Problem Statement

Engineering instructions usually focus on fundamentals. Engineering problems presented in classrooms are highly simplified. Students with such training must be able to make the connection later by themselves between the classroom and real-world engineering problems. Student engineers must go through lengthy training before they can carry workloads, and often complain that they have learned “nothing useful” in their college education.

Main Observations

What went on well:
1. Important design concepts are better mastered by THIS class.
2. Students are interested in the simulated engineering bidding process, and there is no complaint about the required cover letter.
3. The use of small teaching techniques in classroom discussions greatly improve the classroom dynamics.

What needs further effort:
1. Cover letter is not good data as most are repeated.
2. Surveys/evaluations should include numerical questions to facilitate data collection and analyses.
3. The process of simplifying real-world problems into class examples needs better explained.

What is next:
1. A Virtual Reality Infrastructure (VRI) lab has been created.
2. An NSF proposal

Qualitative Analysis Results

The pre-surveys contain general keywords, while the post-semester surveys contained 18 more relevant keywords, covering most conveyed design concepts. Students used “calculate” and “determine” to demonstrate their understanding of the modeling process. In addition, “loads” were used more than 90 times by 22 students, indicating that the important concept was successfully conveyed. Finally, “capacity” “checks” per “ACI” “codes” are clearly shown.

“I like the course about engineering reality though the project is not real”