Revisiting Freshman Composition

Michael Alley
ASEE/University of Wisconsin–Madison

Before the Fall of 1995, over eighty percent of the freshmen at the University of Wisconsin–Madison were able to place out of freshman communication. Responding to a general reduction in the quality of writing, speaking, and library research skills by undergraduates over the previous two decades, the faculty senate at the University of Wisconsin–Madison passed guidelines making it much more difficult to place out of this course—these guidelines raised the percentage of students having to take the course from less than 20 percent to greater than 75 percent. In addition, the faculty senate established the following goals for this course: improvements in writing, reading, speaking, and listening skills; fostering of critical thinking; and practice in performing library research.

Given that many more sections of freshmen composition were to be taught in the coming years, departments other than English wrote proposals for courses in freshman communication. Under the direction of the Dean of Engineering, the Department of Engineering Professional Development proposed one such course, Basic Communication (EPD 155). Across the campus, particularly in the College of Letters and Science, there was much resistance to the College of Engineering teaching freshman communication. However, primarily because of the efforts of the Dean, the College was awarded the opportunity to teach the course for one year on a probationary status. During this year, an independent group from the College of Education would assess the performance of the various departments teaching the courses, and based on those results, the deans would review the probationary status.

Why did the College of Engineering want to teach freshman communication, a course that historically is taught by English and Communication Departments? One reason was to help retain female students. Having a small section class in the College of Engineering during the freshman year was an opportunity to make female students feel a part of the College. This opportunity early in the engineering curriculum to retain women is important because as Felder and others [1995] discovered, by the end of the third semester a large percentage of women have already left engineering. Another reason for the teaching the course in the College of Engineering was the reduction of credits in the curriculum. Given the guidelines established by the faculty senate, the College of Engineering had the opportunity to teach the course in either two or three credits. As it turned out, the College of Engineering course was the only course on campus that taught the course in two credits—something that added to the distrust of the College of Engineering teaching the course. A third reason to teach the course in the College of Engineering was to insure that engineering students receive a quality course that would help them communicate in their remaining undergraduate courses. Like engineering curricula at other universities, the engineering curricula at the University of Wisconsin require that each student take a technical communication course in the junior or senior year. Given that the College knew what was expected of students in those technical communication courses as well as in the laboratory and design courses with writing components, the College was in an excellent position to design the freshman communication course.

A strong argument for not teaching the course in the College of Engineering was that engineering students should take courses in non-engineering departments so that the students receive an education in "liberal arts." For that reason, all engineering students were given the option to take any freshman communication course across the campus, not just the one in Engineering. Moreover, in designing its course, the College tried to include elements, particularly readings, that students in a liberal arts course would experience. Examples included Annie Dillard's "In the Jungle," George Orwell's "Shooting an Elephant," Jessica Mitford's "The American Way of Death," and Deborah Tannen's "Sex, Lies, and Conversation."

Design of the Course. Basic Communication, the communication course in the College of Engineering, was a two-credit course that introduced freshmen to communication, with emphases on writing and reading. In the course, freshmen received instruction in expressive, informative, and argumentative modes of communication as well as in the principles of critical thinking (backing up assertions and evaluating evidence). In addition, the course introduced freshmen to the principles of presentations. Finally, the course introduced freshmen to the University libraries and taught freshmen how to perform library research. The text for the course was one that is commonly used for such courses across the country: *The Macmillan Reader* by Nadell, Langan, and McMeniman. Completing the course in the Fall 1995 semester were 132 students (35 females and 97 males) in eight sections.

Basic Communication had three principal goals. The first goal was to teach freshmen the basic modes of communication: expressive, informative, and argumentative. In learning about these modes, the students solidified their writing foundations so that they were better prepared for the writing and speaking that they would do in their discipline courses. For instance, engineering reports call for the principles of informative writing, and engineering proposals call for the principles of argumentative writing.

The second goal of the course was to improve the critical thinking skills of the students. Students learned to ask critical questions: which assertions require evidence? what kind of evidence is offered? how strong is that evidence? Through readings of professional essays and editing of other students' writings, students applied these questions.

The third goal was to improve the writing and speaking skills of the students. Through two major writing assignments, one major speaking assignment, and related minor assignments, students practiced writing and speaking. Equally important in these assignments, students received feedback on their communications. Most of this feedback was in the form of teacher comments, but there also were student critiques on the writing drafts and videotape reviews on the presentations. Through lectures and discussion, students learned principles of planning documents, organizing documents, and writing clear and precise language. Through instruction, exercises, and quizzes, students learned the principles of grammar, usage, and punctuation. Through readings, students saw examples of excellent writing from excellent writers.

Note that a certain level of writing skill was expected of the students when they entered the course. For instance, students were expected to know the important rules of grammar, punctuation, and usage: what constitutes a sentence? how is a colon used? what is the difference between word pairs such as *affect/effect* or *principle/principal?* In reality, many students did not yet have this understanding when they entered the course. For that reason, the course had extra help sessions (outside of class) for those students who lacked these skills. These sessions were voluntary so that the students who already had the skills could spend this time on other things. In addition to the extra-help sessions, students were required to correct all grammar and punctuation mistakes on their assignments as part of their minor assignment grade. Note that these correction assignments were tailored to the individual. For those who did not make many mistakes, the assignments were short; for those who made many mistakes, the assignments required more time.

Basic Communication had three major assignments (informative presentation, research paper, and argumentative paper). In addition, there were minor assignments, which included an expressive paper, a writing journal, a group presentation, and in-class editing exercises:

Informative presentation	10%
Informative paper	30%
Argumentative paper	20%
Minor assignments	40%

Students had the opportunity to submit the first page (word-processed) of both major writing assignments before the due dates so that the instructor could make comments in time for the students to revise.

Basic Communication differed from the other freshman communication courses in the followings ways: special attention was given to female students; students were encouraged (but not required) to research topics about science and engineering; and the major assignments were linked and significantly fewer, allowing students to achieve more depth in their topics.

Instructors for the course were sensitive to the minority status of females in the course. For that reason, whenever group work was needed, instructors made sure that if there were female students in a group, then at least half of the group was female. Instructors were also sensitive to the high rates at which women leave engineering during the freshman and sophomore years. For that reason, during students conferences, instructors encouraged female students to discuss general questions or concerns that they had about the engineering curricula. In these conferences, instructors acted as advisors either supplying the needed information or referring the female students to someone who had that information.

Perhaps more than anything else, the topics for assignments distinguished Basic Communication from the other freshman communication courses across the campus. Students had the opportunity to write about any topic as long as it met certain criteria: (1) the topic interested the student, (2) the topic could be quickly researched, (3) the topic was specific enough that the student could achieve depth, (4) the topic involved synthesizing a spectrum of sources (not just one or two), and (5) the topic involved enough controversy that analysis was necessary. In the lists of suggested topics for Basic Communication, students were presented with many interesting choices that involved ethical and historical issues of science and engineering. Examples included

Did German scientists in World War II secretly hinder efforts to build an atomic bomb?
Who deserved credit for the discovery of the structure of DNA?
How were the great pyramids constructed?
Has there been an overreaction to the presence of asbestos in schools?
What caused the explosion of the Space Shuttle Challenger?

About two-thirds of the students chose either one of the suggested topics or a topic of similar scope within science and engineering.

The third major way in which the engineering communication course differed from other communication courses across the campus was in the number and depth of assignments. In general, Basic Communication had fewer major assignments (three), but those assignments had more depth than assignments in other courses. Figure 1 depicts these major assignments and

shows how different aspects of the course were worked into each. Note that each student's topic for the informative presentation, informative paper, and argumentative paper was the same. This linking of assignments was one way that we streamlined the course to cover the needed skills in two credits. This linking also allowed students to build a broad, deep, and precise body of knowledge from which to draw in performing these assignments. Some might argue that this building of knowledge detracted from the course goal of fostering critical thinking. However, stressing critical thinking "while de-emphasizing knowledge reduces a student's capacity to think critically" [Hirsch, 1996]. The outcomes (student papers) reinforced this line of thought. By the third linked assignment (the argumentative paper), students had acquired enough knowledge that they could argue intelligently about the subject—bringing in a variety of evidence and, in many cases, adopting positions that reflected their own thinking as opposed to just repeating the position of one of their sources.

Evaluation of the Course. The evaluation of the course occurred in three ways: student evaluation, teacher evaluation, and outside evaluation by the Department of Educational Psychology.

The student evaluations revealed that students enjoyed the course. Many commented that it was an enjoyable break from their "engineering and science" courses. Many also appreciated the freedom that they had in choosing their own research topics. During the first semester that the course was taught, students

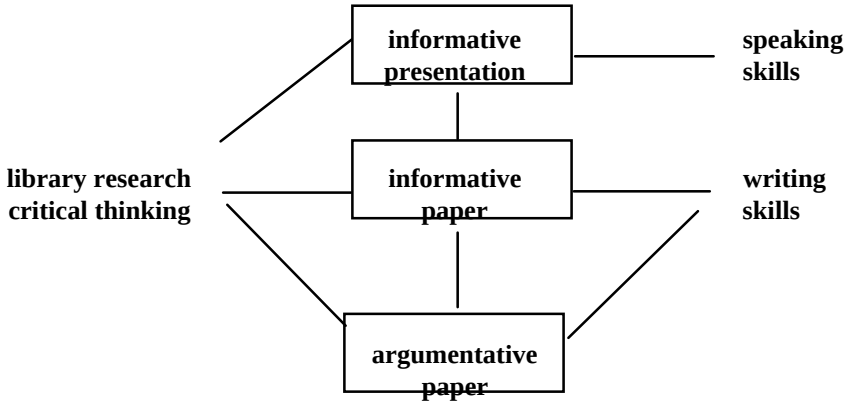

Figure 1. Depiction of how needed skills were worked into major assignments. In addition to these skills, the course also sought to improve the students' listening and reading skills.

uniformly complained that the work load was too great for the two-credit status of the course. Part of this complaining arose from the two in-class papers required in the assessment by the Department of Educational Psychology. However, part of the complaining arose from us being too ambitious in what we expected of the students. In teaching the course during the second semester, we streamlined some minor assignments, and student evaluations during the second semester did not register the same complaints about work load that evaluations in the first semester did.

Teachers for the course were academic staff from the College of Engineering. All had experience teaching upper level technical communication, and all had prior experience teaching freshman composition. In evaluating the course, the teachers did several things. First, the teachers met on a weekly basis and exchanged ideas and possible research topics. Second, the teachers shared student papers and placed strong examples on the internet (*http://darkstar.engr.wisc.edu/155/syllabus155.html*), so that all students could see standards for excellence in the course. The teachers also met after the semester and came to consensus on how to streamline and improve the course. Finally, the teachers selected a small number of students to come back the next semester and give presentations on their research projects to all the new students taking the course. In this way, the next semester of students saw the levels of depth and quality expected for their research projects. Overall, the teachers felt that the linking of major assignments and the presentations of student models were successes. Suggestions for future changes included incorporating argumentation earlier in the semester, even if that incorporation meant dropping the minor assignment in expressive writing. The feeling among the teachers was that argumentation is so important in the engineering curriculum that it deserved more attention in the course.

The third assessment, by the Department of Educational Psychology [Levin, 1996], involved having the students write two in-class argumentative papers. One paper occurred the first week of class, and the second paper occurred the last week of class—topics were assigned and rotated so that no student wrote on the same topic twice. The purpose of the papers was to measure the gains in writing during the semester. Five courses across the campus participated in the assessment: Basic Communication in the College of Engineering; a course from the English Department; a course from the Department of Communication Arts; a course from Integrated Liberal Studies; and a course from Agricultural Journalism.

In the outside assessment, the following items were measured: length of essay, quality of essay (focus, development, and style), and mechanical error rate. The results for the College of Engineering are shown in Table 1, Table 2, and Table 3. In this assessment, our students showed significant gains in both essay quality and essay length. Three things should be noted about this assessment. First, this assessment was limited in scope and did not reflect many aspects of the courses (for instance, speaking skills or library research skills). Second, in comparing the results of Basic Communication with the results of other departments, one should realize that students with the initially lowest writing-quality ratings had the greatest opportunity for improvement in writing [Levin, 1996]. Because engineering students often had stronger pre-test standings (for instance, the best pre-test score in mechanical error rate), the opportunity for improvement was not as great. Nonetheless, the course for the College of Engineering fared well—so well, in fact, that the probationary status for the College of Engineering teaching the course was removed.

Table 1
Assessment of Essay Quality of Students
in Five Freshman Communication Courses

	Score		Improvement	
Course	Pre-Test	Post-Test	Raw	Percent
#1	7.94	8.27	0.33	7
#2	7.58	8.59	1.01	22
#3	7.42	8.12	0.70	16
#4	7.10	7.54	0.44	11
Engineering	7.66	8.17	0.51	11

Table 2
Assessment of Essay Length of Students
in Five Freshman Communication Courses

	Score		Improvement	
Course	Pre-Test	Post-Test	Raw	Percent
#1	423	461	38	9
#2	414	574	160	39
#3	396	463	67	17
#4	381	478	97	26
Engineering	399	475	76	19

Table 3
Assessment of Mechanical Error Rate of Students
in Five Freshman Communication Courses

	Score		Improvement	
Course	Pre-Test	Post-Test	Raw	Percent
#1	0.25	0.19	0.06	25
#2	0.27	0.22	0.05	17
#3	0.27	0.23	0.04	18
#4	0.31	0.28	0.03	9
Engineering	0.24	0.20	0.04	14

Conclusions. Overall, the course was a success. First we taught a freshman communication course in two semester credits, as opposed to three, thus helping to reduce the curriculum load. Second, although our course had only two credits, as opposed to three for the other courses across the campus, our course fared well in an independent assessment of freshman communication courses. Third, the course was designed to make the female students feel a part of the College. Although evidence of success will not be available until these students begin graduating, our teachers sense that the course helped make our female students feel much more a part of the Engineering College than they would have if they had taken the course across campus. Finally, we incorporated design aspects into the course that we believe will help our students in their engineering curricula and engineering careers. These design aspects included opportunities to research a topic in science and engineering, consistent instruction in writing between freshman composition and the technical communication courses that they will take later, and linking of assignments so that students achieve depth in their writing and speaking.

While we do not advocate that all engineering colleges try to teach freshman communication, we do offer the following suggestions for other engineering colleges based on our own experience:

1) Show an interest in the freshman composition course of your students. There is perhaps no better way to build bridges between this course and the needs of an engineering college than to show an interest in the course. Engineering instructors who teach technical writing or courses with substantial writing components should request syllabi and sample papers from the freshman communication course. The more that an engineering college learns about a freshman composition course, the better position the college is in to request changes in that course.

2) Suggest sample topics for assignments. Most freshman composition courses include a research paper, and this paper is an opportunity for freshman to learn about the career path they are considering. Lise Meitner's role in the discovery of nuclear fission, the collapse of the Tays Bridge in Scotland, the reasons for the downing of TWA Flight 800—a host of interesting topics exists that would interest and educate freshman engineering students. Because most freshman students do not have the knowledge and experience to select and focus such topics, suggestions from engineering professors would help greatly. Moreover, such suggestions are an opportunity to further integrate important issues such as engineering ethics into the student's education. Sample topics can be found at our web site (*http://darkstar.engr.wisc.edu/alley/other/topics.html*).

3) Consider requesting that a few sections be tailored for women in science and engineering and encourage your female students to enroll in those sections. Given what Felder and others [1995] have found about the numbers of women leaving engineering by the end of third semester (before they've actually taken classes in engineering), this small-section class stands as an opportunity for female students to actually learn something about engineering before they leave the field. Our experience is that while many female students in engineering would not need or want such a tailored course, many others would. Such a course would provide to this second group both an opportunity to form study groups with other female students and a non-threatening situation in which they could discuss issues that women in science and engineering face.

Basic Communication is continuing to be taught in the College of Engineering. During the 1996-97 year, there were twenty-five sections, and another twenty-five sections are planned for the 1997-98 year.

Acknowledgments. In establishing this course, much is owed to Dean John Bollinger, College of Engineering, and Dr. Gisela Kutzbach, Department of Engineering Professional Development. In teaching and developing the course, much is owed to Dr. Sandra Courter, Bonnie Schmidt, and Paul Ross—all from the Department of Engineering Professional Development.

Felder, Richard, M., G. N. Felder, M. Mauney, C. E. Hamrin, and E. J. Dietz, "A Longitudinal Study of Engineering Student Performance and Retention (III): Gender Differences in Student Performance and Attitudes," *Journal of Engineering Education* (April 1995), pp. 151–163.

Hirsch, E. D., *The Schools We Need and Why We Don't Have Them* (New York: Doubleday, 1996), p. 66.

Levin, Joel, *UW-Madison Writing Assessment Project (Semester I, 1995–96): Final Report* (Madison: Department of Educational Psychology, 1996).

Nadell, Judith, John Langan, and Linda McMeniman, *The Macmillan Reader*, 4th edition (New York: Macmillan Publishing Company, 1995).

MICHAEL ALLEY is an adjunct assistant professor in the Department of Engineering Professional Development. He has a master of science in electrical engineering from Texas Tech University and a master of fine arts in writing from the University of Alabama. He is the author of *The Craft of Scientific Writing*, 3rd edition (Springer-Verlag, 1996).