

# UC Santa Cruz

## Library Staff Presentations and Research

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Library space redesign: stimulus and response -University of California, Santa Cruz

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## Chapter 12

### Library space redesign: stimulus and response –

#### University of California, Santa Cruz

Gregory Careaga

“No operation extends with any certainty beyond the first encounter with the main body of the enemy.” Helmuth Von Moltke

The McHenry Library and the Science and Engineering Library comprise the University Library at UC Santa Cruz. Together they serve a campus community of over 20,000 students, faculty, and staff. Between 2005 and 2011, we executed a major addition to and seismic renovation of McHenry Library. We were committed to recreating this library to better serve our users’ needs. We valued student input and integrated their feedback during the planning process. Following the renovation, we understood the value of validating our planning assumptions in the context of our users’ experience of the library, and of modifying the program accordingly. We continue to assess the library space and improve it as needed but here the focus is on the changes we made to the space after the addition based on user feedback.

Planning for the McHenry project began in 1991, the same year as the dedication of the new Science and Engineering Library. The first Detailed Project Program (DPP) was published in 1995. The programmers foresaw that new digital technologies would change how the library served its community, articulating a vision that “the University Library must become a multiformat electronic library and ‘knowledge center’ for the 21<sup>st</sup> Century.” At the same time, they acknowledged a deficiency in collection space, stating that such space in McHenry Library

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was “at working capacity with little flexibility in organizing and shifting materials” (University of California, Santa Cruz 1995, II-1).

In 2002, University Librarian Allan Dyson secured a campus commitment to make the McHenry Library addition and renovation project a top priority (Dyson and Reti 2006, 224-25). We partnered with Boora Architects and Phil Leighton, who wrote the book on academic library space planning (Leighton and Burns 2000), to revise the DPP. The project was approved under the updated DPP and construction began in 2005 (University of California, Santa Cruz 2002).

### The Addition Years

When we occupied the McHenry Library addition in 2008, we had to vacate the original building entirely. Downsizing from 117,000 assignable square feet to 80,000 was not easy. Services were scattered with the access desk and reference desk on different floors. Drive-up access was curtailed. Pedestrian access was circuitous via a temporary catwalk to a temporary entrance. Some staff and a small portion of the collection were temporarily housed in the Science and Engineering Library. Most of Special Collections was moved off site. The library did not program this temporary configuration to maximize the user or staff experience, but rather to survive the three years until the renovation was completed. The addition served as our laboratory for conceiving and testing early solutions for the renovated library.

### The Media Center

Most staff and public services moved into temporary quarters during the renovation of the larger library. However, the Media Center moved into its permanent location on the ground floor of the addition. I managed the Media Center at that time, so I was the first person

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challenged to translate a portion of the DPP into a workable furniture and equipment plan. The first plan I implemented included thirty-six audio/video stations, and twenty-four computer workstations to supplement a stripped-down Information Commons on the second floor. That mix would not last long.

The Media Center serviced a very busy music reserves program. Our former practice was to create multiple copies of course-specific compilation CDs that circulated for in-house assignment listening. I programmed the Media Center to have seven private listening rooms and nine listening stations (with headphones) in the open area. In the months before the Media Center opened, Apple Computer released the first-generation Apple TV with 40 gigabytes of hard disk storage. This was more than adequate for a typical quarter's music reserves catalog. We piloted an Apple TV-based supplement to the circulating reserves CDs.

In the fifteen months between April 1, 2008 and June 30, 2009, reserves CD circulation declined by more than eighty percent. During that time, there was not a single observed use of the open area listening stations, formerly a mainstay of the service. In the summer of 2009, the new technology allowed us to decommission the under-performing open listening stations and increase the number of high-use computer workstations in the Information Commons. We did not implement Apple TV to free up space; we did so to improve workflow for the recording technician. We did not undertake a formal assessment of either the open listening stations or demand for the computer workstations: we relied on the evidence of our senses. Essentially, we took advantage of an opportunity to improve the space to better serve our students.

Library seating

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The library documented a decline in patron visits to McHenry Library and an increase in those to the Science and Engineering Library after the addition opened. The decrease did not surprise us. McHenry Library was difficult to reach and overcrowded while under renovation. Newly appointed Associate University Librarian for Public Services Elizabeth Cowell was determined to increase user capacity. She directed that sixty double-faced units of reference collections in open stacks on the second floor be consolidated into adjacent compact shelving or integrated into the circulating collection in order to create space for more user seating. The space reallocation created twelve hundred square feet of seating capacity, and improved access to and visibility of the temporary reference desk. Her decision demonstrated that the DPP could be interpreted with a reasonable degree of flexibility and that the library was willing to make course corrections to improve the user experience.

#### Planning for the renovation

The vision for the renovation differed from the original library in five important ways. The library eliminated long-term private study carrels, established a new Digital Initiatives Department, created a new Information Commons, provided for twenty group study rooms available for reservation, and created a café. We were mindful of the DPP's vision to create a 21<sup>st</sup> Century library, and so we planned to give our students and faculty new tools, new spaces for study and collaboration, access to a broader array of digital collections, and a place to refresh and catch up with friends and colleagues.

The library began working in 2009 to translate the DPP into a plan to furnish and equip public spaces in the fully renovated library. Nineteen zones were articulated and nineteen teams were assigned to make recommendations to the Library Management Group. Because of my

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experience in the Media Center, I served on eleven of these teams, including the Information Commons, library instruction rooms, group study rooms, and general seating teams. We did the things librarians do: reviewed the literature and visited new or newly renovated academic libraries. I turned a summer vacation road trip into a busman's holiday by visiting libraries at the University of Oregon, Oregon State University, and the University of Washington, as well as the iconic Seattle Public Library. Oldenburg's concept of the *third place* resonated with me (Oldenburg 1989, 16-18). I was interested in creating spaces for social learning with a strong sense of community ownership. I also investigated new models of flexible workspaces like the Googleplex that were used to good effect by our tech industry neighbors. I drew inspiration from very successful academic library commons like the Learning Commons at the D. H. Hill Library at North Carolina State and the Weigle Information Commons at the University of Pennsylvania. The contributions of Bailey and Tierney (2006) also heavily influenced how I conceived our Information Commons.

### Student Input

During winter quarter 2010, I worked with Assessment Librarian Lee Jaffe and Chancellor's Undergraduate Intern José Ruiz to conduct a photo survey modeled on a successful project completed by the University of Rochester (Briden 2007). We valued student input and wanted to get their perspective on library usage and student habits to create a space to best meet their needs. Five students completed the initial photo survey, each submitting twelve images from a list of topics such as "show us your favorite place to study." Each student also agreed to participate in a one-hour follow-up interview with the student intern, supported by one of the librarians.

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During the follow-up interviews, we displayed the photographs students submitted and asked open-ended questions designed to get interviewees to elaborate about how they studied, used the library, and would like to use the library. More specific follow-up questions emerged based on the details of a given photograph or a respondent's answer to an initial question. Each interviewer kept notes and we audio recorded the sessions. After the final interview, we concatenated the interview notes for analysis.

Upon analyzing the responses, we found they could be grouped into two general areas: usability and atmosphere. *Usability* described programmatic elements—the functionality of furnishings and spaces—that affected the user experience. For instance, did the library provide enough of the right type of seating for students' activities? Was the laptop loan period long enough? Was there adequate quiet space? Group space? *Atmosphere* described non-programmatic elements that still affect the user experience. For example, did paint color, an exterior view, availability of art, or other aesthetic elements play a significant role in the student experience and therefore in whether the library was a preferred venue for student work? A surprising outcome we discovered during this phase of the project was the importance students placed on the library atmosphere.

The student feedback from the photo survey was illuminating, but we lacked confidence that the experience of five students was representative of the campus population. We used the photo survey data to design a brief, ten-question student survey that we promoted to students late in the spring quarter. One hundred twenty-seven students completed the online survey. The data supported the earlier findings, showing that not only were usability considerations critical to students' library experience but that students were also sensitive to how the atmosphere contributed to or detracted from their experience.

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We learned from these two projects that students wanted furniture they could sit in for extended periods. They wanted to be able to stretch out and recline. They liked couches. They liked sitting in a comfortable chair and using a second chair as an ottoman. They were not averse to moving furniture but they did not like to drag heavy furniture across concrete because of the loud noise it made. They liked to be able to move from one kind of furniture to another as needed. They generally liked study chairs with wheels but disliked it if the wheels moved too easily.

Students thought about aesthetics. They described appealing spaces as soft, warm, colorful, and comfortable. They described unappealing spaces as institutional, ugly, dreary, sterile, and cold. Some students expressed a desire for indoor plants, one remarking that they would make the library feel more like home. They valued natural light and hoped to see art in the library.

We learned that lighting and temperature were important to the students' learning experience in the library. One student's comment about lighting led us to perform a lighting study and we discovered that a zone we had programmed for reading tables was inadequately lit for that purpose. As a result, we retrofitted these and other reading tables with task lights.

Students preferred a quiet environment. This was a more dominant theme in the follow-up survey compared with the photo survey. More than sixty percent of the respondents to the follow-up survey described their favorite spot in the library as quiet while less than nine percent indicated their favorite spot was a "busy, lively environment." The photo survey interviewees split more evenly: three preferred a quiet environment and two preferred a more active study space.



Students were ambivalent about large study tables. They liked space to spread out but they did not like studying next to strangers. The group work that sometimes took place at four-person tables was an unwelcome distraction to students studying nearby.

Students stressed the importance of food to their study experience. When asked to show us the things they take to class with them, all five of the photo survey interviewees took a photo that included some sort of food. During the interviews, three students spoke about food unprompted. One said that "snacks are important. Hunger is distracting and interrupts study." Another expressed a preference for healthy snacks that are not readily available on campus. A third counted on snacks because she could not always get to the dining hall to eat. The student who told us that he would continue to study at the Student Union rather than McHenry, mentioned its proximity to the campus restaurant Joe's as a factor affecting his decision.

When we asked the students to show us something they cannot live without while studying, one student took a picture of the vending machines at the Student Union and another took a picture of her kitchen. When queried about this picture, four students spoke again about the importance of food. Two noted the lack of dining near McHenry Library. One of them noted that she must plan for her food needs before coming to McHenry Library. Another student expressed a desire for healthier fare in the vending machines. As to the menu in the café, one hoped for "grab and go food like sushi or sandwiches." Another wanted to see a salad bar and sandwiches. A third would like to see more organic fare like trail mix, granola bars, energy foods, and green tea instead of coffee.

These two assessment projects resulted in a series of recommendations, which informed the renovation program. Some were useful to the programming teams and others were of interest to the management group.

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1. Remove four-person tables from designated quiet zones.
2. Put group study rooms as far away from quiet study zones as possible.
3. Enforce a no cell phone or at least a vibrate-only policy in the quiet zones.
4. Make carrels bigger and provide convenient access to power.
5. Improve lighting at the four person tables, especially in the second floor reading room.
6. Add networked printers on the third and fourth floor.
7. Add more catalog stations on the third and fourth floor.
8. Make computer workstations larger and more private.
9. Advertise the Media Center as the place to go for quiet computing.
10. Add writable surfaces and/or large monitors to the group study rooms.
11. Enforce a three-hour maximum on group study room use.

### The new McHenry Library

#### Information Commons

We opened the renovated and seismically reinforced McHenry Library in June 2011. The new library featured a sixty-seat Information Commons near a new co-located service desk where students could get reference, IT, or access services assistance. We selected Steelcase Answer 120° workstations for the Commons. These were less space efficient than the DPP ordered since each workstation required thirty-five square feet of space while the program called for twenty-five. The configuration broke up the oppressive rank-and-file symmetry of the previous temporary installation and gave students privacy and enough room to take notes or consult print collections while using the workstation. Allocating more space for each workstation

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was a deliberate decision that took us outside academic library planning norms (Leighton and Weber 2000; Fine 2001). We considered the superior user experience to be worth the cost to capacity. We reconfigured the quiet study areas to remove common tables, per student feedback. We replaced them with more of the 120° Answer stations. These were larger than traditional carrels, again with the idea that we wanted to give students space to spread out.

### Library instruction rooms

The library programmed two instruction rooms: one enclosed and one open. There was no good reason to program an open instruction room. When we completed the programming exercise in 2002, we replicated what we already had. However, we failed to consider that the old open instruction area was a niche carved out of other spaces and that it had only ever been a bit better than nothing. In addition, librarians never used the new open instruction room for teaching. Thus, we immediately reconceived it as a semi-quiet alcove off the Commons and students have used it accordingly.

The fifty-seat enclosed classroom was another matter. We supported an active instruction calendar in that room. Unfortunately, the wall-bound power and network infrastructure was not compatible with the active learning pedagogy the library had adopted. We selected Steelcase Node tablet chairs and laptop computers with attachable external batteries to support flexibility for activities like think, pair, share, and to make the laptops last through a long day of instruction sessions.

The solution had a high staff overhead, but it worked well for supporting one class at a time. What we found was that we seldom needed the entire capacity of the room at once, but we

frequently needed to accommodate two classes at a time. Although expensive, we decided to split the room into two twenty-five-seat classrooms to better serve our instruction needs.

### Group study rooms

The original McHenry Library did not have group study rooms. The Science and Engineering Library had eight and the keys to those were circulated like reserve items. Staff actively enforced time limits and reservations. We decided early that this approach was not scalable to more than thirty rooms across four floors in the larger library. This conclusion was informed by the library's rather drastic staff downsizing in the wake of the Great Recession. We needed a low-touch, self-service solution. We installed the Springshare product LibCal because it offered the best mix of configuration options for the largely self-service model we had in mind. Students with valid ucsc.edu email addresses could reserve a room for up to four hours a day and up to one week in advance. Our students quickly adopted the solution. Group study rooms were booked for more than 50,000 hours in 2012, the first year the software was installed.

In addition to the twenty study rooms, there are several group viewing rooms in the Media Center. Students who cannot find a study room to reserve often pick one of those instead. In the early days, we challenged students who were not using group viewing rooms appropriately. It was a matter of policy. Students adapted to the policy by checking out popular films from our collection and playing them in the rooms with the sound muted while they studied in groups. We decided it was better that the rooms be occupied for their second-best use than to sit idle waiting for their best use, so we relaxed enforcement.

### University of Florida survey project

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After we opened the renovated library in June 2011, we were pleased to see an immediate year-over-year rebound in gate count. We wanted to hear from students about how well the new library met their needs. We assumed our first iteration of the program was not perfect and we wanted to know how to make it better. In the fall of 2011, Assessment Librarian Lee Jaffe and I responded to a call to participate in a student survey of new or newly renovated academic libraries with learning commons. We welcomed the opportunity to obtain more comprehensive feedback and to place our renovation experience in a broader context. We were one of five libraries that participated along with Oregon State University, Syracuse University, the University of Florida, and the University of Texas, San Antonio (Crump, Freund and Carrico 2012). We advertised aggressively and ran our instance using SurveyMonkey. We achieved a good response with 739 completions over nine days.

The qualitative data in the form of students' comments revealed meaningful information about the library space. For example, question eleven of the survey asked, "what do you think of the present library facility?" It listed nine aspects of the library to rate and provided a comments section. We received 233 comments on that question. We used the "my categories" function in SurveyMonkey to assign metadata to each of them. That helped us identify trends and quantify areas of concern or praise that students articulated. Students were concerned about scarcity of study spaces and resources like computer workstations and AC power outlets, especially around finals time. They liked the group study rooms and wanted more of them, but they wanted the library to more actively manage room reservations. There was quite a bit of frustration among quiet studiers directed at group studiers at open tables. The quiet studiers wanted a designated space that satisfied their learning needs the same as those who wanted group study space.

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We already suspected much of what the students told us, but getting structured feedback gave the outcomes weight that our anecdotal observations did not offer. We also quoted select comments to good effect to support our conclusions. Stakeholders may say they like data, but they really respond to personal examples.

### Modifying the Renovation

In the summer of 2012, we made some adjustments in response to student feedback. We retrofitted the 120° carrels on the fourth floor and the restaurant style booths on the second floor to provide access to AC power at the desktop. We installed some traditionally sized carrels and additional seating on the less trafficked first floor. We improved the quiet zone signage on the fourth floor to better articulate community expectations for the space. We continued to consolidate the Media Center. We reduced the number of VHS/DVD open stations and increased the number of computer workstations with optical drives that could support audio CDs and video DVDs at need.

### Silent study room

McHenry Library still had one large, unprogrammed space: room 4286. We needed a space for public programs and we needed a sequestered space for silent reading. Room 4286 presented challenges for both uses. It was long and narrow and it had terrible acoustics. We were able to mitigate those challenges and opened a flexible space in 2013 that could accommodate sixty silent readers in its primary configuration. We installed a podium, projector, and large, retractable screen at one end of the room. We installed nesting Steelcase Akira study tables and stackable Steelcase Move chairs to make the space easy to reconfigure for presentations. This

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was the last identified shortfall in the program and marked a de facto end to the McHenry Library renovation project. It was not an end to assessing and improving the experience of the library.

#### Quiet zone project

Transforming room 4286 into the silent study room improved the learning experience for quiet studiers, but we continued to get informal feedback when students complained about the noise level in various spaces. A high traffic area on the fourth floor between the elevators and the administrative suite was especially vexing. Students sometimes shushed passing library staff, a clear violation of the natural order. To articulate quiet expectations for both our users and our staff, we created a four-tiered plan on our website and designated each of fourteen zones in the library as either active, somewhat quiet, quiet, or silent. We added new signage to the silent and quiet areas that better described acceptable behavior. As we got feedback or questions about noise, we referred users to the quiet study page on the website to help them find the environment that best suited their needs.

[Insert photo 12.1 here][Insert photo 12.2 here]

#### Cognitive interview project

In the summer of 2014, newly appointed University Librarian Elizabeth Cowell created the Undergraduate Experience Team (UET) and asked me to lead it. I had just concluded a successful instance of the Ithaca S+R Local Faculty Survey in the spring and was keen to gather similar data from our students. At the 2014 Library Assessment Conference in Seattle, I learned that Ithaca S+R was testing a library space planning module for their student survey. My new

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team partnered with them to field test the module to get it ready for release in time for our use the next spring.

UET conducted thirty-one cognitive interviews during fall quarter. Students took a subset of the survey consisting of the Role of the Library and Library Space Planning modules. Immediately after the survey, a UET member interviewed each student using a script-based retrospective verbal probing technique. Our purpose was to discover whether students were interpreting questions in a way that aligned with the intention of the survey designers. They mostly were. We identified a few ambiguities and one potential question order effect. However, there was one question that stood out for us. We asked about how comfortable students felt in the campus library they used most often. The intent of the question was to measure the student experience of the physical environment. Twenty-four of the thirty-one interviewees were women and seven of those women told us that they were thinking about their sense of safety or emotional well-being while answering that question; none of the seven men did so. As a result of our feedback, Ithaka S+R added four safety themed questions to the survey module (Careaga et al. 2015).

#### Undergraduate student survey

The library administered the Ithaka S+R Undergraduate Student Survey in spring quarter 2015. We worked closely with the campus Office of Institutional Research, Assessment, and Policy Studies to promote the survey and to analyze the results. We refrained from running the graduate student version of the survey in deference to a biennial campus survey project for that population that was running concurrently.

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The survey results indicated that students highly valued study space, computer workstations and printers, and access to food in the library. They were highly motivated to work while in the library but ambivalent about using it as a place to socialize. Students often found it difficult to access the facilities or services they valued in the library. They expressed the lowest levels of satisfaction with availability of computer workstations, seating, power outlets, and group study spaces. Our primary takeaway from the survey was that we were doing a good job providing the mix of spaces and services that students demanded but that we had to increase capacity.

UET's work on the cognitive interview project paid dividends in the full survey. We learned that students felt safe in the libraries and they felt safe getting to and from the libraries during daylight hours. However, they felt less safe getting to and from the libraries at night. The difference was greater for women than it was for men and it was greater for McHenry Library than it was for the Science and Engineering Library (Careaga et al, 2015, 6-7). The cognitive interview project was essential to identifying a student concern that we did not account for in our planning. The quantitative data from the survey was necessary to reveal the extent of the safety concern across different populations.

The fourth safety-related question on the survey was a prompt to tell us what might cause one to feel unsafe in or around the libraries. Three hundred eighteen students wrote responses. Students told us that for McHenry Library especially, the surroundings at night were dark and heavily wooded, campus lighting was inadequate, the campus late night shuttle program was inadequate, and it was too far from the library to public transportation and parking. The qualitative data from this question allowed us to translate student concerns into issues that could be resolved, or at least mitigated. Moving McHenry Library was not an option, so we shared the

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survey data with campus stakeholders. Campus Facilities has upgraded the lighting from McHenry Library to the Performing Arts parking lot. The campus police department secured funding for a late-night safety escort program for the 2016/17 school year. The Library Student Advisory Council chose miniature LED flashlights as one of its promotional give away items for the year. The library will continue to raise awareness and advocate for campus student safety.

### Applying what we learned

While we were refining our implementation of the program in McHenry Library, we were planning to launch a renovation campaign for the Science and Engineering Library. We have a broad vision for the Science and Engineering Library as a scholarly and social hub on Science Hill. We have performed an overdue collection maintenance project to create additional user capacity. We have also partnered with the Division of Physical and Biological Sciences to create a new Active Learning Classroom that will be online for fall 2017. The lessons we learned while renovating McHenry Library are informing our work on this new renovation project. We have partnered with a consultancy to engage with STEM stakeholders to learn about what is essential to STEM student success and what the library might do to support it. We are parsing existing survey data to look specifically at the needs of STEM students. We are emphasizing capacity and good zoning. We plan to open a café modeled on our successful experience at McHenry Library.

### Conclusion

The University Library endured serious budget shocks in the four years leading up to opening the renovated McHenry Library. They were painful in the moment but they were useful in helping us achieve a cultural evolution we needed to take full advantage of our new home

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(Careaga et al, 2014). Building projects end, but programming never really does. A good project program is an essential component to any well-designed space, but fidelity to the program must not become the *sine qua non*. There will always be new or expiring academic programs to account for, new technologies that might serve users better, and new user populations that may place new demands on your library. It is hard to get it exactly right the first time.

In our case, our socially connected millennials turned out to be a bit more traditional in their library use than we anticipated. We over-estimated their demand for social and team-oriented learning space (Brown 2005) and did not adequately separate quiet from active areas. This worked to the detriment of all. Group studiers at open tables felt constrained in their interactions and quiet studiers felt distracted. We only learned that by conducting assessment of users' learning needs in the newly configured space. The renovation and subsequent modifications of our library illustrates the importance of changing the library to meet the learning needs of our users. Furthermore, our reliance on print monographs relative to ebooks has also diminished more rapidly than we anticipated. We have been able to adjust not only by adding capacity and restructuring space, but also by improving communication and reforming policies to reduce barriers to student success.

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