On Oral Exams in Undergraduate Engineering Classes
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Presented at the Fourth Annual Research and Scholarship in Engineering Education Poster Session. 10/22/09.

Reflective thoughts and preliminary data are shown on the use of oral exams in an undergraduate core engineering class, AE 325 (Aerodynamics).

Effect on Lectures
- Lectures should emphasize fundamental concepts in addition to problem solving skills
  - Do not want to stress already packed curricula
  - Many problem-solving skills are best learned through homework assignments
  - “Look-ahead” assignments can free up lecture time and better prepare students for lecture material.

Case Example
- Aerodynamics 325, Winter 2009
- 82 students, Junior and Senior level
- Exams:
  - Two written midterms (15% each)
  - One oral final (20%)
- Oral exam format:
  - Two questions per exam
  - Swapped out one question each day (3 days)
  - Students have 20 minutes with questions before the exam in a preparation room
  - 20 minutes with instructor for the oral
  - Each oral was tape recorded
  - Made notes during exam and assigned points using a concept-based rubric
  - Graded by letters, using: A = excellent, B = good, etc. Then converted to points.

Data and feedback:
- Comparison of written versus oral performance
- Student evaluation comments

Spread suggests that problem-solving ability does not necessarily correlate with a conceptual understanding.

Student comments:
- “I was rather skeptical of the oral final at first, especially since I didn’t know exactly how it would be planned. The way you handled the oral exam definitely made the experience less frightening and painful than a typical written exam.”
- “The final oral exam was really cool. I would definitely continue with this...”
- “I was a bit wary of it at first (like most people were) since I had never done something like that. But it was fine and I think it really showed if we grasped the concepts.”

Aside from apprehension, no negative feedback on the use of orals

Future Plans
- Continue oral exams in AE 325
- Assess the effectiveness of oral exams through
  - Student performance statistics
  - Course evaluations
- Refine the oral grading rubric

Acknowledgements
Cynthia Finelli of CRLT North for valuable midterm student feedback evaluations