

Addressing the Communication Needs of a Mechanical Engineering Department

**Craig James Gunn
Department of Mechanical Engineering
Michigan State University
East Lansing, MI**

Abstract. Departments of Engineering are preparing for the new accreditation standards under ABET 2000. The flexibility inherent in the way in which engineering departments address the needs of engineers can be both exciting and uncomfortable. Some departments may see the above flexibility as too vague and therefore suspect. The area of communication may be one of the problem areas because a typical response from engineering faculty may still be, "I am not an English teacher!" The lack of specific requirements may make faculty feel that they will be forced into teaching topics or skills that may not be comfortable for them. This paper focuses on an ongoing study of attitudes and concerns toward communication begun recently in the Department of Mechanical Engineering at Michigan State University. Students and faculty are being asked to comment on areas of concern in communication, areas that have received little or no attention or areas that seem to be purposely avoided. The first stage of this study has been completed. A report on the survey's findings is introduced along with how those findings will be used to adapt the curriculum. Specific activities will be explained in connection with skill acquisition. A look at the elements that will be refined for continued polling will also be included. It is hoped that by addressing the general problems experienced by both writers and speakers in the engineering curriculum, a foundation will be formed upon which a system for improved communication skill in engineering can be built.

Introduction. Instead of simply complaining about the lack of communication skill demonstrated by engineers, it is important that interested parties in engineering departments investigate the actual deficiencies and concerns of those effected. These parties are comprised of students, faculty, and employers. Faculty will provide the usual insights, "They can't write! They can't speak!" This may not be very helpful in trying to bring about change. Students are also fairly limited in their comments, "I can't write! I can't speak!" Certain employers will provide the same train of thought in their estimation of student output. These comments, though, do not provide much in the way of substantive help when it comes to correcting deficiencies. Therefore, access to actual concerns must be provided.

Procedure. Through the interest of Jill Juliano, a graduate student in Civil Engineering at Michigan State University, a survey was created to delve below the surface of "Can't write/Can't speak," and discover what were the actual concerns of students and faculty. In the initial survey, all faculty and students in the College of Engineering were asked to participate. Because of the timing of the survey (lateness in the semester), only a small number of faculty responded to the request to distribute the questionnaire. All students in these faculty members' courses were polled for their input. Seventeen faculty members

participated, distributing questionnaires to 28 classes. The two separate surveys produced a variety of interesting results, especially the similarity of concerns from both faculty and student alike. Since the surveys focused on the need for specifics and not the general attitude that “engineers can’t communicate, it was important to gain insights about where the actual concerns lay.

Preliminary results. The principal area of concern for both groups was the issue of grammar, punctuation, and spelling. This concern was followed closely by lack of organization skills, unclear expression of ideas, poor verbal skills, difficulty with writing introductions and conclusions, and weak logic. The rankings for each group were as follows:

Faculty

Grammar
Verbal skills
Organization
Expression of ideas
Poor introductions and conclusions
Logic
Support of ideas

Students

Grammar
Expression of ideas
Organization
Support of ideas
Verbal skills
Poor introductions and conclusions
Logic

The two groups also had similar responses to the questions that dealt with how to improve the communication skills of engineers. They both felt that more written assignments with increased feedback would help immensely. This applied equally to the verbal skills where more presentations were suggested with a more concerted effort toward providing constructive feedback. Class analysis of technical papers, providing equal grading for both technical and the way the material is presented, more practice, and the teaching of presentation tools like PowerPoint were all listed as helps to improving the communication skills of engineers. Future work will more clearly indicate concerns and the ways to address these concerns in an engineering department.

Conclusions. We expect that much of what was found is already suitably covered by students in the upper level engineering courses. Since it is not, the burden or responsibility falls on the shoulders of the faculty and graduate teaching assistants. It does not require a great deal of effort to survey the attitudes of faculty and students alike to gain insight into where problems are perceived. Organizing the department into groups that can address elements of concern will do much in both changing attitudes and creating better technical communicators.

CRAIG JAMES GUNN is the Director of the Communication Program in the Department of Mechanical Engineering. Author of numerous papers on communication within engineering departments. With degrees in English, he holds a unique place with which to provide support to engineering students as an in-house guide to communication.