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UNIVERSITY
of GUELPH

Improv for Scientists

(Spontaneous Communication Exercises)

Joanne O'Meara, Associate Chair (Undergraduate), Department of Physics

Context



University of Guelph

2018-2019 Undergraduate Calendar

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[XII. Course Descriptions](#)

Interdisciplinary Physical Science

IPS*3000 Science Communication F (3-3) [0.50]

This course focuses on developing the skills required to communicate science for non-specialist audiences. The principles and practices of public speaking and writing will be explored, employing a variety of media. Through multiple oral and written assignments, students will explore tailoring their message for various audience-types.

Prerequisite(s): 2.00 credits in PHYS at the 2000 level or higher

Restriction(s): [PHYS*4300](#)

Department(s): Department of Physics

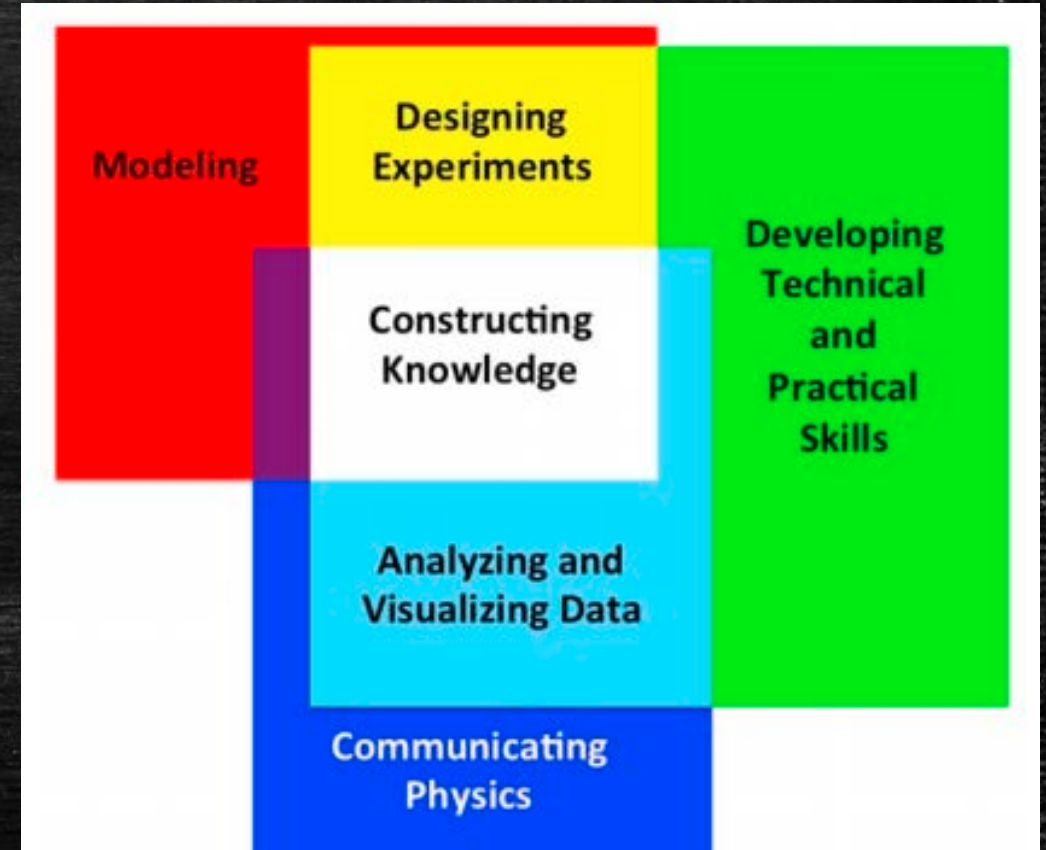
Curriculum Mapping

for Physics Majors

Learning Outcomes & Curriculum Mapping

Identified areas for further improvement:

- experimental design
- computational physics
- data visualization
- communicating physics



(AAPT 2014 – Recommendations for the Undergraduate Physics Laboratory Curriculum)

U of G Learning Outcomes: Communicating

- interacting with a **variety** of individuals and groups
- conveying information in a **variety** of formats

Oral


writing



Requiring a Course on

Science Communication

Communicating to Non-Technical Audiences

Winter 2017 – 46 students

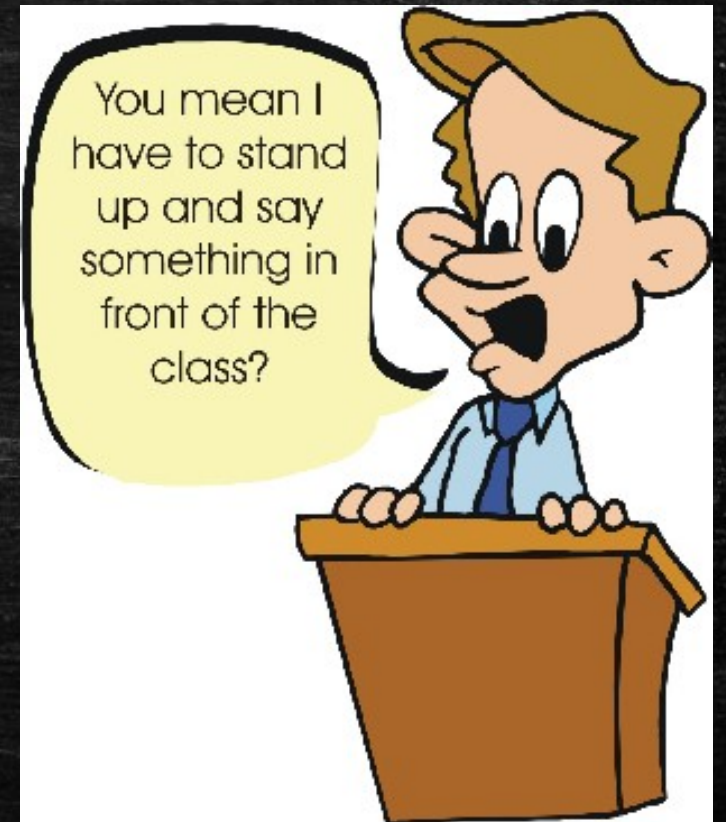
Winter 2018 – 44 students

Mix of 3rd and 4th year physics and nanoscience students



Course Structure

- Weekly discussions – pre-class readings/viewings/listenings
- Three oral presentations
- Two/three writing assignments
- Group projects



Presentations (2018)



1. Three-minute "thesis" (individual)
 2. Mock interviews (paired) – max of 5 minutes
 3. Video explanation (paired) – max of 5 minutes
- Peer evaluation
 - Peoples' Choice Awards

Getting Started



YouTube CA

Search



Science Communication

2 subscribers

CUSTOMIZE CHANNEL

CREATOR STUDIO

HOME

VIDEOS

PLAYLISTS

CHANNELS

DISCUSSION

ABOUT



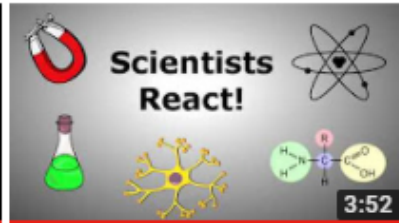
Uploads PLAY ALL

SORT BY



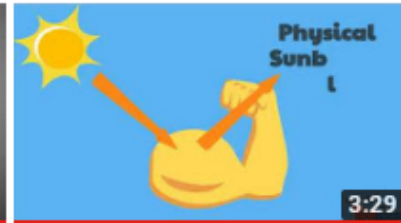
Neutron Stars

3 views • 3 weeks ago



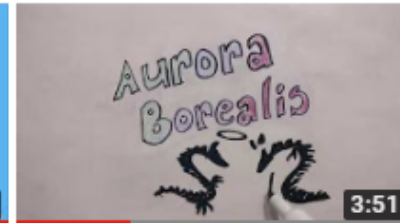
Scientists React! The Mantis Shrimp

39 views • 1 month ago



Sunscreen

10 views • 1 month ago

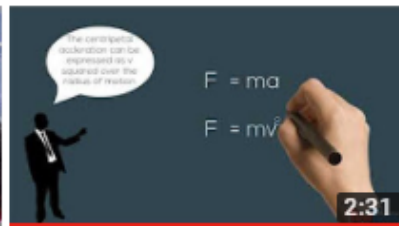


Aurora Borealis - Jade & Kayla

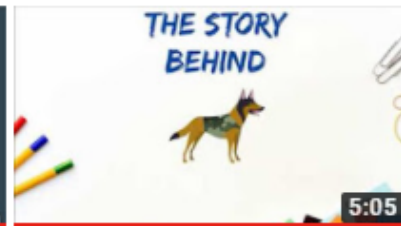
6 views • 1 month ago



Ultimate paper airplane - PEOPLE'S CHOICE WINNER!



Everything You Need To Know On Centripetal Forces



Animal Therapy

6 views • 1 month ago



Lissajous Figures

4 views • 1 month ago

Writing Assignments (2018)

Assignment #1 – story pitch for Science Corner (500 words)

Assignment #2 – profile of a physicist (500 - 750 words)

Assignment #3 – full story for Science Corner (750 words)

Sample titles:

The logo for GuelphMercuryTribune.com features a blue circle on the left containing a white 'G'. To the right of the circle, the text 'GuelphMercuryTribune.com' is written in a blue, sans-serif font.

Life's A Pitch: The World's Longest, and Famously Elusive, Experiment

Biomimicry – Design Inspired by Nature

Platypus Milk: Saving Lives, One Drop At A Time

What does this have to do with improv?

Week-by-week plan (Winter 2018)

Week	Activity
1	Introduction & discussion <ul style="list-style-type: none">• what is the purpose of this course?• Discuss general articles on the principles of science communication• Watch & critique several videos
2	Improv!
3	Presentation #1
4	Media interview discussion <ul style="list-style-type: none">• watch/listen to a selection of interviews
5	Presentation #2
6	Video production <ul style="list-style-type: none">• watch & critique a selection of videos• Storyboarding activity

Week	Activity
7	Presentation #3
8	Pitching a story discussion <ul style="list-style-type: none">• OpenNotebook resources• Brainstorming pitch activity from a research paper
9	Science in print media discussion <ul style="list-style-type: none">• Lede & explainer group activity from a research paper
10	Group project working sessions
11	Personalizing the impersonal <ul style="list-style-type: none">• Discussion of articles posted before class• Group activity to edit stories from peers
12	Open House!!

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Benefits of Improv in the Classroom

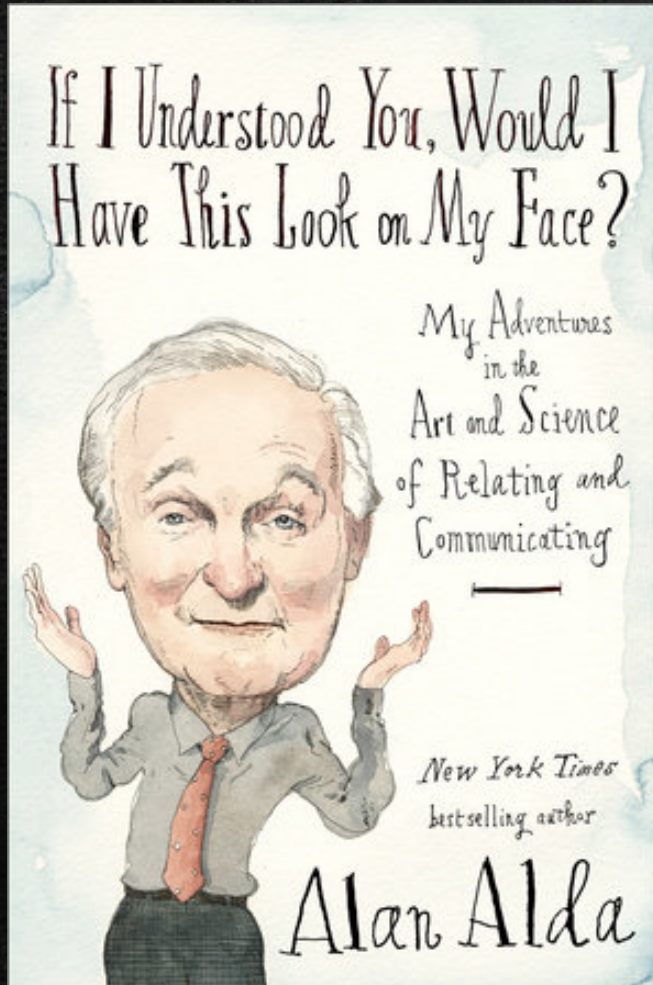
Research shows that improv can promote:

- Nonverbal communication
- Spontaneity
- Attentive listening
- Team building
- Creativity
- Critical thinking



“Whose Classroom Is It, Anyway? Improvisation as a Teaching Tool”
Berk & Trieber, *Journal on Excellence in College Teaching* 2009 20 (3)

Improv Session (2018)



- Word Association
- First word/Last word
- Buzz!
- Once Upon A Time
- That Means
- Bananas
- Breaking News
- Conducted story
- 3-headed expert
- Infomercial

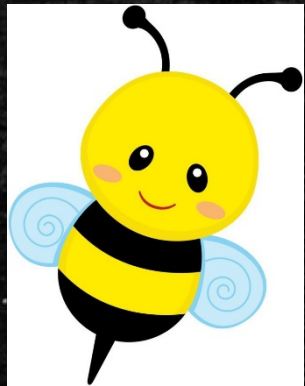
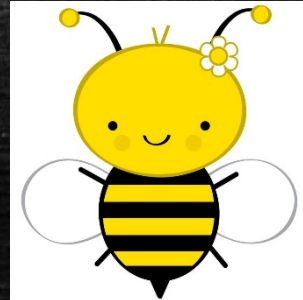
Nytimes.com



Warm-ups – low risk exercises

BUZZ!

- Entire class
- counting around the circle, insert BUZZ! for every 7 and multiple of 7



Small groups – medium risk exercises



Once
upon
a
time...

Form into **groups of 3** for this exercise.

Student A begins with "Once Upon a Time ..."

Student B follows with "Every day"

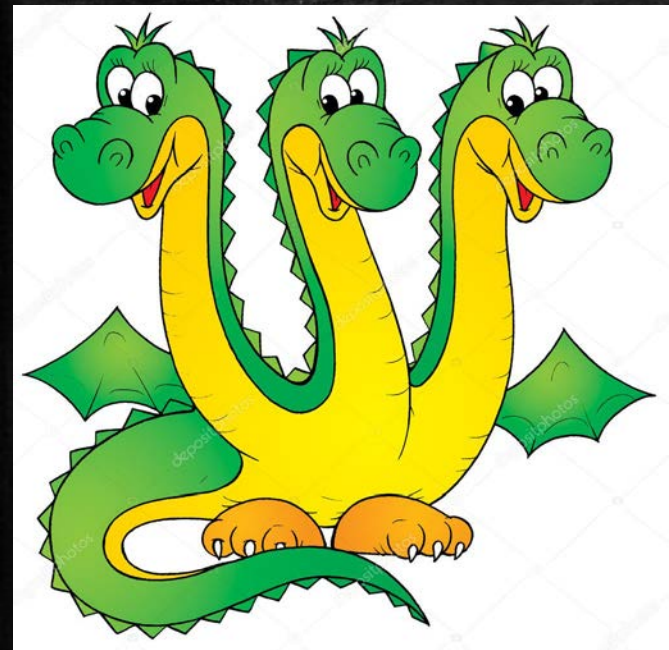
Student C starts the next sentence with "Until one day ..."

Back to Student A who continues with "Because of that"

Now student B with another "Because of that ..."

Student C ends the story with "Ever since then ..."

Volunteers with audience – high risk exercises

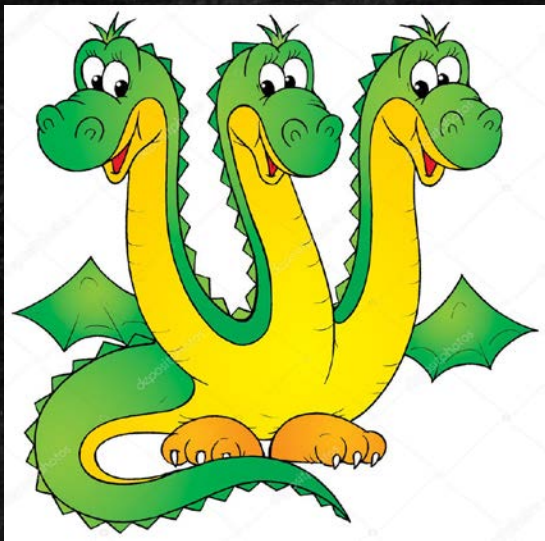


The Three-Headed Expert

- I need **three** willing volunteers for this exercise
- I am the guest host of Quirks & Quarks and I will be interviewing a three-headed expert on rocket propulsion.
- Each 'head' contributes to answer my questions **one word at a time**.

Post-exercise debrief discussion

1. What insights did you learn about letting go of the overall direction/result?
2. How did you handle an unexpected word or direction?
3. Why are you encouraged to go quickly?
4. How is this like teamwork on a job or on a group project?

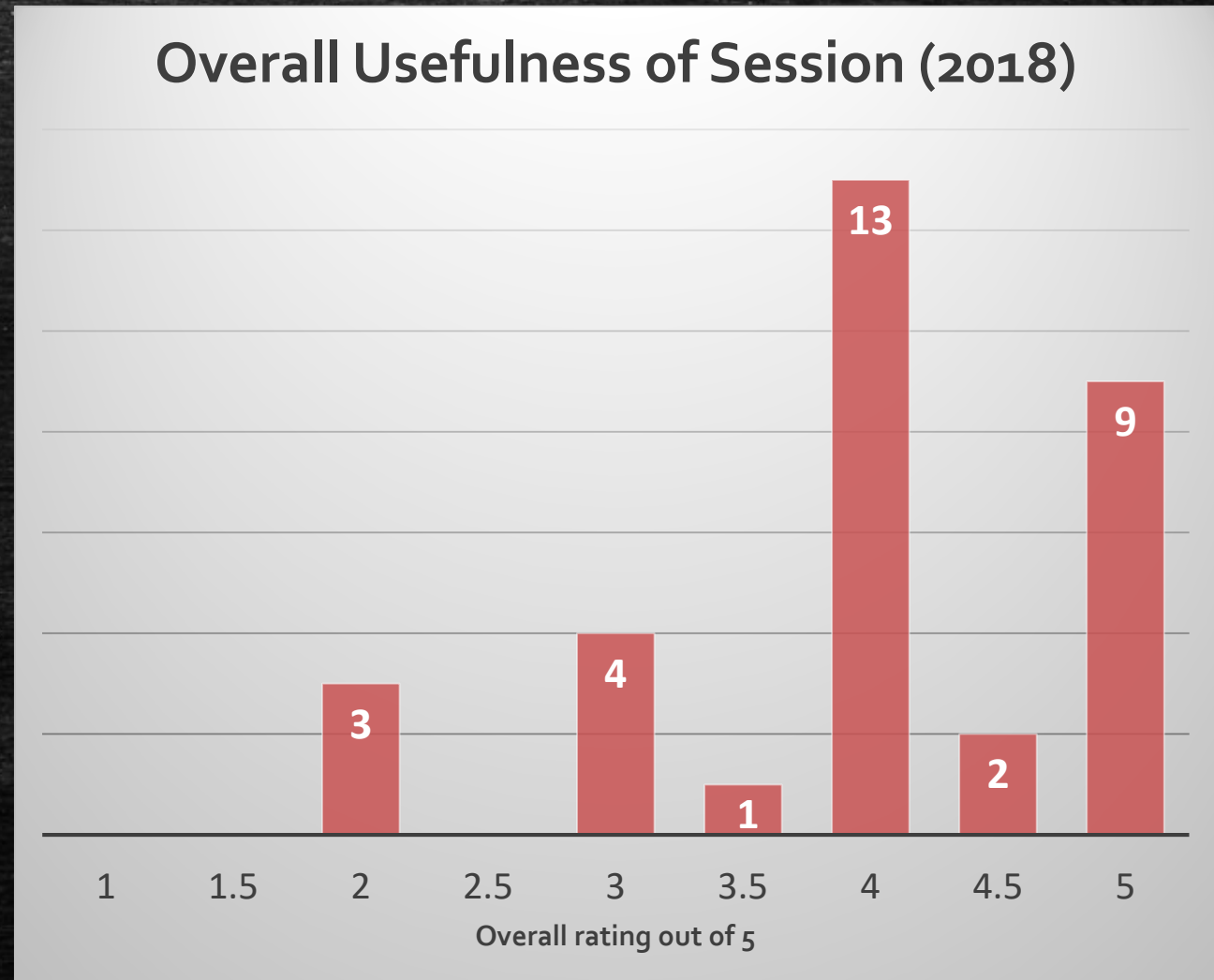


Improv Session (2018)

- Word Association
- First word/Last word
- Buzz!

- Once Upon A Time
- That Means
- Bananas
- Breaking News (1)

- Conducted story
- 3-headed expert (3)
- Infomercial (2)



Improv Feedback (2018)



Improv Feedback (2018)

Definitely a breath of fresh air in the program. I'm very much looking forward to this course!

The purpose of each exercise was clear & they were good lessons to learn about the science (art?) of communicating science

It got everybody a lot more comfortable with each other

I loved this! So fun and let me meet some more people in the class.

Got more comfortable talking in front of everyone and practising thinking on your toes



Education is to train for crisis, to reach intuition and self
– Viola Spolin

Questions & Comments

Resources:

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Improvisation for the Theater

– Viola Spolin (Northwestern University Press – 3rd edition 1999)

Whose Classroom Is It, Anyway? Improvisation as a Teaching Tool

- Ronald Berk & Rosalind Trieber, Journal on Excellence in College Teaching (2009)