of our student body (Figs. 4.1a and 4.1b).

Many of the designs had “creative” elements, including massage tables, fountains, gardens, and game tables, which was evidence to us that the students felt comfortable enough with the exercise to have fun with it and be imaginative. Still, in spite of the individual quirks, several common elements quickly surfaced. Nearly three-quarters of the drawings included “comfy” areas with such elements as fireplaces, sofas, beanbags, and ottomans. Fourteen drawings had group study areas that incorporated

whiteboards, conference tables, and partitions or other structures to provide some level of privacy or sound dampening. Students sought support for their computer-based work, varying from actual computer workstations to strong wireless signals and *lots* of power outlets for their laptops. We could also see many windows, food sources, and even traditional library materials such as books and magazines scattered throughout the designs.

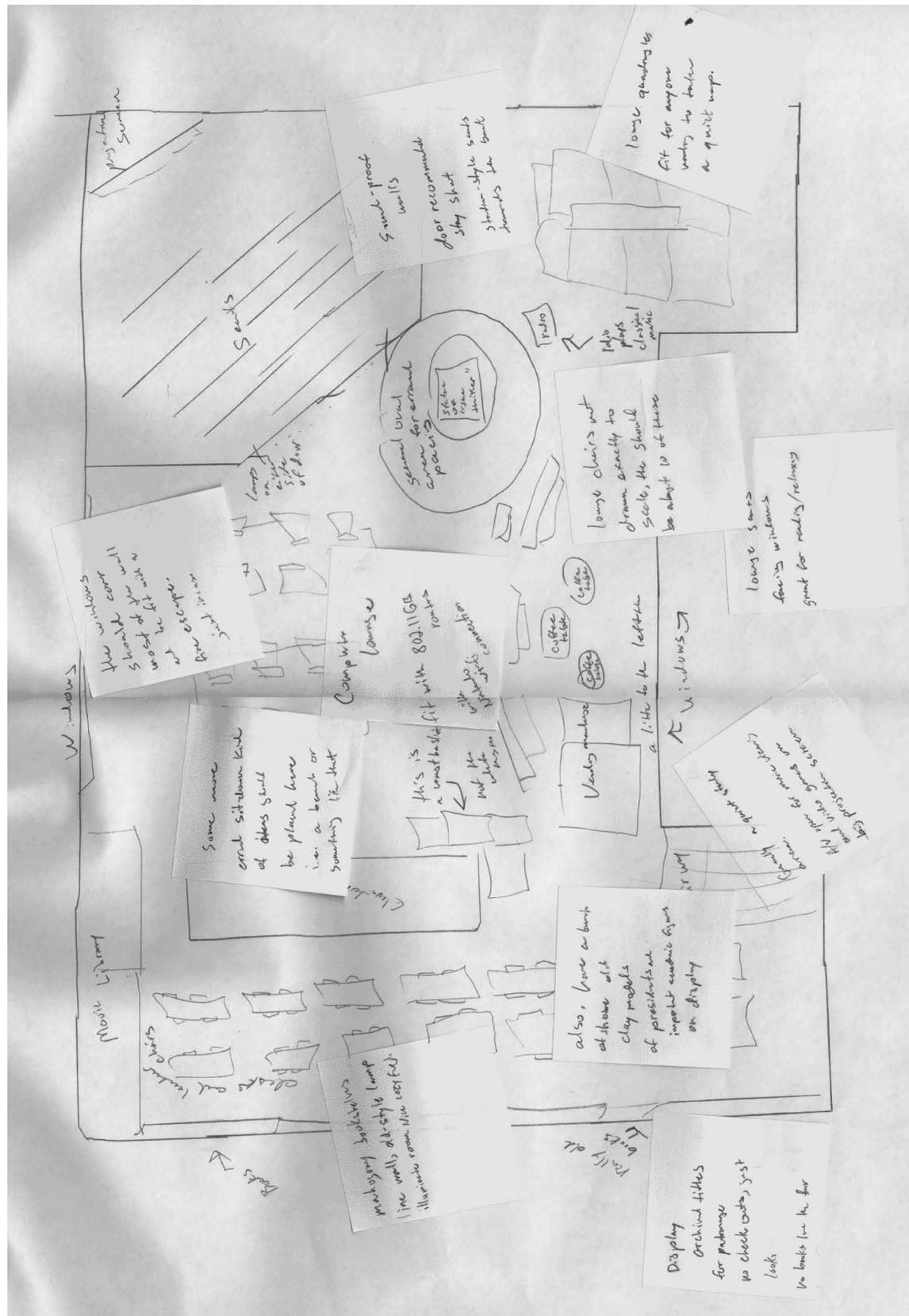
When all of the designs were distilled into a composite, we came away with five top findings. The first was the need for *flexibility*. Students like spaces that meet a variety of needs, and they want to move easily among these spaces. Most important among these spaces are group study areas, spaces to relax, individual study spaces, a café, a computer area, and media viewing areas.

Second, students want spaces that provide *comfort* and have a family room kind of feel. The Rush Rhees Library has an abundance of formal, straight-back chairs and massive wooden tables but a paucity of places to curl up with a good book. For our students, comfort includes easy access to coffee and food, natural light, and an environment with soothing textures, sounds, and great warmth. Moreover, the ideal space should support sitting, slouching, putting one’s feet up, and lying down.

The third finding is the importance of *technology and tools* and their intuitive integration into the space. This includes high-end technology such as media players, Smart Boards, and plasma screens as well as low-tech items including staplers, power outlets, and a three-hole punch.

A fourth element students put into the space is *staff support*. Though only a few students drew a reference or information desk in their designs, a staff presence is commonly associated with food services and to “check things out,” ranging from books to study rooms to staplers.

Figure 4.1b. Student design of ideal library space



Students rarely make distinctions between the types of staff needed in the library. Instead, they include a generic staff person who is expected to provide reference assistance, check out materials, answer IT questions, and brew a great latte.

The fifth and final part of the composite is *resources*, and it is here that we are able to see some elements of a traditional academic library. Students included library materials in their designs, ranging from academic and reference books to leisure magazines and DVDs.

Armed with these findings, Susan Gibbons, a member of the facilities subteam, sat in on the interviews of potential architectural firms. The firm of Ayers/Saint/Gross of Baltimore was selected in part because it not only appreciated our desire for a student-centered process but, through a subcontract with furniture company Herman Miller, brought a new methodology to the process, called Future Pull. This is a way to poll customer representatives to identify the preeminent values driving the design of the space. Unfortunately, the Future Pull workshop could not be done with students because of timing. However, both Susan Gibbons and Nancy Fried Foster, the project's lead anthropologist, were able to represent student viewpoints in the exercise through the information gleaned from the initial student design charrette.

Led by Lori Gee of Herman Miller, the library's renovation team, architects from Ayers/Saint/Gross, and key university personnel envisaged a future several years after the completion of the renovation. We were asked to imagine that the library renovation was a great success and to articulate some of the elements that contributed to that success. After we developed a list of sixteen design elements—including comfort, intellectual stimulation, and great acoustics—we used personal response devices to rank each of the sixteen elements, as follows:

1. Integrated tools (seamless integration of high- and low-tech tools into the space)
2. Intellectually stimulating
3. Intuitive
4. Comfortable
5. Hub (a social and academic crossroads on campus)
6. Zones (clearly defined spaces within the larger space)
7. Rebootable (students can take temporary ownership of the space and personalize it, but when finished it can easily be “re-booted” to support the needs of the next group of students)
8. Great lighting
9. Experimental (space is meant to undergo frequent iterations as our understanding of the students' needs change)
10. Open outward (visually open space, with easy, visual access to the external environment)
11. Open inward (open and intimate, welcoming to individuals as well as groups)
12. Great acoustics
13. Memorable
14. Democratic (versus hierarchical. All are equally welcomed into the space)
14. Timeless
16. Unique

Furniture Design

Using the initial student findings and the results of the Future Pull workshop, the architects began designing our space. We quickly came to realize that what we were creating was just a shell, an open space of some 23,000 square feet. It was the flexibility of the space, the sound level, the lighting, and the furniture that we were going to put into the space that would make this a successful project.

Once we determined the placement of the staircase and the flow of traffic through the space, the architects asked the libraries' renova-

tion team to do a simple “paper doll” exercise. The floor plan of the space was reproduced on large posterboards, and paper cutouts of different seating types, produced to scale, were provided. In groups of two or three people, we laid out the furniture in the space. Across the four designs, there was a great deal of similarity. However, cognizant that we needed student input, we asked the architects to hold off on any further furniture planning until we could gather student input.

We quickly geared up for a second design charrette with students. This time, we had two of our student workers recruit students randomly near the coffee cart in the Rush Rhees Library and in the student union. We invited students into the actual space and encouraged them to walk around and familiarize themselves with it. Then we gave them a plan of the space and a wide selection of furniture cutouts made to scale, along with markers, sticky notes, scissors, and glue. We told students that we

Figure 4.2a. Example of a student’s furniture layout

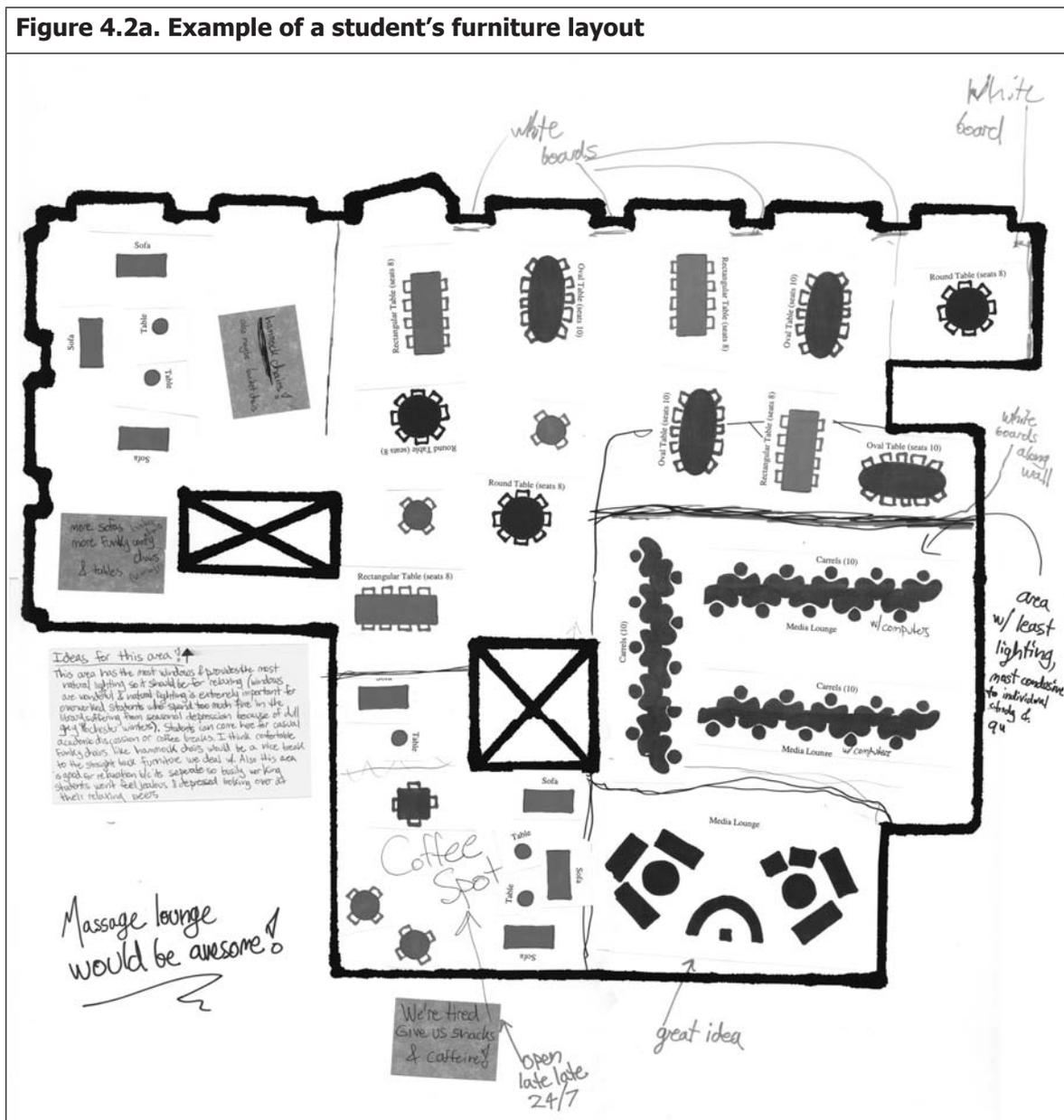
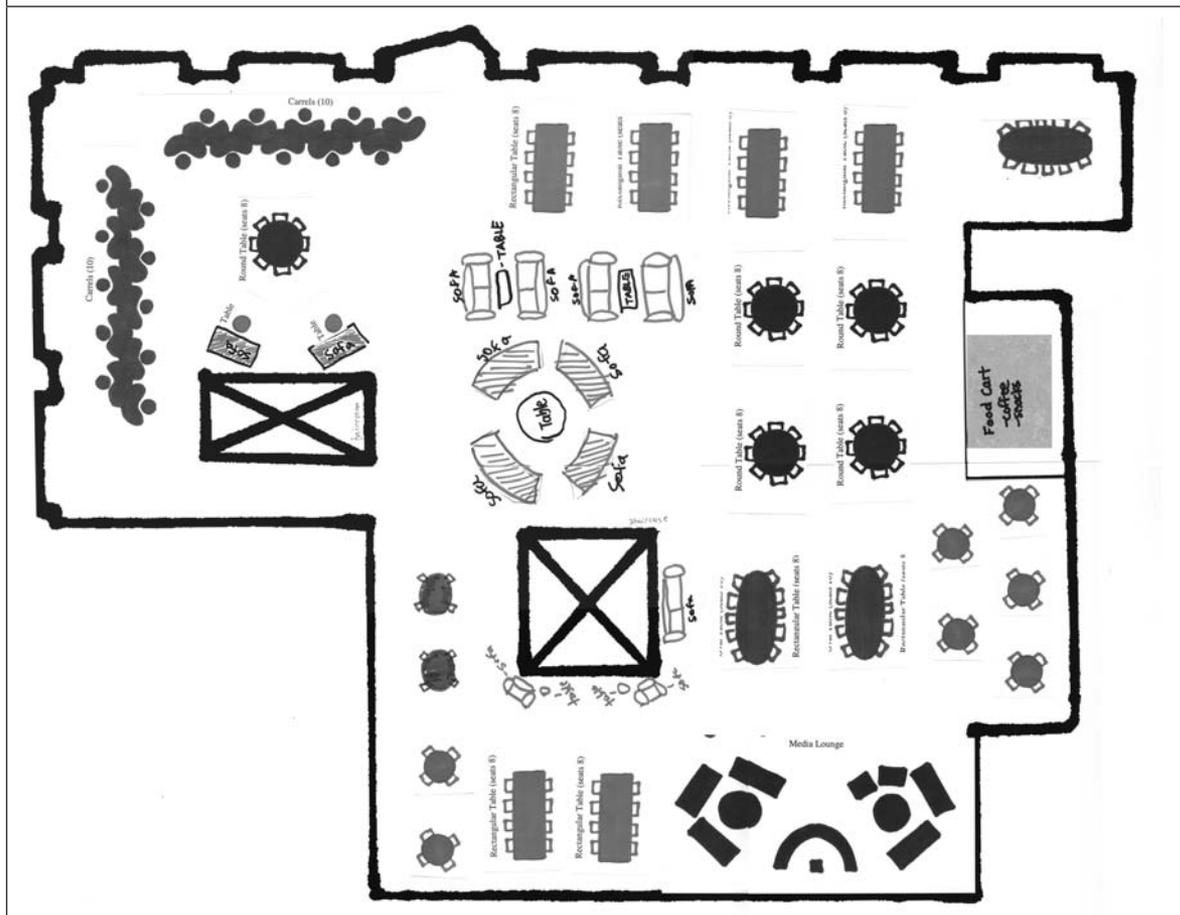


Figure 4.2c. Example of a student's furniture layout

have simply gotten it all wrong! For example, four large, floor-to-ceiling windows will be added to the space, which currently has very little natural lighting. The renovation team had placed comfy armchairs and couches in front of those windows, imagining students curling up in the sunlight, reading their texts. The students, however, uniformly placed eight-seater tables in front of those windows. When we asked them about this placement, we learned that those large tables were desirable study locations because they provided plenty of space to spread out with one's laptop, textbooks, notebooks, beverages, and so on and be joined by one or two friends who are doing the same. Because students imagined that they would spend most of their time writing, researching, and studying at these tables, they wanted them in the prime

location—in front of the large windows. We also learned that students did not view these eight-seater tables as seating for eight students. Rather, they expected that no more than four or five students would be at any table, and this would allow for plenty of working space.

We would have made a second mistake had we gone with the renovation team's design by excluding quiet, individual study areas from the space. The Rush Rhees Library has literally hundreds of seats designed for quiet, individual study, and we assumed that they were more than enough; consequently we had focused on supporting group study in the renovated space. However, the student designs made it clear that in addition to group study spaces they felt the library needed additional quiet study areas. These were represented in the student designs

with comfy seating and wall partitions. Just to ensure that we got the message, the students added notions to the designs including “really quiet study room,” “area w/least lighting, most conducive to individual study & quietest area,” and “comfortable, quiet area.” Using everything this exercise taught us about student work practices and space use, we created a composite to share with the architects, and it became the starting point for floor plan.

Conclusion

The design charrettes taught us two important lessons. One is that gathering student input need not be a burdensome, time-consuming process. Each design workshop lasted for two hours and required approximately two hours of prep work and another four hours for analysis. The cost for each, beyond staff time, was around \$100 in student payments and approximately \$50 in supplies and snacks. Recruiting participants took

little more than a few signs and an hour of student worker time. Going forward, we have learned that the logistics of gathering student input is far easier than we imagined and should never be an impediment.

The second lesson reinforced what we have learned throughout the Undergraduate Research Project, which is that we, as librarians, cannot assume we know how our students do their academic work or what they need. Over and over again, our assumptions have been proven wrong; these design workshops provide just another example. Had we based the design of the space on our assumptions about students, we would now be building a \$5 million space which, though aesthetically pleasing, would not be nearly so useful to students as the one they have helped us design. Instead, our students—and our generous donors—can look forward to the realization of plans crafted through a creative and collaborative process.

Note

1. <http://www.library.rochester.edu/index.cfm?PAGE=3469>.

five. Dream Catcher: Capturing Student-Inspired Ideas for the Libraries' Web site

Jane McCleneghan Smith and Katie Clark

From the start, the Undergraduate Research Project has had three distinct lines of inquiry: the interplay of the libraries' services; facilities; and digital presence with the academic work of students. The focus on the libraries' digital presence built on our earlier study of how faculty find, use, and produce gray literature (Foster and Gibbons 2005). Just as the data gleaned from the faculty work-practice study had informed design enhancements of our institutional repository, we hoped that the findings from the current undergraduate project would inspire innovative uses of the libraries' virtual spaces and services.

In this chapter we focus specifically on two participatory design workshops conducted by the project's digital initiatives subteam. In the first one, students were asked to build a library Web site from the ground up. In the second workshop, students redesigned our current library Web site to fit their ideal. As we envisioned it, our libraries' Web site, like the one of Lakota legend, would be a dream catcher for our students' best ideas and, combined with our own, would help our undergraduates reach their academic goals and scholarly potential.

Participatory Design: The Workshops

A traditional Web design approach involves limited and late user input, which is typically solicited after a prototype has been built. In contrast, the River Campus Libraries employ a participatory de-

sign process, which brings the users into the design process much earlier—in fact from the very beginning.¹ The first phase of our participatory design process is discovery research. This step helps us go beyond our preconceived ideas of what users should need or might need to discover how users really work, what works for them currently, what they lack, and where they are frustrated. Once we have developed a concept of what we could build that would really benefit users, we go through cycles of engineering, usability testing, and refinement before putting the innovation, such as a new Web service, into use. The Undergraduate Research Project provided us with an opportunity to obtain more user data upon which to base future redesigns of the libraries' Web site.

We knew that undergraduate students used the Web, and we knew they used it in their academic work. What we lacked, however, was general knowledge of how the library fit into their use of the Web, and, specifically, how students used the library Web site. Moreover, we needed to know how Web services could help students do their academic work. Consequently, we designed the workshops to collect information about students' Web usage preferences without restricting them to currently available library options. The workshops allowed students to design their ideal library homepage while permitting us a glimpse into the students' online world.

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Table 5.1 Timetable for First Design Workshop

Time	Type	Content
8:00–8:30	Individuals > small groups	Students fill out brief questionnaire when they arrive and then break into groups of three as they finish Create an electronic device Pizza and snacks as desired
8:30–9:00	Full group	Introductions (“coolest place you’ve been”) Debrief
9:00–9:15	Full group	Brainstorming what to put on Web site
9:15–9:45	Small groups	Working on Web sites
9:45–10:00	Full group	Share
10:00–10:15	Full group	Conclude and pay
10:15–10:30		Wiggle room

We conducted two Web design workshops, one in the fall of 2005 and another in the spring of 2006. With each, the first order of business was to select the students to be invited. Drawing on a pool of participants from previous Undergraduate Research Project activities, we invited students by e-mail to attend one of the workshops. Sessions were planned for weekday evenings because few classes are scheduled then and our late-night visits to the residence halls and mapping diaries (see Chapter 7) showed us that students’ energy levels would be high at a late-evening workshop. On the day of the second workshop, we recruited additional students by putting a sign on the reference desk offering free pizza and \$15.00 in exchange for two hours of their time (see Table 5.1 for workshop timetable).

We reserved venues for the workshops in advance and chose them with the activities of the sessions in mind. The first workshop was held in a library reading room with comfortable chairs and sofas and several long tables. The relaxed atmosphere of this room was perfect for a lively brainstorming session, and the tables were well suited to the drawing and construction activities. The second workshop was conducted in a smaller, more intimate library

conference room. This setting was conducive to the online coviewing activities that preceded the principle redesign exercise.

Food is always a useful incentive for student participation. We purchased assorted edibles and beverages ahead of time and ordered pizza immediately before the events. Other than refreshments, the only other supplies needed were a camcorder and tripod, a laptop computer, a projector, posterboard, markers and pens, sticky notes, tape, and scissors.

Each workshop consisted of four activities: a questionnaire to help us understand the participants’ view of themselves and their relationship with the library; a warm-up exercise; a brainstorming session; and the main exercise. The main exercise for the first workshop was to have the students design their ideal library homepage from scratch, without looking at our current homepage. In the second workshop, students first reviewed the libraries’ existing homepage and then based an ideal homepage on the model we provided.

Workshop One

Warm-Up Exercise

We began each workshop with a warm-up exercise designed to get the students to think creatively and feel comfortable in the workshop

setting. In the first workshop we asked two groups of three students:

If you could have only one portable electronic device that did everything you wanted it to do, and you could magically make it small and light even while including everything you wanted, what would it be like?

The first group built an “Everything Machine.” The students taped pieces of poster-board together to form a large box with four “screens.” The four sides of the gadget—labeled School Supplies, Entertainment, Personal Health, and Miscellaneous—contained physical, electronic, and digital objects. The Miscellaneous screen included a cell phone, PDA (with scheduler), and how-to and self-help books. The Entertainment screen included a music and DVD library and a cable TV connection.

A coffee machine, mirror, clock, toothpaste and toothbrush, and fold out bed(!) were included in the Personal Health screen. And last but not least, the School Supplies screen included a dictionary, thesaurus, language translator, stapler, tape, pens, and pencils. This fantasy device would be small enough to throw into a backpack. The students explained that the Everything Machine would be great for school because there would be no need to carry things like a dictionary or highlighters. The only thing it lacked was food, but, as the students pointed out, with the cell phone a food order was just a call away.

The second group designed a device that folded out like a flip phone, with gold stars representing different sets of functionalities: phone, calculator, calendar, camera, alarm clock, PC, television, TIVO, music, MP3 player, movies, lighter to make fire, thermometer, USB port, and Swiss army knife. Again, the device

Table 5.2. First Workshop Brainstorming, by Category

1. Connect to library resources including librarians	
	Online catalog (books, catalogues, articles, DVDs)
	Subject area search engines
	Find movies/DVDs
	Subject area librarian
	Virtual librarian
	Food delivery in library
	Online slide library
	Books sorted by class
	When you login a list of your classes pops up along with a list of useful books
	PDF copies of all books and articles so you never have to leave your dorm room
2. Connect to class material including professors	
	Links to professors' sites
	Audio of class lectures in single centralized location
	Paper help with professor controls
	Virtual office hours, online chat with professors
	Search by department
	Chat rooms for multiple subjects
	Study group message boards
	Links to tests

Table 5.2. First Workshop Brainstorming, by Category	
3. Class Supplies and Support	
	List of everyone in the class so you can set up study groups
	Upcoming assignments (calendar)
	Assignment sorter from online syllabi (what's due?)
	Recommendations
	Course history of student
	Course planner (e-mailed work)
	Facebook list of people who took class year before so you can talk to them about the first test
	Download option to PDA
	Folder to save PDFs of articles, etc.
	Highlight PDF articles
	Ability to make notes in PDF files
	Ability to search through PDF files for highlighted text, note, and keywords
	List of figures and photographs
	Paper help with professor controls
	Major builder
	List of university policies
	Books sorted by class
	Automatically print out reserve articles when the assignment is due
	Connection to someone who will answer your questions about writing or grammar
	Calculator
	Translator
	Help Web (literary terms) for subject matter
	Dictionary
	Instant bibliography
	Dictionary.com
	Writing guides, e.g., MLA, APA
	Specialized dictionaries, e.g., biology, art history
	Grammar link
	AIM with grammar help
4. Connect to people and entertainment	
	Facebook, AIM
	Connect to your music, your personal library
	Radio station
	TV and movie schedules
	Movies and DVDs
	Newspapers, e.g., New York Times
	Order drinks online
	Food delivery in the library
	Bored.com
	Meal plan status
	Horoscopes

they designed was only slightly larger than a cell phone and would be easy to carry anywhere.

The warm-up exercise yielded useful information. The students' ideal electronic devices designed to do "everything you want it to do" did just that. Both devices had more than just entertainment and social tools; they also included academic and work resources. Both groups designed devices with library and academic resources as well as access to entertainment media and the functionality to stay in touch with friends (cell phone, camera). They even made sure that the essentials, caffeine and food, were part of their ideal electronic devices.

Brainstorming

After the warm-up exercise, we asked the students to do some brainstorming. In this group activity, students came up with suggestions for anything they wanted to see on the library Web homepage. They wrote their ideas on sticky notes, which we later organized into four categories: library

resources, class materials, class supplies and support, and social and entertainment resources (see Table 5.2). Several items mentioned by the students are traditionally found on a library Web site, such as links to the online catalog and the capability to find books and articles. Many items, however, represented functionality and services that are absent from most library homepages. For example, they wanted to customize the library page so there were links not just to music but to *their* music. Another important element was food. The students were quite adamant that food (and caffeine in particular) should be available all the hours the library is open: "I need coffee, and deliver it to me in the library."

Another preference put forward was a single login to a list of their classes that they could sort by upcoming assignments. This included links to professors' Web sites and to online chat with their professors. They were also enthused about a tool that could create bibliographies, thereby saving them time, since it was "hard and tedious" to pull one together manually.

Table 5.3. First Workshop, Group One, Transcription of Webpage Design Drawing

ACADEMIC Lecture recordings Lecture notes Course history of students Links to professor sites Chat with professors Folders to store viewed PDF's Links to old tests with answers		RESOURCE ACADEMIC Translator Grammar link Books sorted by class Catalogues for music books, articles, etc. Links to newspaper Search engines Instant bibliography Dictionary Study group message board Calculator TI-89
	UPDATES This section would include upcoming assignment due dates and similar alerts.	
NONACADEMIC Music Games Other Web sites Weather	(OPTIONS) Download option Print option Personalization options	ADMINISTRATION Major builder Course listings School policies (Study abroad, Take 5) Meal plan status

Table 5.4. First Workshop, Group Two, Transcription of Webpage Design Drawing

You are looking for...	Other links	Welcome (NAME)
Databases	My Folder	Image of Rush Rhees Library from Quad
Books	www.facebook.com	(Click "Enter" at the door and image will change to interior of library in 3-D)
Articles	Class resources	
Webmail	Librarians	
Resources	University hours	
My schedule		
My access		
Web CT		
Course catalogue		
Professors		
Chat		
Music		
Google		
Customize		

social resources. In fact, only a small subset of the links then on the libraries' actual homepage—to the online catalog, articles databases, newspapers, prior semesters' tests, and course reserve materials—could be found in the students' designs. Noticeably absent were links to e-journals and subject guides (see Tables 5.3 and 5.4).

We came away from this first design workshop knowing that undergraduates do use some, but not all, of our library resources. These students wanted to have access to everything they use (for work and play) from a single page and not have to travel to different university Web sites to accomplish different tasks.

Main Exercise

At this point, one hour into the workshop, we were ready for the main exercise. After the list of brainstorming ideas had been gathered, we asked the students to design their ideal library webpage starting from scratch. We gave the students the following assignment:

Using the ideas we just discussed and any more ideas you have, design a new library Web site. Include everything you would want to help you do your schoolwork and everything that would make your life as a student better.

The two groups of students organized their large collection of sticky note links from the brainstorming session into categories on their new Web site. In designing their ideal library homepage from scratch, students did not design one that linked only to library resources. Rather, the students pulled in links to other university academic resources as well as to

Workshop Two

Warm-Up Exercise

The main purpose of the second design workshop was to ask seven students to redesign the libraries' current homepage. Here again we started with a warm-up exercise. This time we asked students to design their ideal Facebook page after coviewing and commenting on a live Facebook page.

The students shared the desire to be able to customize the Facebook site by arranging their friends, much as they do with their IM friends list, and create their own categories of friends: cool people, nerds, friends who always have food, stalkers, high school friends, friends with a car, and so on. But they wanted these categories to be private; they did not want anyone to see how they had arranged their friends.

Brainstorming

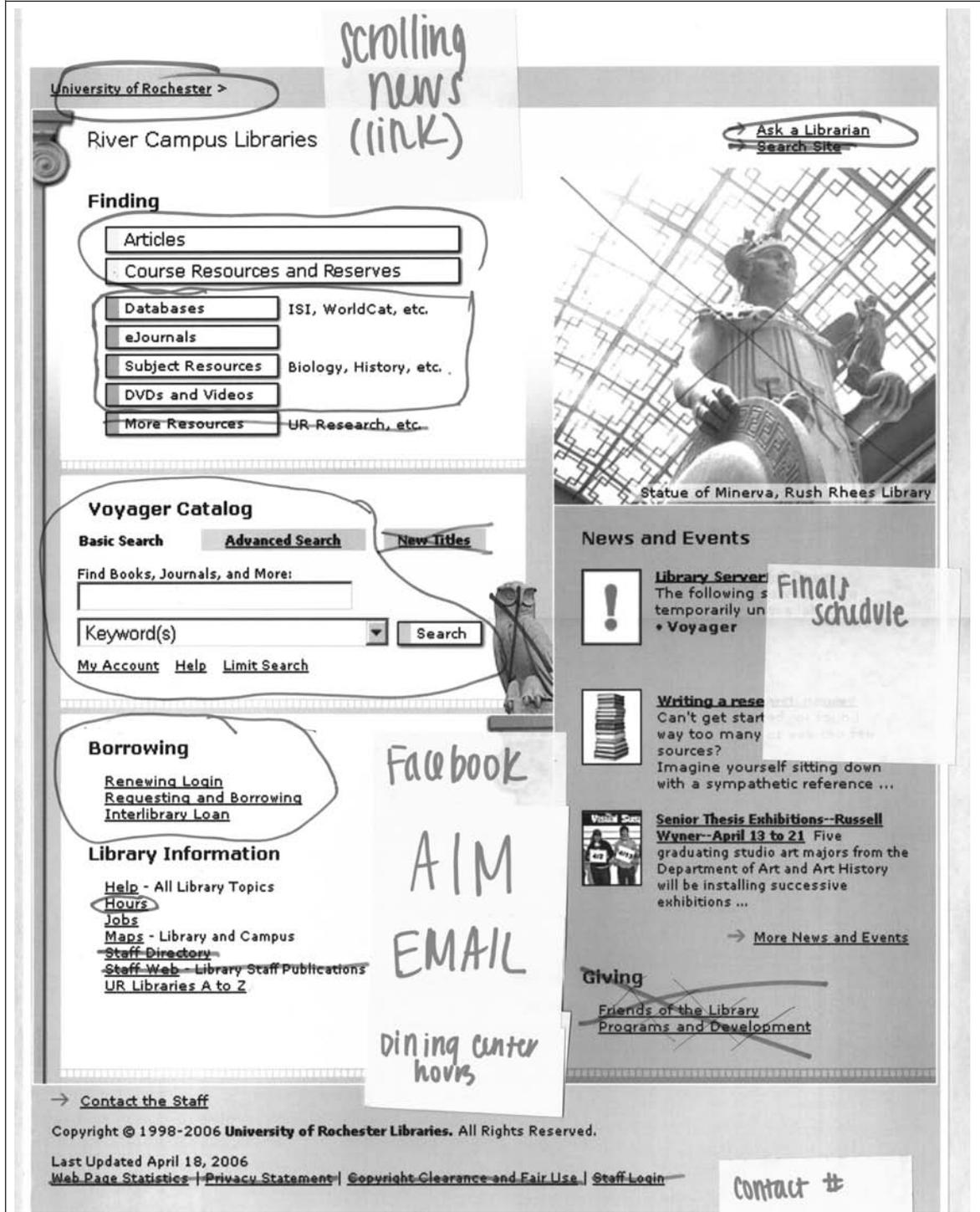
For the brainstorming segment of the second workshop, we asked the students to look at

posterboard mock-ups of our current homepage and do three things: cross off things they did not want, circle features they wanted to keep, and use sticky notes to add new things (Fig. 5.1). Using that as a basis, the students amended the

libraries' homepage so that it represented their ideal site.

We were pleasantly surprised at the number of different links and services students wanted to keep on the homepage, such as Course re-

Figure 5.1. Students' critique of libraries' homepage



sources (for reserve reading and prior exams); Databases; Find Articles (a federated search box); Look for books; Renew books; Recall books; Reserve a room; and Interlibrary loan.

It was equally useful to see the homepage elements the students had crossed off. As with many academic libraries, we had a static picture on our homepage. The students immediately drew a big line through the picture; they hated it. Many wanted images that changed frequently, like the rotation of pictures on our university's homepage. Others thought the picture should be functional or removable if they did not want it. They also drew a line through the New Titles link because it retrieved too many titles to look through. And they crossed out the More Resources link because they did not know what it meant.

These undergraduates had plenty of ideas for what to add to the homepage. They quickly moved from a library-only page to one that did everything they needed, including, but certainly not limited to, library activities. Among their additions were:

- Shopping cart to save sources (books and articles)
- Software to convert saved sources to a bibliography in their preferred format
- Toggle link to subject librarians' webpages that could be turned on or off depending on the subjects of the student's current semester classes
- Map of the book stacks, since many students see the stacks as intimidating and a deterrent to using the library
- Any links and favorites of one's personal choice

They also wanted to add several university-related links including the final exams schedule, links to professors' sites, directory of professors' office hours and contact information, and an audio library of lectures as a means to take notes from missed classes. The students

added links to social and entertainment activities, including live webcams, Facebook, AOL Instant Messenger, e-mail, scrolling news, and countdowns to Christmas, exams, and study breaks.

The students asked, "Where is the phone number of the library?" This was a huge surprise to us. We had made a deliberate decision not to include one on the homepage because we thought students primarily used e-mail and instant messaging to communicate. Obviously they *do* use e-mail and instant messaging, but most are never without a cell phone. They are just as likely to make a phone call to get the answer they need as they are to send an e-mail or text message.

Main Exercise

As the main exercise of the night, we asked participants to draw a new River Campus Libraries' homepage on a blank piece of paper using the mock-ups. Once again, students kept many of the current features on the libraries' homepage, especially those relating to reserves, the online catalog, and circulation. They also added new links relating to their schoolwork and entertainment and social interests. Some of the links were to already existing sites and services (e.g., translator sites, Facebook, dining center hours), but other ideas were purely imaginary (e.g., PDF versions of every book and journal).

Even more than at the first design workshop, we heard from students about how important it was to be able to personalize and customize the site. They wanted to be able to change the background colors and move items around on the page. They wanted to include a link to a subject librarian when they were working on a big research project and remove it when they were not. The Web site they designed ended up being all about "me," a site easily tailored to their personal needs and visual preferences.

Findings

Though the workshops were held six months apart and included different students, there were many common themes. In the first workshop, we asked the students to design a library homepage from scratch, without first looking at our current library homepage. In the second workshop, students first reviewed the existing library homepage and then designed their ideal site. The pages they designed in the two separate workshops were remarkably similar. Here is a synopsis of the main ideas:

1. Students chose to keep many of the links to existing library services. It was clear from these choices and the workshop discussions that the students did use the library Web site.

2. All participants placed additional links onto the library homepage. Some of these were to professors' Web sites and contact information and others were to departments on campus, such as the registrar and dining services. Some were for entertainment and social purposes, including music, instant messaging, and a food delivery service.

3. It's all about me. We knew this issue was important to our professors from our previous faculty work-practice research (Foster and Gibbons 2005), so we should not have been surprised to discover that the same is true of our undergraduate students. It was especially evident in the second workshop that the ability to customize and personalize was a high priority for students. They wanted links to *their* professors, *their* courses, *their* grades, and *their* assignments, and *they* wanted to control everything. They sought to take links on and off depending on the semester or point within the semester. They wanted to add "whatever would make the Web site best for me." These students have already used customizable sites such as My Yahoo, and they carry their expectations for this functionality to the library Web site.

4. In both workshops, what the students essentially designed was a portal. They want everything they need to be pulled together into a single place; it made the library resources more useful for them if they were also able to include other important resources. What they clearly did not want were information silos. Moreover, they did not want a generic undergraduate student portal, but one that they could customize and personalize.

Future Plans and Applications

We found that students do use online library resources and services, but that the library is just one small part of their total suite of resources. Through these workshops, we came to recognize "how the Library Web site is structured around the library and not around the students' far-reaching needs. In these design workshops, the library often appeared as a tool, but within the context of many needs and many tools" (Briden et al. 2007).

Our Web design workshops yielded brainstorming lists, artifacts, discussions, and drawings from which we hope to distill specifically articulated student needs and desires. This information will inform our work over the next year to redesign the library Web site.

We clearly saw that the students desired a portal, a single Web site that included library and academic resources, entertainment, social networking links, connections to faculty and their lectures, tools to manage their assignments and class work, and access to food delivery services. Consequently, building a student portal has become a high priority for the River Campus Libraries, which in the fall of 2006 began a partnership with University Information Technology to design a student portal that will include many of the personalized links and customizable elements undergraduates want.

We realize that many of our plans will take a long time to come to fruition. Still,

we wanted to implement some changes right away. Adding the library phone number to the homepage was quickly and easily done. The boring, static homepage photo is now a rotat-

ing gallery of library-centered images, many featuring students. Thus, with a couple of small steps, we were on our way to weaving student-inspired ideas into the libraries' Web presence.

Note

1. More information about the River Campus Libraries' participatory design process is available through David Lindahl and Brenda Reeb's LITA Regional Institute workshop, "User Centered Design: Design Process and Usability."

six. Photo Surveys: Eliciting More Than You Knew to Ask For

Judi Briden

How many words is a picture worth? In conducting our Undergraduate Research Project at the River Campus Libraries, we have found that words and pictures in combination yield much more information than either alone. During the project we used a variety of methods that combined capturing images and words: retrospective interviews, photo surveys, mapping diaries (see Chapter 7), and video-recorded dorm visits. This chapter focuses on our experience with photo surveys.

In previous research by the River Campus Libraries on faculty use of gray literature, one of the methods we used was work-practice study, which borrows from ethnographic methodology (Foster and Gibbons 2005). We met with faculty in their offices or labs—the places where they actually did their work. Interviewing and video-recording them in these contexts captured a varied texture of details from which we could learn about their environments. Faculty would point to books on their shelves, papers on their desks, and documents on their computer screens by way of illustration as they talked about their research. They showed us their computer desktops and performed some of their work processes for us. Because we were there, we were able to ask questions about what they were showing us as well as capture images for later review and analysis. Using work-practice study as a method contributed significantly to our understanding of what faculty did.

As a result of this experience, when we began the Undergraduate Research Project, team members knew they wanted to talk with and observe students in their dorms—places where they lived and worked. At the start of the project, however, we felt we did not know our students well enough to know how best to approach them about making dorm visits. Until we could figure that out, was there another way to “see” students’ environments through their own eyes?

Photo Survey

Some members of the project team were familiar with cultural probes from the work of Gaver et al. (1999), in which individuals were asked to reflect on and photograph their environments. Nancy Fried Foster, the lead anthropologist for the project, introduced us to the research done by visual sociologists, in particular the work of Douglas Harper (1984, 2001, 2006), whose photo-elicitation interview method provided a useful model. As Harper (1984, 21) describes it, “This method provides a way in which the interview can move from the concrete (as represented by the literal objects in the image) to the socially abstract (what the objects in the photograph mean to the individual being interviewed).”

Our project team decided to develop a protocol around the use of a disposable camera. We asked students who participated to take a series of photographs and then interviewed

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Figure 6.1. Camera with list of requested photo subjects attached



them about their pictures. We referred to this method as a “photo survey.” We hoped that data gathered by this method would suggest new questions and areas for further research. We also thought that using cameras might appeal to students and engage them in a manner that was different from other investigations conducted for the project.

The process was simple. We created a list of things we wanted students to photograph, purchased a one-time-use camera for each student, attached the list to the cameras, and asked students to return the cameras when they were finished (Fig. 6.1). We had the film developed and transferred to CD and then scheduled an interview with each student to discuss his/her photographs. The interviews were audio-recorded and transcribed, so that the photographs and interviews could be reviewed and analyzed together by project team members.

In developing the list of photo requests, we were concerned to keep instructions to a minimum, allowing broad interpretation by each student as to what to photograph. This was a common thread throughout our research—asking open-ended questions that did not imply specific responses. In our planning, Foster characterized photo surveys as “a way to discover the unexpected, create artifacts that can be used as a basis for discussion, and learn about differ-

ent parts of students’ lives we would not learn about through conversation.”

So, what did we want them to photograph? The project subteams (reference outreach, facilities, and digital) brainstormed about what each would like to see from a student’s perspective. Our ideas were prompted by questions we had after conducting a few retrospective interviews about research paper assignments, curiosity about students’ dorm environments, and our interest in how they managed their academic

responsibilities. The proposed photo requests were compiled and reduced to a single list of twenty:

1. The computer you use in the library, showing its surroundings
 2. All the stuff you take to class
 3. Something that you would call “high tech”
 4. Something really weird
 5. One picture of the libraries to show to a new freshman
 6. Your favorite place to study
 7. The place you keep your books
 8. A person, any person
 9. Your favorite person or people to study with
 10. Something you’ve noticed that you think others don’t notice
 11. Your communication devices
 12. A picture of your dorm room, showing your computer
 13. Another view of your dorm room
 14. How you manage your time or keep track of your work
 15. Your favorite part of the day
 16. The tools you use for writing assignments
 17. The things you always carry with you
 18. A place in the library where you feel lost
 19. Something you can’t live without
 20. The night before a big assignment is due
- The rest...whatever you want!

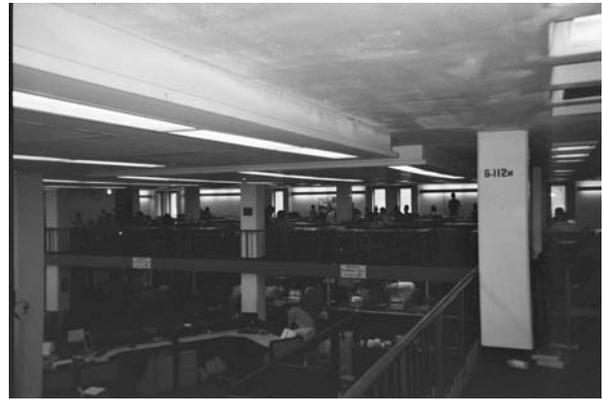
There were more than twenty exposures available in each camera; we wanted to reserve some for student serendipity. We also wanted students to consider this “assignment” fun, so some items on the list were meant to be intriguing—4, 8, 10, 15, and 19, for example.

Eight students participated by taking photographs in late 2004 and the first half of 2005. They were recruited individually—some by asking students who were already participating to refer their friends. They completed the assignment at different times, and we paid each student a small amount. As the student returned his/her camera, we scheduled a follow-up interview, allowing sufficient time to develop the images and transfer them to CD. In the interview, which was audio-recorded, Foster and the student viewed the images on a computer screen and talked about them. Viewing images on the computer made it easier to talk about what was depicted and was more comfortable than huddling over a snapshot. Often, after the student described what the photo represented and was prompted for amplification, Foster would then comment in an open way about something else in the picture or expand on what the student had said by asking about the same thing in other contexts. Often, it was this gentle, follow-up probing,

Figure 6.2. Student A’s “favorite place to study”



Figure 6.3. Student B’s “favorite place to study”



rather than the initial question, that elicited the greatest detail. As an example, the following is an excerpt from an interview about a picture showing “your favorite place to study”:

Foster: And this is “your favorite place to study”...

Student A: This is our study lounge; there is where I study for all my exams. I only have exams in one class, but that’s where I study for them.

Foster: And this is on the first floor of [your dorm]? Are you usually in there alone?

Student: No, when I’m studying for science I have my friend [name] and usually when we do work in here, we work together because it’s better to have somebody in there with you because you can talk and take a break. . .

Foster: Are there times when there are many people in there studying many different things?

Student: Not really, because usually when somebody goes in there, if there’s people

Figure 6.4. "A place in the library where a student feels lost"



in there, they won't stay in there, they'll leave.

Foster: So it's sort of like an unwritten rule that if there's some people in there studying together, it's sort of taken?

Student: Well yeah, because you don't want to be in there with people talking, you probably won't go in if there's other people. And also people have different times when they're working, and we like to work between 8 and 1, and usually other people go to the library or they'll work in the afternoon.

Foster: You're talking about 8 A.M.?

Student: No, 8 P.M.

Foster: At that hour, most people are doing something else?

Student: They're usually in the library. Most of our hall likes to work in [the main campus computing center in same building as the library]. Or they'll be in their room or dinner or watching something.

Foster: So, as it works out, you and your friend are pretty much the ones who want this space at that time. Have you ever had to go somewhere else?

Student: No, we've never had to go somewhere else.

From an interview with a different student:

Student B: ...that was my favorite place to study. Or, not my favorite place to study, well I guess that's what the question is called. I wouldn't call it my favorite place to study but I took a picture of the upstairs level of [the main campus computing center in same building as the library] because I like the atmosphere there. It's more of a group study atmosphere, it's more casual, you're allowed to chat. I studied a few times in the Great Hall [in the library] in the quiet, respectful places, but I don't think I'm as constructive in those places. My mind ends up wandering.

Foster: When it's quiet your mind wanders, because you're distracted by the quiet?

Student: Yeah, or I end up with music of my own stuck in my head sometimes, or in any case, unless I'm really into what I'm reading I'm not going to be able to do it in a quiet setting. So for a lot of studying, especially if it's something I can study group-oriented, I do it here.

In these two excerpts, students are expressing very different needs. One wants a quiet place to study, and the other cannot study if it is too quiet. The entire project reinforced

for us the importance of understanding and accommodating the diverse needs of our students.

One student's photograph and discussion about "a place in the library where you feel lost" made us wince:

Student:... I am still having a hard time negotiating the library. So, whenever I get there, I am trying to figure out where I am going. So I just stare at this list [guide to library stacks, posted by every elevator] and figure out where I have to go.... I feel very lost. Where am I going? Am I even at the right elevator?

Foster: You might *feel* lost when you are standing here—have you ever actually *gotten* lost?

Student: Yes, I got lost in the stacks, and I had to find somebody else, get them to help me get out because I didn't know where I was. It was very upsetting. I am usually pretty good with landmarks, so if I get myself somewhere I can usually get myself back. This time I had been meandering, and I pop out of the stacks and there was no one and no exit signs. This is the ultimate worst freshman moment.

Foster: So somebody just sort of appeared?

Student: No, I just wandered until I found someone. And I was like, "Hi, sorry to bother you. You look like you're studying pretty hard, but I don't know where I am. And I don't know how to get out, and I have an appointment in fifteen minutes." They were like, "You're a freshman?" And I was like, "Yeah."

Like most large university libraries, ours is a complex environment. Over the years, we have looked for ways to improve signage and other aids to wayfinding. We currently use a variety of tactics including maps, contextual signs, inclusion in bibliographic instruction, help desk assistance, tours, and special events that attract students into the stacks. This student's experience reminds us that we need to be doing more.

The photographs taken by students of their rooms, desks, bookshelves, and computers were the most productive for eliciting details during the interviews. As we asked questions about what we could see in the images, we learned how students did their work and what they did for recreation and relaxation. We learned about social interactions with roommates and floor mates and friends. The many objects shown, and their juxtaposition, prompted us

Figure 6.5. Two students' photos of "a picture of your dorm room, showing your computer"



to ask questions we had not anticipated, but that turned out to be very informative. As well, these images helped us appreciate our students as individuals with different personalities, preferences, and unique environments. Figure 6.5 shows two of the many images we studied.

After each interview had been completed, team members met to coview photos and listen to the audio recording. Exposure to the data as a group contributed to our shared understanding and discussion of what we were seeing, how it related to data from our other investigations, what additional questions were raised but not answered by the interview, and what points we thought were most important to take away from the session. Further analyses were undertaken by team members during the course of the project—to look at details of students' rooms and computers for common or unique elements, to compare what different students carried to class, and to review the varied ways students kept track of their work. Throughout the project, we encountered data from different investigations that supported specific findings. Having disparate data inform a single conclusion reaffirmed for us the value of using different methods.

Lessons Learned

Photo surveys as a method worked quite well in eliciting useful data. Combining the visual and the oral provided us with more opportunities to question and learn. We did, however, encounter a few problems. We think that most of these problems could be reduced or eliminated in the future.

A camera's flash did not always work for every photograph. As a consequence, some images were too dark to show much detail. When this happened, students were sometimes able to say what the photographs were supposed to be and to recall what they were thinking when they took them.

Another problem was the time delay between a student taking his/her photos and the interview. A student might have forgotten, or at least be vague about, why s/he took a particular shot. Overall, however, students were articulate about most of their photos. And since the images prompted questions, they were still useful for eliciting information.

A third problem we encountered was difficulty matching a student's photos with items on the list of photo requests. When we created the list, by numbering them we implied a specific sequence. At first, we actually asked students to take pictures in the same order as the list. In preparing the list, however, we failed to evaluate the convenience of this sequence for the students. When they were in their rooms, it might be easier to take 2, 7, 11–14, and 16–17 together. Items 1, 5, and 18 might be easier to photograph in a single visit to the library. Once we realized this, we replaced the numbers on the list with blank lines and asked students to fill in the number of each photograph as they took it. This was an improvement, but it was still difficult at times to match the list with the sequence of images on the CD. Further, when the project team reviewed the interviews later, we had to coordinate recorded interview segments, images, and list.

Findings

What did we learn from the photo surveys? Some findings provided answers to specific questions we were asking, some gave us hints that were confirmed through other investigations, and others were completely unexpected. We were surprised to discover how willing students were to show us and tell us about their lives. Their comfort reduced our anxiety about asking them to take part in the research. As a consequence, it was easier to pursue other questions and to develop different protocols. At the same time, we became more sensitive about protecting the confidentiality of

Figure 6.6. Student's photo of "how you manage your time or keep track of your work"



these students who were so open with us, even if they were unconcerned on their own behalf.

Having already conducted several retrospective interviews, we suspected that students were quite busy and used a variety of techniques to keep up with their academic and social commitments. Photos of "how you manage your time or keep track of your work" confirmed this (Fig. 6.6). One student took a photo of his head to show how he kept track, and another described the merits of Linux calendaring software to integrate personal and academic responsibilities. Most students used more than one tool to keep up with their lives. One recorded assignments three different ways—in a class notebook, with computer scheduling software, and on a PDA. Another used a planner and multiple sticky notes posted around her desk. One first-year student had already recorded in a notebook (her "life binder") all of the courses she would take as an undergraduate, organized by major and cluster, and which semesters she would be taking them.

Combined with the results of two other investigations, mapping diaries (see Chapter 7) and dorm visits, we came to understand that students were actually on the go day and night and were seldom focused exclusively on any one activity. Academic, social, recreational, work,

volunteer, and personal activities were all in the mix, and each day was different.

We were very interested in the technologies students had available and which ones they actually used. Photo request items 3, 11, 17, and 19 were intended to elicit this type of information. Computers and cell phones were most common. MP3 players showed up in some photos or were mentioned in the interviews. Only one student we interviewed for photo surveys used a PDA. On their computers, many students used e-mail, instant messaging, and Facebook or MySpace. During dorm visits later in the project, we followed up with more questions about what was on students' computer desktops and the activities associated with having them there.

In asking about communication devices, we discovered that "landline" telephones supplied by the university in dorm rooms were not used at all or were relegated to use only in limited circumstances (e.g., for calls within the dorm and to save on long distance charges from cell phones' out-of-state numbers). One student described occasionally finding messages on his room telephone long after they had been left, simply because he never thought to check it. Everyone he knew called him on his cell phone. Overall, multiple communications technologies were used by students, but the specific ones varied from student to student. This has implications for libraries trying to choose the best means to communicate with their students.

In one instance, it was the absence of something that caught our attention. In photographs showing "all the stuff you take to class," we observed that laptops were not included, even though students had laptops (see Fig. 6.7). So, we noted it down without understanding why, until the mapping diaries, with more data about students' days, provided an answer (see Chapter 7). That is when we discovered how itinerant students were during the day, carrying what

Figure 6.7. Two students' photos of "all the stuff you take to class"

they needed for long stretches. They covered a lot of territory, and it simply was not practical for most to include a laptop along with all the other things they brought to classes. Instead, laptops came out when students planned to be in one place for a while to do their work, such as in the library at night.

When we combined our data from visiting the dorms with the photo surveys, it became easier to understand why our library buildings were so popular with our students for working for long periods on assignments. Friends going in and out of rooms, impromptu activities down the hall, games, music, and phone calls—these were just some of the distractions working against getting

assignments done. The library provided a refuge when students just *had* to work.

Through photo surveys, our students shared details about their lives in a way that conventional interviews alone could not achieve. They showed us their rooms and the places they liked to go, their friends and study buddies, their possessions and preferred work environments. For library staff, the images and interviews pulled together varied facets of being an undergraduate at the University of Rochester that were previously unknown to us and made them real and cohesive. We now understand much more about our students' lives beyond the doors of the library.

seven. Mapping Diaries, or Where Do They Go All Day?

Katie Clark

Why do students still use the computers in the library when we know they all have one in their dorm rooms? Why is there a steady stream of students coming in the library door at 9 P.M.? Simple mapping diaries turned out to be a rich source of information about these and other student behaviors with implications for academic libraries.

In our project to discover how undergraduate students worked (i.e., wrote papers) and lived, we used a variety of techniques to gather information including interviewing students about their paper research and writing techniques, visiting dorm rooms to see what they had on their computers, and giving students disposable cameras with which to take pictures of their environment (see Chapter 6). We also asked the students to keep a “mapping diary” and record where they went during a schoolday, which is the focus of this chapter. Fourteen students kept these diaries, and the results were surprising.

Background

One of the great challenges of studying students is getting access to them when they are actually doing their academic work. Their most productive hours tend to be outside the librarian’s normal workday. Moreover, students do much of their academic work in their dorms, friends’ rooms, lounges, student centers, and even empty classrooms. Further complicating our task, students approach their academic work and their social lives as one integrated collection of activities. To

understand how students research and write their papers, we needed to understand how they fit their paper-writing activities into the overall flow of their lives, as they move from place to place and activity to activity, throughout the campus and throughout the day.

Anthropologist Michael Moffatt (1989), who conducted seminal research on college life at Rutgers University, asked students to draw maps of the university campus to help him understand their cultural construction of the landscape. For our project, we melded Moffatt’s approach with another anthropological technique, the time allocation study, which we knew through the work of Daniel Gross (1984). We gave students a map of the campus and key surrounding areas and asked them to mark their movements on this map, indicating when they arrived at each place and when they left it. The resulting maps gave us a record of how fourteen individual students spent an actual day of their lives.

Procedures

We recruited our first group of nine students in the fall of 2005 through other research activities in our project. For example, students who participated in our interviews or design workshops were randomly asked whether they would be willing to take a map and, for a \$10 research subject reward, mark down their movements over the course of one day and then allow us to

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3:00 P.M.: Walks back to his dorm room for a quick meal. He is not on a meal plan but has a fridge in his room. He eats quick prepackaged food that he can “go in and grab” for lunch.

3:25 P.M.: Walks from dorm to classroom building for class.

4:40 P.M.: Goes from one classroom to another in the same building for a third class.

6:00 P.M.: Walks to another classroom building for third class in a row, the fourth class of the day.

7:00 P.M.: Walks back to a previous classroom building to work on an assignment.

7:30 P.M.: Back to his dorm room, not to eat dinner, but to change clothes for the gym.

7:45 P.M.: Walks to the campus athletic center and works out at the gym for 45 minutes.

8:30 P.M.: Back to dorm to shower.

9:00 P.M.: Goes to science and engineering library to meet a couple of other people and study.

12:30 A.M.: Goes back to his dorm and finally eats dinner.

Using a scaled map of the campus, we measured the distances from building to building, “as the crow flies,” to calculate how far the student walked. In this actual day, this student covered approximately 2.5 miles just walking

back and forth across our relatively small campus (Kaplan 2006).

What Did We Learn?

Although each student’s diary was unique, by examining all fourteen we began to see some commonalities:

1. Students do more than just attend classes. Even when students report going to one or more classes, they participate in a surprising number of other activities. The number and variety of different activities seem notable especially given that this reflects the movements of only fourteen students. In addition to going to class, our fourteen students

- Went to science and engineering labs
- Went to language conversation lab
- Went to recitation
- Had jobs
- Studied, read, and did homework
- Met professors during office hours
- Went to the gym to work out
- Practiced fencing
- Practiced karate
- Rode their bikes
- Walked or biked or took the bus to class
- Ran
- Ate at campus dining facilities, in their dorm, at home, on the bus, in class, at work, in the library, in the lab, off campus
- Checked their mail at the campus post office
- Went to the registrar’s office
- Met friends to study with at the library and the computer center
- Studied by themselves at the library
- Checked e-mail at the computer center
- Met with tutors at the writing center
- Went to jazz rehearsal
- Practiced clarinet
- Participated in clubs
- Attended sorority and fraternity events

- Watched television in their dorm room
- Attended lectures at nearby colleges
- Went off campus to eat and shop
- Attended church services

Some of these activities—such as going to a lab or to work—do not surprise us. Other activities do. For example, many students who completed maps indicated that they exercise. Some got up early to go to the gym or run. One did karate for several hours in the evening. In addition, the students walked a considerable distance crisscrossing campus. The University of Rochester is a heavily residential campus, and though a few students did go off campus to shop, eat, or attend lectures at a nearby college, the majority stayed on campus all day and walked sometimes several miles on the day they mapped out.

2. Students are highly scheduled and on the go all the time. Our students are on the run all day and many of them late into the night. The majority of students we interviewed left their dorm rooms early in the morning and did not return until after dinner. Many checked their e-mail during breaks between classes. Some of the freshmen went back to their dorm briefly, most of them just to drop off books and pick up what they needed for the next part of the day. They had little down time according to their diaries and interviews. For example, one student said, “Generally on a typical day I leave [dorm room] in the morning and I won’t go back unless I forget something until the evening.”

3. Students’ schedules are “offset” from librarians’ schedules. Most of us are at our best between 8 A.M. and 8 P.M. and at full concentration between 11 A.M. and 1 P.M. Students who completed maps were up at 8 A.M. but on the go until 1 or 2 A.M. In fact, only two of the students we interviewed got up later than 8:30. Two students were exercising (running or in

the gym) by 7 A.M. But, more important, not only are they awake much later than most librarians (at least this author) are, they did productive work long after we had left the library. Our analysis of the maps leads us to conclude that students’ peak concentration time is much later than ours, typically between 10 P.M. and 1 A.M. They do some work such as finishing up homework for class during the day, mostly at odd hours between classes; but their concentrated work blocks are after 10 P.M. As one student commented, “I think it’s pretty typical. You always end up doing most of your work in the library late at night. Not necessarily that late, but definitely in the evening hours is when most people do the serious studying. You might do a little bit before classes, but you don’t get serious until after dinner usually.”

4. Students eat on the go. Most students who completed the mapping diaries did not eat regular meals. They ate at odd times, often just snacking wherever they were. Few of them ate more than one “real” meal during their typical day on the run. They brought food with them to eat in the library, in lab, in class, on the bus, and at work. Fond memories of sitting down with everyone in our dorm in the dining hall and eating dinner together have long faded. What we see now is that students eat quick meals of such prepackaged food as oatmeal in their dorm rooms. When they do eat a real meal, most of them do so on campus. In our mapping group, few students left campus to eat or had food delivered.

5. Students carry their belonging with them, but not their laptops. Students reported carrying stuff with them during the day—everything from books and notebooks to food, energy drinks, and even a bike frame for use in a presentation. One student we interviewed carried his clarinet because he used the music

practice rooms in a building on campus and did not want to take the time to go back to his apartment off campus. Some of the freshmen popped back to their dorm rooms to pick up textbooks for their next class or change clothes before they went to the gym. What they did not carry with them were their laptops. None of the students we interviewed brought their laptops with them from the dorms. The students explained that they were too heavy to lug all over campus and, because of their value, it was very inconvenient to keep them secure, as was confirmed by several of the student interviews:

Student: I don't need my laptop, just 'cause I base everything that I—anything that I'm going to need on campus, I'll just send to my e-mail account so I can just access it right away. But other than that, it is easier to just keep my backpack full of my books and binders, and it's not too heavy.

Interviewer: Do you carry your laptop around ever?

Student: No, well not never, but this entire year I carried it around three or four times because it weighs a ton. I should have bought a better one.

6. Students use computer technology throughout the day and in multiple locations. Although the students do not carry their laptops with them, they did use such technology all throughout the day. They depended on the computers in the computer lab and in the library to check e-mail and to use them to “do homework.”

7. Students study in the library, at home/in their dorms, and in the computer lab. The

majority of students reported doing at least some studying during the day at the library. “Library is really the center of everything you do. It's where you go between classes, it's like ... it serves as the function of your room. It's where you go between classes when you are not eating. You are only in your room really in the morning and when you go to bed.” The prevalence of the library may have been in part because some of our recruitment strategies pulled from library users. Other study locations were mentioned, including dorm rooms, the campus computing center, in classroom buildings, at their job, in the lab, and at the student union.

8. There is no “average” day for a student. Of course, we have to be careful to generalize too much from these diaries because there is no “average” day. These days were described variously as “my easy day,” “the day I'm totally slammed,” and “a really, busy day.” The students indicated that their class, work, and social schedules vary from day to day. None of our diaries reflected student activities on the weekends, which also would be interesting to learn about.

Implications for Academic Libraries

It has been interesting for us just to know more about what students do during the day, but these observations also have important implications for our library facilities and services.

Study Space

We learned that most students do study in the library, and that many of them view the library as the “center” of their day. This means that our library facilities need to accommodate all the different activities students are trying to do during they day. They want a place to study, to check their e-mail, to meet their friends, to read, to write their papers, to kill time between classes, and to eat. Their ideal library would allow them to do all of these things easily under one roof.

We learned from the interviews that students prefer a variety of settings to study in, depending on what kind of activity they are doing. Sometimes they are in the library for a long period of time, sometimes only briefly. Some students like to work at big tables with friends; others spread their work out in a quiet area or confine themselves in the solitude of a small study carrel. There are students who work quietly with friends and others who want to talk and laugh with their friends. No one size fits all. Consequently, libraries need to be mindful of this and try to provide students with a variety of environments to support their academic work preferences, which include spaces to accommodate social times and breaks.

Because we saw that students wanted a variety of different kinds of study space, we created a webpage that details the different kinds of spaces to be found in the main library.¹ The page lists quiet places, collaborative places, comfy seats, public workstations, electrical outlets for laptops, and future spaces. Moreover, our observation that no one size fits all led us to seek more feedback from students about their space needs. To help with the design of a major renovation in the main humanities and social sciences library, we ran two design workshops in which we asked students to draw their ideal library space (see Chapter 4).

Technology

Although students carried all kinds of things with them, including a bike frame, none of the students we interviewed carried a laptop. This does not mean that they are without computer access during the day. Students used computers in the library and campus computing labs. They checked their e-mail, did homework, looked up articles, used a program to turn in their math homework, and just “browsed.” Over the past few years, our library has discussed getting rid of our public computers, because “every student has a laptop.” Yes, most of

them do have laptops, but we saw clearly through the diaries that they still expect us to provide them with desktop computing support.

We confirmed that students do a lot of their academic work from their dorm rooms. This serves to reinforce our commitment to making as many library resources as possible available electronically and remotely.

It also was clear that students do not understand that the computer lab, which is housed in the physical library building, is not part of the library. It is obvious to library and computing staff that the two entities are different, but not to students. We now understand a little better why students are confused, surprised, and sometimes disappointed when the library computers do not have the same software and functionality as the workstations in the computer center. Because of this project, providing access to an identical desktop and suite of services became a top priority for the library and will be fully implemented by the fall 2007 semester.

Food and Drink

We learned that undergraduates often eat on the run. The libraries at the University of Rochester have allowed food and drink in the building for many years. After reviewing these interview transcripts, we wonder whether our open food and drink policy might be a contributing factor to the heavy use made of the library, especially by undergraduates. One could easily imagine that, if food and drink were not allowed in the library, it would be a much less attractive and convenient place for undergraduates to come to work, study, or hang out.

Hours of Service

We learned quite a bit from these interviews that can help us better understand how students use the reference desk. We know that students come to the reference desk in the evening, looking for articles for a paper that is due tomorrow. Are they

all procrastinators? Probably some are, but that is only part of the answer. Instead, it is clear that students are very scheduled and on the go all day. They may not have any free time until 9 P.M. or later to come and ask a reference librarian for help, but unfortunately 9 P.M. is typically when our reference desks close. Many, if not all of us, have seen a decrease in the number of face-to-face reference questions. Could it be that undergraduates do not ask us questions at the reference desk because we are not staffing the desk when (and where) they are writing their papers, that is, after nine at night? How can they come ask a question at the reference desk which typically closes at nine? How can they attend a library workshop typically offered during the afternoon when they are already so busy during the day? Many library services, with the exception of circulation, which is open from early in the morning (8 A.M.) until early the next morning (3 A.M.), are clearly out of step with students' schedules and require some careful reconsideration.

We have made some changes in response to what we learned from the mapping diaries. For example, we were struck by the disconnect between the hours of reference service and the time of day when students do their work. Our response was to establish Night Owl Librarian service, which extended our reference desk hours several nights a week during the busiest weeks of the semester (see Chapter 3). We felt it was important to try to provide reference service at the time of day when students could more easily use it.

Support for Students Who Live off Campus

The students who live off campus have several different strategies for storing their belongings. One student e-mails everything to himself so he does not need to carry his laptop with him. Two of the students had on campus jobs and used their offices as

their home away from home. One of these students stashes books, food, silverware, and even interview clothes at her workplace; the other goes back to his workplace several times a day to pick up things: "I sort of live there [at work], it is sort of my home. I leave all my books and everything I don't need and I go back and pick it up anytime I want."

Again, providing computer access, allowing food and drink, and probably providing a place to store books and coats would better support the students who live off campus. Long before we conducted this study, the science and engineering library purchased textbooks for reserve. Reflecting on what we have learned, it has probably been very helpful for students to find their textbooks in the library rather than having to lug them with them from home or from their dorm rooms.

Conclusion

When we started this project, we knew very little about what undergraduates did during the day other than go to class and come to the library. We did not have a sense for what their schedules or days were like. After asking fourteen students to keep track of their daily activity on a campus map and following up with an in-person interview, we have a much better sense of their lives. They are busy and heavily scheduled. They get up early but do not start their academic work until late at night.

These mapping diaries are just one piece of the larger Undergraduate Research Project undertaken by the River Campus Libraries. Our overarching goal was to understand how students "do their work," and this included when and where they study. These mapping diaries proved to be a rich source of insight about student lives and have led directly to some initial changes to be more responsive to our students' needs.

Note

1. <http://www.lib.rochester.edu/index.cfm?PAGE=3469>.

eight. What an Experience: Library Staff Participation in Ethnographic Research

Helen Anderson and Ann Marshall

Why would an academic library attempt to study its students? A typical answer would include discovering new insights about our students and then using these to inform library planning. Indeed, our Undergraduate Research Project led to made many informative discoveries, some of which are discussed in other chapters of this book. In addition to these, our project has had a more immediate impact on the staff who participated. In this chapter we focus on how the methodologies used in the project helped to create an environment conducive to generating new perspectives, which in turn has affected staff members' day-to-day work.

In gathering data for this chapter, we informally interviewed twelve project participants, asking each a series of questions about their involvement in the project. In the first part of this chapter, we discuss the kinds of tasks that staff engaged in during the undergraduate project as well as some of the underlying ethnographic and work-practice methodologies used. In the second part of the chapter we explain how participation in the study resulted in important changes in staff interactions with students and view their own academic role within the library. Specifically, we focus on our interactions with students at the reference desk and in the classroom. All of this is presented in the hope that readers will be encouraged to experiment with similar methods in their own professional settings.

Project Participation: Who, When, and How

Given significant demands on library staff time, some readers may ask if their own schedules could accommodate a two-year study of this scope. Our project was, however, structured to be attentive to staff schedules. We aimed to be as open as possible to staff involvement at all levels and from all departments while offering a wide variety of ways that staff could meaningfully participate. This included the option of occasionally attending a one-hour meeting or helping out with the preparation and execution of some of the project's exercises. Staff more deeply involved in the project negotiated time for participation with their own supervisors.

By the end of the study, the project was able to involve approximately 30 percent of the staff at the University of Rochester's River Campus Libraries. This number includes staff from technical services, reference departments in the humanities, social sciences, and science libraries, circulation, collection development, administration, interlibrary loan, acquisitions, and digital initiatives. Participants' job titles included subject librarian, library assistant, Web designer, anthropologist, department head, science and engineering library director, and associate dean.

A core group of three librarians and an anthropologist developed a project plan and organized and planned meetings. A larger proj-

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ect team of ten staff members met for an hour and a half each month to advise the core group, participate in interviews, and, in later stages of the project, view and discuss data. In addition, the three subteams (reference outreach, digital initiatives, and facilities) ensured that important research questions were addressed in each of these three areas, helped plan research projects, then viewed data and shared it with others involved in the research. The subteams often met weekly or biweekly, and it was through their activities that many other library staff were able to participate on a more casual basis as their schedules allowed.

At the start of the project, an open invitation was made at a general staff meeting, and volunteers signed up for one or another group depending on their interests. Throughout the project, calls were issued for additional volunteers to perform tasks such as running the video camera during an interview, viewing data with a group of staff, proofreading interview transcripts, and coding data. Participants received training from the project's lead anthropologist.

Throughout the project, we engaged in several different techniques in order to immerse ourselves in the data and capture our thoughts and ideas. Three of these techniques were especially important in giving us access to the perspectives of students: observation and listening techniques, coviewing, and brainstorming.

Observing and Listening

In the initial stages of the project, staff participants completed an exercise that involved positioning themselves discreetly in pairs in a public place of their choice and observing the activity taking place there for a set period of time. Many people chose stores or malls, and one group sat on the bus that runs between two university campuses. We all took notes and then met with our partners to discuss our observations. Later we met

as a larger group to discuss our experiences with the exercise. The goal here was to give the staff members an experience of basic anthropological methods, particularly observation and note taking. We learned to simply observe and listen, without feeling the need to rush in to fix a situation or answer a question. We experienced the process of observing and taking notes as separate from that of forming an opinion about a situation or activity. Holding the video camera during an interview also provided opportunities to practice intentional observation and listening.

Coviewing and Discussing

Coviewing is a technique used to bring people together in a setting where data from the study can be collectively viewed and discussed (see Suchman and Triff 1991; Brun-Cottan and Wall 1995). In our case, staff involved in the project were brought together to watch videotaped interviews of students jointly and then engage in discussions about content from the interviews. Since two people at most were present during the actual interview, coviewing allowed us to involve a greater number of staff in the project. In addition, we could become immersed in the data with minimal demands on our time.

The viewings sponsored by the reference outreach subteam are a useful illustration of how these sessions were organized. Reference outreach coviewing meetings were advertised by e-mail to all reference staff and were held over the lunch hour to provide a time slot that most staff could attend. There was no obligation to attend, and staff could choose to come to one, many, or none of these meetings. The subteam sponsored coviewing meetings twice a month for roughly a five-month period. Attendance varied from four to nine library staff, with some staff attending only once and others attending the majority of the sessions.

These sessions provided staff members with access to the data collected from and about

Figure 8.1. Brainstorming session in progress



our undergraduate population.¹ The majority of materials collected for this project, with the exception of the design workshops (see Chapter 5), had a corresponding interview, including both audio and video. The goal of coviewing was not, however, simply to listen and watch the interview. The technique of coviewing also involves mechanisms to encourage staff to share their reactions to the interview. This was accomplished, first, by giving some initial guidance about the types of reactions best suited for coviewing. The premise underlying these coviewing sessions was that learning about student experiences from the student point of view is valuable. Therefore, the goal was not to critique the student but to try, as best as possible, to get into the student's head and then to remark on issues that surprised us or that we did not previously know. In addition, staff were encouraged to remark on questions raised by the interview and insights the interview gave us about our own work.

Staff were instructed that, if they wanted to make a remark, they should raise their hand or ask that the video be stopped. We found that we quickly became comfortable with this practice, and in a typical one-hour session we would watch about thirty minutes of video, interspersed with four or five breaks for a total of

twenty minutes of conversation. The remaining ten minutes were used for setup, introductory instructions, and logistics. We aimed to create a fun, comfortable, and interesting environment for the coviewing sessions. One librarian remarked that what she enjoyed most about coviewing was experiencing her own reactions while at the same time hearing others' perspectives.

Brainstorming

One final technique that had a large impact on staff was brainstorming. Brainstorming sessions helped staff to generate an extensive list of ideas about student needs and what we as staff wished we could accomplish. Brainstorming sessions led to specific pilot projects (see Chapter 3), but again the sessions were a valuable activity in and of themselves, acting as a tool to help us break out of preconceived ideas and habits.

Our brainstorming sessions adhered strictly to the rule that all ideas are valid and need to be captured. Our mantra during these sessions was "always say yes," that is, receive each and every idea openly and without prejudice or criticism. For some, it was tempting to express only ideas that seemed sensible or to evaluate others' ideas. We gradually discovered that the expression of outlandish ideas was a crucial part of the exercise. It was these seemingly off-the-wall ideas that helped us see beyond our routine ways of doing and thinking. Brainstorming allowed us to reframe our notions of what was possible and had an immediate effect of moving us beyond our preconceptions and preferences.

The structure of our brainstorming sessions varied but most included the following elements. One person acted as facilitator. At the beginning of the study, this role was most often filled by our resident anthropologist, but as time went on others began to act as facilitators. The facilitator's role was to ex-

plain the purpose and structure of the session, encourage the “always say yes” rule, promote a creative atmosphere, and make sure that there was a mechanism for capturing the ideas generated. In some cases, the brainstorming sessions started with a warm-up activity—something fun and outside our routine to put participants in a relaxed and creative mood.

The brainstorming itself took a variety of forms. In a large group, we might throw out ideas and have one person record them on a white board or a flipchart. As an alternative, we might have people spend five or ten minutes quietly jotting down their own ideas on sticky notes and then pass these on to others, who might generate related ideas. Other times we broke up into small groups to generate ideas verbally, jotting down one idea per sticky note and then regrouping as a whole to sort the ideas by category.

One participant reported that the brainstorming sessions were useful because “it is so easy to get into a rut about certain issues, and it can be very hard to get out of that rut.” For her, brainstorming freed up her own train of thought, since she did not have “to think it through,” and it allowed her to “really think off her feet.” From her perspective, this helped open everyone’s thought processes. The collective aspect of brainstorming was equally important in that it generated many more ideas than if each of us had done it alone.

Being Involved in the Study: The Experience of Staff Members

In this section, we report on the informal interviews conducted with twelve of the library staff members who took part in the study as well as on our own experiences as participants. We were interested in learning what it was like to be involved in the study and how participation affected the way we approached our work, students, and the mission of the library. Interviews were conducted

in person or by telephone and included some version of the following questions:

- How were you involved in the Undergraduate Research Project, and what was your experience of being involved?
- What did you learn about undergraduates that surprised you?
- How has your understanding or perception of the students changed?
- Are there any ways your interactions with students or your daily tasks have changed?
- Has the Undergraduate Research Project affected your work in any way?

In general, each of the library staff we spoke with learned something new about the students. In some cases, staff perceptions of undergraduate life were reinforced by their involvement in the study. In other cases, beliefs were altered and viewpoints changed more dramatically.

Personal Benefits

Many participants felt that one of the most important benefits of the study was the optimism it generated. For example, several staff members talked about how enjoyable and interesting it was to be involved in the study. One staff member reported that the best thing about the project was learning ethnographic methods and being intellectually stimulated. Another librarian said that “one of the most wonderful things was to be involved in research again.” Another staff member, whose job responsibilities involve few interactions with students, said that being involved in the project was a “good exercise for your mind and body.” Her involvement helped her to not “get mired in the day-to-day” and made her work “more engaging.” In addition, several staff talked about how the project gave them more confidence. For one librarian, the research increased his credibility with faculty members. This led directly to his regular attendance in an undergraduate class and to more interactions with students in the library.

In some cases, what we learned was not new, but it deepened our understanding. For example, several staff members explained that, even if a particular finding was not new, they had a greater depth of understanding about the issue from the students' perspective. It was a gut level feeling of "I really get it now." For example, one librarian described how powerful it was to watch video clips of students in their dorm rooms. She felt that watching these clips presented the students more fully and gave her a real picture of how the students are "not the same as we are."

For some staff, this deeper level of awareness created a greater comfort level with students. One staff member felt she had gained an increased understanding of undergraduates as well as increased confidence in students' ability to use the library and do research. One library staff member reported that she now thinks of undergraduates as individuals rather than as a group. In some cases, staff felt reassured that the strategies they were using to help and engage students actually worked.

This new level of understanding created apprehensions as well. As one staff member put it, the project acted as a "wake-up call," drawing attention to the amount of work that still needs to be done to prove our credibility to students and faculty. Motivated either by confidence or by apprehensions, several staff used their new insights to experiment with new approaches in their work with students.

Interacting with Students: At the Reference Desk and Beyond

Many participants noted small but important changes in their one-to-one interactions with students. For a few others, participation radically transformed their interactions with undergraduates. The project also offered an opportunity to renew and refresh interviewing and observation skills learned in graduate library degree programs.

From this new perspective, earlier interactions with students now appeared to be somewhat one-dimensional, with the stress on the librarian telling students how to find or do things. Now, interactions with students resemble something more like two-way conversations, or what one librarian called "a more level relationship."

In addition, specific findings of the study gave librarians a clearer understanding of how students work and provided a basis for starting or directing conversations. For example, our research taught us about the important role parents play in many students' lives. Thus, if a student is struggling with a topic, a librarian might ask, "Have you talked with anyone about your research?" The student's response, about parents or instructors, might then add more context and background to the discussion. We also learned how busy our students' lives are, such that they may work on a paper for several hours and then not pick it up for another two weeks. In this case, a reference librarian might ask a student, "Will you be working on this paper tonight? If so, you can definitely get back to us, we'll be here until nine tonight" In both of these examples, a deeper understanding of our students' academic and social practices led to interactions that were more comfortable and more attuned to students' needs.

One librarian reported that now she does not try to give the same "ideal" response to reference questions from undergraduates but instead focuses more on getting the context of the question right. Participation in the study reminded her how important it is to understand faculty expectations and to determine where the student is in the research and writing process. In general, her approach became less idealized but more practical, observing that students have more difficulty narrowing their topic and with writing itself, rather than with research-related problems.

Another librarian observed that she no longer agonizes over getting the students to come to the reference desk or approach a librarian. She recognizes that students want to work independently and was surprised at their level of confidence in their ability to find things, noting that we need to design Web pages and interfaces so that students can do what they need to do on their own. Now her strategy at the desk is not to bury students with suggestions but to get them started and let them know that they can come back for more help.

For some librarians, the study also enabled easier interaction with students away from the reference desk. Some reported that, when encountering a student in the elevator or approaching one in the book stacks, the conversation felt “more reciprocal.” For others it meant being more careful and sensitive when conversing with students and having a fuller appreciation of the differences between individuals. In this way, the anthropological methods we practiced were useful beyond the official study, helping us create an easier rapport with our students.

Similarly, one staff member changed her individual training sessions with the student workers she supervised, based on her experience with the project. Previously she had relied on her own explanation of tasks and on instructional handouts. After being exposed to this generation of students’ approaches to learning, she now finds it more effective to train students by “working alongside them.” After talking her trainee through a procedure, she now has the student do it alone and encourages more questions. She says that she now takes time to “feel out” the student’s perspective and then tailors her training accordingly. In this case, participation in the study inspired her to experiment with new student-centered teaching strategies.

Classroom Instructional Strategies

As a consequence of this project, several librarians have altered their instructional strategies. Some have made their instruction sessions more hands-on, wanting to emphasize two-way conversations. One librarian described a “more minimalist” approach to instruction. Though she is aware that students will likely encounter obstacles, she has learned that it is not helpful to convey all the complexities of the research process up front. Instead she supplies clues to get students started and then allows them to discover the richness of the research process on their own. Some librarians reported that they now spend more time observing their students in a hands-on classroom situation and sharing search tips relevant to their immediate needs.

In other instances, involvement in the study has led librarians to add to or reorient their classroom presentations. For example, the study taught us that many students do not understand what academic librarians do. As one person put it, “In the minds of students, librarians equal print.” In response, some librarians report that they have added a sentence or two about the role of the librarian, telling the class, for example, that “a librarian can save you time.” For example, instead of talking about the power of the search tips—a topic of great interest to librarians—she now relates concepts directly to what we know is important to our students: their need to be efficient with their time.

Other library staff have begun to use slightly different strategies to connect with students. For example, the study gave us a deeper understanding of how students interact with computer and communications technologies. This has allowed some staff to talk more effectively about how library tools relate to the students’ existing knowledge of online searching. One staff member tells her students, “If what you find in Google isn’t enough for your assignment, try this.” Another librarian, again with

students' busy schedules in mind, gives her class explicit after-hour time slots when she will be available at the reference desk. In both of these examples, librarians could have viewed students' use of Google or their inability to seek us out at the reference desk as points of frustration or barriers between students and librarians. But, with a better appreciation for why students do what they do, these librarians saw both of these issues not as barriers but as an opportunities.

Collaboration

The Undergraduate Research Project facilitated collaborative relationships among the library staff and helped the staff pursue the mission of the library more creatively. In fact, one staff member said that the greatest benefit of the study, more than any set of findings, was how it motivated staff. In addition, many staff enjoyed and benefited from working with other people in the library whom they had not previously known well. One staff member said that it was especially helpful to get to know other staff members for an extended period of time and "not as a one-shot deal." This collaborative atmosphere was also fostered by the research and ethnographic aspects of the project. A focus on doing research created a wonderfully neutral, exploratory environment. We learned that all of us, regardless of department or job description, had this in common: we did not know what our students are really like.

Discovering this common denominator led to fruitful discussions among staff and helped us transcend recurring debates, such as those about database interfaces. For example, one staff member reflected on how staff used to debate, again and again, whether we should have a simple search interface or a more complex interface. Being involved in the study helped all of us realize that, as far as our students were concerned, we did not really know what was best. By the end of the study, many of us had an expanded view of this issue, regardless of what

our original opinion might have been. In this particular case, a deeper understanding of the issues helped us see the value of both sides of this debate. As we learned more about our students, it became clear that we needed both simple and complex interfaces; we can now focus our energies on the interactions of both. One library staff member observed that we now respond differently, both as a group and individually, at vendor database demonstrations: "We are able to give constructive feedback from the point of view of the student. We put ourselves in the shoes of the students."

As discussed throughout this chapter, participation in the project encouraged staff to experiment with new ideas and techniques. Because this took place within the context of research, the experimentation seemed less threatening. Participants were not engaged in making library-wide policy decisions or working in committees to solve problems. Instead, the study created, as one librarian put it, a comfort level with "hit or miss" and with different people trying different things. Instead of agonizing over getting it right, innovation was happening on a grassroots level.

In addition, by focusing so intently on our students, the project helped orient us, as a staff, toward our mission for students. One staff member remarked that the project had an interesting parallel to the idea of strategic planning, except that instead of looking inward toward ourselves we were looking outward toward our students. When debates about issues arise now, we have a common language and shared understanding about students. This has meant that we are better prepared to meet new challenges and to move forward as a library.

Thoughts for Future Projects

Even though the staff felt very positive about the project, it is worth considering what we might do differently in the future. As discussed earlier,

a large number of staff members participated. We later discovered, though, that additional staff had wanted to be involved. This was a natural progression of the project; as more staff learned about the study, interest grew. In retrospect, however, there are some simple ways to make future projects more inclusive. For example, the lunch hour coviewing sessions were inconvenient for some staff. The timing of these sessions could have easily varied: lunch, mid-afternoon, and mid-morning. In addition, the reference-sponsored coviewing sessions were advertised only to subject librarians. It would have been interesting to advertise at least some of these meetings to the entire library staff.

In addition, several staff members have expressed an interest in continuing the project. We are aware of how easy it is to fall back into our old habits and typical frustrations with students and to lose the collaborative and experimental mood created by the study. But what is the best way to proceed? And how do we not lose the rich environment that ethnographic research has given us? One idea was to sponsor a regularly scheduled brown-bag lunch or mid-afternoon “snack break.” During this one-hour discussion, hosted on a rotating basis by a staff member who participated in the study, we examine a topic of current interest to public

services through the lens of what we learned during the Undergraduate Research Project. We also continue to collect and analyze data on a limited basis.

Another idea is to sponsor more research-inspired implementations. This allows us to try small experiments on a preliminary basis, with the focus on what we can learn with small investments of time and resources. In addition, staff now trained in some ethnographic methods are equipped to conduct mini-studies. For example, a small group of staff may form an ad hoc team to interview a few students about a particular issue.

In late 2006, the River Campus Libraries began a two-year research project on graduate students. With generous funding from the Institute of Museum and Library Services, we will delve into the academic practices of graduate students, with a particular focus on the research and authoring of dissertations, using many of the methodologies that proved so successful in our undergraduate project.

Regardless of what approaches we pursue, our staff are strongly committed to nurturing the benefits derived thus far from the Undergraduate Research Project and to striving to broaden them.

Note

1. We had permission from all of the students involved in the study to share interview content with library staff. In addition, in order to err on the side of caution, we regularly reminded those who attended coviewing sessions to keep the identities of the students anonymous and, when later conversing with others, to talk in more general terms and not in regards to specific students.

nine. Then and Now: How Today's Students Differ

Sarada George

As the Undergraduate Research Project progressed, we began to see how our current students' study and research practices differ from our own activities as students, especially in relation to technology use. When most of our library staff were in college, we had stereo systems, electric typewriters, dorm phones, office copiers, and sometimes televisions at school. Our students, in contrast, take a wide range of digital technology for granted as a normal part of their lives and use computer hardware and software that allow them to be connected constantly to each other, their families, their friends, and an almost infinite amount of information. This connection is so ubiquitous in their lives that, even though they use this technology everywhere and almost all the time, some of them feel the need to escape from it on occasion, especially to concentrate on difficult academic work.

Who are these new students, who are so different from today's librarians and library assistants? How long and how fast had these changes been going on under our noses while we looked the other way? For us, one obvious place to turn was to the literature, which informed us that our students today are part of a generation often called the Millennials (Howe and Strauss 2003). Many descriptions of the Millennials fit the findings of our Undergraduate Research Project. But before exploring these comparisons, I review the literature on the generations of students who preceded the Millennial.

Generational Groups

By the mid-twentieth century, it became clear that the pace of technological change was greater than ever before in human history; there was every reason to believe the trend would continue and escalate (Toffler 1970). Today's young people and college students are seeing a vastly different world from the one their grandparents, parents, and even most of their academic librarians knew in their own college years. Each group of freshmen arriving on college campuses comes with a different worldview, a different set of assumptions about the world, based on the general and specific situations they grew up with and the environment they saw around them (Beloit College 2006). What you take for granted as normal and ordinary depends on what already exists in your world when you arrive on the scene (Greenfield 2006). Differences in these assumptions can result in perceived "generation gaps"—attitudinal disconnects and misunderstandings between age cohorts. According to Twenge (2006), a person's cultural experiences, expectations, assumptions, and worldview are determined at least as much by his/her time period (and therefore generation) as by family and personal circumstances.

Although there is some disagreement on the birthyear endpoints that should be used in defining generations, there seems to be a broad consensus on the idea of generational comparisons and on some basic characteristics of each group. As of the beginning of the twenty-first

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century, the population of living Americans can be divided into six generations (Mitchell 2000; Howe and Strauss 2003; Oblinger 2003). Leaving out the small surviving numbers who reached adulthood before the era of World War II, there are five American generations with different overall characters. All five groups are represented on college campuses today and have to interact with each other to some extent.

The *World War II Generation* (or GI, or Greatest Generation) consists of men and women who were old enough to have fought or participated in World War II, whether or not they actually did so. They had unprecedented access to higher education as a result of the G.I. Bill but are still less educated, on the whole, than subsequent groups. They experienced the Great Depression and the creation of suburbia in the United States. They were accustomed to teamwork and achievement and were oriented toward community action within the system (Howe and Strauss 2003).

The next group, called the *Silent Generation* (or Swing Generation), was born late enough not to have been of age during the war; they were either children or babies during wartime. Sandwiched between the influential generations that came before and after them, and smaller in numbers, they spent their formative years in a prosperous, socially and economically quiet period after World War II (Mitchell 2000).

The parents of most of today's college students are part of the *Baby Boom Generation* (often called simply Boomers). Born from the end of World War II through the 1950s and early 1960s, they are currently still the largest cohort in American history (Mitchell 2000), though they are likely to be passed in size by their children's generation (Howe and Strauss 2003). This group is the first to be raised with television as a pervasive part of their lives (Twenge 2006) and is associated with anti-authoritar-

ian, countercultural attitudes and behavior (Mitchell 2000). As children or young adults, they lived through the cold war, space race, civil rights movement, sexual revolution, feminist movement, Vietnam War, and Watergate.

Many of the librarians serving current college students fall into the Baby Boom Generation. As of 2005, sixty-five percent of academic librarians were age 45 or older (Wilder 2005). This is the typical age group of parents of college students, so the contrasts between Boomers and Millennials affect students' interactions in their libraries as well as at home. These differences are even likely to increase over time, following a trend in the distribution of librarian ages, which is shifting upward (Wilder 2003).

Generation X (or the Baby Bust, or Latchkey Generation) spans birth years from the mid-1960s through the 1970s, with various authors using different endpoints (Howe and Strauss 2003; Oblinger 2003; Oblinger and Oblinger 2005). Occasionally referred to as a "slacker" cohort, this generation is the first to have computers as a central part of their lives. They have been influenced by the fall of the Berlin Wall and communism in Europe, the rise of the Internet and World Wide Web, the AIDS epidemic, Tiananmen Square, Chernobyl, and the Challenger disaster.

The children of the Boomers are often called the *Millennials* (or Generation Y, the Net Generation, the Echo Boom, Gen Next, or the Baby Boomlet) and were born, according to different points of view, starting in the late 1970s or early 1980s and continuing to the 1990s or, possibly, as far as the present (Howe and Strauss 2003). These students do not have any real memories of the cold war or the Soviet Union, have almost never used postal mail, and have grown up with Google, barcodes, DNA fingerprinting, instant messaging, and reality TV (Oblinger 2003; Beloit College 2006).

Studies of Previous Generations

Recent students have been studied, or at least discussed, fairly extensively; in fact, reports on the characteristics of the Millennials appear with startling frequency in the national media. At the University of Rochester, it was evident to us that students had changed, but it was not clear what the changes were. To get a clear picture of the differences, we must first look at the students of previous generations.

Foley and Foley (1969) conducted numerous interviews with students in the late 1960s as part of the College Poll and noticed similarities, as well as great differences, over time. They note that in the early twentieth century college students came primarily from the social elite, and consequently the college population was small, lacking in diversity, and mostly male. In 1962 only a third of college students were female (Sanford 1962), whereas women today tend to be a majority on campus (Twenge 2006). The atmosphere or student culture at many colleges a hundred years ago was much like an exclusive club.

As higher education became increasingly necessary for entry into careers and as financial aid entered into the equation, the college population became more diverse. Current undergraduate students are the first truly global generation in the United States, with greater diversity in race and ethnicity than any previous generation (Howe and Strauss 2003). One-fifth of them have at least one parent who immigrated from elsewhere.

American college student culture has changed regularly, almost by the decade, in the past century (Moffatt 1989), with members of each generation rebelling against and attempting to correct what they saw as the most egregious trends of the immediately prior generations and perhaps, in some important respects, ultimately resembling their grandparents more than their parents (Howe and Strauss 2003).

Sanford (1962) found that Vassar students in the 1960s differed significantly from those of the 1950s, who perceived their world as socially and economically stable and accepted authority without confrontation. What changed in the interval was the development of an international “youth culture” without social class or national boundaries (Moffatt 1989). After this youth “revolution” in the 1960s, there were fewer differences than before between young people on and off college campuses.

Several changes have had large, transformative effects, altering the nature of higher education for all future students—like a “continental divide” in the history of higher education. One such divide, previously mentioned, was the opening up of colleges to less affluent students after World War II. Another was the renunciation by colleges of their role *in loco parentis* (the substitute parent role), which occurred in the late 1960s. This, along with the international youth culture, had a profound effect on college students, beginning with the Baby Boomers (Moffatt 1989), who had a generation gap in communicating with their parents and other older authority figures. The differences between the Millennials and those before them may be evidence of a third major divide.

University of Rochester Students

At the University of Rochester, we have observed several important student characteristics that the literature attributes to the Millennial generation and that set them apart from earlier generations.

Parent-Child Relationship

Our students seem to be much more in touch with their parents than in previous generations, including their parents' own cohort. The University of Rochester students we studied mentioned a great deal of communication with their parents as well as parental involvement in their research

papers, such as in the search for a topic or in proofreading drafts. Several mentioned communicating with their parents via instant messaging. Clearly, and somewhat to our surprise, these students maintain quite close ties back home. There is even a specifically named “Hi, Mom balcony” in the student union at the University of Rochester from which students can wave to a parent through a Web cam.¹ Baby Boomers could never have had such close contact with their parents, even if they had wanted to.

The Baby Boom parents seem to be sheltering their children more than they themselves were sheltered. This may derive partly from American culture’s attitudes toward children, which changed noticeably in the 1970s, focusing on children in several ways and becoming more obsessed with child safety (Howe and Strauss 2003). Today’s students grew up in an era of metal scanners in schools, transparent backpacks, and multiplying government regulations for their protection. At a time when terrorism, crime, privacy, and safety issues are constantly in the news, the Boomer parents of today’s students raised them with more attention to the details of their lives than previous parents provided. Some Boomers even want colleges to return to *in loco parentis*. These attitudes have given rise to what is now referred to as the “helicopter parent,” who hovers over a child’s college experience, trying to exert as much control as possible and generally interfering in even the smallest details of the student’s life. Today’s students are even similar to their parents in their tastes in music and clothing, and they are generally closer to their parents, experiencing less of a generation gap than any other group studied on this issue (Howe and Strauss 2003; Twenge 2006).

Communication

The current college environment may be most visibly different from the past in the vastly in-

creased use of digital technology. This is turning out to be the source of the latest major divide in higher education, with effects at least as pervasive as those of financial aid, the international youth culture, and the renunciation of *in loco parentis*. New and ever-changing technologies are more integrated into the academic and social lives of today’s students than they were in those of earlier generations. For the grandparents of today’s college students, radio was the most characteristic and pervasive technology; our students’ parents watched television, and they themselves use the Internet (McMillan and Morrison 2006). Millennials are not just users of the new technologies, they are “digital natives” who grew up and are comfortable functioning in this technological world (Prensky 2001).

There are a multitude of portable gadgets available to students now, such as laptop computers, BlackBerry-type hand-held devices, MP3 players, and cell phones. Nationally, most college students tote around at least one of these and may have used cell phones for several years already. The types of electronic media currently available for use in homes and dormitories, and the ways they can be used to connect with people and other media, have become increasingly complex in the past thirty years (Lomas and Oblinger 2006).

Locally, a 2005 survey conducted as part of the Undergraduate Research Project found that cell phones are an extremely common portable communications technology, and the one students would choose if they could have only one. All the freshmen surveyed had a cell phone, as did 93 percent of the upperclassmen. This ratio has exploded in the past several years. For example, in 2001 only one circulation desk student employee at the science and engineering library listed a cell phone number, but by fall semester 2006, cell phones were listed exclusively by all of the student employees. Moreover, the students tend not even to know

the number of their dorm room phone, since they never use it. This trend will only increase over time, especially as cell phones become more sophisticated by supporting multiple uses, including social networking, Web browsing, and global positioning. Students expect to be able to be connected—to the Internet, to their friends, families, and fellow students—at any time, from anywhere (Rainie 2006).

Our Rochester students are constantly in touch with their large groups of friends, through physical and electronic means. Several of them particularly mentioned their study groups as well as a “study buddy,” someone they regularly study with, who may or may not be in any of the same classes. In many classes, academic work is structured to allow team presentations and studying, and even grading is sometimes in group terms. Not all of this is very different from the habits of their parents’ generation, some of whom also remember studying in groups, but it accords with the findings of several authors who describe Millennials as being oriented toward a peer group dynamic (Howe and Strauss 2006; Greenfield 2006; Rainie 2006).

Having grown up in the current high-tech world, today’s students expect to be able to communicate instantly with anyone, anywhere in the world (Alch 2000). Online social networking tools allow young people to have large groups of friends, all electronically connected with each other much of the time (Thomas and McDonald 2005). They are connected to this electronic world almost constantly (Lomas and Oblinger 2006). According to our informal surveys, the vast majority of University of Rochester students make regular use of Facebook and similar social networking websites. Students use Facebook and similar online services that specialize in interpersonal connections on a daily basis to meet new people, connect with their real-life friends, and even create

study groups by finding students in the same course (Read 2004).

The Multitasking Approach

In this electronically connected environment, many different kinds of tasks can be performed from the same location, and the same task can be done in different locations. Students frequently do several things, often completely unrelated, at the same time. For example, here is an exchange between one of our project team members and an undergraduate student who is working on a computer science lab assignment:

Interviewer: “Are you playing poker at the same time?”

Student: “Ahh, yeah.”

Interviewer: “You have a hand open. Oh, you have two hands open.”

Student: “Actually, I think I have five.”

These five poker hands are all being played at the same time as the student is working on the computer assignment. He sees nothing unusual in being online with other people while doing academic work.

This habit of multitasking is seen as an important characteristic of Millennials (Howe and Strauss 2003; Greenfield 2006). Taubenek (2006) reports, “They will have a laptop in front of them and iPod headphones on while they are typing something and checking IMs all up and down one side of the screen.” These students are firmly convinced that they can learn properly while doing several other things at the same time, such as listening to music (McGlynn 2005). This is such an important part of their lives that they may even think differently from previous generations; Greenfield (2006) refers to Millennials as having “hyperlinked

minds”—they jump from one connection to another rather than follow a linear progression.

Not all Millennials are comfortable multitasking in every aspect of their work. Attempting to perform several tasks simultaneously may sometimes distract them from academic work. One student in our project, talking about using e-mail, said, “Yeah, that’s why I go to the library. So I do not have my computer and actually do work.” Some students at the University of Rochester indicated that, at least when working on research papers, they tend to work in spurts. They may go for a period of weeks without working on the paper at all, but when it becomes necessary to focus on it (usually because some other interim step or the finished paper is due) they may work on it to the exclusion of most other activities for hours at a stretch. Several students said they prefer to write their papers in environments of relative solitude, avoiding electronic distractions. This seems to indicate that multitasking does not work for these students all the time. When deep concentration is required, some of them seem, like generations of students before them, to need to work on one task at a time, and even to find quiet places in which to do it.

Perhaps Millennials are not as universally different from earlier students as some current research suggests. Though they use the new digital technology heavily, perhaps it does not define their lives as much as redefine the way they relate to the various locations in which they spend their day. Cell phones, wireless networks, and other technological developments have freed today’s students from some of the physical constraints that limited earlier generations.

The Use of Physical Space

A primary difference in the way Millennials function in the academic world is that they prefer to learn anywhere they may be, in social settings

as well as academic, using digital technology in ways that suit them individually. This means that learning does not take place only or even primarily in classrooms or study spaces; anywhere students congregate is a venue for academic work, a coffee shop is just as likely as a dorm room or lounge (Lomas and Oblinger 2006). Students want to customize their own ways of learning and will use whatever is available, often in ways not envisioned by the creators of the technology. For example, students physically present on college campuses use distance-learning tools as often as the off-campus and out-of-town students for whom these tools were originally intended (Carlson 2005).

Students have some very definite ideas of what they would like to have available to support their individual ways of studying. When the undergraduate project’s digital subteam asked a group of students to design an ideal library website, the results were imaginative (see Chapter 5). The student designers wanted connections from one site to everything a student would ever need to use, from course reserves, databases, instant messaging, and e-mail to their own personal schedules and a way to order pizza. When other students were asked to design their ideal physical library space, they wanted group study areas and public spaces as well as quiet study areas, food and coffee service, and even places to take naps (see Chapter 4). They want a great deal to be available to them, possibly because they are trying to get a great deal done, all the time.

Students at the University of Rochester seem to be constantly busy; the mapping diaries they made of their movements during a full day show that they are on the go nearly all the time (see Chapter 7). They often depend on day planners—electronic or paper—to keep track of their activities. One of our students explicitly characterized college life as being “always on the run.” The literature shows that Millennials

have been heavily scheduled from early childhood and are a more pressured generation than any other (Howe and Strauss 2003; Taubenek 2006). In general, their lives have always been overplanned, with much less unstructured time than youngsters twenty or thirty years before them (Howe and Strauss 2003). College students eat irregularly and have little free time, even to sleep. Most of the students we interviewed do more of their sustained studying and academic work in the evening and late at night rather than during the day, when they are occupied mostly with classes, labs, recitations, jobs, and group meetings. Often students are away from their dorm rooms for most of the day and do academic work only when they return. One student said, "When I get back to my room for the day at like ten or whenever, I will sit down and do my work then." According to one interviewee, "You don't get serious until after dinner, usually," and this appears to be a common pattern.

Dormitories tend to be noisy and may not always be the best places for the concentrated bouts of academic work. Our students use the library primarily for studying, often going to the same spots repeatedly. Several indicated that they went there in order to avoid the distractions of electronic communication devices. One student, commenting on using instant messaging while studying in the library, said, "It gets distracting so I try not to. I'll put up an away message or I'll just completely turn it off." That particular student studies in the book stacks area, but many others prefer more comfortable seating. In our design study, where students envisioned their ideal library environment, comfortable, relaxing spaces were always included (see Chapter 4).

In needing such spaces, today's students may not be much different from other generations, but their use of the space and what they are escaping from may demonstrate some differ-

ences. This may be the first generation that comes to the library to escape from communication. Many often do not even bring their laptops with them, usually "because it weighs a ton." Instead they use computers in the campus computing centers or library study areas when they are away from their dorm rooms. The need for comfortable spaces in which to relax and unwind at all hours of the day and night has been noticed by other researchers as well (Howe and Strauss 2003) and can probably be attributed to a desire to escape the constant pressure and connectedness of student life.

Emerging Trends: A Technology Backlash?

Some of the students in our project needed a partial escape from computer technology itself, preferring, for example, to print out articles to read for a paper or print a paper draft to proofread rather than doing it entirely on the computer. One student who had just written a paper said she always proofreads from a printout: "I print it out, I can't read it on screen. I don't know; my eyes just don't work that way." These occasional retreats from computer technology came up periodically in our interviews and were slightly surprising. It is hard to tell whether technological improvements will change things like this or whether some students will continue to prefer to read paper materials. This is important to keep in mind as we attempt to follow wherever the latest technology leads.

The literature also mentions some downsides to constant electronic connectedness, including the distractions some of our students brought up. Electronic communication and social networking tools can be a means of procrastination (Taubenek 2006) and can even lead to what has been identified as Internet addiction (McMillan and Morrison 2006). Those who do carry laptops around do not get better grades than others, but they do spend more time on Web surfing, instant messaging, and other non-

academic activities (Read 2006). Colleges are responding in different ways to these problems. Some professors are already refusing to allow laptops in class on the grounds that they are too much of a distraction from the lecture, and in some classrooms Internet connectivity can be switched on or off at the professor's discretion (Young 2006). Lower grade point averages have also been found to correlate with more playing of computer games; though students feel they have the technological skills they need for academics, they do not always seem to have equivalent levels of problem-solving skills (Oblinger and Oblinger 2005).

In fact, students may not be quite the digital technology experts their elders assume they are. They prefer instant messaging to e-mail and offhandedly use cell phone text messaging, blogs, and wikis (Greenfield 2006). But even those students with high levels of technological skill may not necessarily have adequate communication skills in general. They may not have the listening skills or attention spans of earlier generations. They do not read as much as their predecessors (Carlson 2005). Though Millennials want to be able to choose how they learn (McGlynn 2005), they may not function as well as previous generations in terms of independent thinking (Carlson 2005). Though they are comfortable with the new technology, they are not necessarily good at using the information it brings them (Thomas and McDonald 2005). These are clearly issues librarians need to address. Our study shows, however, that this will not be as simple as one might hope. One of the reasons our students are not likely to consult librarians in their research is that they already have a great deal of confidence in their ability to do it on their own (see Chapter 2).

This confidence may be a result of the focus on children in the past several decades and the heavy emphasis on the teaching of self-esteem in school. When 66,000 college students were

tested on a measure of self-esteem over several decades, male students in the 1990s tested 86 percent higher, and females 71 percent higher, than those in the 1960s. The later students had high expectations for their own success, sometimes in stark contrast with the reality of their talents and opportunities (Twenge 2006). We found our University of Rochester students to be confident in their abilities to find and evaluate information and to obtain the course grades they wanted.

Today's students are pragmatic and focused on their future careers, viewing their education and other aspects of their lives primarily as means to reach their career goals (Nathan 2005). Many of the students we interviewed had fairly clear ideas about what they wanted to do, what courses and grades would be necessary to succeed, and their ability to attain them. They and their Boomer parents have high standards for a college's responsibility for the safety and success of students, and the children have high expectations of adults with whom they have contact (Howe and Strauss 2003). It is somewhat surprising in this context that these expectations do not seem to extend to the staff of campus libraries. Our students expect technology of every sort to work properly at all times and to be able to access everything they need, but they do not, as a rule, think to come to the reference desk and demand our assistance.

We wondered what would happen if we tried to make use of instant messaging to reach students, but our brief experiment found no evidence that undergraduates would use this tool to contact library reference desks. This could change, however, over a longer period and with more publicity. There is evidence in the literature (Roper and Kindred 2005) that students will use instant messaging to contact professors who make themselves available that way to complement in-person office hours. It

is premature to draw conclusions at this point, though. Many of our students seemed to be telling us that in-person communication is still of primary importance to them. One student said, "I would say the closer my relationship is with a person, the more I feel comfortable talking to them online. But at the same time, the more I see them ... face-to-face." Lomas and Oblinger (2006) also found that communication technology could not substitute for real connections with other people.

Conclusion

The college campus of the twenty-first century has not really been an ivory tower for many years now. It is caught up in the general headlong rush toward ever-greater technological sophistication. The students on campus now have grown up accustomed to high levels of computer technology and are impatient with many aspects of higher

education that have not yet adapted, the library included. Though they are not all Millennials chronologically, they and their universities must learn to adjust to the Millennials and their even more digital successors, who will be shaping the colleges of this century.

These students may appear like a new breed to those who staff the libraries and were students decades before. Today's students are prepared to make high demands on their schools. Though their attention may be more fragmented than was usual in the past, these students believe that academically they are doing very well. And, for the most part, at least as far as we have seen in our Undergraduate Research Project, they are. But although Millennials cannot avoid being molded to a great degree by the technologies and attitudes of the present, academic libraries are only just beginning to make the necessary adjustments.

Note

1. <http://www.rochester.edu/aboutus/wilsonwebcam.html>.

ten. The Mommy Model of Service

Nancy Fried Foster

In this chapter, I focus on a few specific trends in the Undergraduate Research Project data that relate to service in general, and to reference outreach in particular, and draw some general conclusions about students and their library use. I write as an anthropologist, and as the person on the project with the broadest responsibility for methodology and fieldwork.

Since the project began in the summer of 2004, I have asked many of the reference librarians who participated what they like best about their work as librarians as well as about their frustrations and the ways their roles have changed over the years. I have learned that many of these librarians started in their professional careers at a time when there was a different kind of demand for their services. They had a higher level of meaningful contact with library patrons; students thronged the desk and there were two reference librarians on duty. Now, a single librarian might languish at the desk for hours, only to be asked for directions to the restroom or to lend a patron a fork.

Of course, librarians are not really languishing at the desk. They are hard at work behind the scenes, making sure that the library does everything its users need it to do, such as allow them access to the full text of articles right on their computer screens, no matter where they may be. The new demands and opportunities of their work notwithstanding, many librarians have prepared themselves for a career help-

ing students and faculty members track down hard-to-find information and can feel disappointed that they are less frequently called upon to use their well-honed reference skills.

But librarians have also been concerned with the scholarly mission of the library. Specifically, they have felt that students and other library users have not been making best use of library resources, instead consulting Google, Wikipedia, and other websites and services to answer their own questions, sometimes poorly, rather than finding warranted information in the libraries' scholarly collections. They also believe that patrons only scratch the surface of the collections and miss out on the richness of the holdings—the important but hard-to-find works, the rarities, the treasures, the historical and esoteric materials that they and their predecessors have lovingly collected, preserved, and cataloged for generations in the hopes of making them available to new cohorts of library users.

The reasons for studying undergraduates have been complex. One motivation has been the desire to figure out what it would take to get more students to come to the desk asking for help, to restore the face-to-face interactions and the opportunities to provide that special kind of service—caring and personalized, intellectually demanding, expert and informed—that attracted so many librarians to their field in the first place.

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We came up with a research question designed to give us insight into student perspectives and experiences: What do students *really* do when they write their research papers? Librarians expected that if they had a better understanding of the student research and writing process, they could improve their interactions with students and help them find and use better scholarly and research materials, thereby enhancing the learning experience for more students. With this overarching research question, library staff have pursued several different research activities, including interviews, observations, map diaries—many of them described in this book.

For example, library staff undertook a reference desk survey to understand changing patterns at the reference desk and followed that up with a set of brief interviews in the student union (see Chapter 2). The survey and interviews revealed that few students understand what reference librarians do and how reference librarians can help them, nor do they consider asking for the help reference librarians are trained to provide. Rather, students tend to feel that they are good at finding their own resources and answering their own questions. If they need expert advice, they turn either to their instructors or, surprisingly, to their families, whom they contact by phone or e-mail.

Workshops in which students designed their ideal library spaces provided additional insight on reference outreach. As we saw in Chapter 4, most students simply leave reference librarians out of the picture. Interestingly, some put reference librarians at desks that also supply technical support, coffee, and office supplies and check out books. To a librarian, the circulation desk, reference desk, coffee cart, and IT help desk are clearly for different purposes and staffed by different kinds of experts, but many students do not recognize these distinctions.

Interviews of students who had written research papers added information about how students organize their research activities and integrate them into other everyday activities (see Chapter 8). Librarians have been struck by the degree to which students maintain contact with their families, asking their parents to edit their work and even to help them select their topics and find resources. They also find that students have a high opinion of their own ability to find resources and assume that, if they cannot find resources through the library's Web presence, it is because the library does not have them.

As the information has come in from these and other research activities, librarians have confronted the fact that students and librarians have vastly different orientations to the library. I believe that part of this difference has to do with a profound change in the nature of service over the past several decades. What follows is an attempt to describe the student view of library reference in the context of an overall student model of service. I contrast this model to the librarian's view and investigate the implications of these different views for the library and for understanding students.

Librarians' Models of Service

Reference librarians have a professional model of service, which they learn in library or information science programs, and which is evident in their professional practice. This model of service is clearly visible in the "reference interview." In its ideal form, this interaction requires that the librarian be approachable and interested in the needs of the patron, establishing eye contact and focusing attention on the patron, inquiring about the patron's needs and the strategies s/he has used so far, providing on-the-spot support for finding materials, and taking steps to ensure that the patron is fully served (Reference and Users Service Association 2007).

In addition to explicit, taught models of service, librarians also have a tacit and more general model of service, just like the average person, which goes well beyond the library. This is a more personal and unspoken model, and it has a strong influence on their behaviors and expectations. It is a model of service developed since childhood, and it derives from personal experiences of service, for example, in shops, gas stations, restaurants, offices, and bookstores.

The average academic librarian is white, female, well educated, and just under 50 years old (Wilder 2003); accordingly, an average librarian's tacit model of service would be familiar to any middle-class, well-educated, white woman who was born around 1956. At the time these librarians were 10 years old, in 1966, service was much more extensive and courteous than it is now. When their parents needed gas, an attendant filled the tank and washed the windshield. When they needed shoes, their mother might take them to a shoe store, where a shoe salesman measured their feet, fetched a few styles in their size from a storage area in the back of the store, and then helped them try these shoes on, making sure they fit properly.

If their parents needed a camera, a television, or a typewriter, they went to a camera store, a television store, or a typewriter store, or perhaps to a well-staffed department store, and got advice from a specialized salesperson. If that camera, television, or typewriter broke, it could be returned to the store for expert repairs.

If someone in the family got sick, the doctor might very well have made a house call—that was still done in those days, though the practice was already in decline. In 1966, if you wanted a book, you would probably have gone to your local booksellers. At that time, Barnes & Noble had only its original New York store; it did not start to turn into the large chain and online presence it is today until the 1970s (Barnes & Noble Booksellers n.d.). Borders Books did

not exist; it was established as a used bookstore only in 1971 (Borders Group n.d.). Instead of today's megabookstores, the 1966 Rochester phone directory listed fourteen independent bookstores, places where salespeople could advise you on a purchase or find a special item for you.

In 1966, when the average librarian of today was 10 years old, the Rochester phone book listed 116 meat markets and ten milliners (hat makers). There were seventy-eight bakeries. The names of department stores took up two and one half columns. Specialization and personal attention prevailed twenty years after World War II and well into the Vietnam era. That was the milieu in which today's average librarians formed their ideas of service.

Students' Models of Service

As I write this chapter it is early 2007 and the average freshman at the University of Rochester was born in 1988. By the time these students entered school, "self-service" was such an established concept that it seemed as if people had always pumped their own gas and shopped in megadiscount stores or online emporia. Many of today's students are used to getting medical assistance from physician's assistants, nurse practitioners, medical reference books for home use, or even websites, and less often from doctors. They certainly do not expect a house call. But these are relatively recent developments. Though students feel comfortable with all of this, the typical librarian has had to learn this new model of service and may feel that it is not really service at all.

In 1998, when today's freshman was 10 years old, the Rochester yellow pages listed thirty-two meat markets, down from 116 in 1966. This number has since fallen to twenty-seven. There were sixty bakeries, down from seventy-eight; today, only forty-nine remain. By 1998 there were no custom milliners and only six retail hat stores, now down to four. The old de-

partment stores had already begun to close, replaced by KMarts and WalMarts; where there had been two and one half columns worth of department stores in 1966, by 1998 there was scarcely one, and this has shrunk even further now, with Target and Kohl's ascendant.

Borders Books established a branch in Rochester in the early 1990s, when today's freshmen at the University of Rochester were young children. Simultaneously, many of the local bookstores began closing their doors, so that now the vast majority of bookstores in Rochester sell only used books or pornography or specialize in Christian or New Age books. It seems completely natural to our students these days to go online to buy books, or almost anything. If they shop at "real" stores, the only service they expect is help in finding an item and completing the sale, if that. Now that self-checkout is available at many supermarkets and discount stores, it is possible to conduct an entire transaction without human contact. Given the change in the day-to-day service experience, it is hardly a surprise that today's students have a vastly different concept of service than librarians—or that they feel comfortable seeking answers to their questions on Wikipedia, WebMD, and Google. But there is more to the story than self-service gas stations and online medical help.

In 1966, when the average librarian was 10 years old, service was a relationship. It might be enduring or brief, or even a one-time relationship, but the give and take between the service provider and the client was important in itself. The service provider established his/her expertise and credentials while angling for business and loyalty. The client evaluated the service provider or vendor while disclosing his/her needs and angling for preferential treatment. This is not to say that these relationships were mere economic-rational transactions. They were what remained of client relationships histori-

cally embedded in face-to-face societies, in which everybody knew everybody and your neighbor was your butcher, or your doctor, or your pastor, or your seamstress, or even your librarian.

The world has changed for librarians and students alike. Few service situations allow for the development of an interpersonal relationship, no matter how brief. Most butchers now work nowhere near the customers, whether in the back of a large supermarket or in an offsite processing facility. The same is true of bank tellers and the order fulfillment personnel who work in warehouses, assembling the books in an Amazon.com order or the apparel in a Lands' End order. Even librarians fall into this category, when you consider all they do on the digital side. And, of course, real people program Google and maintain it and improve it. But in these situations there is hardly a relationship at all; there is scarcely any person-to-person interaction.

The student model of service is self-service. Of course, it really only looks like self-service, depending as it does on real people working in backrooms. But looking at it from the student's end, it often entails running down a tacit list of self-service strategies until one works. When students talk about the actions they take to find books and articles for their research papers, many of them communicate an overall strategy of finding just enough, as quickly as possible, and then stopping. They start with the instructor's recommendations, move quickly to the online library catalog, and then on to Google, consulting Wikipedia and unwarranted websites for tips and shortcuts. Fortunately, this is not true of all students, but it is common enough in the data that we recognize it as a significant trend.

It is tempting to relate this trend to lack of time, but I think it resembles a pattern of information seeking that is evident in students'

recreational activities—gaming, for example—when time is not an issue. Video and computer games come with little by way of directions. Manuals are available but not all gamers want or use them. When a gamer gets stuck in a game, s/he commonly runs through a variety of information-seeking activities, starting with experimentation with the game itself (Gee 2003). If this fails, the gamer may seek an online site for the particular game to see whether there are any “tips” or “tricks” that solve the problem. The point is that the parsimony of the gamers’ information seeking is not related to time pressure. It is related to a view of life in which instrumentality trumps relationship.

So self-service is the preeminent model and strategy of the information-seeking student. But when the student cannot satisfy his/her own needs and turns to real-life service providers, what happens? In their drawings of ideal library spaces, students sometimes group librarians with technical support staff and baristas at service desks (see Chapter 4). When they do not differentiate between different kinds of service providers, it is in part because they do not know the service providers, having experienced few person-to-person service relationships. If they have a need, they want it filled. If they want a need filled, they want to go to a font of all sorts of service, a sort of universal service point, a physical Google. In other words, they want Mommy. And indeed, in many student narratives of the paper-writing process, family members figure importantly as providers of advice, resources, and editing services. Many students stay in close touch with their families, talking on the phone with their parents and exchanging e-mail and instant messages (Gardner 2007; see also Chapter 9). And we should note that it is not only students who want access to the font of all good things. Library staff enjoy all the benefits of new technologies, even while they mourn the loss of full service. And the same can be said of faculty.

It may seem contradictory to say that students want self-service because it fits their instrumental, non-relationship view of the world and then say that they want Mommy. Isn’t Mommy everyone’s first and most intense relationship? But “Mommy” is not the same as a real student’s real mother, a person with whom s/he has a complex and ever-changing, ever-maturing relationship. When I speak of the Mommy Model of Service, I refer to a Mommy who is the provider of everything to the infant.

Implications of the Mommy Model of Service for the Library

If students want either to take care of themselves or have “Mommy” help them, what does that mean for the library? One thing it means is that there are many students who are very good at learning about and locating traditional and digital materials from varied sources with a wide range of finding aids. They take care of themselves very well. In this, many of them follow the model of their professors, and others take advantage of bibliographic instruction or online help, or just use the library’s Web presence until they understand it. Research shows that heavy users of traditional resources tend also to be heavy users of electronic resources (Abbott 2006). If the library can provide these skilled and heavy users with even better tools, the use of both physical and digital collections will increase.

Understanding the student point of view makes it possible for library staff to see how things look to students. For example, librarians understand the difference between the various service points in the library and on campus. However, our research shows that students do not necessarily know that reference and circulation are two different desks, designed for different purposes. They expect that anyone behind any desk will be receptive to a variety of requests.

On the one hand, it makes sense that more students learn that there are different kinds of service available to them and make thoughtful and full use of those services. On the other hand, librarians may learn from students that some of the service divisions are simply unexamined holdovers from past times when they made sense. Now that a reference librarian needs little more than a networked computer with a screen that can swivel, and students are free to do research almost anywhere with a laptop and wireless access, why not position librarians where the patrons are? This might even include dorms.

Further, to make more of limited resources, librarians may want to explore opportunities to join forces with others in the university, such as IT or learning services staff, or even circulation staff or student workers. This is not to suggest that a student can provide the same level of service as a reference librarian. But perhaps it would help to have multiple staff at the same desk who then refer students to each other, as appropriate. Student workers can solve technology problems, provide directions, and answer straightforward reference questions, leaving librarians free to address the more complex or difficult questions or give their time to those students whose projects or interest levels merit it.

This is not to say that librarians should bend to every undergraduate whim and misperception. Sometimes understanding students leads to better ways to enlighten them and help them build skill and knowledge. For example, we have learned in our research that students look to their professors as the preeminent authorities on research paper resources (see Chapter 2). But we also know that faculty members are often poor users of such finding aids as online library catalogs and databases (Barry 1997; see Chapter 1). This suggests the value to librarians of pursuing better partnerships with teaching faculty, so that professors invite librarians into

their departments and classrooms and explicitly direct their students to approach librarians for bibliographic support.

Students tend to be overly confident of their self-service skills in the library arena (see Chapter 2). A student who cannot find resources for her/his paper assumes that the library simply does not have the resources. The student may resolve this problem by consulting Wikipedia or an unwarranted website; as long as their references are acceptable to their instructors, we can expect this practice to continue. Google does not, however, always lead students to the wealth of warranted information licensed by their institutions or in their own collections, and Wikipedia is not considered a reliable source by scholars (Read 2006a, b, c; Schiff 2006). If they make heavy use of Google and Wikipedia, social science and humanities students with serious academic interests may fail to develop the habits of mind, the skills, and the attitudes they will need to succeed in the academy (see Abbott 2006). Now as in the past, librarians have special expertise in finding resources; what has changed is that indexes are now online (Bell 2006). If more faculty members understood the changing nature of librarian expertise, they could help their students get better help.

Students may want Mommy, but that does not mean that the library should mother its students. There are students who will never do more than the minimum, and nothing will benefit them quite so much as simple searches that really work. And there is much to learn from student behavior and expectations about those aspects of libraries and their technologies that are simply outmoded. We might not want our students to use Google all the time, but giving them Google-like simplicity in the library interface—on top of functionality that supports precision searching and advanced forms of browsing—would certainly be desirable.

We are all the Millennial Generation now. The difference between today's college students and today's librarians is not the technology we use or the way we schedule our days. The difference is that a 50-year-old librarian has lived through several "generations," experienced different ways of doing things, and ended up older and wiser in this world, in this year, to deal with the same reality that confronts our youth. The 18- or 20-year-old student has less experience of generational change and depends on past generations to understand the past that created this world and this age. It is exactly the information of past generations that the library provides, often in writing, sometimes onscreen, and even in person.

Librarians can play a significant role in challenging students to develop their information-seeking skills and their judgment. This will help students become better citizens even if they have no intention of becoming researchers or academics. Librarians can share their insights about students with instructors, supporting faculty efforts to coordinate what happens in the library with what happens in the classroom; librarians can also contribute to a broader, ongoing consideration of the curriculum. It is the educational mission of the university and society's higher purposes that shape the role of the library and the work of librarians. Those who articulate that mission can learn from librarians about the real lives, the perspectives, and the potential of the students whom librarians know so well.

eleven. Conclusion: Creating Student-Centered Academic Libraries

Susan Gibbons and Nancy Fried Foster

The Undergraduate Research Project produced hundreds of pages of transcripts, dozens of photos, stacks of maps and drawings, and other artifacts that we can mine again and again for insights into the academic practices of our students. Staff from different parts of the University of Rochester River Campus Libraries joined together to engage in project activities, forming new bonds through a shared experience. The project has been an enormous success and we have already begun to use our insights to implement improvements in our libraries' services, facilities, and Web presence.

In our book, we have presented some of the more useful methods that produced this success and some of our most interesting data and interpretations. In conclusion, this final chapter provides an answer to our research question, discusses the meaning of our user-centered approach to design, and reflects on how the project affected the library as an organization.

How Students *Really* Write Their Papers

With regard to our central question—What do students *really* do when they write research papers?—we found a range of approaches and strategies, which we characterize with reference to a few real students. We prefer not to give a composite or average, since there is no composite or average student; there are only real students with quirky, evolving work practices. The following

students—whose descriptions are slightly anonymized and whose identities are protected by the use of pseudonyms—provide four representative approaches to the writing of the research paper.

Abbie is an outstanding student with a history of school success. As a high school student, she became comfortable asking librarians for personal assistance and attention, a habit she brought with her to college. Abbie has maintained a weekly appointment with a tutor at the writing center despite her excellent organizational and writing skills, just to get that extra bit of help. She describes herself as an excellent student and says she works hard on her papers—and the rest of her academic work—because she is good at it. She has many genuine intellectual interests, including her major, which is preparing her to work in a field she finds worthwhile and personally satisfying. Abbie approaches her assignments by scheduling her research and writing activities, sometimes using a course syllabus and other times creating her own timeline. She is oriented to achievement and works hard to meet deadlines while driving herself to gather and digest extensive resources. She has learned to find published resources, whether print or electronic. She also makes use of a large personal network, developed through internships and travel, that includes students from around the world. She readily consults these overseas students for lo-

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cal, up-to-date information on her topics. Abbie is a hardworking student who says that she feels internally motivated to learn and externally motivated to gain further educational and travel opportunities. She is a passionate learner.

Danielle is a diligent student who extends her generally cheerful attitude to her courses and instructors. She enjoys many of the habits of the idler, such as television viewing and shopping. Her academic habits are not altogether different. She takes pleasure in browsing the library bookshelves, almost like a *flâneur* in the stacks. She also enjoys selecting and using paper, pens, and notebooks—that is, she appreciates the materiality of her academic work. Danielle participates wholeheartedly in college, and for her it is a life—a full, rounded, integrated experience. She approaches her papers as one might the preparation of a meal: reviewing the recipe, gathering the ingredients—enjoying the aroma, color, texture, and taste of each—and then combining them into an artfully arranged dish. She is a gourmet.

Brandon is a pretty good student who has never liked the library. He has strong interests outside of his academics and a set of friends who share those interests. Indeed, he finds himself torn between his academics and other pastimes, including a variety of sports and games. Brandon good-naturedly attends classes and finds resources to complete assignments, although he would probably do something else if an assignment were not due. Despite this somewhat lackadaisical attitude, Brandon is genuinely interested in many of his classes, enjoys much of his reading, and loves the variety of disciplines and areas of study that college opens up to him. Brandon's approach to a paper is to go through the steps, asking peers—but never a librarian—for help when he needs it, and continuing to work until he is done. He is oriented to living life; his education, while enjoyable, is instrumental—a ticket to what comes next.

Tiffany finds it hard to maintain passing grades. She dislikes the library as a physical place and avoids the library website. She feels that she made a mistake coming to this college because it is so hard for her to succeed in her classes. Tiffany's nonacademic interests clearly outweigh her academic ones, and she shows little enthusiasm for her college courses and little interest in mastering course material or other intellectual work for any reason. She has no regular approach to writing papers and little inclination to stake out a position and argue it consistently. Tiffany seems like a bystander to her own education.

These are only four students, and they are not archetypes or averages; they are real individuals. They do not sum up or typify all students, but they give us some insight on representative characteristics and gross differences among our students. These and many other students engage, with more or less success, in a range of paper-writing activities, which may include these:

- Reviewing the requirements
- Consulting with the professor or instructor about the requirements, the topic, or resources
- Consulting with others about the topic and resources (this may include librarians, friends, family members, or student workers in the library)
- Creating a timeline or adding the assigned timeline to a planner
- Choosing a topic and consulting preliminary resources to do so
- Gathering resources through the library, Google, the professor or instructor, friends and family, and other sources
- Making notes
- Creating a bibliography or an annotated bibliography
- Creating an outline
- Completing and submitting research-relat-

ed class assignments, as required (e.g., topic statements, bibliographies, early drafts)

- Meeting with the professor or instructor, a writing tutor, a librarian, or another expert, as needed
- Composing the paper in sections, or free form, or following a strict outline, or writing it all in one extended work session, as one's particular practices and preferences dictate
- Asking others to read and comment on the paper, or proofread the paper; this may include peers, a writing tutor, or parents
- Revising the paper, seeking additional resources, and checking details as required
- Completing the bibliography; this may entail the use of RefWorks, EndNote, or another digital bibliographic tool
- Submitting the final version either on paper or electronically

Although this series of steps seems obvious, some of the details surprised us. For example, we were all surprised at the extent to which students consult their parents and other family members about their academic work. We were also surprised that students have such a narrow view of what librarians can do for them (find books on shelves, locate items they already know about) and such strong feelings that faculty members, and faculty members only, are experts at finding good scholarly resources. We were also surprised to find that students are on average no more proficient with computer technology than librarians or faculty members. Some students demonstrated broad knowledge of computers and facility in using them, but others were awkward and clumsy. And one of the biggest surprises was that many students feel enchained by that technology and struggle to break free, especially of instant messaging and similar distractions.

Every student has a unique approach to writing papers. Our research has allowed us to

understand the work habits of some representative students and to get a sense of the broad variation across the large group of research participants. Our research has also allowed us to recalibrate our sense of our students and how their experiences relate to our own. Although many aspects of the college experience have changed and are unlike the experiences librarians remember from their own college days, there is still much in common between student and librarian lives. We all use the latest technologies, although students tend to use them more. We all want to meet our own information needs, although students are more confident—sometimes overconfident—of their abilities and less comfortable seeking certain kinds of expert advice. We are all busy, although they are more likely to push their academic work into the nighttime hours when they are alone with a network connection to a database. We are all keeping our options open, although students do not really know what their options are, or which options might be best, or how to organize themselves to do what they want now and get where they want to go in the future. We would do better to understand our students' lives not in terms of our own college experiences but in terms of our own current lives. They are not really so different from us except that they are kids, newly set loose on the world.

User-Centered Design

User-centered design means designing things—technology, spaces, services—to meet the needs of the people who will use them and to perform well in real-life situations. In a university, user-centered design is not entirely straightforward. When we design for students, we design for people whose practices and preferences may be at odds with the university's educational mission or their instructors' demands. So user-centered design in higher education must take a broad view of the "user" and pay attention to a wide range of

needs, preferences, and constraints on the part of numerous people who are served by the technology, spaces, and services the library provides.

Throughout our project, we collected information about student work practices without evaluating those practices. This is part of the method: to observe everything, take it all in, and understand it without rushing into judgment or problem solving. However, once we have made extensive observations and amassed a large set of data, we must interpret it in the relevant context. We are designing technology, spaces, and services for an academic library, not a summer camp, a fitness center, or an airport. Students may want to eat in the library, socialize in the library, and sleep in the library, and we may want to make that possible. But they can do those things elsewhere. There are some things they can *only* do in the library; those things must have priority.

When students draw an ideal library space and the drawing includes a massage room, our response is not to run out and buy almond oil. We understand the massage room to represent the student's need to feel comfortable or to feel that s/he belongs in the space. We might meet that need by providing comfortable chairs or by making sure that students can easily understand signs and directions, so that they know they are where they should be. And so on.

Our aim is to understand how students work and how they might work better so that they can reach the standards set by the faculty and so that the university can work toward its mission. Once we understand this, we set about to support the work practices that will help our students, and the library and the university, succeed. This, for us, is user-centered design.

Organizational Change

Some people use the long and glorious history of academic libraries as proof that academic libraries will have an equally long and glorious future.

This supports the view that libraries should keep services, collections, and facilities much as they are. It often requires a significant event to change the culture of an organization and disrupt the status quo; the Undergraduate Research Project appears to be such an event for the River Campus Libraries.

The project was a wake-up call. We saw over and over again how much we did not know about our students and their academic endeavors. But, perhaps more important, we saw how often our personal assumptions about the students, which have guided years of decisions, were incorrect. We tend to assume that our own student experiences are largely similar to those of our students, but as Chapters 9 and 10 illustrate, this is not the case. As an organization, we must be suspicious of any declaration that begins, "When I was in college..."

Engaging in an extended research project has fostered an experimental spirit among the staff. New, creative ideas are emerging all across the organization, at all levels. Although ours has always been a creative staff, what seems different is that the ideas are being tried and explored, largely without the need to form committees and seek approval from all levels of the organizational hierarchy. Instead, the more bureaucratic necessities enter in only after a mini-experiment proves promising. In addition, members of our library staff have become more tolerant of the risks associated with an experiment. Not every experiment will be a success, but from each there is information to be learned.

Having an anthropologist on staff has made it possible for library staff to learn many different techniques borrowed or adapted from a wide range of anthropological and ethnographic studies. It has also helped us develop a toolkit to use whenever we find ourselves with a question that we could answer if only we knew more about our students, our faculty members, or our own staff. After a learning

period, more and more members of the library staff are gaining experience and competence in a range of research methods. Many of them now feel comfortable conducting some research activities on their own, without the presence or direct support of the anthropologist. We have come to understand and appreciate how easy it can sometimes be to talk to students and get information from them. The design workshops described in Chapters 4 and 5 are good examples of this. Organizationally, we are moving toward a shared mindset that, when it comes to what our students need and want from the libraries, “Don’t guess, just ask.”

Student-Centered Libraries

In recent years, a new phrase has entered the vocabulary of higher education administrators and their funding bodies: “student-centered.” This new emphasis on students began in the classroom, with student-centered pedagogy and student-centered learning, but it has now spread across campus, so that today Google lists more than 13,000 results for “student-centered university.” Consequently, it should come as no surprise that the concept of “student-centered libraries” has emerged.

To be truly student-centered requires a rather deep knowledge and understanding of today’s undergraduate students. Fortunately, we have organizations such as EDUCAUSE, Pew Internet and American Life Project, and OCLC, which are conducting studies, surveys, and environmental scans of college students, such as the recent *ECAR Study of Undergraduate Students and Information Technology* (Salaway et al. 2006). It is from sources like this that we can start to see some high-level trends, including the importance of social networking sites (Lenhart and Madden 2007), the continued predominance of the association of the physical book with libraries (OCLC 2005), and the relegation of e-mail to communication with “old people” (Lenhart et al. 2005).

All the same, as useful as this information is, we must remember that these represent high-level trends and the aggregation of data from many higher education institutions. The reality is that the student body of each higher education institution is unique, for it is a reflection of a variety of factors including socioeconomic conditions, the ratio of residential to commuter students, local climate, and the robustness of the campus IT infrastructure, just to name a few. Consequently, to be truly student-centered we must be cognizant of the high-level student trends but truly fluent in the local campus situation.

The Undergraduate Research Project was our way of tapping into our local student environment and collecting data upon which to base our student-centered organization. Since the start of the project, we have made changes in reference services (Chapter 3), enlarged our partnership with the college writing center (Chapter 1), and altered library instruction. Support for all of these changes can be found in the student data we collected. The same can be said for the forthcoming changes to our library facilities (Chapter 4) and website (Chapter 5). As an organization, we can collectively turn to our data about students to inform decisions about services, resources, facilities, and our Web presence. When we find that the data are lacking, we can tap our toolkit of user research methodologies to find a way to gather the data we lack.

The River Campus Libraries’ intent to be student-centered is decades old but was never fully realizable until we began to collect fine-grained ethnographic information about our students. The project has given us the tools and information to convert our intent into a reality, and to do so with confidence. The Undergraduate Research Project has helped us shape our organization into a truly student-centered library.

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Alan Unsworth grew up in Ithaca, New York, and attended colleges in three different states. His favorite was the University of Washington, Seattle, where he earned degrees in ancient and medieval history and library science. He is the History subject librarian at Rush Rhees Library, University of Rochester.