Integrating Communications Instruction into Engineering Curricula: A Writing Center Approach

Tom Gasque Smith, Deanna E. Ramey
University of South Carolina

I. Introduction

ABET criteria call for improved communications instruction throughout the engineering curriculum. What such improvement looks like varies from school to school and, indeed, from class to class. Such variation is linked to the histories and cultures of individual schools, departments and professors. At first inspection, this variation seems to present a problem to engineering colleges seeking to integrate communications instruction into their curricula. But the writing center model, long a fixture at most colleges, offers a flexible program that meets the needs addressed in ABET criteria while avoiding cookie-cutting demands from on high about the shape of communications instruction in every course.

Because of the humanities backgrounds of most writing center staffs, involving them in the activities of an engineering college presents interesting opportunities and problems. To make the collaboration effective, it is useful to find a common language to discuss communications instruction. Three areas of research on writing center programs find interesting parallels in engineering: the idea of consultancy as collaborative learning, the idea that knowledge is socially constructed, and a commitment to student responsibility for their learning. These prominent goals of writing center work are consistent with at least three of ABET's A-K criteria: d. an ability to function on multi-disciplinary teams; g. an ability to communicate effectively; and i. a recognition of the need for and an ability to engage in life-long learning.

This paper outlines the basic structure of the Professional Communications Center program at the University of South Carolina College of Engineering. This structure includes 1) communications instruction in-class and in one-on-one consultation with students, 2) consultations with faculty looking for new ways to integrate communications instruction into their syllabi, and 3) writing and producing a variety of publications for the College.

II. Background: Writing Center Theory Meets Engineering

An essay well-known among students of composition and rhetoric is Stephen North's "The Idea of a Writing Center."[1] In this essay, North identified some of the then crucial characteristics of writing centers in a variety of institutions. While acknowledging the general function of writing centers on campuses as sites where students could go to get extra-classroom assistance with their writing, North also posed an idea that may seem strange to those unfamiliar with writing centers. He said that those who work in them are interested in better writers—not better writing. This opposition, hovering between paradox and tautology, remains a central idea in most writing centers and is interpreted to mean that the centers emphasize teaching the processes of improving writing rather than simply improving the texts students bring to the center.

Primarily staffed with undergraduates, graduate students and faculty of English departments, writing center researchers have described the work they do in terms appropriate to the rhetoric of their humanities discipline. The tutoring that occurs in writing centers, predominantly considered a form of supervised proofreading prior to publications like North's, has been theorized over the past fifteen years as feminist and as consistent with a social constructivist theory of knowledge.[2,3] Those familiar with research in the field of writing centers assume that the structure of the one-on-one tutorial serves not so much as an addition to the more hierarchical structures of the classroom, but as a corrective, a place in which often marginalized students find the opportunity to learn *through* writing and discussion, not *prior* to it.

Discipline-specific writing centers and "satellites" of writing centers in non-humanities disciplines are a small but growing phenomenon in the development writing centers. Emerging as components of liberal education in technical or scientific fields, writing center staff have become attuned to the way that descriptions of their work (i.e. writing center theory) are received by students, faculty and staff in non-humanities environments. For example, writing center theory has resulted in a common mantra uttered by most writing centers: "We don't proofread." This rule of writing center work—based on a sound but rarely articulated pedagogical goal of giving students responsibility for their own work—sounds like nonsense to many members of the academy. To them, decrying proofreading is one step on the road to anarchy. But, generally speaking, the mantra simply means that writing centers would teach proofreading to students rather than proofread for them.

Three planks of writing centers' theoretical platform offer a useful entrance to the engineering discipline. First, many writing centers have adopted the idea of consultancy as a way of describing the role of the tutor.[4] Second, because writing centers view knowledge as a social construct, they tend to believe that tutors must seek to understand the full context of students' writing situations.[5] Third, writing centers tend to insist that the most useful tutoring occurs when students seek help voluntarily.[6] These three ideas offer the best chance for convincing engineering faculty of the efficacy of writing centers.

A. Consultancy

Positioning the writing center tutor as a consultant, first of all, evokes a relationship that most engineering faculty are familiar with. They lend their expertise to industry and to colleagues when called upon. Similarly, tutors lend students their expertise. Crucially, however, that expertise is introduced at the point of need as defined by the client/student. Moreover, while "consultancy" has typically been employed in writing center scholarship to refer to tutor-student relationships, in an engineering context, the idea of consultancy extends to tutor/faculty and tutor/staff relationships as well. Already familiar with the idea of consultancy more than their humanities counterparts, engineering faculty seek help with communications instruction from experts—if they are readily available.

Finally, the idea of consultancy places demands on the English-department tutor. Faced with new kinds of writing assignments, tutor/consultants must conduct research to determine the

expectations faculty have of student writing, expectations that are remarkably dissimilar to those of the faculty with which writing centers traditionally deal.

B. Social Construction of Knowledge

Because of their interest in the social construction of knowledge, the second part of an engineering writing center program involves tutors' concerted efforts to become embedded in the activities of the engineering college. Becoming aware of the particular research interests of the college and its individual faculty members provides a modicum of expertise that smooths the relationship between student and tutor. Students in an engineering college often have experienced strained relations with their writing instructors, instructors whose assessments of student writing often seem, at best, subjective, and, at worst, biased.

Tutor/consultants who engage engineering faculty and students in conversation use these conversations as starting points for discussing writing, not as non-writing issues ancillary to the construction and design of a student lab report or faculty grant proposal. When, after the questions of a non-expert tutor, a student writer says, "What I meant to write was '. . .'", the student views the new statement as found words. But the tutor views such moments as created knowledge. Whether the knowlege is created or the words are found, this movement from implicit to explicit expression in texts occurs more quickly when consultants/tutors are familiar with the micro- and macro-contexts of a piece of writing (For example, micro-context might include the assignment, course, and instructor, while macro might include technical writing, the curriculum, and non-academic engineers).

C. Individual Responsibility for Learning

The final plank of writing center research argues that services are most effectively rendered when the consultant/client relationship is voluntary. Just as popular culture views consultants with some suspicion (e.g. "Dilbert"), student engineers are suspicious when required to spend a valuable half hour with a stranger to work on a skill secondary to "real" engineering. A similar concern is voiced by many engineering faculty who, while concerned about the communications skills of engineers, are equally concerned that incorporating such skills instruction into already cramped curricular space presents an either/or dilemma. But the location of a writing center outside the classroom presents a possible solution to this difficulty.

Just as students are encouraged to visit the writing center based on needs they perceive (either from prior experiences with writing or from a recent disappointing grade on a lab report), faculty seek out the consultants of a writing center based on their perceptions of need (either from a quick look at students' first lab reports or from the demands of ABET). The initial unevenness in instruction provided is, hopefully, mitigated by an incremental widening of services offered due to the flexibility of the writing center approach. Students return when they feel a consultation offered quick assistance to immediate needs; faculty incorporate in-class presentations when they are brief, pointed, and catered to their expectations of student writing. Faculty appreciate "cleaner" texts; students appreciate the knowledge consultants have of the particular course and instructor.

These three planks of the writing center platform for delivering communications instruction translate into activities that may appear different from one engineering college to the next. At the USC Professional Communications Center, they offer a theoretical background for a model that includes 1)consultation with faculty 2)communications instruction to students in-class and through one-on-one tutorials and 3) the production of publications for the College and its departments.

III. Incremental Expansion

The following are descriptions of the evolving involvement of the PCC with two courses, with faculty on their writing, and with publication activities in the College of Engineering.

A. The EECE 201 Course: A Foundation

The ECE Department Writing Center opened in August 1995 with departmental support and a grant from the Gateway Coalition of Engineering Colleges. Its first engineering course link was with EECE 201, a sophomore lab course. When we first worked with the 201 course, students in the class wrote 12 lab reports, one for each week of the semester. So our initial writing instruction was focused toward helping the students learn about different sections of the lab report format, like the abstract, introduction, and conclusion. We also had students sign up for weekly small-group meetings in the Writing Center. Attendance, however, was voluntary.

As our involvement with the 201 course has continued, we have implemented several different forms of writing instruction: voluntary small groups; mandatory small groups; individual consultations; in-class presentations; hiring a Technical Writing assistant to grade the writing content of the labs; and co-teaching the course by having Writing Center staff teach and grade the communications portion of the course. We have also influenced the course content and the form and purpose of the writing assignments in the course. Initially, the course assignments consisted of 12 lab reports. The Writing Center worked with the engineering faculty assigned to the course to incorporate writing assignments that focus attention on the professional writing that they will do as engineers. For example, now 201 students write three technical memos, a progress report, and give an oral presentation in addition to the eight lab reports they write.

B. EMCH 361: Expansion and Adaptation

Even while still an ECE program, the staff of what would become the PCC began to look for links with other departments. When the instructor of the mechanical engineering department's initial lab course approached the ECE Writing Center, the idea of eventual expansion to college-wide status provided a powerful incentive for the staff to offer assistance. However, it was necessary to limit that involvement to the beginning of the semester since the PCC had not yet attained college-wide status. Initially, one staff member presented a variety of issues regarding technical writing to the entire lecture section of the course, 40 students.

Over the course of three years, this initial 40-minute lecture has been replaced by a workshop environment occurring over the course of two-weeks. The (now) PCC staff member visits each of four lab sections (10 students) during two separate weeks. The first week includes an

introduction to the writing requirements of this course and a comparison of these requirements to more broad technical writing principles. After the students have written their first lab report, the second week includes individualized and group work: analyzing the different approaches students took to the writing task and beginning a draft of the second lab report during lab time with individual consultation from the PCC staff member.

During the first semester of involvement with this course, no students visited the (then) ECE Writing Center for individual consultation. Lasr semester, approximately 20 hours of individual consultation have been provided for students of the course (outside of course time; consultations' lengths vary but rarely exceed an hour for any single meeting). Not only that, the PCC has expanded its involvement with the department by conducting a similar two-week workshop with students in the senior lab course. Finally, the local chapter of ASME invites PCC staff to their meetings to discuss services ranging from the academic (lab report writing, oral presentations) to the pre-professional (resume/cover letter writing and interviewing skills).

This increase and expansion in both ECE and EMCH, while notable, does not explain why students and faculty use the service now when they did not before. Until further study is completed, PCC staff speculate that 1) a more knowledgeable consultant/client relationship with faculty and students and 2)the status of the PCC as a college-wide program results in greater use. In its initial phases, the collaboration would hardly be seen as an answer to ABET's demands; in its recent incarnations, however, the program reaches most all ECE and EMCH students in some form. The relationship, however, is not without problems. First, consultants and faculty are not always in agreement about the best way to comment on and grade student writing. Second, the relationship between the PCC and these courses is currently reliant upon the individual faculty members and PCC consultants. Should new instructors take over these courses, the PCC must be certain to establish a consultative relationship with them.

PCC involvement with both ECE and EMCH show the flexible character of the writing center approach. PCC involvement with the college's two other departments (civil and environmental and chemical) is not as advanced as in the first two but is in its initial phases.

C. Faculty Consultations

In a variety of ways, the staff of the PCC has come to serve faculty in the College in much the same way that they serve the students. As the ECE Writing Center, staff helped train engineering graduate teaching assistants how to respond to and assess writing. Shortly thereafter, under the auspices of the college-wide PCC, staff conducted a workshop for faculty and TAs in the college who would be responding to student writing in the college's University 101-Engineering course for first-year students. Such an incremental expansion of services is a crucial element in building a successful communications program.

This incremental expansion is further illustrated by the case of two engineering professors for whom English is a second language (ESL). These professors sought the assistance of PCC staff to discuss several grant proposals they were developing. While typical ESL writing issues were discussed in these consultations, staff also assisted in transforming proposals into more persuasive and more readable documents. Assistance to these professors eventually led to the

development of a workshop on proposal writing for all newly hired faculty. This workshop, in turn, has led to more consultations with faculty about proposals; but several of these faculty members have also sought PCC guidance in developing writing assignments and encourage their students to use the center.

D. Publications

Not only faculty, but also staff have sought the services of the PCC. Over the past year, PCC staff have played a central role in developing a variety of publications for the College. A newsletter to alumni and industry, *Innovations*, is written and edited by PCC staff. Moreover, staff have written brochures for both a development campaign and the college's distance education program. All these projects involve significant outreach efforts by PCC staff. They must contact faculty, staff, students, and alumni—people important to the life of the college.

While such publishing activities certainly seem secondary to the primary goal of integrating communications instruction into the engineering curriculum, they still help support that goal. As staff learn even more about the context in which they are teaching communications skills, students see the high value placed on communicating engineering's ethos and achievements by faculty and staff. These publications are a visible symbol of the importance of communicating to both technical and non-technical audiences, often at the same time.

IV. The Writing Center Approach to Integrating Communications Instruction

The Professional Communications Center model of the writing center approach to integrating communications instruction into engineering curricula includes three levels of involvement: 1) communications instruction; 2) faculty consultation; and 3) publications. Diverse forms of engagement with the College allow each element to strengthen the other two.

There are several strengths to this writing center model that we propose. In communications instruction, engineering faculty or instructors ask PCC staff to customize writing and oral presentation instruction for their specific courses. This often involves several meetings between faculty and PCC staff, one of the results of which is a stronger relationship between the PCC members and the faculty. The second mode of integration is faculty consultation, which refers to situations where PCC staff work with faculty on papers, presentations, or even conduct grading sessions. Again, this type of interaction increases the ties between engineering faculty and PCC staff. And, third, is PCC involvement with publications like the College's quarterly newsletter, *Innovations*, that reaches over 5,000 alumni and members of industry. Doing research for articles and interviews offers the PCC staff opportunities to meet a diverse range of faculty, students and professional engineers. The staff also learn about unique and exciting projects that the College sponsors or houses from an insider's perspective.

However, our model does not involve an across-the-board, standardized level of writing center involvement. In other words, some students will receive more writing center instruction/benefits than others based on which instructors choose to have a writing center connection. Our involvement with specific departments thus far suggests that, over time, this weakness can be overcome. Another possible concern of this approach is that, because the writing program occurs

outside the curricular structure of the college, it might be more vulnerable to budget cuts during tough times. Hopefully, this potential problem is mitigated by the relatively small cost of hiring part-time staff and also by the involvement of the PCC in crucial public relations activities like publishing *Innovations*.

V. Conclusion

This model of integrating communications instruction into an engineering curriculum represents the evolution of our involvement in three major areas of communication in the College of Engineering: 1) faculty consultation; 2) publications; and 3) communications instruction. We acknowledge that writing centers will have different levels of integration and involvement, depending on the specifics of their situations. Yet, we feel that the three areas of communication in our model offer opportunities to work with faculty and students to thoroughly integrate communications into an engineering program. Staff should maintain a consultant relationship with students and faculty, teach with an awareness of the socially constructed character of knowledge, and engender individual responsibility for learning.

Bibliography

1. North, S. The idea of a writing center. *College English* 46(1984): 433-446.
2. Trachsel, M. Nurturant ethics and academic ideals: convergence in the writing center. *Writing Center Journal* 16.1(1995): 24-45.
3. Murphy, C. The writing center and social constructivist theory. In J. Mullin and R. Wallace (Eds.). *Intersections: Theory-Practice in Writing Centers*. Urbana: NCTE (1994).
4. McCall, W. Writing centers and the idea of consultancy. *Writing Center Journal* 14.2(1994): 163-171.
5. Neuleib, J. W. & Scharton, M. A. Writing others, writing ourselves: ethnography and the writing center. In J. Mullin and R. Wallace (Eds.). *Intersections: Theory-Practice in Writing Centers*. Urbana: NCTE (1994).
6. Rodis, K. Mending the damaged path: how to avoid conflict of expectation when setting up a writing center. *Writing Center Journal* 10.2(1990): 45-57.

DEANNA E. RAMEY

Deanna E. Ramey is a doctoral student in Composition and Rhetoric at the University of South Carolina, Columbia, SC. She received her B.A. in English from the University of North Carolina, Chapel Hill and her M.A. from Clemson University, Clemson, SC. She has served as the Assistant Director of the Freshman Writing Program in the USC College of Engineering, and she is currently co-teaching a sophomore lab course in the Electrical and Computer Engineering Department.

TOM GASQUE SMITH

Tom Gasque Smith is a doctoral student in Literature at the University of South Carolina, Columbia, where he also received an M.A. He received a B.A. from Duke University in Durham, North Carolina. He as served as a writing consultant in three different writing centers and has taught composition and business writing courses. In addition to working closely with the Department of Mechanical Engineering, he edits *Innovations*, the College of Engineering quarterly for alumni and friends.