Nifty Ideas

and

Surprising Flops
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Microsoft Teams allows students to explore the different projects without needing a meeting manager.

Bridget Smyser, Northeastern
Use of Adjuncts for Mentoring

Background: Research University, sometimes hard getting Faculty to agree to mentor projects

Capstone 2018: Jim talks to RIT (host) they solved this problem by adding Adjunct Faculty (generally retired Ex- Eng managers)

Academic Year 19-20: Pilot Program - hired 2 part-time Adjuncts

Nifty Idea: Good results!

Flop: Adding Adjunct Faculty is hard. ABET concerns, Bureaucracy, “outsider” concern.

Would like to hear if others have tried this - Results? Is ABET a real concern?

Jim Hartman, UNC Charlotte
Longer Class Sessions and Dedicated Studio

Problem: Team member life/school schedule incompatibility – teams didn’t meet enough.

- Less sense of team,
- Individual accountability harder to inspire,
- No easy work-arounds,
- Frustrated students,
- Less productivity,
- Synergy and creativity hampered,
- Fosters last-minute frenzies.

Remedies: Scheduled 6 hours of class time per week (vs. 2.5 hours before) - dedicated design studio space. Replaced lecture-only with lecture/work sessions.

- Better attendance*,
- Team members sit together,
- Longer sessions facilitate design reviews,
- Students spend more time together,
- Students can ask “quick questions” during the class sessions,
- Instructors can “hang out” in the design space outside of class time to be more accessible.

John Lens and Dustin Rand, Univ. of Vermont
The Miniature Radio Flyer Fail

What was I trying to fix?
1. Students don’t “see” the process until the end
2. Students don’t understand how long a task takes
3. Address communication issues early

Why Did it Fail?
1. Mistake 1: Groups were not the same so group dynamics of the mini-project had no relationship to their actual groups
2. Real Mistake: Lacked Relevancy

Success from failure
1. Design in Freshman year (See the entire process)
2. Design in Manufacturing Process class (understand how long things take to make)

Jamie Canino, Trine Univ.

● Make a better Radio Flyer
● About 3 weeks
  ○ Generate requirements
  ○ Perform design reviews
  ○ Build
  ○ Test
  ○ Reflect on the process
## Revolutionizing Engineering Department (RED)- Fostering Engineering Identity

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- URMs report that the senior design project provides opportunities to talk with professionals and to be “more on a first-name basis” with faculty.
- It could be difficult to get faculty buy-in and to be consistent with the professional language in other “classes”.

Yen-Lin Han, Seattle Univ.
Legos and K'nex in Ideation

-- Activity happens during the beginning of the ideation phase in the design process

-- Students are given a Lego or K’nex piece to start building an object they have to imagine without talking to each other

-- Each student must add a piece and pass the object to the next student in the group

-- The object is completed when a group decision is made that the object is completed

-- The group then names the object and provides a short description of its utility

The Hoop Rover

Souheil Zekri, Univ. of South Florida
The Importance of Documentation

The “Paper Bridge” - Group Activity

1. Students were asked to use sheets of paper to create a bridge that can stand on its own, you can pass a 1 litre PET water bottle beneath it and this bottle (with water in it) can stand on top of the bridge for 20 seconds

2. Part 1 was to come up with a plan that details the design, the cost and “document” it.

3. Part 2 was to exchange the plan with another team and use it word by word to create the bridge.
Motivating Test Design with Lawnmowers

Goal: Introduce performance tests for capstone projects in one lecture (1.5 hr)

Part 1: Design Requirements
A class, develop design requirements for a new lawnmower

Part 2: Design of Experiments
Teams design an experiment to test one requirement is met.

Part 3: Presentation and Discussion
Teams explain their experiments with diagrams.

Joshua Gargac, Mount Union
Protecting People: Proper Protocol or Painful Process?

Protecting Human Subjects in Research: This is GOOD.

Respect for Persons, Beneficence, Justice

Protecting Human Subjects in Research: Avoids the BAD

STUDENTS Protecting Human Subjects in YOUR Future Testing: This is the IDEA(L)!

Kris Jaeger-Helton, Northeastern
Student-organized 510(k) Review Panels

Motivation: FDA regulations are not exciting for students.

Idea: Have them critique their own work.

Nifty-ness: High engagement, deeper understanding of guidelines than from a ppt lecture, additional constructive criticism on project ideas.

The 510(k) Program: Evaluating Substantial Equivalence in Premarket Notifications [510(k)]
Guidance for Industry and Food and Drug Administration Staff

Decision factors:
- Is the predicate device legally marketed?
- With the same intended use?
- And same technological characteristics?
- Differences still safe and effective?
- With applicable methods?
- And data demonstrate SE?

SUCCESS!

Stephen Hugo Arce, FAMU/FSU
Virtual Poster Session

Reality

Virtual Reality

Poster Session

Rachael Brown, Seattle Univ.
Twitter Poster Session

- 23 design teams posters using #CHME4703Poster
- 24-hrs to comment and discuss designs.
- Engaged ChE students, faculty, alumni at NU AND larger scientific and engineering community, notably AIChE and ASEE.
- The event was a success with over 275 tweets, 382 likes, and 81 retweets.

@ScottS_Biochar omg cant wait for #CHME4703Poster !!! it’s going to be soooo much fun

Companies lining up to work with Xpress Bio after the #CHME4703poster session

Courtney Pfluger, Northeastern
Nifty Ideas

and

Surprising Flops

Virtual Capstone Design Conference 2020

9 July 2020
Facilitator: Susannah Howe