

Exploring the Library Needs of Resident Graduate Students at Oregon State
University's Hatfield Marine Science Center: a Report

Submitted by:
Susan Gilmont

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Taught by:
Dr. Jeffrey Hale

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College of Liberal Studies
213 Gilkey Hall
Oregon State University
Corvallis, Oregon 97331

Abstract:

In an effort to ascertain the library needs of resident graduate students at a marine field station, a mailed survey and a focus group gathered student input. Respondents rated the current collection and services and identified areas needing improvement. A plan of action to improve services has been developed.

Problems Discovered, Recommendations for Action and Timetable:

≠The new computers with only CD-RW drives were unpopular.

- slow to save
- desktop saving limited to only 2 Excel and 2 Word files

Actions taken: Computer support informed of problems (12/01/03).

Recommendations: Two older computers with zip, floppy and CD drives should be reinstated or another portable zip drive and a portable floppy drive be purchased. HMSC computer support staff should be reminded to communicate better with library staff before making major changes.

When: Winter Term, 2004

≠The library is noisy after hours.

Actions taken: Designated quiet study area and posted signs (12/01/03).

Recommendations: Purchase a sign holder to make the quiet area designation more elegant. Posted sign should remind students to set cell phones to vibrate, and that those wishing to study in groups should use group study rooms. Consider adding web page “Library Resources for Visiting Students” and promote group study rooms on web page.

When: Winter Term, 2004

≠Some students miss initial library orientations.

Recommendations: Offer and promote individual library orientations for those who miss them at the beginning of terms. Publicize in HMSC Newsletter, Guin Library News e-mail list and on proposed “Library Resources for Visiting Students” webpage.

When: Winter Term, 2004

≠Shelving and binding problems – books and journals not on the shelves.

Actions taken: Additional student worker hired (12/05/03).

Recommendations: Resume regular sweeps of the library on to pick up stacks of books and journals. Continue shifting project with shelf-reading built in. Do regular shelf-reading as time allows. Publicize summer binding to alert students that some issues will be off the shelf. Continue user education.

When: December, 2003 –

≠Circulation problems – books not checked in.

Actions taken: Moved book carts to prevent students from putting checked-out books on them. Reviewed circulation workflow with students (12/04/03).

Recommendations: Write circulation desk manual.

When: December, 2003

≠Students requested tutorial on new copier.

Recommendation: Arrange for and publicize tutorial.

When: January, 2004

≠Self-checkout station goes down and students cannot restore it.

Action taken: Autoexec.bat file written so self-checkout is restored when computer is restarted. A webpage for the station was created as the homepage in Microsoft Explorer and Netscape that explains how to checkout items, how to renew books and how to request materials (12/05/03).

≠Students requested a laptop computer to practice presentations.

Actions taken: the librarian had already requested that HMSC purchase a laptop that would be kept in the Library Seminar Room. This suggestion was forwarded to the librarian, who reminded the Center of the request (12/05/03).

≠Students recommended some software and book purchases.

Action taken: Forwarded recommendations to librarian (12/01/03).

≠Students requested that sofas and pillows be cleaned.

Action taken: Forwarded recommendation to librarian. Librarian has washed pillows and arranged for professional cleaning of sofas (12/05/03).

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Exploring the Library Needs of Resident Graduate Students at Oregon State University's Hatfield Marine Science Center: a Report

1. Introduction

Academic libraries often find graduate students rewarding subjects of study. Graduate students use the library more heavily than other user groups (Bancroft 222, Veldof, 8). As a result of their dependence on library services, they are frequently more critical of libraries than other patrons (Allen 2002, slide 32). Libraries are thus more likely to get constructive feedback from graduate students. If services can be improved for these heavy library users, they will probably be bettered for everyone. Finally, some graduate students will be the faculty members of the future. Positive library experiences at the graduate level can have important consequences for both student and library.

For all these reasons, Janet Webster, the Guin Library's librarian, encouraged me to conduct an assessment of the library needs of resident graduate students at the Hatfield Marine Science Center as part of the requirements for the LS 406, Special Projects class. Janet wanted to know how well the collection met their needs and if our current services satisfied them. Ms. Webster wanted constructive criticism and identification of specific areas needing improvement. She expected the project report to include an action plan and timetable for enhancing library services.

To prepare for this project, I read extensively about the Hatfield Marine Science Center and the Guin Library, from HMSC annual reports to a history of the Center. I interviewed faculty members and collected syllabi from courses offered Fall Term to see how much library work was required. I investigated the websites of HMSC students. I reviewed past student surveys at HMSC and at the main campus. I interviewed the OSU librarian who supervised the latest campus surveys. I reviewed literature on graduate students and other libraries' assessments

of these students' needs. This research led to the creation and distribution of a self-administered questionnaire to 30 HMSC graduate students, followed by a focus group.

2. A Brief History of the Guin Library:

Oregon State University's Marine Science Center began operations in 1965. At first, there was no library. A history of the Center's first years records that, "Researchers and students had to be in Corvallis to do library and computer work, so the usual pattern was to travel to the Center to collect specimens and do experiments—and then go back to campus to write them up" (Rogers, 10).

With the aid of Kerr Library (now the Valley Library) on the OSU campus, a small collection of books and journals began to build. Kerr Library paid for a few books, journal subscriptions, and a student worker. The collection expanded into two small rooms of about 400 square feet, one housing books, the other journals. Each term, a librarian from the main campus met with researchers to learn what materials they wanted to order and to reorganize the collection. This level of support meant that the Center's researchers still had to travel to Corvallis to do most library research (Rogers, 23).

Clearly, more facilities were needed to support the Center's research. A 1972 study noted, "As research demands increase, the pressures on library and instruction facilities will also increase. Presently these functions are scattered about the center on a 'make-do' basis" (Zopf, A18). In the mid-70s, the Center was awarded a grant to construct a new education building with room for a library. This building opened in September, 1976. Available library space expanded to 3,000 square feet. Marilyn Guin, a former medical librarian with an M.S. in oceanography, was hired as the first librarian. Guin began to develop a focused collection of books and journals that supported research at the Center. A method of shipping library materials back and forth

between the two campuses was worked out. The library began to offer reference service, computer database searching and interlibrary loans (Rogers, 23).

In 1983, the Center was renamed the Mark O. Hatfield Marine Science Center to honor the support of Oregon's senior Senator. Also in 1983, the library's workload had grown so much that a support staff position was added. By the mid-1980s, the computer revolution began to affect services. The unique problems of a branch library fifty miles away from the main campus often impelled Marilyn Guin to innovate in using technology to overcome the problems of distance and isolation. She was, for example, a leader in introducing CD-ROM technology to Oregon libraries.

By 1987, the library needed more room. The Center was about to expand again, with the Environmental Protection Agency's only saltwater laboratory on the West Coast slated for construction. As part of that grant, the Center won funding for a new library of 21,000 square feet. Responsibility for raising money to furnish the new building was given to the librarian. Thanks to community support, \$200,000 was raised for this purpose. Construction of the new library began in 1989.

In 1988, Marilyn Guin was named Associate Director of HMSC for Academic Affairs. Janet Webster was hired into a part-time librarian position to fill the time Guin spent on her administrative duties. Webster's appointment was fortuitous, as it became clear in 1989 that Marilyn Guin was gravely ill. Guin died of cancer in December, 1989. Janet Webster assumed the acting librarian position, and after a national search was hired as the second librarian at the Hatfield Marine Science Center.

The late 1980s and the early 1990s was a time of transition for the library. The new building was dedicated July 4, 1990 and was swiftly named the "Marilyn Potts Guin Library." The new building and the new librarian were not the only changes. Online communication made

the library's collection visible to the world; the world wanted to use it. The branch library went from being a net borrower in 1988 to being a net lender by 1990. This means that the Guin Library loans more to other libraries than it borrows from them. Lending increased so much that a half-time support staff position was added to the library in 1994, bringing total staff up to 2.5 FTE, where it has remained.

The period after 1990 saw more automation, more construction at HMSC and an increased international role for the Guin Library. The library began participating in a project to send free articles to a consortium of marine laboratories in East Africa. Janet Webster served as president of the International Association of Aquatic and Marine Libraries and Information Centers (IAMSLIC) and of the Oregon Library Association. OLA recognized Webster's services to Oregon libraries in 2003 when she was named Oregon Librarian of the Year.

1995 brought team-based management to the libraries, and all library staff received team training. Although most teams at the main library have disbanded, Guin staff members like working in teams and have retained much of the team structure. Staff members meet weekly, help create an annual plan and perform regular checks on progress toward team goals. The less hierarchical structure also reflects the realities of working life at a very small library, in which staff routinely fill in for each other and assume more responsibility than many of their peers on the main campus.

Limited budgets and serials subscription cancellations have been recurring themes in recent years. The library's former University division, Information Services, struggled with a multi-million dollar debt in the last half of the 1990s. The debt has been retired, but the turn-of-the-century recession and repeated fiscal crises left lean budgets. Despite these constraints, the library staff has attempted to maintain a high standard of service.

By the late 1990s, online journal subscriptions improved service to remote patrons. Desktop document delivery of requested articles became possible. The library joined an IAMS LIC initiative to deliver requested literature to member libraries around the world. The Guin Library quickly became the project's biggest lender, and has retained that status. A library users' advisory committee was established in 2002, with staff, faculty and a graduate student representative as members. Recent library projects have included a web-based bibliography of research on Yaquina Bay and web-based information on seafood technology.

The history of a library is, however, more than just names and dates, or a list of accomplishments. It is a human endeavor. The true history of the Guin Library is written in our lives and in the lives of the people we serve. In a memorable passage in their report on qualitative assessments of library users, Colleen Cook and Fred Heath compared the experience of using a well-run library to that of a commuter passing over the Golden Gate Bridge, oblivious to the superb engineering and thousands of hours of labor that make the transit possible. That's what libraries are: bridges between people and the information they need. If we do our jobs well, much of our work will not be noticed, but the value of what is done will endure (Cook and Heath, 580-581).

3. Literature Review

A. General Studies of Graduate Students

I began with general works about graduate students. Howard Adams addressed the graduate school climate for minority students in engineering and the sciences. Adams noted that many minority graduate students experience "situational stress," by being, for example, the "only one" in the department (9). Adams advocated an "environmental audit" of the graduate school climate, and faculty mentoring of graduate students (12-18). As a support staffer, I approved of

his recommendation that support staff be sensitized through training “to departmental goals for creating an environment that welcomes and affirms each new graduate student” (Adams, 15).

Cooke, Sims and Peyrefitte examined general issues of graduate school attrition. They concluded that “students with higher levels of school satisfaction and affective commitment, and those whose expectations had been met” were less likely to depart, while those with “a lower need for achievement” were less likely to stay in school. “Affective commitment, or a sense of belonging to the university,” could be improved by joining faculty and graduate students in discussions, organizations, research, or community service (Cooke, Sims and Peyrefitte, 685-686).

Hodgson and Simoni found that, across disciplines, “Lack of graduate school support and financial problems were strongly related to psychological distress” in graduate students. They urge administrators to “recognize that some of their students are psychologically distressed” and suggest training to help faculty advisors recognize vulnerable students (Hodgson and Simoni, 252-253).

Onwuegbuzie and Jiao address a particular situational stress affecting some graduate students: library anxiety. They define library anxiety as “characterized by negative emotions, including tension, fear, feelings of uncertainty and helplessness, negative self-defeating thoughts and mental disorganization.” Library-anxious students tend to be male, carry heavy course loads, are not native English speakers and are employed full-time (Onwuegbuzie and Jiao, 217). Competition for computers can create additional tensions for these students, and certain learning styles are not well suited to the library; for example, students who need to move around when they study may disturb others or get bumped from computers, thus increasing their library anxiety (Onwuegbuzie and Jiao, 221). The authors recommend that their library be open more hours, that there be sound-proofed study carrels to accommodate both students who need quiet

and those who need to learn from peers, and that librarians be friendly, accessible and “willing to approach users who appear to be having difficulties” (Onwuegbuzie and Jiao, 222-223).

In the mid-1990s, Christine Barry conducted a qualitative study of the information skills of academic supervisors of doctoral students at King’s College, London. Barry found that traditional methods for teaching library skills were inadequate in the electronic environment. Both librarians and academic supervisors had important roles in teaching graduate students, but too often the supervisors did not themselves have all the needed skills, or were not conscious of all the methods they used to acquire information. Librarians should lead in developing better information skills programs, but responsibility for training students should be shared with academic supervisors. Faculty should get more training and “responsibility for training students in information skills should become part of the guidelines for research supervision” (Barry, 236).

For all of the literature indicating the critical role faculty members play in assuring graduate student success, the two groups have quite different information needs. Linda Ackerson explored these differences in terms of reference service for science graduate students and faculty. I found that Ackerson’s description of the information-seeking practices of scientists jibed perfectly with my fifteen years of experience working in a science library. The scientists of my acquaintance rely on extended informal communication networks. They often have large personal collections of literature. They use citation tracing to identify desired articles and they are very interested in current literature. For these researchers, the library is indeed “a supplemental, rather than a primary source of information” (Ackerson, 250).

The comprehensive literature review required in thesis or dissertation work imposes a different burden on graduate students. “Faculty researchers active in their fields favor search strategies useful for current awareness, while graduate students need to adopt strategies that support archival searching” (Ackerson, 250). Librarians may need to step in to help teach

graduate students these strategies, and Ackerson proposes a model for a comprehensive literature review to help them do so (Ackerson, 252).

Ackerson's article was published in 1996 and fails to capture the most recent trends in library research by science faculty and graduate students. For this information, the research done by the University of Washington Libraries is particularly valuable. The most recent (2002) focus groups studies of science and health faculty and graduate students show a decided shift in preference towards online use of library resources. They also note "the information environment is too complex" and that "the personal connection with a librarian remains important" (Hiller 2003, slide 62).

B. Overview of Library Assessments

Advances in research methodology have transformed library studies of their users. Around 1970, for example, the technique of unobtrusive observation was developed as a research method in libraries. The results of controlled studies using unobtrusive observations of reference transactions shook the library world out of its previous complacency by showing that about half of all reference questions were answered incorrectly (Murfin and Gugelchuk, 314-315).

Uncertainty about service quality is not the only factor that has spurred the drive for better library assessments in the last thirty years. Automation brought rapid changes in library services. Periodic cycles of fiscal constraints pressured libraries to do more with less, while the need to meet accreditation standards remained constant (Hiller 2001, 606). Librarians also began to see that "new user technologies are making it possible for people to bypass the library" altogether (Berger and Hines, 306).

A large body of literature on surveys and user satisfaction has been developed. Along the way, the concept of "needs assessment" has been gradually eased out of the lexicon in favor of studies of user satisfaction and service quality. The most significant advance in library user

studies in recent years came about through the adaptation of the retail service quality model SERVQUAL to library research. Developed in 1988, SERVQUAL is based on discrepancies, or gaps, between management's and customers' specifications, expectations, perceptions and communications about service quality. In particular, SERVQUAL focuses on the gap between the service customers expect to receive and their perceptions of the service actually delivered (Hernon and Nitecki, 690-693). In 1996, Peter Hernon and Ellen Altman used the SERVQUAL model to develop an assessment instrument for measuring service quality and user satisfaction in academic libraries (Cullen, 671). This approach has evolved into the current national survey, the LibQUAL+ instrument, which ran a pilot study in 2000 and national surveys of academic libraries every spring thereafter.

The explosion of library assessments in recent years has created a vast body of literature. Between 1976 and 1982, for example, 238 works were published just on reference service assessment (Murfin and Gugelchuk, 315). A comprehensive review of recent library assessment literature is beyond the scope of this project. I have therefore focused primarily on studies of graduate students, branch libraries and science students.

C. Needs Assessments in Libraries

“The purpose of a community needs analysis,” Roger Greer and Martha Hale wrote in an influential early (1982) paper, “is to help the library choose from alternatives in allocating resources” (Greer and Hale, 360). Greer and Hale developed the community analysis model as a way for public libraries to learn about the communities they serve. They recommend that libraries: define the community to be studied; gather information about the community; learn the interests of the community; learn about other service providers in the community; and learn about the history of the community (360-365). This is essentially the method used by Marilyn

Parrish in her 1987-1989 study of the information needs of graduate students at Bowling Green State University (Parrish, 644).

In her 18-month project, Parrish analyzed all available information about graduate students at Bowling Green. She studied demographics, course syllabi, use of library services, and interviewed faculty members about class assignments that required use of the library. Graduate students received questionnaires. Parrish found that many graduate students are unaware of basic library services and “experience difficulty with each step of the research process.” Faculty members were critical conduits of information about university services, yet many faculty members were themselves ignorant of library research services (Parrish, 646).

A 1990 study at Georgia College used focus groups followed by a survey to evaluate student views of library services. Scott and colleagues observed that qualitative research is attractive because of the “immediacy of the experience and how it gives librarians and administrators a gut level grasp of users’ perceptions” (Scott, Long and Flanders, 228). The study found some students had acute library anxiety. Georgia College graduate students “were likely to return [to] use the library at the institution at which they received their undergraduate degree, if it was within a hundred miles. Some expressed a concern that they would be ridiculed, or the staff at an unfamiliar library would think they were dumb for asking for help” (Scott, Long and Flanders, 235). This is a remarkable, if extreme, expression of the discomfort some students can feel in academic libraries.

In 1992 and 1993, a Duke University Library study investigated what services specific user groups wanted. Graduate students were found to be midway between faculty and undergraduates, particularly in terms of their attitudes towards computerized resources (Berger and Hines, 308). The complexity of information retrieval led users to identify “simplicity of use” as a critical feature in an ideal library of the future (Berger and Hines, 307). Users wanted

fast, sophisticated, comprehensive access to information, and they did not want to pay more to get it. The authors reporting on the study use a phrase often heard in library user studies, “They want it all” (Berger and Hines, 308).

The situation of the University of Rhode Island Library in 1993 mirrors that of many academic libraries at that time. The online public access catalog (OPAC) was new. The library had new CD-ROM databases, and it faced budget cuts. URI librarians wanted to know how effective students were at using library resources, what skills students needed to be effective library users and how satisfied students were with the University Library. A questionnaire was distributed in the spring of 1993 to students entering the library.

URI patron satisfaction was based on successful searches and pleasure with the CD-ROM databases and online catalog. Dissatisfaction was largely due to journals not owned or missing. 13% of dissatisfied students needed more staff help. While most (86%) students saw themselves as effective library users, only 60% were satisfied with the results of their search for information. Students tended to “blame the library’s resources and staff for their own ineffective searches rather than identify their own inadequacies in using library resources” (McCarthy, 230). Top requests were for better shelving and replacements of missing journals, more training, more purchases of library materials, more staff help and better signage.

In the early 1990s, Washington State University Library was struggling with managing services for three widely separated branch campuses. A survey of branch library user needs was conducted in 1991. The survey had methodological problems and a low response rate (Bradley, Siegel and Terry, 48-49). A second survey was done in 1995. Results pointed to a need for increased staffing and enhanced user instruction at the branch libraries. (Gover, Pappas and Wycoff, 131-133). In 1996, a system-wide survey involving the main library and the three branches was conducted. An “alarming disparity” was found between what users needed and

what the libraries were offering, especially in journal holdings (Bancroft, Croft, Speth and Phillips, 220). The third survey found that graduate students used the libraries more than any other user group. Like the Duke study, this survey showed the concerns of graduate students “overlap those of faculty and undergraduate students” (Bancroft, Croft, Speth and Phillips, 222). Like faculty, graduate students were alarmed at mutilation and theft of research material and were interested in interlibrary loan services. Like undergraduates, they cared about photocopy services and library hours. The authors proposed “these students’ heavy use of the libraries warrants their increased involvement in some areas of decision-making” (Bancroft, Croft, Speth and Phillips, 222).

The first study that gave the University of California, Santa Cruz Science Library “extensive statistical data about its users” was conducted in the spring of 1994 (Wei, 33). This study combined focus groups concurrently with the distribution of a questionnaire. These graduate students’ priorities more often matched those of faculty members than those of undergraduates. They agreed with faculty about the importance of interlibrary loans and the wish to get library notices via e-mail. They did not share undergraduates’ interest in course reserves or study rooms. The survey highlighted the need for improved photocopy services, faster interlibrary loans and more electronic services.

Two studies from the University of Arizona Library in the mid-1990s illustrate the importance of proper research methods. The University of Arizona Library’s Social Science Team conducted a needs assessment of faculty members and graduate students in 1995-1996. The team began with focus groups and then worked with a consulting group to develop two surveys. Responses were tracked, and one survey was resent to faculty to improve the response rate. Graduate students valued reference works, government documents and electronic databases more highly than faculty members. Faculty ranked books and journals more highly than

graduate students. On the other hand, graduate students felt that the journal collection in the library was less adequate than did the faculty. A significant number of users found the library's book and journal collection inadequate for their needs, and the main conclusion of the survey was that any available funds should go towards strengthening the collection. As in many studies, graduate students visited the library more often than faculty members (Veldof, 1-9).

At about the same time as the social science study, the University of Arizona's Science-Engineering Team conducted a needs assessment of science and engineering undergraduates, graduate students and faculty members. A 1997 report on this study by Laura Bender and colleagues had an interesting conclusion: methodological flaws with the survey meant that the most important lessons learned were about study design. The team had used a census method, polling people while they used the library, and the response rate was too low to be useful. The authors determined to use random sampling in the future and concluded "statistical literacy is a necessary skill in our organization" (Bender, Chang, Morris and Sugnet, 32-33).

The University of Washington Libraries began conducting triennial user surveys in 1992. The UW Libraries also use observational studies, interviews, focus groups and usability studies to assess its services and user needs. Over the years, there has been a shift towards remote use of library resources and in favor of electronic resources. The task of finding and using information has increased in complexity since the surveys began. Constants include satisfaction with the libraries and the importance of libraries in the lives of students (Hiller 2001, 613). The surveys also show distinct differences in use patterns depending on the academic discipline of the user (Hiller 2001, 620).

UW studies are also interesting because UW participated in the 2000 LibQUAL+ pilot study and is therefore able to assess differences between its 1998 in-house survey and the LibQUAL+ instrument. Responses to the LibQUAL+ survey were significantly lower (Hiller

2001, 610), but generally correlated with UW survey results (Hiller 2001, 619). Both surveys show “continued growth in remote use of library resources and in user self-sufficiency” (Hiller 2001, 625).

The 2000 LibQUAL+ pilot study and subsequent surveys are the most significant national evaluations of library services and patron satisfaction. As part of the 2001 LibQUAL+ survey, sixty interviews with a diverse group of academic library users were conducted in the spring of 2001. The report of this study, written by Colleen Cook and Fred Heath, was one of the best articles I encountered: well-written, comprehensive and compelling in its direct quotes of library users. A major finding of this study (and of the LibQUAL+ surveys) was a strong drive for self-reliance on the part of library users. Most users pursue a strategy of “independent trial-and-error” to find resources (Cook and Heath, 553).

Graduate students shared the desire for self-reliance with faculty members. At the same time, they wanted library staff to be open and approachable. “Interviewees spent more time expressing their concerns and expectations for the delivery of respectful and caring service than other factors” (Cook and Heath, 579). Empathetic and knowledgeable staff turned out to be one of the most important factors in determining user satisfaction. One graduate student interviewed actually changed universities in part because of an unsympathetic librarian. “So the library was about a sixth of the reason why I left . . . I could never find what I needed” (Cook and Heath, 561).

Faculty and students also valued comprehensive library collections. “I have had history and sociology of science graduate students tell me to check out a school’s library before you enroll in a Ph.D. program,” said one graduate student . . .” (Cook and Heath, 567). Students accept that no library can have everything, and value interlibrary loan services to supplement the library’s collections. A delivery time of one week was acceptable for interlibrary loan (Cook and

Heath, 570). Ease of access to library materials was a high priority, and online collections are changing the way libraries are used (Cook and Heath, 568).

Interestingly, the subject of branch libraries was divisive, with scholars in traditionally defined disciplines supporting them, while interdisciplinary scholars often found them an impediment (Cook and Heath, 569-570). Well-designed web pages were particularly important to interdisciplinary scholars using branch libraries, because they brought centralized databases to the branch. Combined catalogs brought bibliographic unity to dispersed collections (Cook and Heath, 571).

LibQUAL+ studies also emphasized basic library services. Records should be accurate. “Perhaps the most frequently occurring complaint is the unavailability of books found in the catalog and noted as available” (Cook and Heath, 572). Journals out to the bindery, unreliable computers and malfunctioning photocopiers and library printers frustrated users. Finally, although online access is almost universally preferred, the library remains important as a place to its users. It is a symbol of the life of the mind, a place to study, to work, to browse and to do research. (Cook and Heath, 575-579).

A 1998-1999 study of graduate students at the University of Iowa showed the same drive for self-reliance on the part of students as that seen in the LibQUAL+ studies. Graduate students rarely interacted with reference staff and “almost never” used the libraries instructional computer program or library handouts. Open-ended responses showed that graduate students were unaware of many library services and needed more general instruction. The online catalog and the libraries’ website were unpopular. When students did need to interact with library staff, they preferred to do so in person rather than by telephone or e-mail. (Washington-Hoagland and Clougherty, 133-134).

A 2002 study at the graduate-level Oregon Health & Science University (OHSU) explored combining library orientation with usability testing of the library's new web page. The biggest surprise was how effective combining usability testing with orientation was. Graduate students "became active participants from the very beginning," and evaluated the program more highly than in past years. (Crum, Judkins and Zeigen, 24). They "particularly liked being able to test out the Web page rather than be told about it, and they preferred 'letting us figure it out instead of hand-holding'" (Crum, Judkins and Zeigen, 25). Additionally, the study made students "partners with the library in improving access to library services" and gave them a chance to contribute (Crum, Judkins and Zeigen, 25). I am intrigued by the idea of giving students real-life assignments and a free hand as a teaching method. These authors may have found a way to turn users' self-reliance to the library's – and the users' – advantage.

4. Data Collected at the Hatfield Marine Science Center

A. Course Syllabi – Fall Term, 2003

I reviewed syllabi from seven classes taught at HMSC in the Fall, 2003 term. All classes had a writing and/or presentation assignment that would require some library research. The most extensive library research requirements fell to students taking the writing-intensive Aquaculture class. The graduate student assignment culminates in an 18,000-word position paper on a policy issue in aquaculture. Research topics assigned in other classes this term include: a short essay on marine bird or mammal conservation; a marine species fish stock assessment; a term paper on freshwater fish biology; a presentation on some aspect of the groundfish crisis; a poster on Pacific Northwest natural resource ecology and management; and a pseudo-National Science Foundation proposal for a fisheries ecology research project.

B. Faculty Interviews:

I interviewed one retired professor to get some background information about the history of the Guin Library, and four active professors to get their perspectives on their graduate students. I verified the names of their students. I asked about the nature of their research, the qualities required for success in their fields and about obstacles their students face while in graduate school. Some professors offered opinions about library services, but the focus of the interviews was the graduate students, not the library. Many of the views they expressed I later found in library literature about graduate students.

This group of faculty members taught toxicology, fisheries economics, aquaculture, behavioral ecology and fisheries genetics. The professors felt that successful graduate students are well rounded, curious, tenacious and motivated. “They have got to be self-motivated and enthusiastic,” one professor stated. “They’ve got to have the juice!” (Langdon).

Two professors mentioned library skills as important parts of subject mastery. One noted that successful students have “the ability to connect with, to assimilate and read the literature” (Banks). The other researcher complained that his students did not keep up with current literature (Fleming).

Sources of stress abound in graduate school. The faculty members I spoke to mentioned money worries, especially for married students. “They have families, often their spouses are in school themselves, and there are real money issues” (Weber). “Some of my students have gotten married while they were in grad school; a couple of the women even had kids—that’s real pressure! They had a hard time finishing. But that’s grad school: it’s supposed to be tough” (Sylvia).

The professors also noticed their students struggling with time management issues. One faculty member complained about “Lack of organization of their lives, difficulty completing

tasks on time” (Langdon). Another observed, “Time management is a big issue, especially for the Master’s. You know, in the undergraduate setting, everything is laid out. You go to school for a term, then you have two weeks off . . . There’s a rhythm. But the graduate program is a year-round job. They’re in a new situation. And they don’t know how to estimate how long things are going to take” (Fleming).

Burnout may be a problem for some students. A molecular biologist was sensitive to the demanding nature of his work. “I see the big problem as burnout. My work requires tenacity and a capacity for drudgery: you have to be willing to run the 455th gel, and then run the 456th and 457th to get the data you need. It requires stamina: burnout is very easy” (Banks).

One professor observed that the pattern of course-work was changing. “Lavern Weber used to talk about having his students take their classes in one year and then come here to do the lab work. It just doesn’t work like that in my field [fisheries economics]. The classes are all scattered and incremental. You have to build up the skills over time. None of them finish in two years; some of them take 3 or 4 years. There just isn’t that neat division. They have funding during that time, but it isn’t what they thought they were getting into when they started the program.” (Sylvia)

Although stressed, most students seem unwilling to ask for help. “I tell them to talk to me if they’re having problems, but they almost never do” (Sylvia). For some students, asking for help may seem a mark of failure. A faculty member saw fear as an obstacle to success. “You have got to create self-assuredness in these students. The fear of failing is so strong . . . Whenever it was appropriate, I made sure to compliment them” (Weber).

The faculty members I interviewed cheerfully acknowledged the many stresses of graduate school. “I was under a lot of pressure when I was in grad school,” one professor remembered. “It was a crucible” (Sylvia). The comment that has stayed with me the longest

described the transition from undergraduate life to the graduate situation in a way I had not thought of before. “It’s a huge transition: they’re going from being information absorbers to being information producers. And it can be quite difficult” (Fleming).

5. Historical Data on OSU Graduate Students and Libraries

Oregon State University was one of 43 academic libraries to join in the 2001 LibQUAL+ survey. Respondents were randomly selected and invited by e-mail to participate in an online questionnaire. Of the 329 OSU respondents, 35.3% were graduate students. Of all the patron groups surveyed, graduate students were the most critical of the OSU Libraries. Reporting on the OSU results, Bonnie Allen observed that, “In all areas pertaining to access to collections, OSU graduate students were more critical than the Aggregate [of all LibQUAL+ participating libraries] scores for graduating students” (Allen 2002, slide 32). The libraries fell short in several access issues, including inadequate electronic delivery of full text, a lack of comprehensive print collections, incomplete runs of journal titles and a lack of responsiveness to having resources added on request. Graduate students also had problems with reliability, including lack of accuracy in catalog, borrowing and overdue records, and failure to provide services as promised. Responsiveness was another problem area. This service dimension includes readiness to respond to user questions, prompt service to users, and keeping users informed about when services will be performed. Graduate students also reported gaps in the self-reliance service dimension, which includes helping users find information 24 hours a day and making electronic resources available to the office or home. Summing up the 2001 results, Bonnie Allen observed, “OSU collections do not meet graduate student needs nor are we succeeding in basic service issues” (Allen 2002, slide 32).

The Guin Library conducted “snapshot” surveys of on-campus users in 1996 and 1999 to determine if they got requested material quickly enough. Users were generally satisfied. Their

needs were met if they got requested materials within a week. The Library surveyed undergraduate and graduate fisheries students in 1996 and 2001, and HMSC surveyed fisheries students in 1997 on all of the HMSC experience, including the library. Student concerns in 1996 included photocopying and computers. (Webster 1997, 1-2). 62% of the 1997 students felt the library exceeded their needs. 1997 students wanted more, better and better maintained computers. (Anonymous, 1). 2001 students were unhappy with noise in the library, lack of computer support and printing. They wanted a scanner, help with creating posters, a color copier and an auto-feeder and collator on the copier. (Webster 2002, 1-3). Over the years, fisheries students have appreciated 24-hour access to the library, the self-checkout system, access to a kitchen, the comfortable, relaxed atmosphere of the Guin Library and the helpful staff.

6. The Survey.

A. Methodology:

My charge was to study the library needs of “resident” graduate students at HMSC. But who was a resident? The HMSC administration did not have a list of resident graduate students. HMSC faculty supervise some students who are based on the main campus and who rarely visit the Center. Deciding about whom to survey gave me a great deal of trouble.

In the end, I relied on home library identification in the library database, professors’ comments, class lists, and feedback from the students themselves. I identified a core list of 21 residents plus 9 visiting students. I posted a message to the HMSC Graduate Students’ Association e-mail list notifying them of my survey, and asking that if they wished to be included, they write me. Two students responded, and they were added. One student e-mailed me that he was leaving to do field work and would not have time to complete the survey.

I placed paper copies of 30 self-administered questionnaires in the selected students’ mailboxes. The surveys were tagged with removable identification numbers to enable tracking

of non-respondents. After a week, I sent a reminder to the student e-list, and followed up with individual e-mail messages to non-respondents.

I compiled the results myself. The survey was not sent to the Survey Research Center on Campus, in part due to a lack of time, and because the variation in overall satisfaction was so small. I am open, however, to following up at a later time with the Survey Research Center if that should seem desirable.

B. Survey Report

I. Information About the Students Surveyed

Questions 1-4. Surveys were distributed to 21 resident and 9 visiting graduate students. Of these, 17 resident and 7 visiting students responded (80%). Most students were affiliated with the College of Agriculture’s Department of Fisheries and Wildlife. More than half of the resident students surveyed are working towards doctorates, and all of the visiting students are pursuing Master of Science degrees.

Table 1: Respondent Demographics

	Residents	Visitors	Male	Female	M.S.	Ph.D.
Ag/FW	14	4	10	8	10	8
COAS/MRM		3	1	2	3	
COAS/Ocn	1	1		2	1	1
Zool	1		1			1
Male	9	3			4	8
Female	8	4			10	2
M.S.	7	7				
Ph.D.	10					
Age 22-25	3	1	1	3	4	
Age 26-30	6	6	6	6	8	4
Age over 30	8		5	3	2	6

Questions 5-7. Several resident students had long-term connections to HMSC. For some, this experience dated from required fisheries classes taught each fall. Three resident students worked at HMSC before starting graduate school. One student began as a volunteer in the Visitor's Center at HMSC, progressed to a staff job and entered graduate school two years after she began volunteering at the Center. Only one of the visiting students had been at HMSC before beginning work on their current degree. Most visitors were on the HMSC campus to take the required courses. The long-term connection to HMSC might affect library evaluations, but the Center was rated lower than the library by these students (see question 26).

Question 8. Literature about the graduate student experience shows that the student's relationship with the major professor is critical for graduate student success (Hodgson and Simoni, 244-245). If so, then these students should do well. Only the one visiting student who was leaving OSU indicated a bad relationship with the major professor, and only two resident students felt that the relationship could be better.

Question 9. Lack of financial support is a potential source of stress. All students had some financial aid, from scholarships, fellowships, tuition waivers, assistantships and grants. One student took care to mention that the award did not cover student fees.

Question 10. Lack of time seems to be a significant source of stress for many of these students. One visiting student had two jobs amounting to a near full-time work schedule of up to 35 hours a week. Some resident and visiting students had seasonal jobs. For other students, the time needed for research is a strain. Four resident students said they worked 50 or more hours a week in the laboratory.

Question 11. The breadth of experience students have with different academic libraries might affect evaluations of library services. All students were able to contrast the Guin Library with at least one other library. Half of all students had experience with 5 or more academic

libraries. A resident graduate student whose research took him around the world claimed to have used at least fifteen different academic libraries. Experience with other libraries did not seem to be a determining factor in the evaluation: distribution of “1” (highest) ratings was almost evenly divided (7/6) between those who had experienced less than 5 and those familiar with 5 or more university libraries.

Table 2: How many academic libraries have you used in your university experiences?

	2	3	4	5 or more
Residents	4	3	2	8
Visitors	1	2		4

II. Library Collections

Questions 13-15. The next section of the survey dealt with the library’s collections. Students were asked to list the five journals most useful for their research. Most frequently mentioned were the Canadian journal of fisheries and aquatic sciences (8), Ecology (6) and Fishery bulletin (6). All journals mentioned more than once that the Guin Library does not own are available online.

Next, students were asked to list the subjects they were researching. They were asked to list up to three topics in order to capture some of the interdisciplinary nature of today’s research environment. This question was followed by a question asking the students to evaluate how well the library met their needs in these areas. Subject areas were ranked on a scale of 1 (“Very well”) to 7 (“Very poorly”). Fisheries biology was the most frequently mentioned subject area (12 students), followed by marine ecology (7 students) and fisheries management (5 students). These areas all received high scores, and averaged between 1 and 2. Mean scores were lower in some areas, particularly molecular biology, statistics and breeding techniques.

Table 3: Ranking Collections in Major Subject Areas.
The number of students is shown as (resident,visitor). 1 = Excellent, 7 = Unsatisfactory

	Fisheries Biology	Marine Ecology	Fisheries Management	Molecular Biology	Statistics	Breeding
# of students	10,4	4,3	2,3	3,0	1,1	2,0
Resident mean score	1.9	1.25	1.5	3.3	4	6
Visitor mean score	1.5	2	1.67		4	
Combined mean score	1.79	1.57	1.6	3.3	4	6

One visiting student used this question to voice dissatisfaction with the library’s physical resources. Just before the start of the term, new computers had been installed. The new computers had CD drives, but lacked disk drives, which was a serious problem for some students. This individual pointed out the need for “floppy and zip drives” and gave the collection a score of 7 for “Very poorly” meeting the student’s computing needs. The student also listed “Available new journals” (Score: 4) and “Private study rooms for visiting grads” (Score: 7) in place of different subject areas. (Note: despite these concerns, the student’s overall rating of the library was a 2.)

Question 16. As a follow-up to the questions about the collections, students were asked to suggest software or publications they would like the library to acquire. Few students responded. Two students suggested software and publications related to the S Plus statistical program. A visiting student suggested “Sysat 7.0 or statistical program” and Ecosim or other modeling software. Another visited suggested the journal Molecular Ecology (available online) and “EndNote or other biological [sic] database.”

Question 17. I had hypothesized that students would prefer the convenience of online journals to print journals. This view was overwhelmingly confirmed: 17 students favored online

journals, three students preferred print, two didn't want to choose and two did not respond to the question. The lack of comprehensive coverage and difficulty of access to some online subscriptions was a problem for one student. "I really need a combination of the two and the online journals are often missing the volume(s) I am looking for or have subscription login requirements that I don't want to mess with. However, I really find it fast and helpful to do a few clicks and get a .pdf file..." Another observed, "I far prefer to sit down with a journal to read a paper, but I have to also admit that the majority of my current research is done through online sources (JSTOR is a godsend)... Short-term answer would be online, long-term answer would be print." A more typical point of view was expressed by a visiting student, "I access all my journals online if available...it is more convenient."

III. Library Services

Question 18. The final section of the survey had to do with library services. We wanted to know what speed of delivery students considered satisfactory for material the library does not own. I hypothesized that one week would be satisfactory, as our early study and the LibQUAL+ results showed; however, most students preferred to get materials within 4 days. The most meaningful distinction with this question was not based on resident or visitor status, but rather on the degree being pursued. Doctoral students have longer timelines than Master's students. Many doctoral students have completed most of their coursework by the time they come to HMSC (Rogers, 16-17); in contrast, most of the Master's students were taking classes. It may also be that the (mostly) younger Master's students have been more conditioned by the online environment to expect instant access to articles. Master's students were split between wanting requested materials delivered within two days (7) and 4 days (7). Doctoral students preferred delivery by 4 days (4) to one week (5). (Note: some students checked more than one option, and all choices were counted.)

Table 4: Preferred Document Delivery Time

Degree Pursued	48 hours	4 days	1 week
M.S.	7	7	2
Ph.D.	1	4	5

Question 19. Another indicator of service quality is the perception that library staff are “too busy” to help students (Cook and Heath, 539). Students don’t seem to feel that this is a problem. Only one visiting student thought staff were sometimes too busy to help, and this student noted that “it depends on the day of the week,” perhaps referring to days when the librarian is gone.

Questions 20-22. Recent studies of service quality have shown that library staff cannot afford to ignore basic library services (Cook and Heath, 573-574), so questions about specific service problems were included. Students were asked how many times they had been inconvenienced in the last six months by books not being properly checked in (circulation issues), or by missing books and journals (shelving and binding issues).

It can be very distressing to get an overdue notice for a book you know you have returned. Unfair fines can be levied, and time and energy must be spent contesting the error. Three students reported one such incident each in the last six months. This should be considered a serious problem.

More students were inconvenienced when books that the catalog display showed were “Available” were in fact off the shelf. Three students said this had happened three times in the last six months. More than half of the students were inconvenienced in this way. The situation was even worse when it came to journals issues being off the shelf. One student did mention that the needed issue was at the bindery, showing some awareness of the two-month period journals can be off the shelf being bound. Nevertheless, this is clearly the most widespread service problem that library users identified. One student wrote, “I’ve found sometimes that some issues

are lost, even if they appear on the screen. There should be a way to improve this, and avoid that users take books/journals without checking them out.” This patron refers to a particular problem the library faces: users have keys and can remove items from the library if they wish. Despite this problem, I believe that the situation can be improved.

Table 5: How many times in the last six months have you been inconvenienced by returned books not checked in, books missing from the shelf, or journals missing from the shelf?

	0	1	2	3	4	5 or more	No response	Mean score
Bks not checked in	20	3					1	
Bks off the shelf	10	6	4	3			1	
Jrls off the shelf	5	14	1				1	

Question 23: Student frustration about missing journals and books seems to be somewhat alleviated by the library staff’s ability to get locally missing items from other libraries. Most students believed that library staff were “Almost always” able to get desired materials. On a scale of 1 to 7 with 1 meaning that library staff were “Almost always” able to get desired materials, 12 students scored 1, 6 scored 2, 1 scored 3, and 5 did not respond.

Question 24: We wanted to know how students preferred to learn about library services. The library’s electronic news list was a clear favorite (20 students). The next most requested source of information was the library web page. The least popular ways for students to learn about library services were handouts and the HMSC newsletter.

Question 25: Students were asked to rate library services, including help from library staff. Much recent literature refers to users’ desire for “self-reliance” in using the library (Cook and Heath, 554-557, Hiller, 623). Many library patrons prefer to learn to use the library on their own, however inefficiently, rather than ask for help. Based on these studies, I hypothesized that “help from library staff” would receive low rankings. Five students, however, listed “help from

library staff” as a top priority, and seven students gave this help the second-highest ranking. I take this as a compliment.

Questions 12 and 26: In an interview with OSU librarian Bonnie Allen, she asked if there were a “halo effect” around the Hatfield Marine Science Center that would bias students in favor of the Guin Library. Was there a warm glow around the experience of doing research here that could carry over into users’ perceptions of the library? If there is a halo, it is small. Most students rated the library higher than they did the Center.

The Newport campus lacks many amenities for students that are present on the main campus such as student health services and recreational facilities. These deficiencies are clearly felt by the students. The difference in satisfaction is particularly clear in the case of the visiting students. They are required to commute or to move to Newport in order to take the required classes offered here. The change in residence can be a financial and logistical strain. Many students have to share rooms in HMSC student housing, another source of stress. If anything, there may be a “negative halo” around the Center, particularly in the case of visiting students.

Table 6: Level of Satisfaction with HMSC and with the Guin Library

1 = Excellent; 7 = Completely Unsatisfactory

	1	2	3	4	5	5.5	6	7	No Response	Mean Score
HMSC eval–Residents	4	6	3	3				1		2.59
HMSC eval–Visitors		1	3	1	1	1*				3.64
Lib eval–Residents	11	5							1	1.31
Lib eval–Visitors	2	5								1.71

*Student scored HMSC as 5-6.

Comments: Students were invited to comment on the library. Their comments reveal dissatisfaction with the new library computers, unhappiness about the level of noise in the library, particularly after working hours when there is no staff to monitor the noise level, and missing books and journals.

Selected comments from students giving the library a “2” rating:

“It would be nice to have some signs reminding people that it is library and that people go there because it is SILENT place, and that this should be RESPECTED... Some people (especially after hours) chat very loudly...”

“I use the computers on a daily basis – super important to have friendly & reliable service. People talk to [sic] loud / too much in library – would be nice to check out a study room for individuals or have others have group study sessions in separate rooms.”

“When I first came to HMSC, I wasn’t associated with a particular lab or group, therefore I never received or heard of an orientation... Is there an annual library intro for new people at HMSC?”

“I’ve found sometimes that some issues are lost...”

“In general, Guin is one of the best libraries I have ever used.”

We also received helpful comments indicating areas where there is perceived room for improvement from students who gave the library a “1” (Excellent) rating:

“The computers w/only CD drives are extremely frustrating and the student “S” drive is full.”

“The computers are great to have here, but there have been many problems with them as well. For example, we have lacked essential software when it was needed, though it has improved some. The lack of drives, such as zip, floppy and CD drives has been a big issue.

Being able to access networks on campus has been difficult. Having enough computers to run a computer lab for our courses has been difficult as well.”

7. The Focus Group.

On a rainy evening in mid-November, I conducted a small focus group. The session was held in the Library Seminar Room. Refreshments were served. I led the discussion and took notes. The focus group had three purposes: to follow up on the survey, to hear from the students in an informal setting and to improve the study through methodological triangulation (Patton, 247). I began with a standard message about the value of their responses and gave assurance of confidentiality. I then acknowledged the problems identified in the survey and let the students know that library staff was working on them.

Unfortunately, only five students showed up, but we managed to have a good discussion. Computers continued to be an issue. There were complaints about the time it took to save files and limitations in desktop settings. One student had lost files with the new CDs and was particularly incensed. “I don’t think I’ll ever switch to CDs—they’re really annoying to work with—nobody in my lab on campus wants to use CDs.”

Noise in the library, especially after the staff has gone home was another problem. “I need to concentrate. I really don’t want to have to hear about somebody’s date last night when I’m trying to work. And cell phones—it totally blows my concentration to have to hear a phone ring.” Another student said he appreciated the way cell phones didn’t work at the Valley Library. “I think they have scramblers.”

The survey showed that these students had little time. None of them had any suggestions as to ways the library could streamline services. “The library is great—I can get all kinds of stuff. But that doesn’t give me time to read it!”

The survey also showed a preference for online journals. A student remarked that he and another graduate student present “both like to read Molecular Ecology Notes—but it’s not like we’re reading for pleasure. We’re looking for protocols, how to set up experiments, and for that online is better—easier to find what you want. Sometimes I do like to come in and just sit down and read something that’s not necessarily in my field, and then paper is good. But online is better for work.”

Printing had been a problem in the past, but did not seem to be an issue here. Printing is free at the Guin Library, and is appreciated. “I can’t tell you what a resource that is. And I loved it when you went to double-sized pages [a default setting]—not just because it’s—you know, good for the environment, but because I don’t have to keep resetting it.”

Photocopying, a problem area in many library studies, also did not seem to be an issue. The library lost a copier this year, and I thought its absence might inconvenience students. One student did all his copying at night. Another remarked that the library’s student assistants stopped copying and let her in when she needed to use a machine. Another student wanted to learn more about the new copier and requested a tutorial.

There was an unexpected problem with the self-checkout computer. Apparently, it occasionally went down at night and on the weekend and the students did not know how to restore it. This comment surprised me, not because it was extraordinary, but because nobody had complained about it before.

Students also requested a laptop in the library that could be used for practicing presentations. “It could be just for in the library. It would really help.”

A student in the survey and another in the focus group complained about missing library orientations. It seems that some students are slipping through the cracks.

There was one final surprise. Because the library is available to HMSC students at all hours, the sofas get heavy use. Although they were cleaned a couple of years ago, it appears to be time they were cleaned again. “Three other students made me promise to ask this—could you please vacuum or shampoo the couches? We love them—and the pillows—we all sleep on them—but it’s time they were cleaned!”

At this point, it seems that the students had said what they came to say. The session ended with kind words. “I’d just like to say—I’ve been in a lot of libraries—at Guelph, Ohio State—and this is by far the friendliest library I’ve ever used—the most flexible. I really appreciate it.” Another student added, “I was at Friday Harbor before I came here. And this is so nice—such an upscale library. It’s great.” Then they scooped up the pizza and departed.

8. What I Would Do Differently Now

Time and confidence were issues for me. The literature review took more time than I hoped, and I had to work through a paralyzing loss of confidence as I learned how sophisticated library surveys have become. There were few ambiguities in the survey, but the question about the number of academic libraries used (Question 11) confused some students because some campuses had several branch libraries. I would also split Question 10 to distinguish between an outside job and time spent on research. Unfortunately, I did not have the time to pre-test the survey, which standard methodology recommends (Bourke and Fielder, 83-84).

I should have either used random sampling or surveyed every graduate student who ever came to the Center rather than trying to select people who actually used the library. The response rate would probably have been lower, but the sample would have been more representative (Thompson, 2-3). Bruce Thompson says it well, “In the LibQUAL+ study we have to date taken the view that the perceptions of ALL potential users are important. In the

campus environment, all students have paid fees to defray library expenses . . .” (Thompson, 11). Non-library user’s perceptions are also important.

I would bring the approval / disapproval rating scale into conformity with the LibQUAL+ standard of 9 possible scores instead of the 7 I used, and reverse the values so that 9 was the best possible score, instead of 1. These changes permit more refinement in ratings and would make comparison with the LibQUAL+ data easier.

As for the focus group, I had not intended to lead it myself, but I came down with a bad cold and lost the time needed to make other arrangements. It would have been better to have a neutral party lead the group. I also make the classic mistake of trying to impart a little information instead of just listening (Patton, 385-386).

Conclusion:

Students were generally satisfied. Some basic service issues were identified. A plan of action has been established to improve identified problems.

On a personal note, I would like to add that this was a most rewarding experience. I got to read some of the professional literature and gain in my understanding of library assessment techniques. My respect for the people who conduct these studies has increased. I feel that I made a real connection with a critical user group. I am grateful for whatever contribution this class permitted me to make.

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