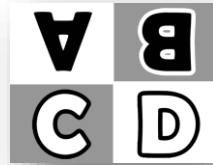


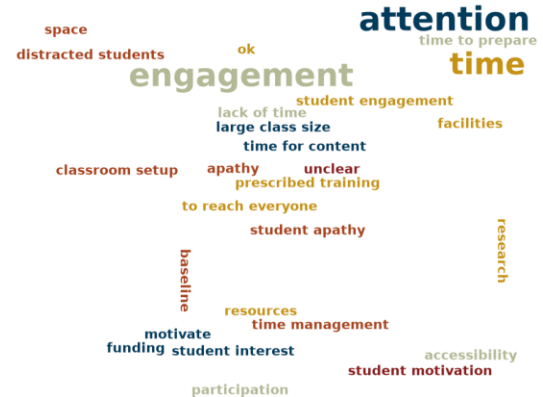
## As we get started

- Make sure you have:
  - An ABCD card (everyone).
  - A whiteboard and marker (two per table).



- Go to **vevox.app** on your phone and join with ID **183-456-928**.
- Write one word which summarizes your biggest challenge (or what you expect your biggest challenge to be) in this type of space.**

Enter Text and  
Press Send



# What we just did...



- I got you started before I got started:
  - Used that time as folks are settling.
  - Got folks settled faster!
  - Got your heads in the game.
  - We all know that at the end of class, folks are starting to get antsy and start packing up.
  
- Got *y'all* to summarize some of the most common challenges: I didn't have to do it.
  
- Icons are useful/important in your slides \_\_\_\_\_ they minimize the need for directions. For this session, this icon means we are doing metacognition on what we just did.

# A little about vevox




Single user	Single user	Single user	(5+ users)
<b>Free</b>	<b>Starter</b>	<b>Pro</b>	<b>Institution</b>
<b>\$0</b> (USD)	<b>\$6.75</b> (USD)	<b>\$12.95</b> (USD)	From <b>\$779.40</b> (USD)
	/month \$81 per year, billed annually	\$155.40 per year, billed annually	per year \$779.40 : Fair pricing plans based on 'Active Users'
<a href="#">Sign up for FREE &gt;</a>	<a href="#">Buy Now &gt;</a>	<a href="#">Buy Now &gt;</a>	<a href="#">Contact Sales &gt;</a>
<b>Features:</b>	<b>Everything in the Free plan plus</b>	<b>Everything in the Starter plan plus</b>	<b>Everything in the Pro plan plus</b>
<ul style="list-style-type: none"><li>✓ Up to 100 participants</li><li>✓ Unlimited basic multi-choice polling and Q&amp;A</li><li>✓ Quiz leaderboards</li><li>✓ Run on single screen</li><li>✓ Easy student access- No download required</li><li>✓ Microsoft Teams &amp; PowerPoint integrations</li></ul>	<ul style="list-style-type: none"><li>✓ Up to 250 participants</li><li>✓ More poll types - including word cloud, numeric, open text and star rating</li><li>✓ Surveys and ready to use templates</li><li>✓ Microsoft Teams Integration</li><li>✓ Image in polls &amp; access to image library</li><li>✓ Data exports</li><li>✓ Live chat &amp; online support</li></ul>	<ul style="list-style-type: none"><li>✓ Up to 1500 participants per session or survey</li><li>✓ All poll types including pin on image &amp; ranking polls (NEW)</li><li>✓ Q&amp;A moderation</li><li>✓ Microsoft Teams integration</li></ul>	<ul style="list-style-type: none"><li>✓ Up to 5000 participants per session</li><li>✓ Pay for active users</li></ul>

iClickers can also work (no word cloud though!)

## A bit on the closed captions...



- Started by clicking the  icon that appears when you hover over the lower left in the slide show view.
- Seems to me to be pretty accurate.
- Nice, not only for Deaf and hard-of-hearing folks, but also makes your class more accessible to those for whom English is a second language.
  - From experience with friends, many of these folks watch movies with CC on.
  - Adds additional information: if you miss the speech, you can catch up with reading.

# Active Learning Techniques Using Low Tech Tools for the Large Classroom

USDA S1077 MULTI-STATE ANNUAL MEETING

Dr. Brokk Toggerson  
Sr. Lecturer

# What we will do today

## Goal of this session

- Beth Lisi already showed us the research indicating that active learning.
- Our goal is to see how to do it *at scale* in a lecture hall which may more closely resemble a dungeon.

## Specific tools we will use

- Vevox ✓
- Closed Captioning. ✓
- Icons ✓
- Multiple-Choice Questions via ABCD cards.
- Whiteboards.

# General Notes for Large Lecture Halls



My lecture hall  
seats 312

- **Sound:**
  - Use a microphone.
  - Echoes.
  - Bell or similar for bringing back to attention.
- **Visibility:**
  - Font size.
  - Markers.
- **Expectations:**
  - Folks come in expecting to sit and passively take notes (there was some implicit expectation of that in the requests that this be recorded!).
  - Need to address this expectation and get folks comfortable in working collaboratively in these spaces.

# A First-Day Activity to Break the “I’m Going to Sit and Take Notes” Expectation



## **Pull-Backs**

1. Stand with feet together.
2. Go up on your toes.
3. Bend your knees.
4. Jump.
5. While in the air, brush your feet backwards across the floor.
6. Land.

## **What we did**

- I got you up and out of your seats. You also had some fun!
- I got you thinking about how to learn.
- I proved that activity with feedback is key.
- I humanized myself!



Courtesy of Ed Prather  
at the University of Arizona's Center for Astronomy Education

# **MULTIPLE CHOICE QUESTIONS USING ABCD CARDS**

On which continent is this country?

- A. Africa.
- B. Asia.
- C. Europe.
- D. South America.
- E. North America.

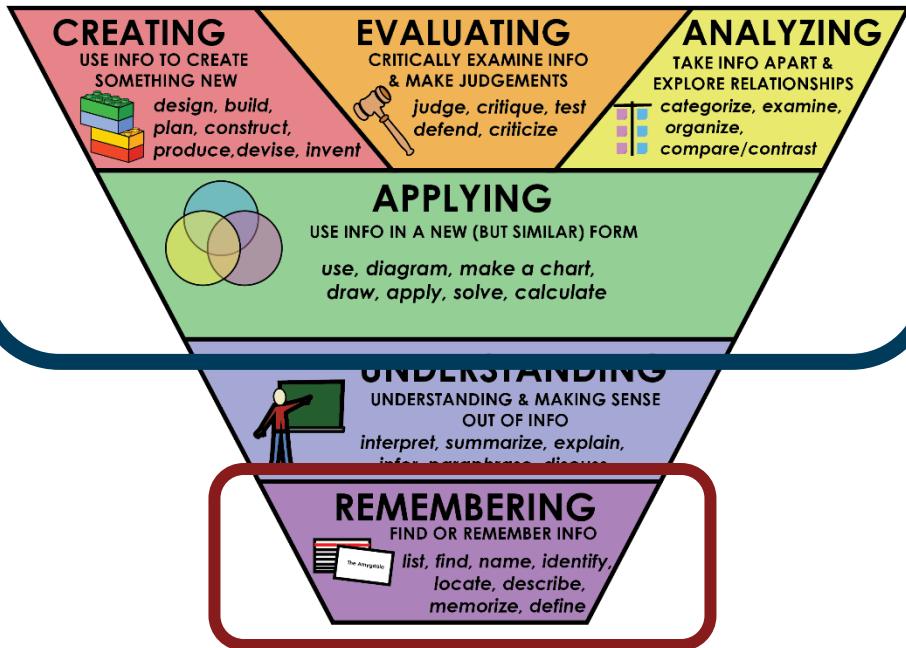


For the purposes of this question, North America includes Panama and all the countries north of it.

# Using ABCD Cards for Remembering

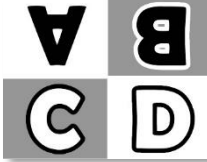


## BLOOM'S TAXONOMY



- The timer is just a YouTube video!
  - Just search “X min timer”
  - Add to presentation.
- These recall questions can have great value at the start of a topic to check recall of the fundamentals.
- However, cards can be used for more complex parts of Blooms Taxonomy as well!

# What is the phase of the moon?

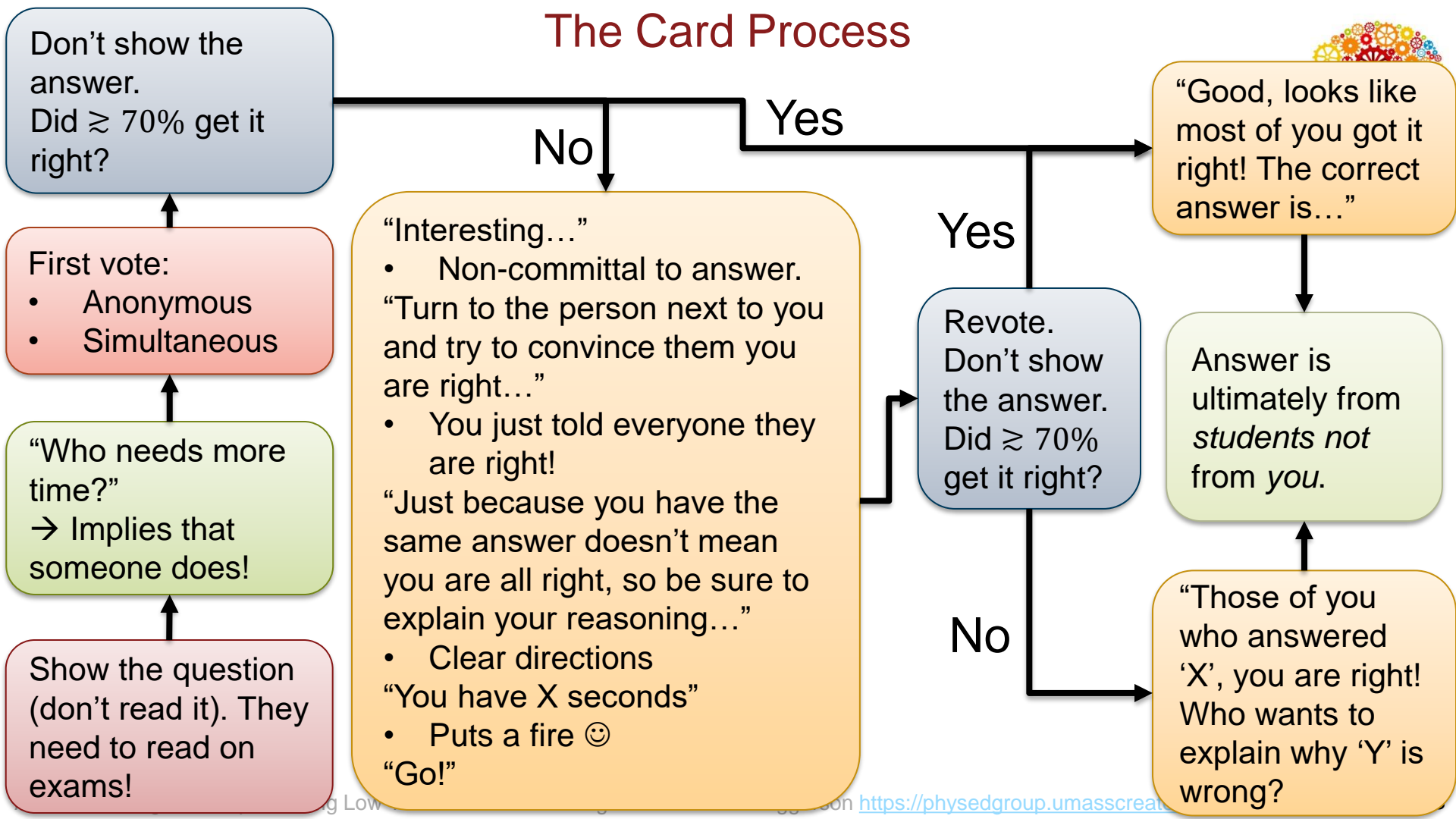


- A. New.
- B. Waxing (growing) quarter.
- C. Full.
- D. Waning (shrinking) quarter.
- E. Not enough information.



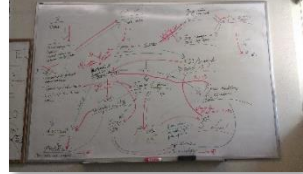
NASA Apollo 8, Bill Anders  
Processing: Jim Weigang

# The Card Process



# WHAT ABOUT QUESTIONS THAT DON'T BOIL DOWN TO SIMPLE MULTIPLE CHOICE?

Draw the pattern made by particles hitting  
a screen after going through a slit  
like balls through a door



1. Done and 😊  
0%
2. Done and ☹️  
0%

Poll Open

Join: **vevox.app** ID: **183-456-928**

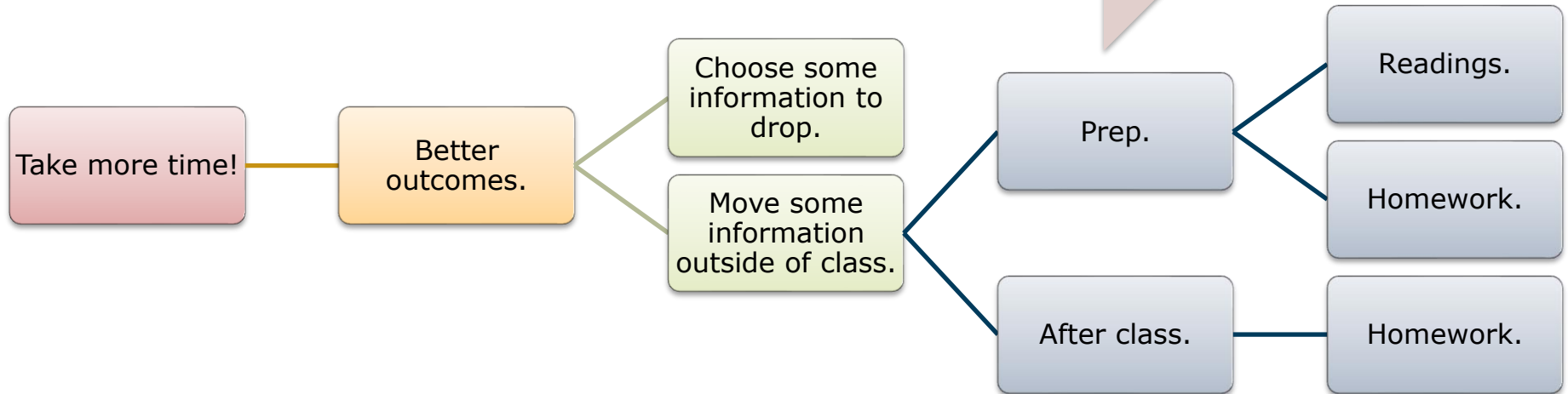
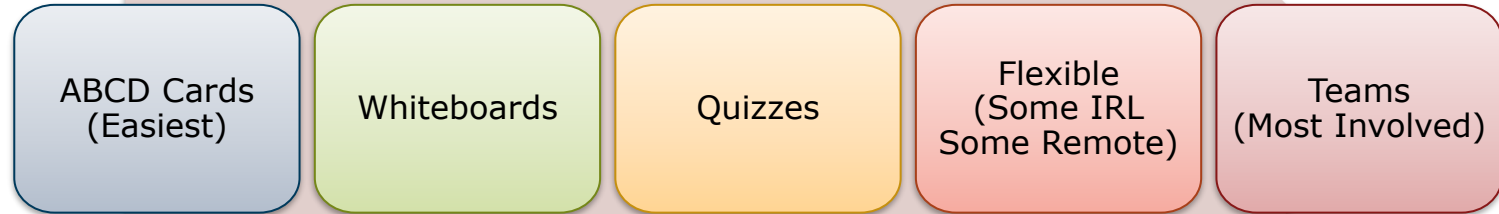
# Tips for Whiteboards



Whiteboards	Show the problem.	Use Vevox/iClickers as a timer!	Help students	Debrief
<p>Use them <i>only</i> if you are going to have them report out: lists of words, drawings, etc.</p>	<p>Sometimes answers given to algebraic problems to let students know if they got it correct.</p>	<p>I tell them, "vote 'A' if you are done and sure, 'B' if you are done but not confident."</p>	<p>Walk around. Engage students who look lost or are just sitting there. Encourage TAs to do the same.</p>	<p>After about 3-5min usually. Don't do the algebra for them unless it is particularly tricky. They can do it if you make them (though they will complain!).</p>



# Even in these dungeons, you can do a lot!



[toggerson@umass.edu](mailto:toggerson@umass.edu)

**NEED HELP?**

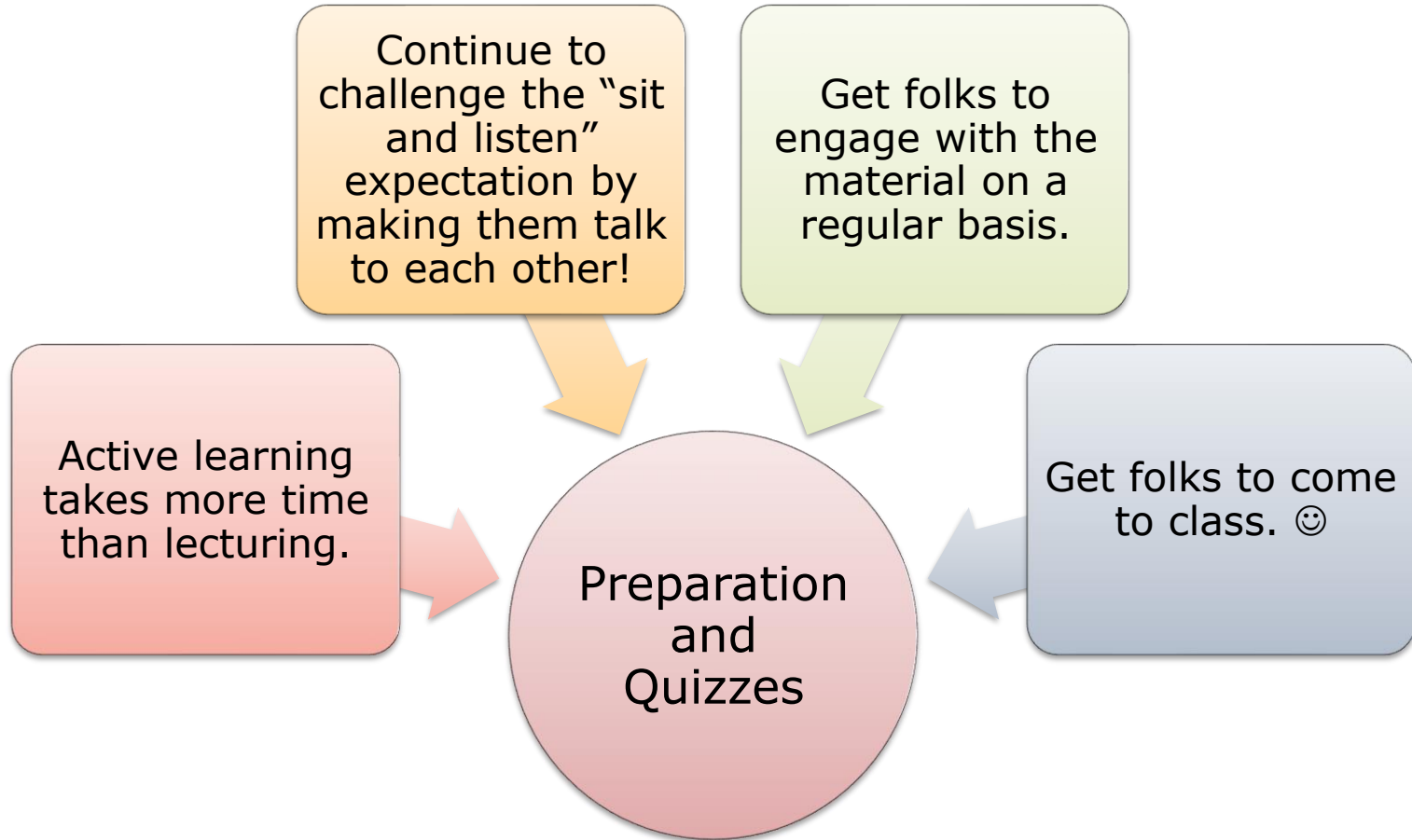
**DON'T HESITATE TO CONTACT ME!**

A large, empty classroom with rows of grey chairs, a wooden podium, a whiteboard, and a chalkboard. The room has a brick wall and a wooden door in the background.

# BACKUPS

# PREPARATION AND QUIZZES

# Benefits



## An example: answer with your iClicker



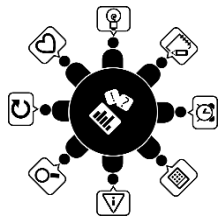
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For the purposes of this question, North America includes Panama and all the countries north of it.

## An example: answer with your iClicker



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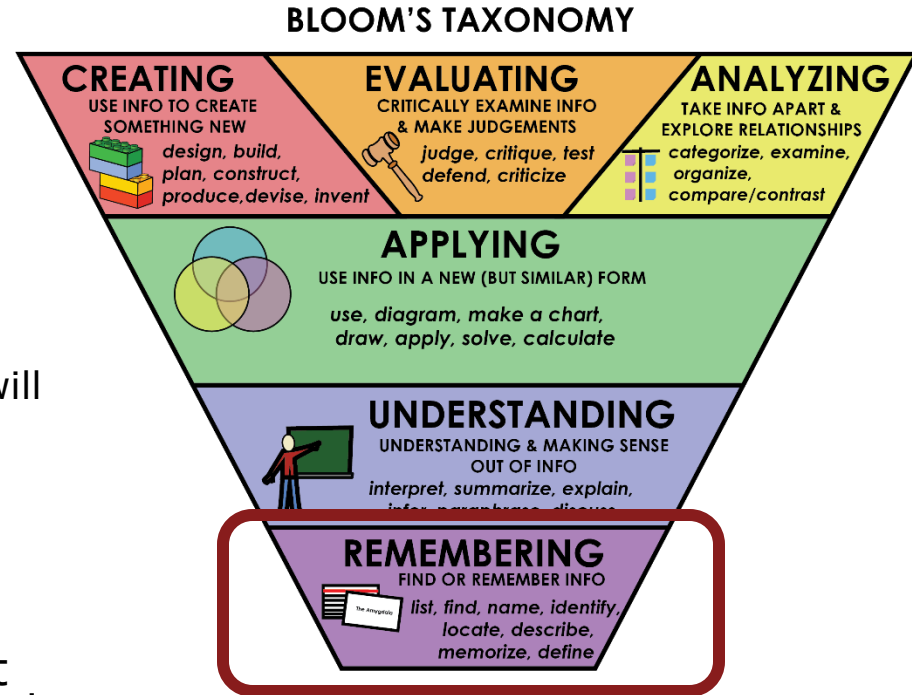


For the purposes of this question, North America includes Panama and all the countries north of it.

# The Quiz Process & Tips

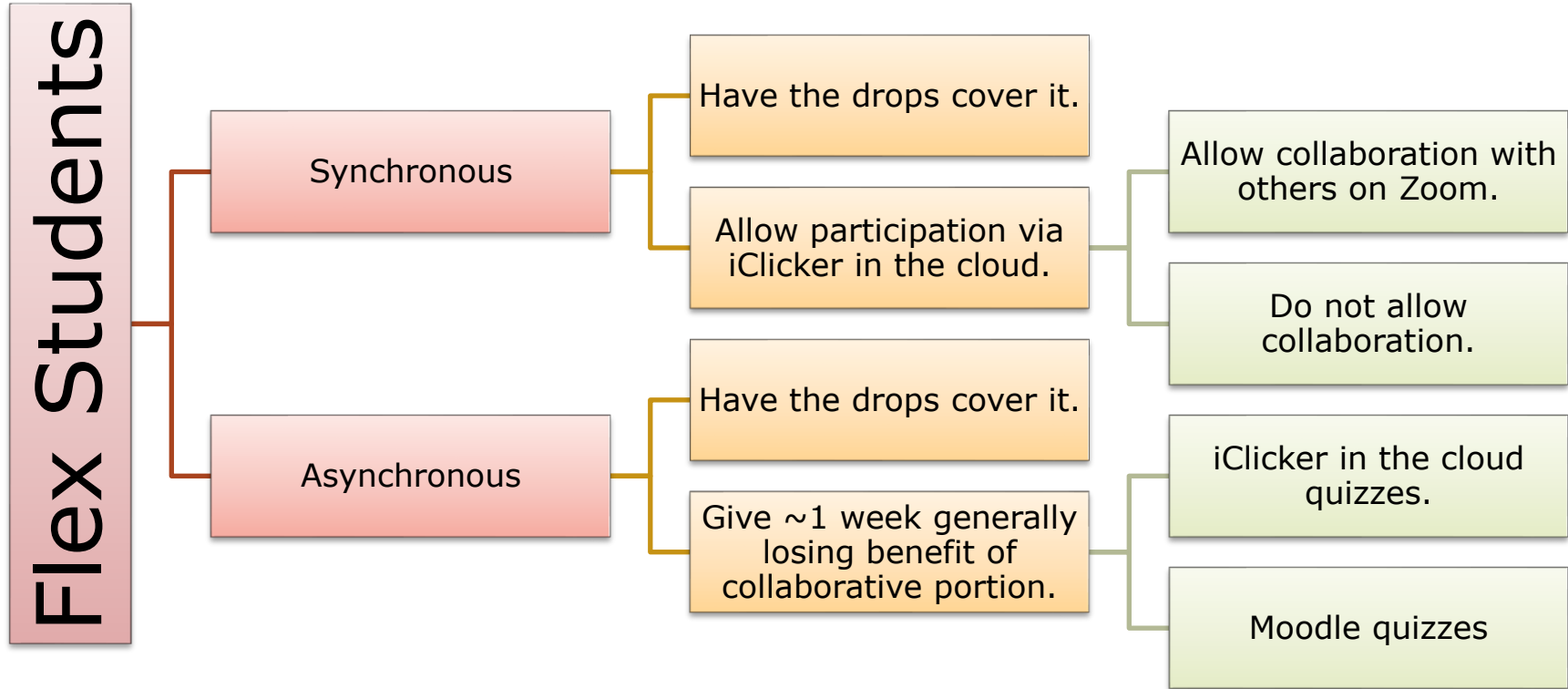


1. Stick to “Remember” on Bloom’s Taxonomy. This is what students can learn on their own with some confidence.
2. Do once individually and then once collaboratively.
  - a. Lowers the stakes.
  - b. Helps with team cohesion.
  - c. I do a 50/50 split.
3. iClickers are nice for this:
  - a. A lot of students already have them or will use them again (at least in CNS) ← No wasted \$\$
  - b. Integrates with Moodle.
  - c. Via the cloud-based one, can be done even by folks engaging synchronous remote.
4. To avoid dealing with absences, just pre-give a certain number of dropped quizzes (I do about 2wks worth).





# What about flex students?



- Next time problems.
- Broadcast emails.

## **AFTER CLASS**

# Next Time Problems



- These were a suggestion from a student!
- A problem directly related to the day's class.
  - If you understood the day's material, you should be able to do it.
  - If you need help, you know where to look! 😊
- Full solutions available at the start of the next day's class.
  - Gives students a chance to try it without being tempted to look at the solution too early!

# Another exercise with power and why circuit breakers exist!



A typical hair-dryer draws 1600 W (that is A LOT – my microwave is only 780 W!).

- How much current is this? (Remember the voltage of the wall is 120 V).
- What is the resistance of the hair-dryer?
- Say you dropped it in the sink. The water now provides another conducting path (as tap water has some ions, it is a conductor). The resistance of  $\approx 1.9 \Omega$ .
  - What would be the current now?
  - What about the power?
- Why might you want the circuit breaker to cut the current in this situation?

Another exercise with power and why circuit breakers exist!

Next Time

A typical hair-dryer draws 1600 W (that is A LOT - my microwave is only 780 W!).

- a) How much current is this? (Remember the voltage of the wall is 120 V).
- b) What is the resistance of the hair-dryer?
- c) Say you dropped it in the sink. The water now provides another conducting path (as tap water has some ions, it is a conductor). The resistance of  $\approx 1.9 \Omega$ .
  - What would be the current now?
  - What about the power?
- d) Why might you want the circuit breaker to cut the current in this situation?

$$b) V = IR$$
$$(120V) = (13.3A)R$$
$$R = 9\Omega$$

$$c) V = IR$$
$$(120V) = I(1.9\Omega)$$
$$I = 63.16A$$
$$P = IV$$
$$P = (63.16A)(120V)$$
$$P = 7.6kW \text{ (4.7x bigger!)}_2$$

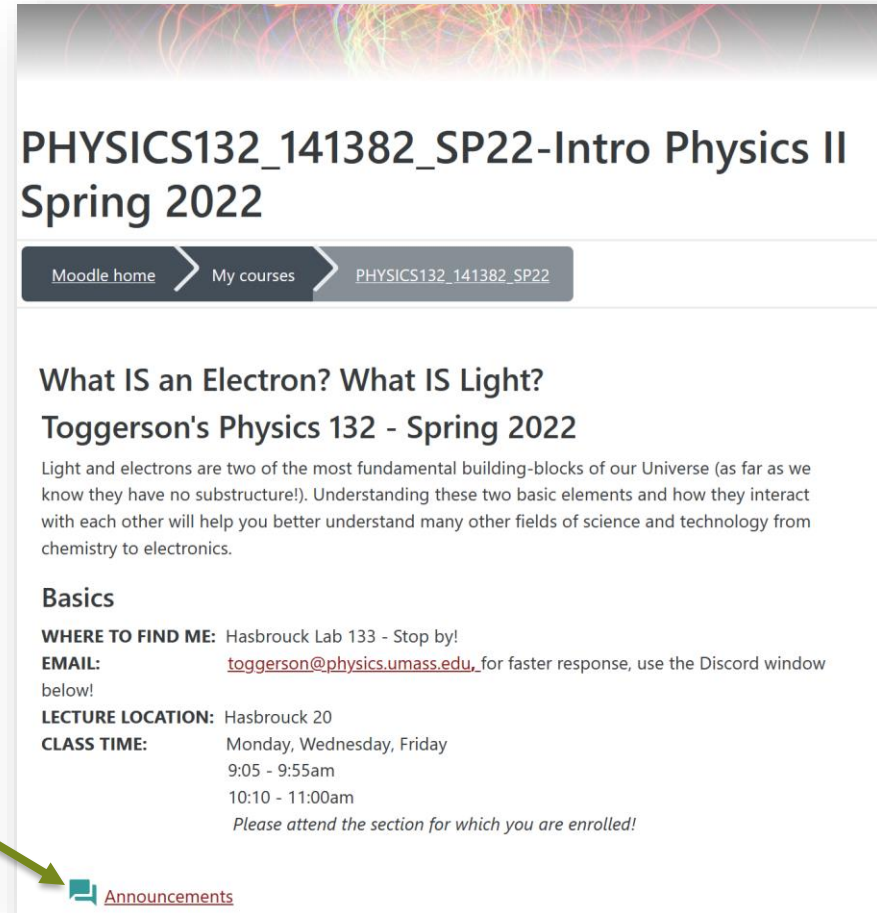
breakers detect the surge in current and cut the electricity.

$$a) P = IV$$
$$(1600W) = (I)(120V)$$
$$I = 13.3A$$

7.6 kW is a lot of power. Enough to set wires on fire! Circuit-

# Broadcasts

- Don't waste time with announcements!
- Frankly, it is unfair anyway: what about those students who were not in class?
- Instead send out a *broadcast email* using the Announcements forum after each class!



PHYSICS132\_141382\_SP22-Intro Physics II  
Spring 2022


Moodle home > My courses > PHYSICS132\_141382\_SP22

### What IS an Electron? What IS Light? Toggerson's Physics 132 - Spring 2022

Light and electrons are two of the most fundamental building-blocks of our Universe (as far as we know they have no substructure!). Understanding these two basic elements and how they interact with each other will help you better understand many other fields of science and technology from chemistry to electronics.

#### Basics

**WHERE TO FIND ME:** Hasbrouck Lab 133 - Stop by!  
**EMAIL:** [toggerson@physics.umass.edu](mailto:toggerson@physics.umass.edu), for faster response, use the Discord window below!  
**LECTURE LOCATION:** Hasbrouck 20  
**CLASS TIME:** Monday, Wednesday, Friday  
9:05 - 9:55am  
10:10 - 11:00am  
*Please attend the section for which you are enrolled!*

 Announcements

# Example

Hello all,

The slides and Moodle quiz for today are posted as is the raw video.

## Summary of today's physics

By the end of today's class, you should be able to...

- Summarize the principles of geometric optics.
- Determine the image position and magnification for any object/mirror combination.
- Interpret the results of a calculation to determine the image position and/or magnification:
  - Sign.
  - Value.
  - Confirm/Deny consistency with a ray diagram.
- Apply  $1/i+1/o=1/f$  for a lens.
- Use information about seeing at distance to determine focal length.
- Explain the circumstances under which the eye's focal length is the longest.
- Define far point.
- Determine the far point for a given eye.

## Announcements

- Wednesday's quiz will be on the sign conventions for image and object distances for lenses. Review problems 15 and 16 from the Unit II homework.
- I would definitely be trying to start the Unit III homework!

Remembering to summarize is always hard! Doing it here helps!

Announcements including the exact material to review for the next quiz!