Augment Motivation and Interaction to Help our Students Succeed
Dr. Julia Kregenow, Penn State University
Slides online: bit.ly/neroc20-julia

Goals of this presentation:
1. list and describe three principles for increasing student motivation
2. list multiple different ways that students can interact with you and peers

Handy tool: Zoom -> View Options -> Annotate: lets you (and students, if you wish) stamp, type, or draw on screen

Students come to us with varying interest & motivation. Tips for augmenting motivation:
- Establish relevance: everyday life, important to society
- Incorporate authentic questions (answers not yet known) or tasks (e.g. Citizen science sites: Zooniverse.org, Cosmoquest.org)
- Use an appropriate level of challenge: rewarding yet achievable. Offer support: frequent low-stakes practice & feedback gives them a chance to “fail” safely
- Connect individually. Ninja move: Email all your students. Seriously. It’s worth the time investment.

Students come to us with a wide range of preparation and confidence.
- How do you know their preparation level? Survey them, share aggregate results, create opportunities to let them talk, really listen, personal connection, be approachable
- Offer more support: Design question order to build in complexity / difficulty within each assignment, make extra practice Qs available, “HW party”, think-pair-share, office hours
- Offer more challenge: depth spikes, challenge questions, think-pair-share, office hours

Reference for “depth spikes” and identifying audience needs: Marketing for Scientists, Kuchner, 2011.

Voting questions
- Vary the difficulty. Interesting + challenging = motivating + great discussion!
  Think-Pair-Share approach: 1. Vote solo, 2. Discuss in groups, 3. Vote solo again.
  4. LAST: Explain reasoning. Ideally, have students explain aloud.
- Various ways to collect answers: zoom poll, zoom annotate, zoom nonverbal feedback

Reducing anxiety for shy or introverted students:
- confer with peers before answering
- group answer; group can elect a spokesperson
- opt in/out from answering in class
- talk with me privately, or submit written answer online
- email selected students ahead of time to give them prep time
- non-speaking role (e.g. emailing you a photo of their work for spot checking)

For all teaching methods, especially active learning, nuances of implementation matter.
- Try 1 or 2 new things at a time. Don’t change everything at once.
- Practice helps.
- Get feedback from students, colleagues, local teaching & learning center.
- As Brené Brown says, “Stay awkward, brave, and kind.”
Augment Motivation and Interaction to Help our Students Succeed


Image credits: changingpaces.com/4-general-types-of-barriers/
news.mit.edu/2015/mit-pole-vaulter-cimran-virdi-goes-ever-higher-0709

Dr. Julia Kregenow, Penn State University
website: bit.ly/kregenow

What type(s) of classes are you teaching?

Using the zoom annotate feature, place a “stamp(s)” somewhere in the chart

NOTE:
This feature must be enabled by meeting host before mtg starts

class size

1 100 1,000

10

1

intro survey course; non-technical
undergraduate science majors
graduate students

Class level / technical rigor

Or, I’m not teaching now:
**What type(s) of classes are you teaching?**

OR, Enter a letter in the chat box corresponding to your answer
OR, Use zoom polling with multiple choice answer options

<table>
<thead>
<tr>
<th>class size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

- **A** intro survey course; non-technical
- **B** undergraduate science majors
- **C** graduate students
- **D**
- **E**
- **F**
- **G**
- **H**
- **I**

**Or, I’m not teaching now:**

**J**

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**Where would Pluto be on this graph?**

*Use zoom annotate feature to mark your answer right on the graph*

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**Where would Ceres be?**

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Augment motivation with **relevance**, authenticity, and appropriate challenge.

Image credits: http://why-am-i-always-tired.org/78/are-you-tired-or-are-you-bored/
https://logophilesunleashed.wordpress.com/2015/08/19/honors-english-i-extra-credit-recommend-a-book/

Slides online: bit.ly/neroc20-julia
Augment motivation with relevance, **authenticity**, and appropriate challenge

https://www.dailystar.co.uk/news/latest-news/608297

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Augment motivation with relevance, authenticity, and **appropriate challenge**

Image credits:
https://www.upwork.com/hiring/for-clients/lightweight-app-design/
Augment motivation with relevance, authenticity, and appropriate challenge.

Pro tip: Email all your students individual near the beginning of term. Seriously. Do this.

Actively support and engage students with different levels of prep.

Image credits:
- www.criticalbench.com/exercises/band-assisted-pullups.htm
- Slides online: bit.ly/neroc20-julia
The wood of a mature tree weighs much more than a young sapling. Where did it get most of that mass?

A. The seed
B. The air
C. The soil
D. Water

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Use zoom polling to vote, or zoom annotate feature to stamp in the box next to your answer.
The wood of a mature tree weighs much more than a young sapling. Where did it get most of that mass?

Hint: \[6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2\]

A. The seed  
B. The air  
C. The soil  
D. Water

A metal plate has a circular hole cut from it. When you heat the plate, the metal thermally expands. What happens to the diameter of the hole?

- it decreases  
- it increases  
- it stays the same size  
- it depends on the plate thickness

Use zoom non-verbal feedback icons (at the bottom of your participants window) to indicate your answer.

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For more example teaching strategies, here are some of my longer slide decks

**Connecting with your Students:**
*Meet them Where They Are*
slides online:  http://bit.ly/hilo18-julia

**Teaching is a Two-Way Street**
slides online:  http://bit.ly/baltimore19-julia

Dr. Julia Kregenow, Penn State University
website: bit.ly/kregenow

Your handout lists ideas for reducing anxiety for shy students

Video credit: https://iwastesomuchtime.com/extroverts_vs_i_161227

Slides online: bit.ly/neroc20-julia
Minute papers are very brief in-class writing assignments

Image credit: Peeter Jontes

Students who take ownership of their learning are more motivated & successful

https://www.aacu.org/resources/stem-higher-education/mcguire

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