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Usability Research in the Writing Lab: Sustaining Discourse and Pedagogy

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Abstract: Redesigning the online writing lab (OWL) presented the opportunity for collaboration among writing center and professional writing program members. While the article briefly describes the OWL redesign process, the argument focuses on collaboration and presents a model for sustainable intra-program collaboration. Following Hawhee, usability research is defined as “invention in the middle,” which offers a model for understanding research process as part of the infrastructure of new media instruction as described by DeVoss, Cushman, and Grabill. This article offers four stakeholder perspectives on the process of participatory technology design: of writing center administrators, graduate students, technical writing practitioners, and writing program graduate faculty members. The model asserted by this article presents a dynamic understanding of expertise and of fluidity in the roles of participants. Collaborative usability research, seen as invention-in-the-middle, contributes both to long-term sustainability of technological artifacts as well as the discursive interactions among stakeholders whose work supports these artifacts.

Keywords: OWL, Online Writing Lab, Writing Center, User-centered Design, Professional Writing, Usability, User-testing, Collaboration, Intra-program, Online Pedagogy, computers and composition specialist

Introduction

Beginning in 2004, the Purdue OWL underwent significant design changes in order to improve usability and navigability, launching a new design in 2005. And the process of redesign has not ended. The OWL site has been and remains enormously popular, averaging over 30 million hits per year prior to the redesign project, with 84 million hits recorded in the years since the redesign. Yet users were concerned that they still could not find certain materials or easily locate answers to writing questions.

Historically, the Purdue OWL served as a library of print-based writing handouts and PowerPoint presentations which instructors could use in class or which students could use independently to work on writing issues. During its ten years of existence, the OWL grew to more than 200 static handouts that reveal its print-culture roots. These handouts,

designed mainly to be printed and distributed to students, have been continuously added to the OWL site, and the Writing Lab's administrators, content developers and OWL technicians have been interested in better using the medium—the World Wide Web—to meet users' needs and to build an effective information architecture that supported how students, writing instructors, and other users actually use the web-based content. The OWL redesign team began to consider how the materials could take fuller advantage of web technology to support writing instruction.

OWL differs significantly in size, scope, and purpose from many web-based educational resources. It is best described as, in the language of Danielle DeVoss, Ellen Cushman, and Jeffrey Grabill (2005), *infrastructural*. OWL staff members receive requests from other campuses for advice on replicating the online repository, and we often find it difficult (if not impossible) to accurately describe the substantial resources, time, and effort spent establishing, coding, populating, organizing, and maintaining this popular resource. It is truly part of the infrastructure of a large, complex, and successful writing program, and its redesign and redeployment is the outcome not just of technical expertise but of rhetorical expertise and a commitment to dialogic engagement among stakeholders located within the Writing Lab, first-year writing program, Professional Writing Program, and graduate program in Rhetoric in a particular institutional context.

The process of redesigning this large and comprehensive repository has been challenging, particularly as Writing Lab administrators worked to incorporate usability and user-centered design principles into the new site. This task proved to be outside the realm of Writing Lab administrators' expertise. The Writing Lab approached the Professional Writing Program to develop and administer usability testing in order to gain

valuable feedback from users about ways to tailor OWL to its users' needs. While the process of usability testing and the resulting data has yielded important and interesting information about users and in creating usable writing center technologies, one significant outcome of the process has been the collaborative relationship strengthened between the Writing Lab and the Professional Writing Program. This article focuses on the unique characteristics of the relationship and how we see it as part of our professional and intellectual infrastructure, context for further innovation, and as such, heuristic for invention of pedagogy and technology integration.

In these pages, we describe the Online Writing Lab, or OWL, as a discursive technology, a techno-rhetorical artifact, which supports interaction among different stakeholders to articulate programmatic needs during the redesign process. This space became the site for intra-program collaboration, as well as a space for exploration and articulation of new research methods and ways of understanding and developing writing expertise. Taking inspiration from Debra Hawhee's articulation of *kairos*, our argument posits that usability research and iterative redesign of OWL elaborates and develops the model of "invention in the middle" that constitutes contemporary usage of *kairos* as an invention heuristic. The "invention-in-the-middle" model supports Sullivan's call for taking a broader view of usability as research and not mere testing by situating the OWL usability project *vis-a-vis* the landscape of a rich body of usability research (Sullivan 257). Further, it extends and complicates her rationale for a broader conception of usability by encouraging reflective conversations among both current and previous stakeholders in the techno-rhetorical contact zone. In this process, rather than argue that scholars with specialties in computers and writing concentrate on any specific technological hardware

or software system, we have come to understand that the specialist in literacy and technology can define her expertise by bringing technologically-aided tools to bear on the challenges existing at the nexus of literacy, writing programs, and research. Following Hawhee's understanding of kairos as invention in the middle and the infrastructural argument asserted by DeVoss et al., we argue for usability as an infrastructural heuristic for continual re-imagining OWL as a site for intra-program collaboration.

While the project centered on redesigning Purdue's OWL, this paper is not specifically about the nuts and bolts process of redesign. Instead, our collaboration is the focus of this article. While the technical know-how was certainly an important element of redesign, we argue that this knowledge was secondary to maintaining effective dialogic relationships among stakeholders on the team. Drawing upon theories of stakeholder management, we see the OWL not as a static entity but as information architecture constituting and constituted by collaboration and competition among "multiple and diverse constituencies and interests" (Post, Preston, and Sachs 3). As such, its well being and success depends not so much on tangible technological, human, and other resources as on intangible assets, particularly stakeholder relationships.

Defined by Post, Preston, and Sachs as the individuals and constituencies that are voluntarily or involuntarily the potential beneficiaries and/or risk bearers of an enterprise or community, stakeholders bring with them a range of foci and specialties. Effective management of stakeholder relationships involves working with and valuing contributions made across areas of expertise. The challenge remains to avoid claims for legitimacy based in particular stakeholder strengths, and establishing and nurturing sustainable interaction among these stakeholders. As coding becomes secondary to

technological infrastructure—as reflected in the computers and writing literature that moves from stand alone computers to programming tools to establishing and maintaining technological spaces (Walker, 2007; Powell, 2007; Cummings 2006)—we argue that computers and writing specialists are well positioned to address this challenge. These stakeholders are represented in narratives portraying the experiences of a writing center administrator, professional writer (recently returned to school), graduate student, and a professional writing faculty member. There are other stakeholders, especially OWL users, who remain silent here so that the article can concentrate on the interaction among these narratives. Users have been present throughout the OWL redesign process. Indeed, users are the focus of the OWL Usability Report which is available online:

[<http://owl.english.purdue.edu/research/>].

Viewing interaction among stakeholders as a driving engine for techno-rhetorical work, we encourage computers and writing specialists to see their responsibility as one of maintaining dialogue and collaboration rather than the too-often narrated drudgery of becoming the technology guru-cum-technician. We don't want to dismiss the notion of technological expertise—the technician role—but we don't want to reduce the C&W specialist to that of technician whose primary role is to code the artifact. Technical proficiency hovers displaced as necessary but insufficient to defining the computers and writing specialist, as Lisa Gerrard's histories of the computers and writing conferences (1995, 2006) make clear.

OWL is here presented both as an example of sustainable rhetorical technology and as techno-rhetorical site for interaction among writing program stakeholders. The software and hardware used to establish and maintain the artifact, this virtual place, is

secondary to establishing (or maintaining) intra-program rapport and trust. As writing programs grow and expand, we seek to articulate opportunities for mutual support and development within the writing program rather than seeking external partners for collaboration. And so these narratives concentrate not on the hardware and software on which the system is built, but on the opportunities and responsibilities that emerge and challenge program stakeholders as they articulate roles and positions amidst the people, technologies, and networks of discourse that define the concentration of techno-discursive activity.

Hawhee's construction of "invention in the middle" shares much in common with Latour's idea of the techno-cultural artifact. OWL, as artifact, both is changed by and in turn has some capacity to inflect or even project the agency of those who have contributed to its creation. Hawhee and Latour both challenge a simplistic notion of technological determinism, yet there is something powerful and, in Thomas Rickert's (2004) construction, *ambient* about the power and impact of artifacts like OWL in the network of people and things. We both write and are written by our technologies, and this is never clearer than when we think and articulate our work with OWL. Haunted by the processes and decisions of previous OWL designers and staff, the OWL is both the discrete collection of materials made available on the Web as well as the history of the creation and commitment to OWL by this institution and its programmatic participants and partners. Hawhee puts it thus:

"I invent" in the middle becomes "I invent and am invented by myself and others" (in each encounter). The middle, then, at once combines and exceeds the force of active and passive. (Hawhee, 17)

Usability, as a technorhetorical middle-voice, recognizes agency of past human intervention in the design and deployment of technology, here of OWL. While Latour articulates the agency of technological artifacts, Hawhee reminds rhetors of human agency in technological invention, making usability explicitly rhetorical by articulating invention in the middle. Invention is radically situated, constrained both by historical precedent and by values embedded in the artifact; both the active, engaged activity of inventing and marshalling emerging technologies and the passive letting-be and shining-through: letting OWL be what is had already been designed to be by previous stakeholders. So too, current stakeholders become impacted by and influenced by their work with OWL. As Hawhee continues to describe the movement, shift, or turn employed by Gorgias from one argument to the next, we recognize the rhetorical middle voice of emplaced invention changing the substance and subject of rhetoric as we all as rhetors are changed by our encounter with the artifact, by OWL. OWL is changed by, but so are we stakeholders all changed by our encounter. Usability is the name of the encounter, named by the underlying institutional context or (as in DeVoss et al's argument) the infrastructural influence on the development of the object. Infrastructure becomes ambience; that is, OWL carries the pedagogical and administrative values of its developers and existing structures continue to impact future development.

By understanding usability research as a combination of “invention in the middle” a la Hawhee's argument and of the artifact as infrastructural, following DeVoss, Cushman, and Grabill, we offer a sustainable development model. We chose to focus not on the technological artifact —the OWL— or to focus on narrating the process of usability testing and research. Rather, our goal here is to demonstrate the importance of

collaboration in the ongoing process of perpetual redesign. By being less concerned with each change to the artifact or describing each new technological tool employed, we turn our attention toward sustainability of the artifact, one that requires collaboration among stakeholders. The recursive process ensures sustainability. OWL, as an example of a complex artifact, is always being written, rewritten, and impacted by change in technology and input from users and stakeholders. Simultaneously, our work on OWL impacts each of us as participants as we recognize OWL as programmatic infrastructure.

Computers and composition specialists seem overly concerned with the newest, emerging cutting-edge technologies, abandoning existing technologies and overlooking the process by which technologies are not only created but also integrated in pedagogical spaces. We argue that sustainability of technologies is vital to writing instruction and that the model of intra-program collaboration we describe demonstrates how computers and composition specialists can ensure sustainability of the artifact and pedagogically sound and responsible choices in technology development through dialogue with other stakeholders. Specifically, our model offers three levels of sustainability:

1. Sustainability of the OWL as artifact, that is, an artifact that continues to remain useful and relevant to users
2. Sustainability of the process of collaboration
3. Sustainability of relationships among writing programs, ensuring longevity among each individual programs and their stakeholders

Sustainability is important both institutionally and technologically, and we rely on Robert Johnson's (2004) definition of institutional sustainability and Karl Stolley's (2008) definition of web sustainability. Below, four stakeholders narrate their experience with Purdue's OWL, articulating it as a site for professional as well as programmatic identity building. In the process, OWL becomes a technological place supporting continued

communication and collaboration. We cannot discuss the computers and writing specialist's role without discussing artifacts. The technological artifact at the center of techno-rhetorical discussion here is a redesigned, user-centered OWL where undergraduate and graduate students, faculty, and program administrators engage each other and articulate intra-program concerns. This collaboration becomes a means of rearticulating the relationships among the sub-specialties within this writing program. Each narrative emerges through research towards and redesign of OWL, and the focus on the improvement of usability and navigability of the techno-rhetorical artifact, positing the construction of OWL as a technorhetorical place (Kalay and Marx, 2005). Ultimately, we present four disparate narratives because these are the various perspectives of OWL we each hold; through our dialogue, we each have come to understand our partners and colleagues better without asserting one or another of these representations as the definitive description of OWL. Rather, we each understand OWL as defined by each cooperating stakeholder, and our understanding binds us as a team.

Writing Center Administrator as Stakeholder

In a 1995 *Computers and Composition* article, Susan Simons, Jim Bryant, and Jeanne Stroh describe how a successful collaboration among three principal stakeholders—a writing center director, an instructional designer, and a technical coordinator—facilitated integration of technology in a writing center. They assert that collaboration helped created “a community within a community... [with] common language, reference points, symbols, questions, and assumptions” (p. 169). The experience they describe facilitated change and brought together different expertise to ensure smooth integration of computers into the Community College of Denver writing

center and writing program. Simons et al offer an early description of successful intra-program collaboration valuable to projects like the Purdue OWL redesign. However, they do not articulate a programmatic framework necessary to sustain technological spaces like the OWL, a framework that DeVoss, Cushman, and Grabil (2005) describe as “the institutional infrastructures and cultural contexts necessary to support” technology used for writing instruction (37). While technical knowledge is necessary to sustain the OWL, sustainability is more than technological knowledge. The OWL redesign, which began with simply improving the artifact, grew into a complex intra-program collaboration that required stakeholders to examine practices, policies, framework, expertise, and resources necessary to (re)shape an artifact.

As a writing center administrator, my first goal was to move the OWL away from its print-based roots and develop it into a Twenty-First Century site. However, when working closely with faculty and graduate students in the Professional Writing Program, I learned that a successful redesign of the OWL was kairotic not because all conditions pointed to a miraculous convergence of events, expertise, and personnel to instantly or easily create a beautiful and functional site, but because all the stakeholders involved had worked over a course of several years to “make possible and limit, shape and constrain, influence and penetrate” (DeVoss, et al, 37). The redesign allowed the team to invent, reinvent, and be invented by the OWL’s revisions—through the intra-program discussions, negotiations, collective expertise, goals, and shared responsibilities that were central to the project’s success. My narrative offers a writing center administrator’s perspective of how incorporating user-centered design led to a successful collaboration with the Professional Writing Program in the English department.

In redesigning the OWL, my goal was practical: to develop a next-generation Online Writing Lab with information-rich, technology-rich, and accessible resources for users on- and off-campus and to ensure the sustainability of the OWL as an artifact. I wanted the new OWL to provide access to differently-abled persons and provide writing assistance to those with limited resources. The resources needed to meet multiple users' needs and expectations. Despite a revision in 2000, the OWL remained text-based and like many early attempts to move pedagogical material online, maintained focus on digital distribution of documents designed for print distribution. PowerPoint presentations and hypertext workshops were added, but the OWL's core content was designed to be printed and distributed as handouts. Furthermore, the site addressed a variety of audiences who had different reasons for visiting the site. Content and information structures seemed to confuse users. Reorganization of content and redesign of navigation did not direct users appropriately. In 2004, Writing Lab administrators and OWL staff began a complete redesign of the OWL.

The redesign concentrated on three areas. First, the materials were updated to reflect contemporary writing pedagogy and discipline-specific writing concerns. Second, the design needed to be aesthetically pleasing and organizationally appropriate, so users could distinguish between services available only to Purdue users and services available to others. Finally, a third component was the implementation of usability testing. From the beginning of the redesign process, Writing Lab administrators and OWL staff wanted to incorporate user-centered design principles and solicit user feedback as changes were made. Usability testing would allow OWL designers to "identify [the OWL's] target

audience... to convey material to a particular demographic group” (Sheen, Hughes, and Howles).

From a writing center administrator’s standpoint, incorporating user-centered design was a priority but also a challenge. The Writing Lab was concerned with its image as part of a technologically innovative campus and of new and expanding models of Online Writing Labs. I wanted the design to account for issues of place versus space, to be aware that “[p]laces differ from mere ‘spaces’ in that they embody social and cultural values, in addition to spatial configurations” (Kalay and Marx, 2005). Administrators, designers, and usability specialists needed to consider the social and cultural values embedded in the OWL, in addition to visual appearance and organization. I had questions: How could the OWL embody cultural and pedagogical values while meeting users’ needs and expectations? How could the OWL reflect “conceptual appropriateness” with a design that was as useful as it was beautiful (Kalay and Marx, 2005)? The OWL needed to be more than a collection of printable handouts and PowerPoint presentations added haphazardly over the years. I wanted a site that wasn’t merely functional or merely aesthetically pleasing but both, one that offered a range of users—from students and faculty on our own campus to students, parents, teachers elsewhere—access to support materials that took advantage of new media technologies and that incorporated contemporary writing pedagogy. This combination of technology and pedagogy reflects the social and cultural values of the stakeholders and creates a place for users, distinct from space. Making OWL a place would require stakeholders to learn from users, to understand what users value, and to negotiate users’ needs with those held by stakeholders. To establish OWL as a place and to ensure its sustainability, the Writing

Lab needed the expertise of the Professional Writing program as a stakeholder in the redesign.

As writing center administrator, I lacked the expert knowledge to develop testing protocols and administer them. The Writing Lab needed usability expertise without requiring staff to develop new specialties in web and user-centered design. Instead, the Writing Lab acquired expertise by collaborating with the Professional Writing Program. While this collaboration was central to the project's success, it was essential that Writing Lab administration actually participate in the usability testing rather than serve as uninvolved clients. The redesign would not work if the Writing Lab was removed from the testing and the redesign process. The Writing Lab and the Professional Writing program were stakeholders not simply because both stood to benefit from the project but because both added expertise. Certainly the Writing Lab and Professional Writing stood to gain research opportunities, material resources, data, and ethos from participating in the usability project. But these tangible outcomes led to sustainability of both programs, and the final result of the redesign, i.e. a usable, accessible, technologically-rich site, would not “work” if one or more stakeholders were not involved in usability testing.

User-centered design in writing centers has precedent with Stuart Blythe’s work as the first OWL Coordinator and in his analysis of the early Purdue OWL in his dissertation (1997). Blythe states that “studying the relationships between actions and resources” would allow him to “gain enough certainty to act with confidence in changing and refining the technologies that make up Purdue’s OWL” (p. 52). He argues for a theory of writing center technology that “includes reactive, substantive critiques of the design and implementation of technology” as well as “proactive tactics for influencing

technological design processes” (p. 52). By examining a comparison of OWL’s usage to its mission, by looking at OWL’s purpose, as well as its audience and context, by including users in the design process, and then using all the above information to make informed design choices, stakeholders in the OWL redesign enact Blythe’s theory and develop a user-centered approach to the new OWL (Blythe, 1997, p. 69-73).

In a later piece, Blythe reminds writing center administrators to consider usability because they ...

...need ways to gather meaningful data that will yield insights into how people interact with sophisticated technologies.... Usability research and testing can enable researchers to gain insight into human/computer interaction. The most promising methods for writing center work see humans not as part of a system, but as partners engaged in a dialogue with technology. (p. 105)

Blythe asserts that usability research leads to technologically-rich on-site physical writing center spaces, advice which holds for online writing centers. Usability research creates (and revises) electronic spaces that embody pedagogical and technological best-practices, mirroring the collaborative pedagogy of writing centers. User-centered design allows users to convey preferences, generating dialogue that designers can use to develop a site that is information-rich, technology-rich, and accessible. Updating the OWL meant more than adding a new design template to the site. It meant organizing hundreds of resources, assessing their pedagogical effectiveness and appropriateness, and incorporating new technologies that facilitate writing support across multiple levels and for multiple types of users. The dialogue among the stakeholders—Writing Lab administrators, Professional Writing faculty and graduate students, OWL designers, and OWL users—further establishes sustainability through collaboration, a process inherent in writing center theory and practice and one critical to user-centered design.

The redesign of the OWL and usability testing are recursive and iterative processes that requires administrative, programmatic, and user participants to avoid preconceived ideas about the artifact or usability results. Initially, I thought that usability testing would confirm problems in the OWL's design and provide solutions for addressing these problems, and the process would end there. I could not have been more wrong. In fact, Hawhee reminds that "the movements and betweenness of *kairos* necessitate a move away from a privileging of 'design' or preformulated principles" (24). Having concrete expectations for the outcome of usability testing would limit users' feedback and revisions based on testing results, hence removing all opportunities for "invention-in-the-middle." And so the OWL redesign process continues and *must* continue for OWL to remain a viable resource.

While I have difficulty separating the techno-rhetorical artifact from the discussion of usability, my focus has shifted from looking at the end-product—a newly designed website—to looking at the relationship between the Writing Lab and the Professional Writing Program. The relationship represents stakeholders' goals and ideologies and an infrastructure that sustains the artifact and the programs that support the OWL. During the intra-program collaboration, I needed to articulate my goals and values as a writing center administrator, not because I had to convince another writing program that my contributions were valuable but because I needed to recognize how my goals foster a discursive relationship between two parts of a large writing program with different specialties. Although the outcomes of the collaboration did include tangible, technologically-driven results—data about users, suggestions for revisions to the OWL design, and research opportunities—the process led me to consider the role of writing

centers in maintaining discursive intra-program collaborations. Incorporating user-centered design into the OWL and working with the Professional Writing Program established the Writing Lab as a site of professional development and research. Both programs gathered valuable information about users' preferences, informing future OWL design choices, and developing knowledge about usability and OWLs in professional writing, writing centers, and in Rhetoric. Graduate students used their discipline-specific expertise during the OWL redesign project, and the Writing Lab served as an important research site that allowed students to serve as both experts and apprentices. The following sections tell two graduate students' stories.

Technical Writer as Stakeholder

When I began work on the OWL usability project, I already considered myself a professional technical writer. I had been a working practitioner for ten years, first for the Department of Defense and later as an independent contractor. Moreover, I thought I was working as a user-centered rhetorician, delivering information in format and context that stakeholders could use to improve people's lives. I began working with the OWL believing that I would extend my previous experience by helping academic subject matter experts create user-centered online writing resources. However, as the project progressed, my concept of user-centered theory shifted. I gained experience with discursive knowledge building, what Hawhee (2002) calls "invention-in-the-middle", and as I developed an understanding of critical research practices (Sullivan and Porter, 1997), my concept of user-centered theory became more dynamic, more fluid and interactive (p. 17).

I understood rhetorical situation (purpose and audience) as an “...empathy for users...” as outlined by Sullivan (1989), and a checklist for creating user-centered artifacts (p. 259). But I did not realize the importance of a discursive, theoretically informed and empirical approach to usability research. My original conception of the project was a static notion of user-centered theory. I was forcing a dynamic approach into a static situation and was carrying out user-centered tasks in system-centered¹ ways. I began my journey from traditional technical writer to techno-rhetorician as I grew to better understand the need for discursive knowledge building in usability research.

Seen through a rhetorical lens, most of the invention that occurred in my professional work emerged from me, single author alone, writing procedures in ways I believed matched users’ needs. In this way, I *removed* the power of invention from stakeholders and smothered the discursive process. Simmons and Grabill (2007) describe this process as part of stakeholder disempowerment and user marginalization (p. 439). It wasn’t until I worked on OWL usability that I understood why my work as a practitioner was limited.

Stakeholders from a number of the sub-disciplines of writing studies were included within our department and needed to be participants in the OWL redesign. Faculty and staff from the Writing Lab, Professional Writing, and the Graduate Rhetoric Program all offered expertise and time. However, each also brought unique needs and expectations. Sometimes this resulted in tension. But as the project progressed, these spaces formed positive rhetorical tension—as envisioned by Hawhee in “Agonism and Aretê” (2002)—that invigorated ongoing discourse. Our work became increasingly participatory. Given the interaction of these diverse stakeholders, gaps of experience and

expectations made effective discourse imperative. Our discourse situated research in a rhetorical, kairotic space that Hawhee, in “Kairotic Encounters” (2002), calls “invention-in-the-middle” (p. 17).

Hawhee asserts there is much to be gained by realigning our idea of kairos with the classical understanding of the term. Her argument focuses on “rhetorical stance,” which situates the rhetor in a position of constant readiness, poised in between rest and action (p. 25). Thus, rhetoric remains a more dynamic process where knowledge building occurs in the movement between rest and action: “It is only through the timely, *kairotic* encounter that ‘turns’ happen, different *ethoi* emerge, and *logos* becomes action... words make themselves deeds” (p. 32). Rather than forming gaps, communication among intra-disciplinary stakeholders and users created space for negotiated knowledge building. OWL usability research *itself* acted as a negotiated, rhetorical space.

Collaborative knowledge building occurred in gaps between intra-disciplinary experts and OWL users; it is a unique process suited to skills practiced by computers and composition experts whose backgrounds and interests are nestled between technology and rhetoric. Work with research participants illustrated this negotiated, kairotic space. For example, many traditional usability test methods employ tasks that do not work in discursive, participatory ways. Less discursive and participatory methods can establish hierarchies between researchers and participants, procedures that reinforce system-centered design while attempting to collect information that should benefit users. In this way, well-intentioned researchers may carry out their responsibilities unaware that they are, in fact, disempowering users instead of empowering them. Sullivan (1989) noted that a number of disciplines and approaches exist that employ usability testing to help achieve

their goals, but not all of them consider usability, or how to attain it, at a macro or cultural level (p. 256). To address this, Sullivan and Porter (1997) posit situated, empirical, and critical research practice that aligns with Hawhee's invention-in-the-middle

...we see methodology as invention, as the construction of a rhetorical design that contributes to an understanding but that also effects some kind of positive action through a rhetorical practice (pp. 12-13).

Most importantly, we fostered a discursive research atmosphere by developing a user-centered, mixed-methods design of rhetorical research.

Some usability test methods approach research as a way to obtain knowledge from users (who are not seen as experts) so that the "true experts" (designers) can make changes to improve the technology being tested. As noted above, this approach remains system-centered. A user-centered research methodology, however, moves participants from outside the research and development process into the discursive space of invention and decision-making. Rather than studying how participants used the OWL in sterile lab environments, researchers interacted *with* participants. Researchers asked participants questions to better understand why they made certain navigation decisions, and researchers implemented an after-test questionnaire to gather feedback regarding participants' sense of well being during the use of the artifact. The process mixed quantitative and qualitative research and provided a richer sense of how users interact with the OWL and what they need and want from their OWL experience. The most interactive task researchers employed was the paper prototype page.

During test sessions, participants were given a blank sheet of paper and a number of OWL page elements, such as a navigation bar, search bar, and navigation menus, and

logos printed on small pieces of paper. Participants were asked to arrange these elements into a mock-up of a new OWL homepage. In this way, participants—OWL users—were included in a discursive invention process, helping to design the new homepage which is used today by millions.² This discursive process (our invention-in-the-middle) extended beyond the usability testing itself: stakeholders assembling the usability report worked in similar rhetorically informed spaces. Additional information about our methodology, including our testing materials and participant perspectives, can be found in the OWL Usability Report available here: [<http://owl.english.purdue.edu/research>].

Before our research could be communicated to an outside audience, intra-disciplinary experts had to first better understand one another's needs and expectations. Researchers developed a greater awareness of stakeholder collaboration before we progressed into document production. In one instance, this meant that our professional writers had to negotiate with our social scientist regarding our concept of “significance” and its relation to the field of statistics. Though intra-disciplinary work proved indispensable, we knew that an audience of writing center and professional writing experts might balk when confronted with sentences like this one: “These findings, while important, did not achieve significance, but rather they *approached* significance.” As a compromise, we added a section in the OWL Usability Report explaining the difference between *statistical* significance and significant *findings*.

Intra-disciplinary gaps could have been places of disconnect, but instead, they acted as spaces for kairotic collaboration. When we realized that our research exists in a constant state of change and negotiation, I believe we moved into a “rhetorical stance,” situating rhetors in a position of constant readiness.

Prior to the Purdue OWL usability project, I believed I was acting as a user-centered rhetorician in my role as professional technical writer by completing tasks and presenting information based in user-centered theory. But my lack of experience in collaborative knowledge building, critical theory, and empirical research methodologies left me with a static idea of user-centered design. My work on the OWL project exposed me to multidisciplinary collaboration that depended on negotiated knowledge building, and in fact, the OWL usability research itself fostered this techno-rhetorical space. This process shifted my idea of user-centered theory to a more dynamic and user-focused approach markedly different from my work as practitioner. Moreover, the process of invention-in-the-middle that emerged from our work continues to guide the sustained and ongoing OWL redesign.

Professionalization: A Graduate Student Perspective

As a collaborative project that draws on the expertise of specialists in the Purdue Writing Lab as well as from other academic programs, the OWL redesign project offers a unique professional development opportunity allowing graduate students to serve as both experts to writing centers and apprentices who are gaining usability experience with clients--operating at the intersection of the Writing Lab and the Professional Writing Program. In Robert Johnson's (1998) words, these students are becoming technical rhetoricians, technical communicators who are "trained in the theory and practice of the arts of discourse, and who [practice] these arts as a responsible member of a greater social order" (p. 158). They are moving from "to know" to "to know how" (Johnson, p.160). Johnson insists that this movement requires that technical communication

students not be “limited to a self-aware knowledge”, which is not enough to prompt and enable them to *act* as techno-rhetoricians; rather, they should learn to negotiate with the users, and I would add, with other stakeholder groups involved in knowledge building, directly, ethically, and tactfully. This move from knowledge consumption to negotiated knowledge creation is a critical step in the professionalization of students in professional writing.

As a graduate student specializing in rhetoric and professional writing, my experience with the project serves as an example of this movement. In the following paragraphs, I briefly describe my roles and responsibilities as a content developer participating in the early phases of the OWL redesign project. Then I will discuss what opportunities as well as challenges the project has presented to me in a unique and transformative process of becoming a technical rhetorician.

My involvement in the OWL redesign project began when I was enrolled in a practicum in professional writing offered to first-time professional writing instructors. My responsibility was to create a user-centered handout that would achieve both the technology goals related to usability and the human goals of supporting writing center philosophy and professional writing. I was accommodating pedagogical and technological needs of various user groups, from my students in my classroom to the world wide audience of OWL users.

In addition to being a graduate student in professional writing and a graduate instructor teaching business writing, I was also working in the Writing Lab. As the Writing Lab’s Business Writing Coordinator, I was teaching new business writing consultants how to effectively tutor professional writing. I was playing multiple roles:

teacher, student, consultant, designer, content developer; each presented particular challenges and was motivated by different needs and interests. As I shifted my attention to each role, my identity became destabilized in the OWL's techno-rhetorical space, and a new identity emerged: that of the computers and composition specialist. I came to realize that although no particular individual or group of individuals was explicitly and definitively designated the "computers and writing specialist," each of us played this role at different stages of the project in our kairotic encounters with users and with each other in the techno-rhetorical space opened up by the OWL redesign project. Indeed the specialty of computers and writing is *rhetorical*, and not inherent in the person; it's not so much about what technologies one knows or pedagogies one promotes as it is about creating and maintaining such techno-rhetorical spaces in which technologies and pedagogies intersect.

As a learning and professionalization experience, my participation in the OWL redesign project can perhaps be best viewed in Johnson-Eilola and Selber's (2001) thinking-doing-teaching framework for graduate education in technical communication. This framework is based on the assertion that theory and practice should inform each other and that technical communication should be viewed as "a robust, diverse, complex whole" (p. 409). Although the framework was initially created to analyze and assess graduate "leveling courses" (which Johnson-Eilola and Selber define as courses that introduce students from disparate backgrounds to the field of technical communication), the authors emphasize and argue for application of the framework to "any technical communication activity or artifact" (p. 414). This three-dimensional framework consists of three axes with positive and negative values on each that represent three aspects of

technical communication: thinking, doing, and teaching. The thinking dimension is constituted by theoretical perspectives—some more humanistic and some more technological. The doing dimension, as the name suggests, is the practice or the getting-things-done aspect of technical communication. As the third element in the framework, teaching includes any educational activity or structure. Teaching is the movement between thinking and doing, "an activity that occurs where theory and practice meet" (p. 413). All activities in technical communication then can be analyzed in terms of their position in the framework to see which of the three aspects is emphasized or valued more in a particular activity.

Viewed in Johnson-Eilola and Selber's framework, my experience with the OWL redesign project has high positive values on all three axes and demonstrates a balance among them. In the "doing" dimension, I was engaged actively in working with a client in a context producing an information artifact for an audience. I engaged firsthand in a variety of technical communication practices that exemplify theories of user-centered design. Before I started creating an online handout to be included in the "Teaching Writing" section of the OWL, I talked with Writing Lab administrators and the liaison intern between the Writing Lab and the Professional Writing Program to determine client needs. I also spoke with students in my business writing and tutor training classes and with other professional writing instructors to find out more about user needs. My students and colleagues provided valuable advice on selection of sample student work.

In the process of creating the online handout, I joined other content developers and usability consultants in discussion about users, usability, and what it means to accommodate a range of users—with resources that are information-rich, technology-rich,

and accessible. This discussion was particularly helpful in negotiating the goals of the redesign project as articulated by different stakeholders, goals which were not always compatible. My interview with the Associate Director and the Writing Lab-Professional Writing Liaison revealed that administrative stakeholders intended “Teaching Writing” section of the redesigned OWL to serve as a resource for professional writing instructors in general. The students and instructors indicated interest in handouts that would help them with projects typically assigned on campus. For content developers, both of these goals, one local and the other global, are important. On the one hand, content needed to be useful and relevant across institutions in order for OWL to maintain its popularity. On the other, the OWL has tradition of serving as a favorite internal resource and reference for new instructors, on program websites, and in their classrooms. Meeting two goals, writing for both internal and external audiences, thus became a challenge. Working *with*, and not merely *for*, the client and other stakeholders, helped me better understand the challenge. I also applied information gathered from informal interviews and formal feedback received at an internal pedagogy showcase attended by professional writing instructors.

Johnson-Eilola and Selber name their second dimension “thinking.” In the thinking dimension, I was reflecting on action, to borrow Schon's (1983) terms, on participatory design and my design choices, motivated not only by theoretical discussions of usability in class but also by client and user feedback. Furthermore, playing these multiple roles created complex hybrid identities: I was simultaneously a student of usability, a writing teacher, and a content developer. Negotiating these identities and defining them in the OWL collaborative techno-rhetorical space was a reflective act.

Such reflection led to new understanding of rhetorical and kairotic dimensions of identity, a realization that becoming a techno-rhetorician entailed both developing the technological artifacts and sustaining relationships with people for whom and with whom the artifacts are created. I questioned my design choices and the assumptions and beliefs motivating them. I wondered where those assumptions came from, and I asked myself about the goals that I was trying to achieve, interrogating how these choices impacted users, clients, and others on the usability research team. Why, I wondered, are these goals desirable? And for whom are they desirable? These questions arose from the multiple roles I was being asked to play and the questions demanded answers based on my acute awareness of the complexity of producing a technological artifact in the overlapping disciplinary, institutional, and communal networks that, as Johnson has pointed out, impose constraints upon technological use.

The third and final dimension asserted by Johnson-Eilola and Selber is the teaching dimension, which bridges thinking and doing. The OWL project enabled me to build educational structures on three levels: self-teaching, peer teaching, and classroom teaching. At the first level, I negotiated different—and often competing—needs of various stakeholders, prioritizing them as a technical rhetorician. I viewed usability not as an act of applying pre-formulated design principles but as kairotic decision-making, or, to borrow from Hawhee, as interventional cutting into discourses already circulating about the OWL, its goals, users, intended and intended use. This cutting inevitably involves using some of the existing discourse while “ignoring (i.e., selecting out) others” (Hawhee 25).

My decision-making was informed by my knowledge of design principles, yet these principles cannot and should not restrain discourse. I learned to connect my expertise, needs, and interests with those of others who were also contributing to intra-program collaboration and research. Making such connections opened up opportunities for peer teaching that allowed the whole team to develop a shared repertoire of techniques for designing user-centered technological artifacts and for negotiating stakeholder relationships. In this process, I learned to teach usability as a form of research to my students as they observed me act through each step of the process. And I observed my students learning as they offered suggestions during user interviews that I conducted to help me determine student-user needs. By bringing the collaborative design process into the classroom, I was helping my students become conscious and engaged technology users. Using the OWL project as an example, I integrated these user interviews into classroom discussions about usability research methods. Through these ongoing conversations among myself, users, clients, and other members of the usability team, I became more aware of not only my own roles and expertise, but also the roles and expertise of others working in the techno-rhetorical space of intra-program collaboration and research.

Participatory Design: Faculty Perspectives

When I was asked to work on the OWL redesign project, I recognized that I was playing multiple roles: I was the usability expert, graduate faculty, technical communicator, and researcher. Although I see the need for increasing usability awareness among computers and writing specialists, I will not argue that usability consultancy equals computers and writing. While study and experience offered me language and tools

for usability analysis, my consultancy was not one of educating or teaching usability to my partners in this research, which would imply a power differential. Rather, each stakeholder brought with them a way of seeing, a lens (or set of lenses) through which they perceived the artifact, OWL. And each lens enables as well as disables vision. In my role as the usability consultant, I offered language with which to discuss navigation, content organization, taxonomy, and metadata, which I describe in greater detail below. Together, these elements of user-centered design represent an important perspective that had been missing.

Although I acted as the usability consultant, this professional knowledge base was one discourse among many that together enabled discussion of and about the OWL. Developing methods of inviting users into the design process while keeping the process moving forward: this was my primary challenge. Inviting user participation seemed a necessary step in understanding stakeholders' concerns and in understanding the issues of and improving site usability. But as a new member of the group of stakeholders discussing the OWL, my first responsibility was to get to know the discourse that surrounded the artifact. I was interested in learning how the group was representing their relationship to OWL, how they named and understood the problems they faced, and what role they expected me to play on the team.

Professional writing began its collaboration with the Writing Lab two years before undertaking any explicit project in usability. It began as many usability consultations begin: with suggestions for reading. The first books suggested were Donald Norman's (1988) *Design of Everyday Things*, Jeffrey Rubin's (1994) *Handbook of Usability Testing* and Rosenfeld and Morville's (2005) *Information Architecture for the*

World Wide Web. Before suggesting anything for the OWL website, I wanted to negotiate some common language with which to analyze OWL content with this team of collaborators.

I was interested in learning more about OWL, and was struck by how closely OWL's development followed the description of a rambling, organic site Rosenfeld and Morville describe. Over ten years, the OWL had proliferated under numerous graduate student web developers who did incredible work, inventing new genres, establishing practices, and establishing Purdue's OWL as both a valuable reference and brand for writing help. I remember referencing the OWL as a graduate student, and as a web-savvy early user, I came to regard the OWL as *the* authoritative online writing reference. Like many others, I used the OWL as my handbook. So my relationship as a consultant to the OWL was not without its own history. I had to prepare to consult with the OWL as much as I was asking Writing Lab administrators to prepare to work with me.

Rosenfeld and Morville describe the organic development of large websites as archipelagoes – websites as islands of information protruding above the surface of an organization in public view:

Large, complex web sites and intranets have similarly organic beginnings. These sites are loosely connected archipelagoes of information, starting slowly with one island, coming from sources often unseen, exploding with change and growth, out of control. Sites that grow this way within an organization are really a collection of sub-sites. Their complexity runs deeper than you think. Indeed, the biggest challenge is often the degree to which organizational politics intrude into the process. This isn't surprising if we consider the differences between the ways modern corporations and the World Wide Web work. (pp. 175-176)

Writing centers, academic departments, and complex writing programs like the ones at Purdue University are not corporate entities, but the hierarchies and traditions that define

Purdue have flavored the island culture that defines these specific archipelagoes. As much as I would have liked to imagine stark differences between academic and corporate consulting, many similarities exist between Rosenfeld and Morville's experience of corporate consulting and my academic consulting. The archipelagoes of the Writing Lab consisted of the physical Writing Lab space, where face-to-face tutoring happened, the satellite centers located in the library and dorms, and the online writing space, the Purdue OWL. Each of these archipelagoes had its own politics, its own concerns, and its own stakeholders.

These archipelagoes are also fodder for institutional critique as Porter et al. (2000) argue, and reveal the fissures and fractures among elements of the Writing Lab. These gaps are real and coming to terms with institutional issues and internal traditions and politics played a significant role in preparing for Writing Lab collaboration. The writing center administrator thought about this OWL among others, articulating the site as a potential focus for writing center research. Our technical writer saw issues of organization, that is, of taxonomy, and thought using controlled vocabulary for links might provide a long-lasting solution. The graduate student understood the day-to-day concerns of local writing instructors, pushing for the best resources to support local needs. As an information architect, I was thinking how these different concerns could be bridged and, rather than isolated sub-sites, the redesign team might begin talking about OWL as a large, complex project. The team needed a common language.

Even before suggesting reading, professional writing collaboration with the Writing Lab began with an informal discussion about site organization, which for information architects, becomes a conversation about taxonomy. Remember that no

taxonomy is perfect or final, and inventing and maintaining labeling schemes have given rise to distinct careers, and even professions and organizations of practitioners (see esp. Morrogh, 2002). Contemporary search engines, with their sophisticated search algorithms and programmed agents, are attempts to bypass taxonomies, and have enjoyed mixed results, as well as abuse, as users attempt to put their links in front of more users by "climbing" towards the top of search engine results. Purdue's OWL is engaged in this practice, currently appearing in the top few results for writing-related search terms. Nevertheless, robust and meaningful taxonomies become particularly important as site contents grow.

For professional and technical writers, taxonomies are one form of metadata and most recently have been incorporated into discussions of single-sourcing, particularly the use of XML. While single-sourcing is beyond the scope of this article, development of a taxonomy for the OWL enabled concerted attention to the development of a "metadata" strategy alongside the redesign of the OWL. That is, the Writing Lab had to consider how it was describing and documenting the creation of new materials and revision of existing online documents. Metadata, then, is information produced about the documents: their intended use and audience, title, author, date of revision, date of publication, etc: metadata is data about data. While no metadata scheme can claim to be universal or provide a permanent solution, talking about taxonomic structures and metadata provided an opportunity for the writing lab administrators to participate in and articulate their needs in discussion of the OWL redesign. Taxonomy became a common place, a contact zone or *topoi*, where technical designers and pedagogy administrators negotiated a common language to discuss and negotiate not only the look and feel of the site, but the

key attributes a variety of stakeholders were looking for in the ultimate design. Language was also negotiated around this zone of interaction.

For program administrators, negotiation of language and common understanding, or establishing *stasis* in classical rhetorical theory, helped the stakeholders within the department come to better understanding of the various and occasionally competing needs within this large writing program. Even within the same writing program, stakeholders often do not effectively communicate about various populations being served and the needs met with limited resources—sometimes fighting with each other over ever-dwindling resource streams rather than developing strategies for pursuing new resources. So our discussions of taxonomy were not only aimed at settling questions of labeling but also towards helping program stakeholders articulate values and needs. Discussions about taxonomy have had a direct effect on the OWL redesign and the project at hand; however, these intra-program discussions led to better understanding of institutional processes and resources that are vital to successful collaboration. Better communication leads to better research in a project of this scale, but also enables better intra-program communication and collaboration.

Informal consulting led to more formal collaboration when, as described above, I designed a practicum class in collaboration with the Writing Lab. Graduate students were turning their professional writing teaching materials on single sourcing, whitepapers, web publishing, and job search documents into web-based tutorials and guides intended for publication and distribution through the OWL. As part of their pedagogical training for the professional writing classroom, graduate students were asked to complete materials for submission to the OWL. A significant number of students developed OWL materials,

and they are now part of OWL online content. Students retained their intellectual property rights (an advantage to the OWL's Fair Use Policy <http://owl.english.purdue.edu/owl/resource/551/01>), and had the freedom to opt out of publishing their work on the web. None did opt out, however, as students recognized the value of OWL publication and recorded their assignments as published documents.

The next step in collaboration involved redefining an advanced graduate/undergraduate professional writing class and focusing it on *usability*. Students participated in in-class usability testing and, on a volunteer basis, could participate with users after completing training for working with usability test subjects, as described in the technical writer's narrative above. Some graduate students continued to work with the OWL after the practicum had ended. These students worked with the Writing Lab to create usability testing materials and nearly one third of the class volunteered to participate in one of a half dozen different roles in the OWL usability testing, from completing required training in order to work with research subjects to recording user responses. Three graduate students acted as co-investigators in the project and, during the following summer, led usability testing of their own design. Each of these activities was an outcome of the close collaboration occurring between professional writing and the Writing Lab, a collaboration that had not been attempted before in this institution.

Important to this testing was Institutional Review Board approval. Andersen's (1998) argument about the ethical demands of writing research is instructive here, and perhaps our local conditions of research review made it easier to accept the IRB's insistence that its concern was to protect the rights of research participants. Although there was no need to gain approval for in-class testing of other students, the OWL

Usability Research Team thought it was potentially valuable to undergo the process of IRB approval. Although many writing teachers with whom we have spoken think IRB is encroaching beyond its intellectual and institutional mandate by requiring oversight of writing research, the IRB at this institution has been very clear that its interest is protecting the rights of human research subjects. This delineates the rightful limits of IRB's authority, and as a usability consultant, I happily traded the few hours spent preparing IRB documents for institutional acknowledgement of the value of the research being completed. As writing teachers, IRB oversight, whether resulting in full review, expedited approval or exemption (the three operant categories for the local committee) represent institutional recognition of usability, classroom-based, writing research *as* research worthy of review. A small investment of time for review is well-spent when considering the larger issues of institutional recognition for research methodology.

Although it ran a risk of requiring either full review or rejection, the research group decided to complete the IRB approval process during the first few weeks of class. I brought IRB memos and emails into class, as well as institutional documents, making the review and eventual approval process part of class, and institutional documents became part of our class texts. By completing the IRB approval process openly and with students, the institution became transparent and while its workings were no more logical or comprehensible, students at least saw one example of a large institution at work. And, of value to professional writing students, they traced the way documents work to sustain institutional processes and the administration of complex relationships among stakeholders. They saw my frustrations when the process slowed, my elation when the project was approved, and they understood the relationship among genres such as

proposals, memos, process reports as well as cumulative reports within the context of use. These lessons were as (if not more) important than teaching the generic conventions of these documents.

As a usability consultant, I had the distance to see the OWL family of websites as organically-emerging individually sponsored islands of information. Besides archipelagoes of information, organically developed as circumstance and opportunity presented itself, the OWL has consistently been a world-class information resource, worthy of investment of time and resources. Campus and department administrators are supportive of OWL initiatives because they are seen as both public service as well as global marketing, reaching millions of users in all 50 states and 125 foreign countries. As a usability consultant and information architect, I knew that I was working with a unique, daunting, and visible site. As a technical communicator, I also knew that to its off-campus users, the OWL was primarily a freely-available information resource before all else, and that the disciplinary knowledge of technical and professional writing research would serve OWL well. But I also knew that, for any of the collaboration to produce change in the OWL, I would have to commit to long-term participation in the discussion surrounding the technological artifact. What has surprised, and indeed delighted, me in my collaboration with the Writing Lab has been how much I have learned about my colleagues and the relationships and histories among the elements of this large, diverse writing program from first year writing, to the undergraduate major in professional writing, to graduate study in rhetoric. Knowledge and understanding gained through negotiation and engagement with stakeholders, participants, and users.

Conclusion: Valuing Intra-Program Collaboration

As constituent parts of a writing program, each of us knew that we shared similar values and goals. However, we had not articulated our specific interest and expertise in research methodology and computer-mediated writing pedagogy as stakeholders. As members of different sub-organizations, the Writing Lab, the Graduate Rhetoric and Composition Program, and the Professional Writing Program, we each realized we were interested in discussing and developing the next generation of empirical methods and furthering the discussion of methodology so vital for the advancement of writing research. This collaboration represents a shift in the way this Writing Lab and other writing centers position themselves in institutions. Specifically, the Writing Lab's decision to work with the Professional Writing Program not only provided access to information that would ultimately benefit those who used its services, it allowed the Writing Lab to establish itself as a research site that could shape its future and that of 21st century online writing resources. If the Writing Lab had chosen to undertake the OWL redesign on its own, without the collaborative relationship we describe, the situation might have echoed Molly Wingate's (1995) analysis of the dangers of avoiding collaborative relationships within institutions: "...by choosing not to collaborate with others, I had ensured that the writing center was powerless to shape its own future at a time when futures were being shaped." (p. 101). Visions of the future are particularly important for internal collaborations within complex writing programs where success is often defined not merely by solving a particular problem at a particular moment but also by sustainability and identification of opportunities for future research and collaboration.

To participate in effective collaboration, both the Writing Lab and the Professional Writing Program had to become stakeholders. However, the label "stakeholder" implies risk as well as reward—and we were able to articulate both our goals in pursuing this OWL usability research project as well as the risks we were undertaking. Graduate students were professionalizing. Professional writing expertise led to better web resource usability. Writing program administrators rearticulated the Writing Lab as a site for writing research. And more importantly, stakeholders across the department were communicating more effectively about OWL as a very visible and publicly accessible resource which, if it had failed to keep up with current web design and usability, would lose its place as an important and valued web-based writing resource.

In this way, the IRB approval process described above became much more than a momentary concern in one class. It transformed the way our program's (and our programs') stakeholders speak to each other about research. The collaboration allowed us to develop a functioning internal dialogue about resources, funding, research, methodology and planning for the programs grouped under the title of "Rhetoric," a dialogue that will continue beyond the life span of any particular techno-rhetorical project. And by invoking the language of functionality, we refer to effective group communication as opposed to the all too common descriptions of *dysfunctional* communication that fill our journals and conferences. This language is not intended to imply functionality as *instrumentality*, to accusations of either perfunctory or mechanistic goals. Rather, we have established a better communicative infrastructure for realizing due process as a necessary part of program administration. In describing the OWL redesign and usability research project from the perspective of administration, graduate

student education, and professional and technical writing expertise, we offer a model for establishing and maintaining productive dialogue among constituent elements of effective writing programs. OWL is, at its heart, techno-rhetorical research. And our reinvigorated dialogue has effectively supported rhetorical investigation as well as action.

Following Simons et al's (1995) work on intra-program collaboration, this article extends research on team building within a large writing program. By narrating participants' experiences we articulate OWL as a site for building professional identity by illustrating how the technological artifact becomes a site of stakeholder interaction.

Hawhee (2002) informs our discussion of user-centered research, offering the idea of invention in the middle. Following DeVoss et al.(2005), the essay articulates OWL as part of institutional infrastructure, contributing to understanding OWL's role in forming programmatic identity as well as a source for historicizing the formation of that identity.

Seen infrastructurally as DeVoss et al suggest, writing labs and writing centers have the potential to support research and professionalization, expanding the role to become a center not just for revision but for scholarly study of writing, technology integration, and research innovation. As these narratives attest, articulating oft-unspoken values and desires can help bring together disparate interests and, acting as an infrastructural catalyst, support programmatic development.

Our experiences, as we narrate here, demonstrates the challenges of developing effective information architectures that respect and support functional communication and techno-rhetorical action that furthers the sometimes competing, sometimes complimentary interests that unite us (and we suspect most other) writing programs as shared intellectual space. Within that shared space emerges a dialogic relationship

among elements of writing programs facilitated by the computers and writing specialist, a role each of us played throughout the intra-program collaboration as we negotiated with our fellow stakeholders to establish a space for techno-rhetorical action. The dialogic engagement that characterizes our continuing collaboration is the infrastructure that sustains innovation and invention.

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¹ In *User-Centered Technology: A Rhetorical Theory for Computers and Other Mundane Artifacts*, Robert Johnson (1998) defines the system-centered approach as "...based upon models of technology that focus on the artifact or system as primary, and on the notion that the inventors or developers of the technology know best its design, dissemination, and intended use" (p. 25).

² For more a detailed discussion of our test methods, please see "Usability and User-Centered Theory for 21st Century OWLs" in *The Handbook of Research on Virtual Workplaces and the New Nature of Business Practices* edited by Kirk St. Amant and Pavel Zemlansky, published by Idea Group Publishing, 2008.