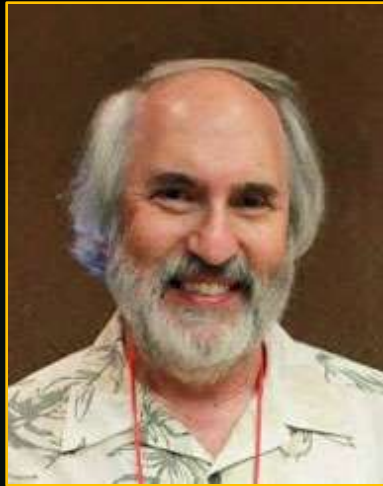


March 8, 2018
Wheelchair Fabrication in Developing Countries



ENGR110/210

Perspectives in Assistive Technology



David L. Jaffe, MS
Instructor



Attendance Sheet, Evaluation Form, and Meet with Dave Signup



For all students:

- Attendance Sheet
- Meet with Dave signup - teams or individual students

For everyone:

- Class Session Evaluation Form



ENGR110Q10 Enrolled Student Attendance List
January 9, 2018

| Enroll Address | Name of Enrolled Student | Enroll Address | Name of Enrolled Student |
|----------------|--------------------------|----------------|--------------------------|
| 10101 10101 | John Doe | 10101 10101 | John Doe |
| 10101 10101 | Jane Smith | 10101 10101 | Jane Smith |
| 10101 10101 | Mike Johnson | 10101 10101 | Mike Johnson |
| 10101 10101 | Sarah Lee | 10101 10101 | Sarah Lee |
| 10101 10101 | David Kim | 10101 10101 | David Kim |
| 10101 10101 | Emily White | 10101 10101 | Emily White |
| 10101 10101 | Chris Brown | 10101 10101 | Chris Brown |
| 10101 10101 | Alex Green | 10101 10101 | Alex Green |
| 10101 10101 | Mia Black | 10101 10101 | Mia Black |
| 10101 10101 | Noah Gray | 10101 10101 | Noah Gray |
| 10101 10101 | Olivia Blue | 10101 10101 | Olivia Blue |
| 10101 10101 | Liam Red | 10101 10101 | Liam Red |
| 10101 10101 | Sophia Purple | 10101 10101 | Sophia Purple |
| 10101 10101 | Lucas Yellow | 10101 10101 | Lucas Yellow |
| 10101 10101 | Isabella Pink | 10101 10101 | Isabella Pink |
| 10101 10101 | Ethan Orange | 10101 10101 | Ethan Orange |
| 10101 10101 | Ava Silver | 10101 10101 | Ava Silver |
| 10101 10101 | Michael Gold | 10101 10101 | Michael Gold |
| 10101 10101 | Madison Bronze | 10101 10101 | Madison Bronze |
| 10101 10101 | William Iron | 10101 10101 | William Iron |
| 10101 10101 | Charlotte Steel | 10101 10101 | Charlotte Steel |
| 10101 10101 | Benjamin Copper | 10101 10101 | Benjamin Copper |
| 10101 10101 | Victoria Tin | 10101 10101 | Victoria Tin |
| 10101 10101 | Jack Lead | 10101 10101 | Jack Lead |
| 10101 10101 | Karen Zinc | 10101 10101 | Karen Zinc |
| 10101 10101 | Robert Nickel | 10101 10101 | Robert Nickel |
| 10101 10101 | Laura Aluminum | 10101 10101 | Laura Aluminum |
| 10101 10101 | Matthew Silicon | 10101 10101 | Matthew Silicon |
| 10101 10101 | Hannah Germanium | 10101 10101 | Hannah Germanium |
| 10101 10101 | Anthony Arsenic | 10101 10101 | Anthony Arsenic |
| 10101 10101 | Christina Selenium | 10101 10101 | Christina Selenium |
| 10101 10101 | Andrew Tellurium | 10101 10101 | Andrew Tellurium |
| 10101 10101 | Samantha Polonium | 10101 10101 | Samantha Polonium |
| 10101 10101 | Joseph Uranium | 10101 10101 | Joseph Uranium |
| 10101 10101 | Kyle Neptunium | 10101 10101 | Kyle Neptunium |
| 10101 10101 | Morgan Plutonium | 10101 10101 | Morgan Plutonium |
| 10101 10101 | Christopher Americium | 10101 10101 | Christopher Americium |
| 10101 10101 | Michelle Curium | 10101 10101 | Michelle Curium |
| 10101 10101 | Matthew Fermium | 10101 10101 | Matthew Fermium |
| 10101 10101 | Stephanie Mendelevium | 10101 10101 | Stephanie Mendelevium |
| 10101 10101 | Timothy Nobelium | 10101 10101 | Timothy Nobelium |
| 10101 10101 | Rebecca Lawrencium | 10101 10101 | Rebecca Lawrencium |
| 10101 10101 | Jonathan Rutherfordium | 10101 10101 | Jonathan Rutherfordium |
| 10101 10101 | Katherine Dubnium | 10101 10101 | Katherine Dubnium |
| 10101 10101 | Christopher Seaborgium | 10101 10101 | Christopher Seaborgium |
| 10101 10101 | Morgan Bohrium | 10101 10101 | Morgan Bohrium |
| 10101 10101 | Christopher Hassium | 10101 10101 | Christopher Hassium |
| 10101 10101 | Stephanie Meitnerium | 10101 10101 | Stephanie Meitnerium |
| 10101 10101 | Timothy Darmstadtium | 10101 10101 | Timothy Darmstadtium |
| 10101 10101 | Rebecca Tennessine | 10101 10101 | Rebecca Tennessine |
| 10101 10101 | Jonathan Oganesson | 10101 10101 | Jonathan Oganesson |

Sign Up to Meet with Dave

Before class outside Thornton 110
After class in Thornton 110
Other times in Peterson Building, Room 113

| Date & Time | Enter Your Name & Specify 15 minute time block |
|--|--|
| Wednesday - January 16 th Morning - 8:30am - 10:30am | |
| Afternoon - 1:00pm - 3:30pm | |
| Thursday - January 17 th Morning - 8:30am - 11:30am | |
| Afternoon - 1pm - 3:30pm | |
| Before class - 3:45pm - outside classroom After class - 5pm | |
| Friday - January 18 th Morning - 8:30am - 11:00am | |

Perspectives in Assistive Technology - 2018
Class Session Evaluation Form

Use a pen with a legible font

Lecture 01a: Course Overview & Introduction to Assistive Technology - David L. Jaffe

Are you an enrolled student? - Yes - No

The purpose of this questionnaire is to help the teaching team assess today's class session. Please rate the following areas:

Speaker's overall presentation: speaking volume, understandability, ease of following concepts and arguments, clarity of explanations, quality of PowerPoint slides, use of supporting media (video) and presentation aids (Show&Tell items), stage presence, knowledge of topic, preparedness, presentation structure, organization, pace and management of allotted time, opportunity for questioning and class engagement, provided good answers, examples, and demonstrations

Presentation content: topic interest, relevance to the broad scope of assistive technology, presentation of new information, appropriate level of detail and technical content, overall value of presented material

Submit your comments, questions, and suggestions, especially if you found portions of the lecture to be particularly or . Supply your name if you want a response and use the back of this form if you need more room.

What one item did you hear, see, or learn that was new, surprising, interesting, or provided a new perspective?

How much did you learn from today's lecture? - a great deal - a lot - a moderate amount - a little - nothing

What is your stress level today? - low - medium - high

How is your stress level trending? - downward - steady - upward



Food & Drink Signup



For everyone:

- Food & Drink Signup



End-of-Term Celebration
Food and Drink Signup
Thursday, March 16th

Choose one burrito and one drink item

| Burrito | | | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Veggie | | | Chicken | | | Beef | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Drink | | | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Regular Coke | | | Diet Coke | | | Water | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



Fixed



Fixed: The Science / Fiction of Human Enhancement is available on DVD for overnight loan by students



Week 9



- Finalize fabrication, perform user testing
- Focus on Tuesday's team presentation
- Project demonstrations next **Thursday - March 15th**



Final Presentations - Tuesday



- ▶ Cover your entire quarter's effort
- ▶ Tell a complete story, but focus on what you have achieved since the mid-term
- ▶ Emphasize how your project addressed the problem
- ▶ **7 minutes, no demos, no audience questions**
- ▶ Show your prototype in your slides - point to features
- ▶ **Email PowerPoint slides or url to Dave by noon Tuesday**
- ▶ One video of prototype in use
 - ▶ Upload video to YouTube and include its link in your slides
- ▶ Be prepared to evaluate other teams' presentations
- ▶ Dress professionally



Dress Professionally

- ▶ No t-shirts, sweatshirts, hoodies
- ▶ No flip-flops, sandals
- ▶ No shorts, jeans, holes in pants
- ▶ No baseball or stocking caps



Mark Zuckerberg

“Each item of clothing makes a statement about who you are”

“Dress for the grade you want”



No Jacket
Required



Perform Professionally

Starting now, you will be evaluated as a professional, no longer as a student



Presentation Order

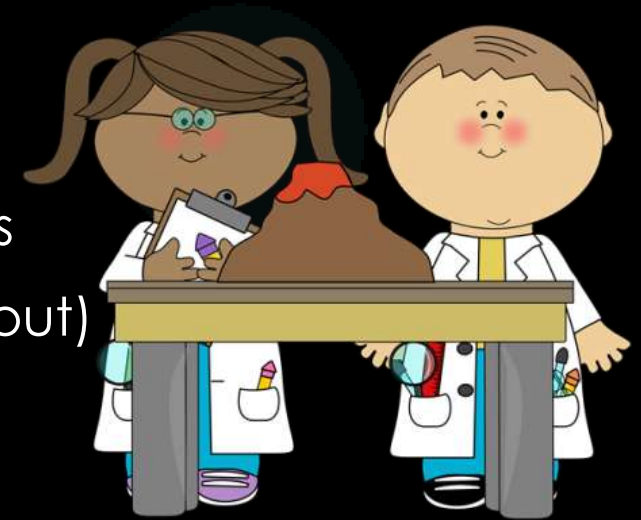
1. Danny's Dudes - Creative Expression for Danny
2. Team EmpowerU - At Home Monitor
3. Wheelchair Workers - Projects for Abby's Wheelchair
4. Tony's Terrific Team - Wheelchair Camber Project
5. The Trolls - Magical Bridge Playground Project 1
6. Team L.L. Bean, LLC - Better Leg Brace
7. Team Harnessing Power - Hybrid Body-Powered Harness
8. The Three Cookies - Magical Bridge Playground Project 2
9. Uno Dos Trays - Fernanda's Wheelchair Work Tray



Project Demonstrations - Thursday

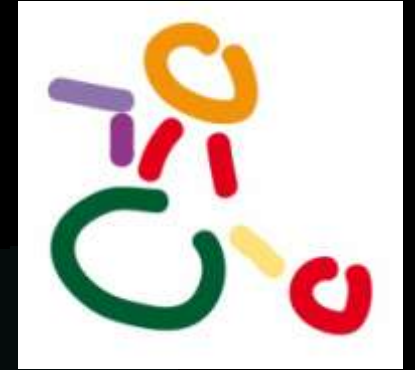


- ▶ Bring all prototypes to class
- ▶ Meet in classroom to fill out a course evaluation form
- ▶ Project demonstrations outside classroom (if not raining)
- ▶ No posters or handouts - informal “trade show” presentations
- ▶ Demonstrate prototype’s functionality (make sure I check it out)
- ▶ Check out other teams’ projects
- ▶ Burritos & drinks
- ▶ Community members attending
- ▶ Invite project suggestors, users, friends who contributed to your project’s success
- ▶ Bring laptop to show additional videos and images of your process (charge laptop, no AC available)



Project Considerations

- ▶ Your prototype should be functional, but not necessarily ready for market
- ▶ Contingency plans if things don't work out
- ▶ Add a team or Stanford logo
- ▶ Never apologize for what you did or what you were not able to achieve
- ▶ Mention future plans
- ▶ Remember “Everything is a prototype”



Course Evaluations



1. Dave's in-class evaluation on Thursday
2. Cardinal Course Student Survey (web-based)
3. VPTL's evaluation - online



| | Strongly Agree | Agree | Disagree |
|--|-----------------------|-----------------------|-----------------------|
| The instructor had a nice haircut. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The instructor knew how to cook. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The instructor had a good singing voice. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Shaving cream was used. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Dogs were permitted in class. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The instructor had a masculine nose. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |



Final Report



- ▶ Cover your entire quarter's work
- ▶ Include material from mid-term report
- ▶ Consider mid-term report mark-ups
- ▶ Due week of March 19th



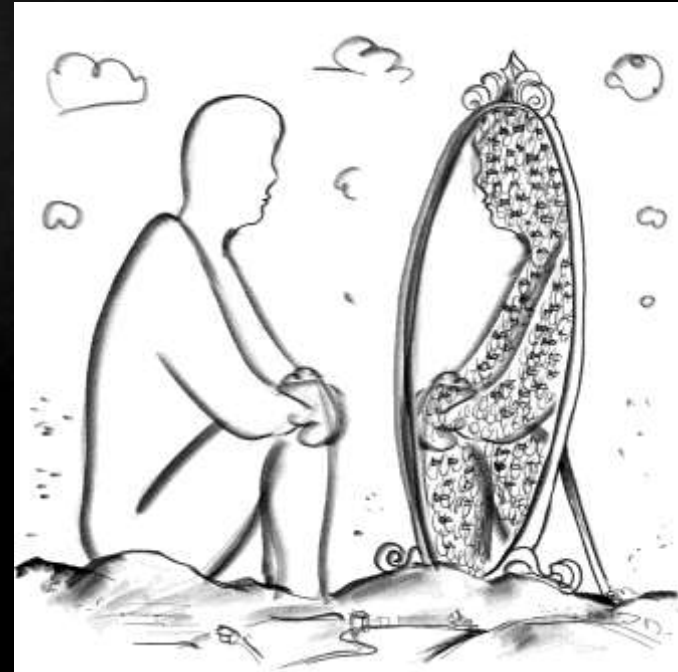
Individual Reflection



- ▶ How you felt about your course, project, team experience
- ▶ Due week of March 19th

We do not learn from
experience... we learn
from reflecting on
experience.

- John Dewey



Tuesday, March 13th



Student Team Project Final Presentations

1. Danny's Dudes - Creative Expression for Danny
2. Team EmpowerU - At Home Monitor
3. Wheelchair Workers - Projects for Abby's Wheelchair
4. Tony's Terrific Team - Wheelchair Camber Project
5. The Trolls - Magical Bridge Playground Project 1
6. Team L.L. Bean, LLC - Better Leg Brace
7. Team Harnessing Power - Hybrid Body-Powered Harness
8. The Three Cookies - Magical Bridge Playground Project 2
9. Uno Dos Trays - Fernanda's Wheelchair Work Tray

Today



Wheelchair Fabrication in Developing Countries

Ralf Hotchkiss

Whirlwind Wheelchair International

Pre-lecture Discussion Topics



- ~~21~~ Assistive Robotics
- ~~18~~ Ethical / Moral Dilemmas
- ~~13~~ In the News
- ~~12~~ Ten Commandments of Making
- 12 Video Theatre
- 12 **Marketing Terms**
- ~~10~~ Overview of Accessibility
- ~~10~~ Vintage Assistive Technology
- 10 The Upside of Failure
- 8 Who is Disabled?
- 7 Famous people with disabilities



Which is Most Innovative?



How much more Innovative?



Innovation Quotes



In a book I'm (Lee Vinsel) writing with Andrew Russell, *The Innovation Delusion*, we examine the origins of our culture's current obsession with "innovation." We make a distinction between actual innovation, the **introduction of new things and practices into society**, and innovation-speak, the empty-headed and misleading ways people have come to talk about technological and social change in the past few decades.

[Design Thinking is Kind of Like Syphilis - It's Contagious and Rots Your Brains](#)

Medium - 12/06/2017

Innovation Quotes

INNOVATION QUOTES



“Innovation” is **overused**, focus on impact

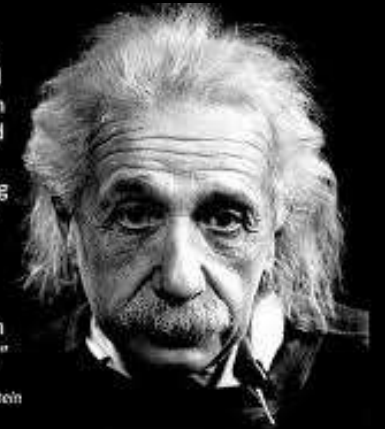
“Innovation. It’s kind of an odd word because it has a **very vague definition**. Generally, it means to create something so different from what’s been done before that simply calling it “new” isn’t quite right. The fact that the **definition of innovation seems to evolve** with each new technology breakthrough doesn’t make it any easier.” Kasey Panetta - Editor ECN

“‘Innovation’ is something that is both familiar and new.”
Chief Innovation Officer

If Einstein took ENGR110/210, he would have said, “If I had a quarter to design and fabricate a solution, I would have spent a significant time understanding the problem”.

“If I had an hour to solve a problem and my life depended on the solution, I would spend the first 55 minutes determining the proper question to ask, for once I know the proper question, I could solve the problem in less than 5 minutes.”

- Albert Einstein



Innovation Links

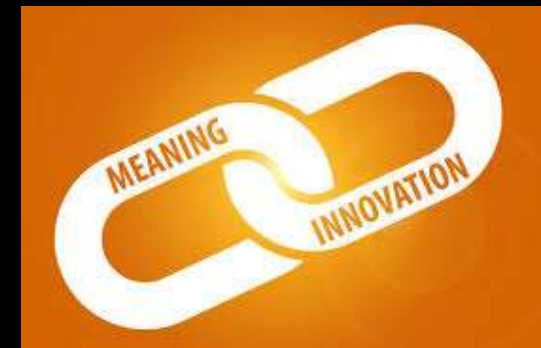


[Word 'Innovate' Said 650,000 Times at SXSW So Far](#) (satire)

[Employees Most Innovative When Brainstorming Dramatic Quitting Scenarios](#) (satire)

[Innovate the Way You Innovate!](#) (a real conference!)

"Forget everything you've ever learned about innovation and invention."



Innovation Questions

- ▶ Is “Innovation” a design feature or property of a device?
- ▶ Is “Innovation” a binary feature or one that has a range?
- ▶ Is “Innovation” used because there is an unavailability of other means to measure the qualities of a device or design?
- ▶ Does the use of “Innovation” indicate a desire NOT to use a measurable engineering term?
- ▶ Does the use of “Innovation” mean that there is a lack of evidence that the device is actually useful?



Innovation Questions



- ▶ What does it mean if XXX is innovative?
 - ▶ Product
 - ▶ Person
 - ▶ Idea
 - ▶ Company
 - ▶ Process
 - ▶ Course
- ▶ What is the unit measure of “Innovation”?





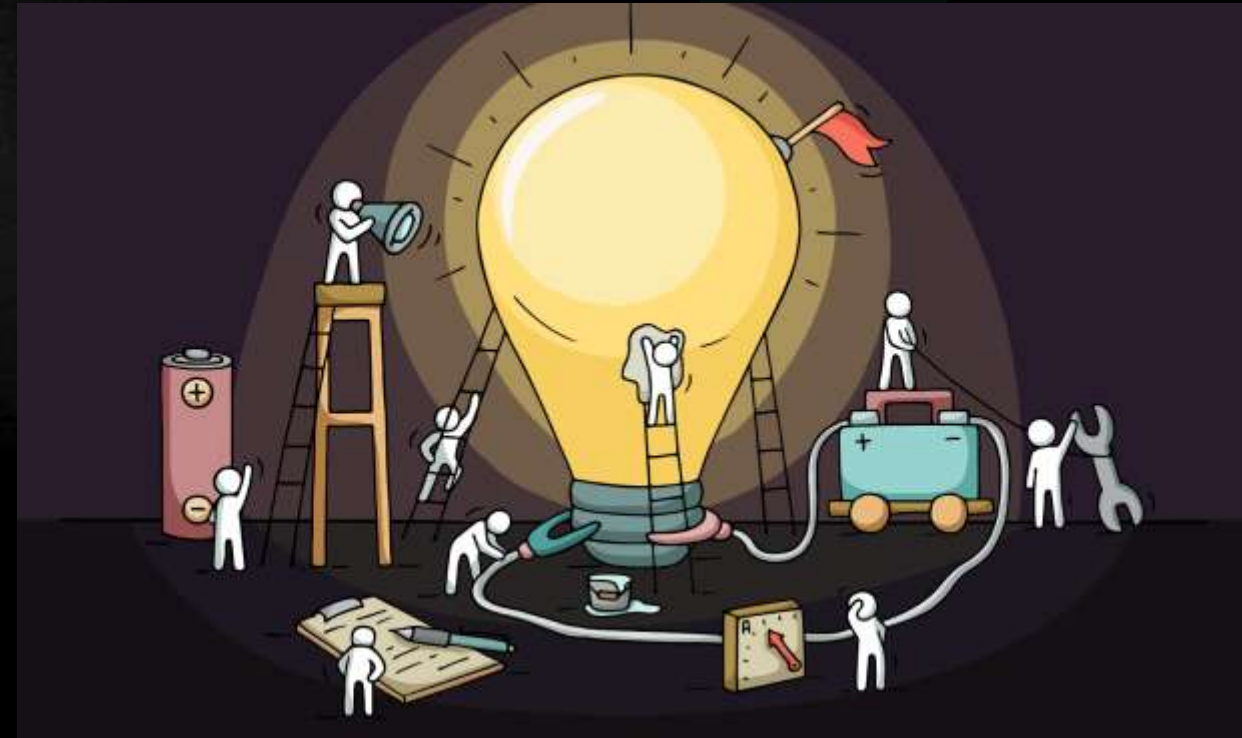
- ▶ Certainly “Innovation” is generally thought as something **positive and desirable**, but why would someone use a word that is doesn't have a strong meaning or is actually measurable?
- ▶ My conclusion: **“Innovation” is a marketing / advertising term**, not a scientific term
- ▶ Saying something is innovative implies that it a good product, worth purchasing. Of course in advertising, one doesn't actually have to prove that it is a good product.

Innovation

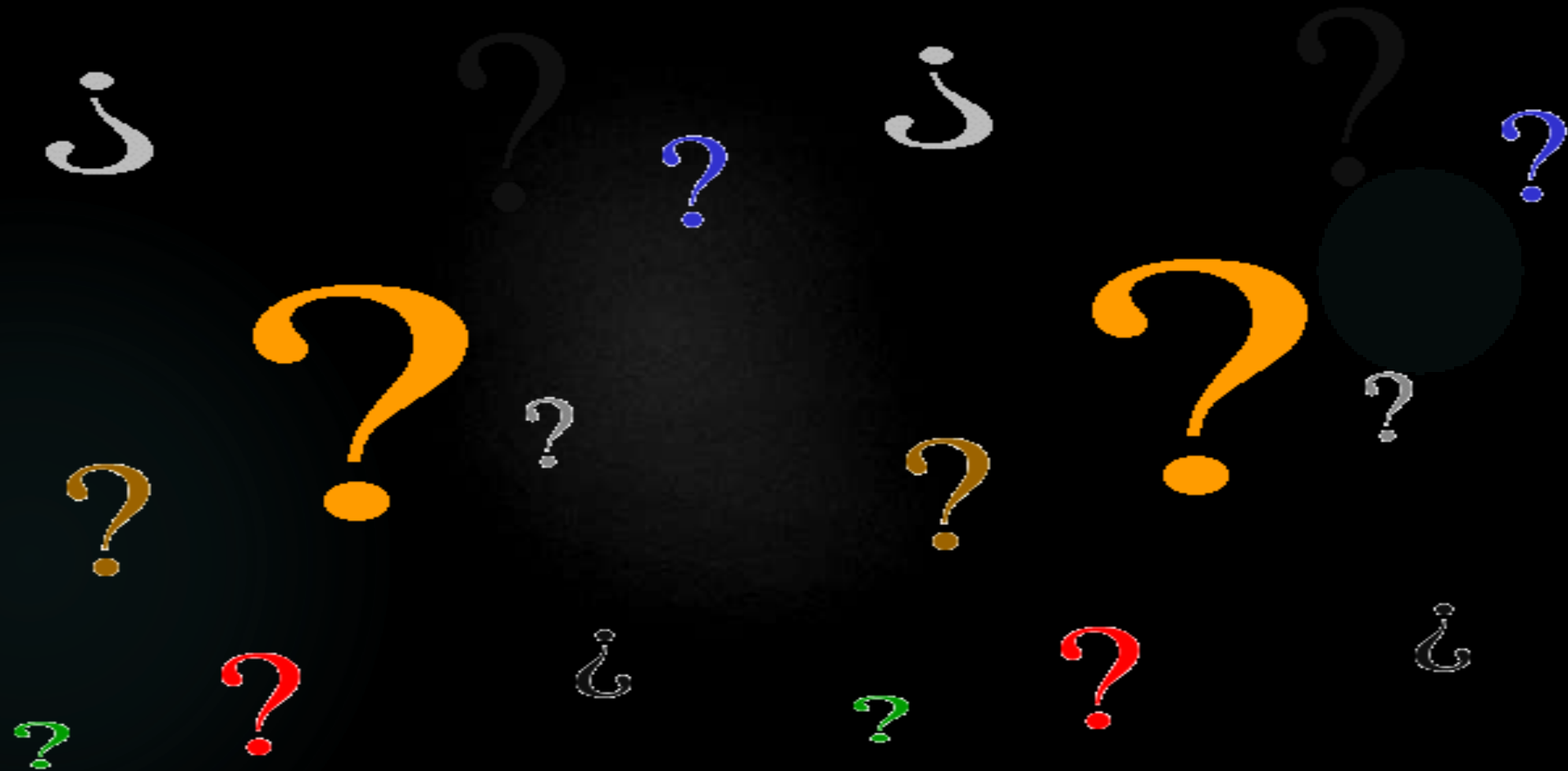


Beware of terms that describe a product, a person, an idea, a company, a process, or a course that do not have an objective measure.

So, engineering students should not to use "innovation" or "innovative" without describing exactly what they mean and their measurement technique.

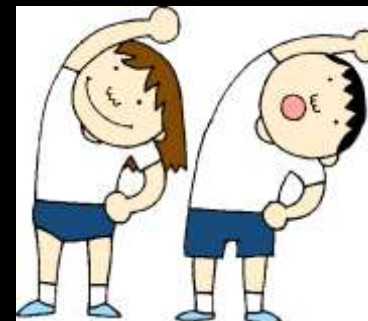
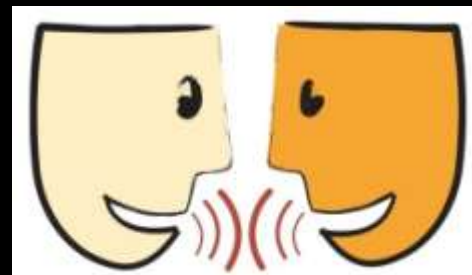


Questions?



Break Activities

- ▶ Stand up and stretch
- ▶ Sign attendance sheet
- ▶ Grab a cookie
- ▶ Take a bio-break
- ▶ Text message, web-surf, email
- ▶ Talk with classmates
- ▶ Reflect on what was presented in class



Adjourn



class dismissed



Laptops Galore



Time for Questions?



End the class

