

JUST THE FACTS

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225-578-4697**Enhancing Calibrated Peer Review for Improved Engineering Communication Education****PROBLEM**

There are various efforts across the nation to promote interest in Science, Technology, Engineering, and Mathematics (STEM) courses. One of these efforts, sponsored by the National Science Foundation and developed at the University of California Los Angeles, is Calibrated Peer Review (CPR) where students learn by reviewing the work of their peers. Students are initially guided in how to evaluate written work, but by observing the writing of others and responding to peer evaluations, students progressively improve their own performance. An advantage of the method is that it allows feedback at an individual level on multiple occasions throughout a course in large classes; its disadvantage is that it achieves this greater degree of personal attention at the cost of student effort. From its development approximately 10 years ago, CPR is now in use in more than 950 colleges and universities. However, its use is still restricted to written communication, and given that engineers usually communicate visually (e.g., drawings, graphs, and models), verbally (meetings, telephone, and on-site communication), and technologically (e-mail, webinars, websites, listservs, and blogs), their skills in these areas need to be developed as well.

OBJECTIVES

The objectives of this study are to extend CPR to allow for the input and review of visual and verbal components to the process, develop assignments in a set of core engineering courses that use these facilities, assess the impact of the visual and verbal components on student communication performance, and disseminate the findings and the enhanced CPR procedure through training workshops, conference papers, and websites.

METHODOLOGY

This project is being funded through a National Science Foundation grant with Louisiana State University (LSU) as the lead but with collaboration from the original developers of CPR at University of California, Los Angeles (UCLA), early users of the method at Rose-Hulman Institute of Technology, and a member of the current research team at Louisiana Transportation Research Center. The project also has the services of Dr. Diane Raubenheimer, director of Assessment for the College of Engineering at North Carolina State University, as external evaluator and advisor to assist in the development of the procedure.

SPECIAL POINTS OF INTEREST:

- Problem Addressed
- Objectives of Research
- Methodology Used
- Implementation Potential

The procedure will be developed by applying and evaluating test procedures in several engineering courses in the College of Engineering at LSU. One of these will be in the course CE 4750 Professional Issues and Concept Design in Civil Engineering. It is the first part of the two-course Capstone Design course at LSU.

An audio-visual component of the process will be developed as follows:

1. By using live or video examples of good and bad presentations, students will be encouraged through active and directed dialogue to develop criteria that distinguishes good and bad oral and visual presentation practices. These criteria will form the basis of the evaluation of the presentations to follow.
2. A group will be randomly selected from among all groups to present their subject material and be evaluated by the students and a trained public speaker.
3. Aggregate results from the students will be compared with the evaluation results from the trained public speaker and discussion will be encouraged on differences. The trained public speaker will motivate his or her ratings and encourage discussion to make students aware of good and bad practices.
4. The next group will be asked to make their presentation, will be evaluated by the students and the trained public speaker, and the process in No. 3 above repeated.
5. The process in Nos. 3 and 4 will be repeated, observing convergence between the students' aggregate ratings and those of the trained public speaker, as successive groups are evaluated. The process will be terminated once all students are within a certain tolerable limit of those of the trained public speaker.
6. Performance of the procedure will be evaluated.
7. The procedure will be documented.

IMPLEMENTATION POTENTIAL

The procedures developed in this study will be added to the library of procedures that currently exist on the CPR Web site for written assignments. The library is accessible to all registered users of CPR, therefore, the use of individual procedures is dependent on users' needs. The findings of the study will be publicized through journal papers, presentations at conferences (notably that of the American Society of Engineering Educators), and a Web site.

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