

Engineering Competitions as Communication Learning Opportunities

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Faculty Center Presentation
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4/27/2010

A Collegial Discussion

- Present 3 case histories of student competitions
 - Two unsuccessful
 - One successful
- Describe the differences
- Discuss how we can make better use of these opportunities

Case 1: Geo-Challenge

- Competition Background
 - Discipline specific design competition
 - Presented at a national professional conference
 - Evaluation based on
 - Quality of 3 page technical report, used to select national finalists
 - Efficiency and performance of actual design as evaluated at national competition
- CPP historical performance
 - Place 3rd in 2009, first time entered

Case 1: Geo-Challenge

- Team
 - Team relatively well structured and organized team of 6 to 8 students
 - Approximately 10-12 weeks to perform testing, complete design and write paper
 - Level of effort ~ 500 student hours
- 2010 Results
 - Tech paper scored in lower ½ of submissions
 - Not selected a finalist
 - Actual design would have beat national winner if team had made nationals

Case 2: Geo-Prediction

- Competition Background
 - Discipline specific analytical computation
 - Presented at a national professional conference
 - Evaluation based
 - Accuracy of analysis
 - Quality of 3 page written report
 - First year of competition

Case 2: Geo-Prediction

- Team
 - Two students
 - Completed entire analysis and paper in ~3 weeks
 - Level of effort ~100 student hours
- Results
 - Placed 2nd at nationals
 - Paper judged as best in competition

Case 3: Concrete Canoe

- Background
 - Oldest national ASCE student competition
 - Regional qualifications followed by nationals
 - Evaluation equally divided between
 - Quality of final product
 - Technical paper ~ 20 pages
 - Technical presentation ~ 20 min
 - Races
 - CPP has made nationals about every other year
 - 8th place nationally highest finish

Case 3: Concrete Canoe

- Team
 - Large team 10-20 students
 - Formal organizational structure
 - Requires \$5,000 - \$10,000 in fundraising
 - Level of effort > 5,000 student hours
- Regional results 3rd Place
 - Final product: 3rd – Paper 5th
 - Races 2nd – Presentation 7th
 - Didn't qualify for nationals

Attributes of Unsuccessful teams

- Ratio of analytical to writing time ~9:1
- Little or no active coaching during writing phase
- Reports (or presentation) completed just before deadline
- Large teams with 4 or more authors

Attributes of Successful team

- Ratio of analytical to writing time ~1:4
- Active coaching during writing process
 - Reviewed 5+ drafts
- Writing started only 2 weeks before deadline but stayed on schedule
- Two person team with one student doing vast majority of writing

Performance Observations

- No excellent writers on any team
- No teams familiar with style appropriate for the reports
- Unsuccessful teams
 - Didn't follow guidance
 - Missed audience
 - Had disjointed organization & flow
- Grammar not a significant issue

What did we learn

- Communication important to national engineering groups—can't win without it
- Good reports require multiple drafts and coaching from a skilled writer
- Biggest issues
 - Analyzing audience
 - Organization & structure
 - Lack of familiarity with form
 - Team writing
- Grammar is NOT the biggest issue

Help!

- How to efficiently coach and review drafts
- Guidance for team writing
- Time