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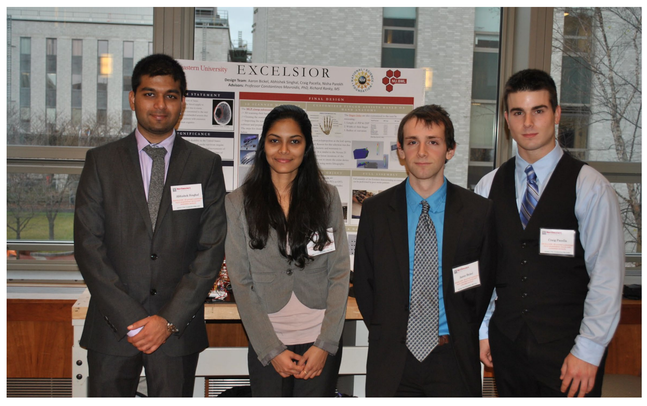
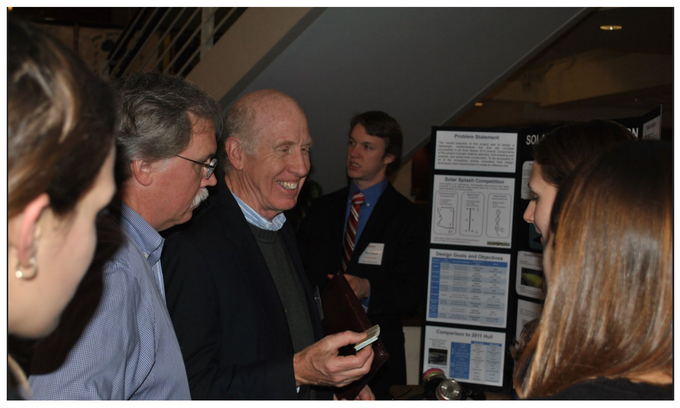
What's a Good Project? Comparing Student, Faculty and External Evaluations

Bridget M. Smyser
Northeastern University
Boston, MA

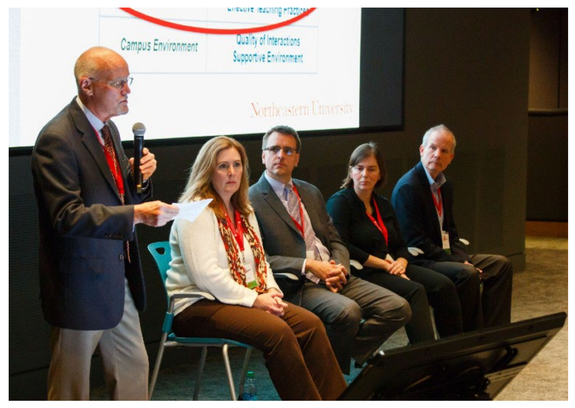
Big idea: We have multiple evaluators. Do they all agree? If so, what are the implications?



Students: Peer reviews, votes for Innovation Awards



Alumni Jurors: Program evaluations, selection of Impact Award



Faculty: Writing grade, Prototype Grade, Overall Course Grade

Research question #1: Do students, jurors, and faculty identify the same projects as successful or unsuccessful?

Student Top 10
JPL Tether Launch**
Supersonic Test Stand*
Dental Appliance Cleaning Device**
Mars Rover Sample Handler***
Vibration Pain Therapy***
Backyard Zamboni**
Asthma Inhaler Device***
Mars Rover Armature*
AVATAR**
Wheelchair Baseball***

Jury Top 10
Multiphase Centrifuge*
Mars Rover Sample Handler***
AVATAR**
Agricultural Prosthetic Adapter*
Water Purification*
Mars Rover Drive System*
Wheelchair Baseball***
Vibration Pain Therapy***
Asthma Inhaler Device***
Industrialization of Cocoa Harvest**

Faculty Top 10
Industrialization of Cocoa Harvest**
JPL Tether Launch**
Mars Rover Sample Handler***
Dental Appliance Cleaning Device**
JPL Omni-Antenna for Cube Sats*
Wheelchair Baseball***
Recycling for Kids*
Vibration Pain Therapy***
Asthma Inhaler Device***
Backyard Zamboni**

Student Bottom 10
Phone Disinfection Device***
Particle Splats in Cold Spray**
Superhydrophobic Material Tester***
Impact Tester for Carbon Fiber Composites*
Drag Measurements in Stratified Fluid**
SAE Active Aero***
Formula SAE Suspension***
SAE Formula Engine Cooling***
Dynamic Powder Mixer***
Agricultural Prosthetic Adapter**

Jury Bottom 10
Particle Splats in Cold Spray**
Drag Measurements in Stratified Fluid**
SAE Active Aero***
Formula SAE Suspension***
SAE Formula Engine Cooling***
Dynamic Powder Mixer***
Hybrid 3D Printer for Ceramics**
Tow Behind Antenna*
Phone Disinfection Device***
Superhydrophobic Material Tester***

Faculty Bottom 10
SAE Active Aero
Hybrid 3D Printer for Ceramics
Superhydrophobic Material Tester
Formula SAE Suspension
Dynamic Powder Mixer
Water Purification
Phone Disinfection Device
Desktop Metal Furnace
Agricultural Prosthetic Adapter
SAE Formula Engine Cooling

Short Answer: Yes, but more for unsuccessful

Question #2: Are there significant differences between high and low ranked projects?

	Student Averages		Jury Averages		Faculty Averages	
	Top 10	Bottom 10	Top 10	Bottom 10	Top 10	Bottom 10
Student Award Votes	27.2	5.1	21.5	5.6	20.7	6.6
Jury Mentions	2.7	-0.4	4.9	-1	3.3	0.3
Prototype	8.4	5.9	**6.7**	**6.1**	9.2	6
Delivered/Initial	10	7.9	9.6	7.8	10	7.4
Writing Grade	92.9	79.2	91	78.7	94.8	75.7

- Differences between top 10 and bottom 10 projects statistically significant
- Exception: Prototype scores for Jury evaluated projects
- High writing grades indicate quality projects
- No effect from source of project

Short Answer: Yes, but not between evaluators

Question #3: Is there evidence that the different groups of evaluators favor different types of projects?

Top 10 project topics			
# of Projects	Students	Jury	Faculty
Space related	5	3	3
Medical/Assistive	4	4	4
Consumer Product	1	0	1
Service	0	2	3
Research	0	1	0
Automotive	0	0	0
Bottom 10 project topics			
# of Projects	Students	Jury	Faculty
Space related	0	0	0
Medical/Assistive	1	0	1
Consumer Product	1	1	1
Service	0	0	1
Research	5	6	4
Automotive	3	3	3

- SAE teams struggle to sell projects
- Space and medical projects popular
- Space most interesting to students – popular club
- Research projects did poorly
- Helpful projects equally popular among groups

Short Answer: Yes

Conclusion: Despite some differences, three sources of evaluation are all able to identify quality projects – so use all the evaluators you can!