Helping Our International Students Succeed in Communication

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Introduction

We are seeing more international students in graduate studies as American students choose industry rather than academia. Maybe this trend will change as the economy goes through a downswing and jobs become scarcer, but maybe not. Regardless, if we expect international students to perform at a similar level with American students in written and oral communication forms, we need to provide them with sufficient instruction and practice. We cannot take for granted that they have been coached in the basic rules of communication that we have ingrained in the typical American student throughout high school and undergraduate studies.

Since this is something that cannot always be left to the graduate students' advisors, we have developed a first-year graduate course that seeks to hone these communication skills by laying the groundwork for the students' second-year proposal defense. Activities include conducting a literature review, developing an oral presentation, and writing a research proposal. As a result of this early intervention class, advisors have noticed increased productivity and focus in their students as they begin their research projects.

Background

"Introduction to Literature Review and Proposal Writing" was first developed two years ago as a required core course for incoming chemical and biochemical engineering (CBE) graduate students. The course has been offered in the summer with a CBE faculty member coordinating course content and projects. Various CBE faculty members delivered individual lectures, and a team of CBE faculty members graded student work.

This course does not take the place of English-as-a-second-language (ESL) courses that may be required by the university after an English proficiency evaluation or a speaking and comprehension skills test. The ESL courses focus on basic skills associated with everyday communication (grammar, pronunciation, conversation, reading, and writing), while this course focuses on the art of technical communication in its various formats.

This year, course delivery has been modified to increase instructional continuity by assigning it to one CBE faculty member who will deliver the majority of class lectures. It has also been moved to the spring semester of the first year for incoming graduate students. In this way, the students will move into their first summer prepared to focus on their research projects without the distractions of coursework.

Need for Course

As a new assistant professor, I was blindsided by some of the communication problems exhibited by international graduate students in my classes. In written assignments, some students copied portions of texts or articles (many times word for word) without acknowledging the source (or using quotation marks). In oral presentations, some students read their entire talks directly from their slides or paper. Since these are by no means inferior students, I asked them about these behaviors. Most students said that they were not given many opportunities to write or speak in their undergraduate coursework. Some were unsure of their English writing and speaking skills, and they feared that they would be penalized for making vocabulary and grammatical errors. Finally, the students were taking heavy course loads (in a second language), and they found it difficult to devote extra time to practice their communication skills.

Since the percentage (and number) of international graduate students in engineering at the University of Iowa has grown over the past seven years (see Figure 1), the case to provide special assistance in the area of communication skills becomes even more compelling. Early intervention to alert them of our expectations and to help them develop good writing and speaking habits will stand them in better stead than waiting until the dissertation to address these deficiencies. This formative approach is less frustrating and discouraging to the students and their mentors. In addition, these students realize their need to improve in these areas and appreciate the opportunity to practice their communication skills. One international graduate student responded in their evaluation of presentation assignments in my polymers class as follows: "It's very nice of you to have such considerations for us! It's really very important for us international students."

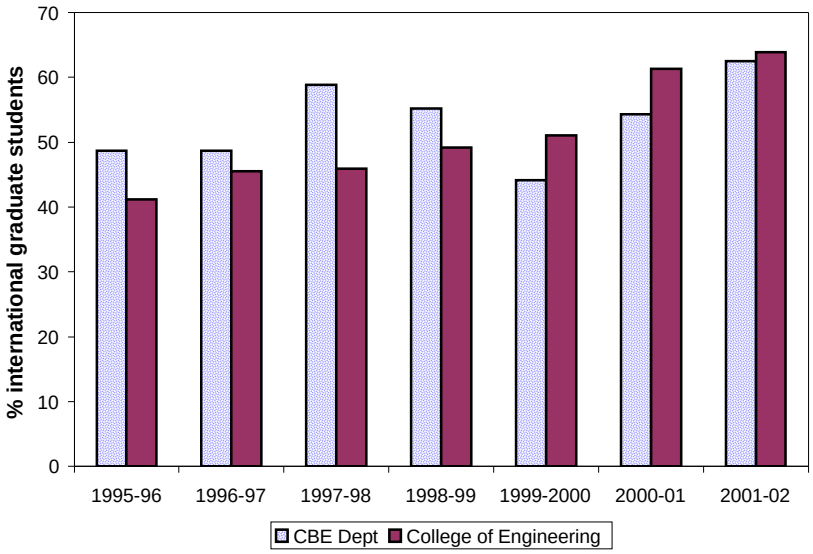

Figure 1. Increase in international engineering graduate students at the University of Iowa over a seven-year period.

Course Overview

The goal of this course is to improve the oral and written communication skills of incoming graduate students. Preparation for their second-year Ph.D. comprehensive examination, which includes a thesis research proposal and presentation, provides the means for developing these skills. Since the course activities lead up to products that the students will actually use for their graduate education after the end of the class, the students are more motivated to complete the assignments in a satisfactory manner. In addition, early interaction between the students and their mentors on their research projects leads to more productivity in a shorter period of time.

In order to reach this goal, the course is carefully constructed around three aspects: atmosphere, activities, and assessment. It is imperative that a non-threatening environment be nurtured where these students can practice their communication skills, see how they can improve, and obtain methods and avenues to show improvement. In this way, students are given the opportunity to express themselves freely without fear of harsh or unreasonable grading. The activities of the course build upon one another and culminate in a full-fledged research proposal. By starting with small activities that grow larger through incorporation (*i.e.*, students use the small pieces to build the whole), student confidence is raised and lessons in communication are more easily assimilated. Finally, students will be able to assess their own progress throughout the semester as they compile a videotape of their oral presentations and a portfolio of their written assignments. This will give them tangible evidence of their improvements throughout the course, as well as written feedback on their performances.

Course Activities

Instruction through interactive lectures equips the students with the tools they need to succeed in technical communication. The course covers a wide variety of topics that the students will find necessary in their graduate education (and beyond); a sampling of these topics is as follows:

- *Generation of research ideas*: We define the creative process, identify techniques that enhance creativity, and practice idea generation and critical thinking skills in controlled settings.
- *Literature and citation search*: The students learn how to use the library and Internet to find materials relevant to their research topics. These skills are especially important to these students, since they may be unfamiliar with the tools available to them in the U.S.
- *Presentation skills*: We discuss how to develop an oral presentation using PowerPoint, the attributes of a good presentation (format, content, *etc*.), and common mistakes made during presentations that detract from its delivery.
- *Publication evaluation*: We discuss the elements of a journal article, the attributes of a good paper, and the critical review process.
- *Writing mechanics*: We discuss the elements of a proposal, writing styles, developing and testing a hypothesis, determining the audience and review criteria for the work, *etc*.
- *Research ethics*: We discuss integrity in scientific research and writing. The case studies found in *On Being a Scientist*[1] provide discussion material to help the students apply the ethical standards of our professional organizations to realistic situations.

The expectations for each assignment are clearly defined to avoid student confusion. The assignment sheets contain the objectives (what skills the students are expected to acquire as a result of completing the assignment), the activity (a rigorous description of the assignment requirements), and the outcome (what the students must submit and when). In addition, the students are given examples of the grading sheets that will be used to assess the format, content and quality of their works.

Numerous examples of technical communication are provided the students so that they have templates for their own works. In addition to the in-class examples and discussions, the textbook *Technical Writing and Professional Communication for Nonnative Speakers of English*[2] serves as a good reference for written and oral communications of various types and contains several chapters on grammar, style and vocabulary building designed especially for ESL students. Faculty advisors are also encouraged to share their papers and proposals (particularly the first submissions that may not have been successful) with their students so that they can see the review process in its entirety.

The most important aspect of the class is the practice (and more practice) students receive to increase their competency in oral and written communication. The students are not expected to perform perfectly on any given assignment, but rather they are shown that this is a process of continual improvement. For each of the course topics discussed above, the students are given a series of assignments that increase in difficulty and complexity, yet build upon one another to culminate in the final class product, the research proposal:

- *Generation of research ideas*: Students practice brainstorming in class as individuals, small groups (two students) and a large group (all students). Brainstorming exercises are recommended outside of class for proposal formulation.
- *Literature and citation search*: Simple library exercises are assigned at first to help the students familiarize themselves with the search tools. More intense exercises are required for the literature review and final proposal on their research topics.
- *Presentation skills*: The students first give a mini-lecture (approximately 10 minutes) based on material from the classes for which they were teaching assistants the previous semester. This provides a baseline for their oral communication competency. A 15-minute presentation of their results from a literature review is given midway through the course, and a 20-minute presentation of their research proposal is the culmination of the class. All presentations are taped.
- *Publication evaluation*: The literature review is the main avenue for practicing this course topic. The students evaluate 10 articles in a cursory manner and choose 5 to review critically (strengths and weaknesses, impact on research topic, *etc*.).
- *Writing mechanics*: The students' first major writing assignment is a literature review. This review is then incorporated in the proposal, which the students will submit in draft and final form. Other writing assignments of a smaller nature are scattered throughout the semester. All assignments are collected in a writing portfolio.

– *Research ethics*: Case studies on research and writing issues are discussed throughout the course to help the students understand what is expected of them in a professional sense and how to use a set of ethical guidelines to assist them in resolving issues they may encounter.

An integral part of these exercises is the feedback the students receive, which dictates how they will proceed on subsequent assignments. All feedback is delivered in a constructive manner, emphasizing the strengths of their work as well as recommending areas for improvement. In addition to the instructor, a panel of two to three faculty members (including the student's advisor) reviews the literature reviews and proposals. The class and a second faculty panel critique the oral presentations. Peer review of writing in progress is also used to help the students prepare their manuscripts before submission. Finally, the presentation videotape and writing portfolio draw the students themselves into this process as they are able to review their own work and evaluate the merit of the reviewers' comments.

Conclusions

Since the number of international graduate students has grown in our department over the years, we have developed a course that will assist them in improving their technical communication skills. "Introduction to Literature Review and Proposal Writing" provides a non-threatening environment in which the students can practice speaking and writing and offers constructive feedback that will help the students assess their strengths and weaknesses. The end product of the course builds the framework for their second-year proposal defense and prepares them to begin their graduate research in earnest during their first summer.

1. Committee on Science, Engineering, and Public Policy (1995). *On Being a Scientist: Responsible Conduct in Research*. Washington, D.C.: National Academy Press.
2. Huckin, T.N., & Olsen, L.A. (1991). *Technical Writing and Professional Communication for Nonnative Speakers of English* (2nd ed.). Boston: McGraw-Hill, Inc.

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