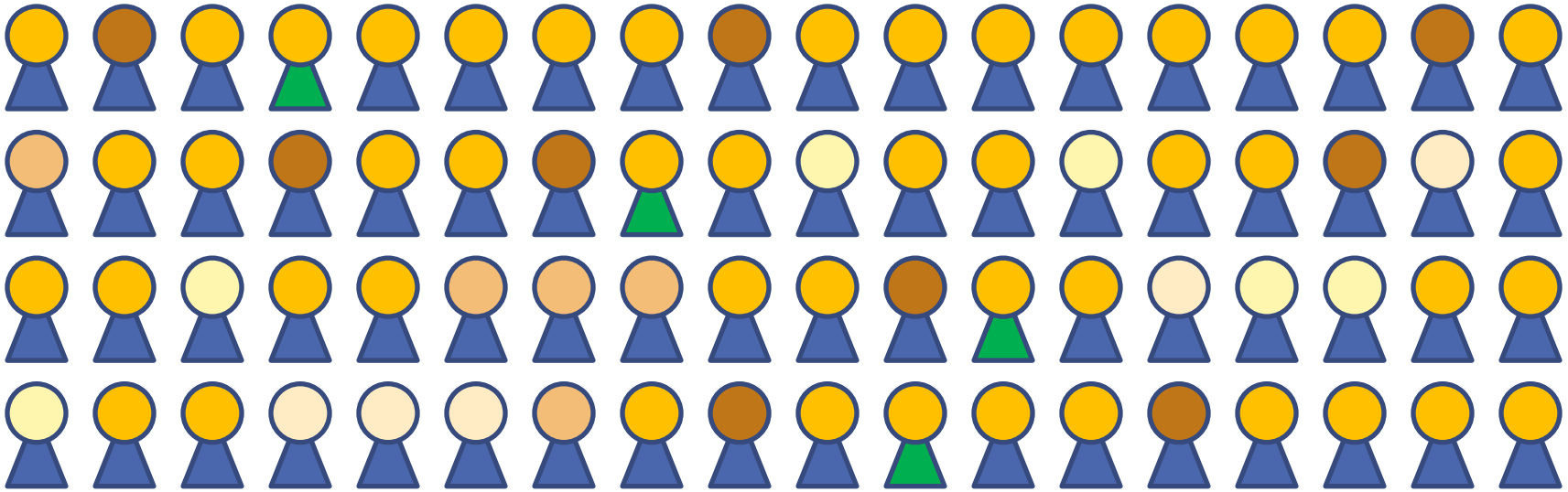
Give Every Student A Voice: Infusing Active Learning Through Technology

Matt Evans

U of WI – Eau Claire

Why engagement of all students is necessary







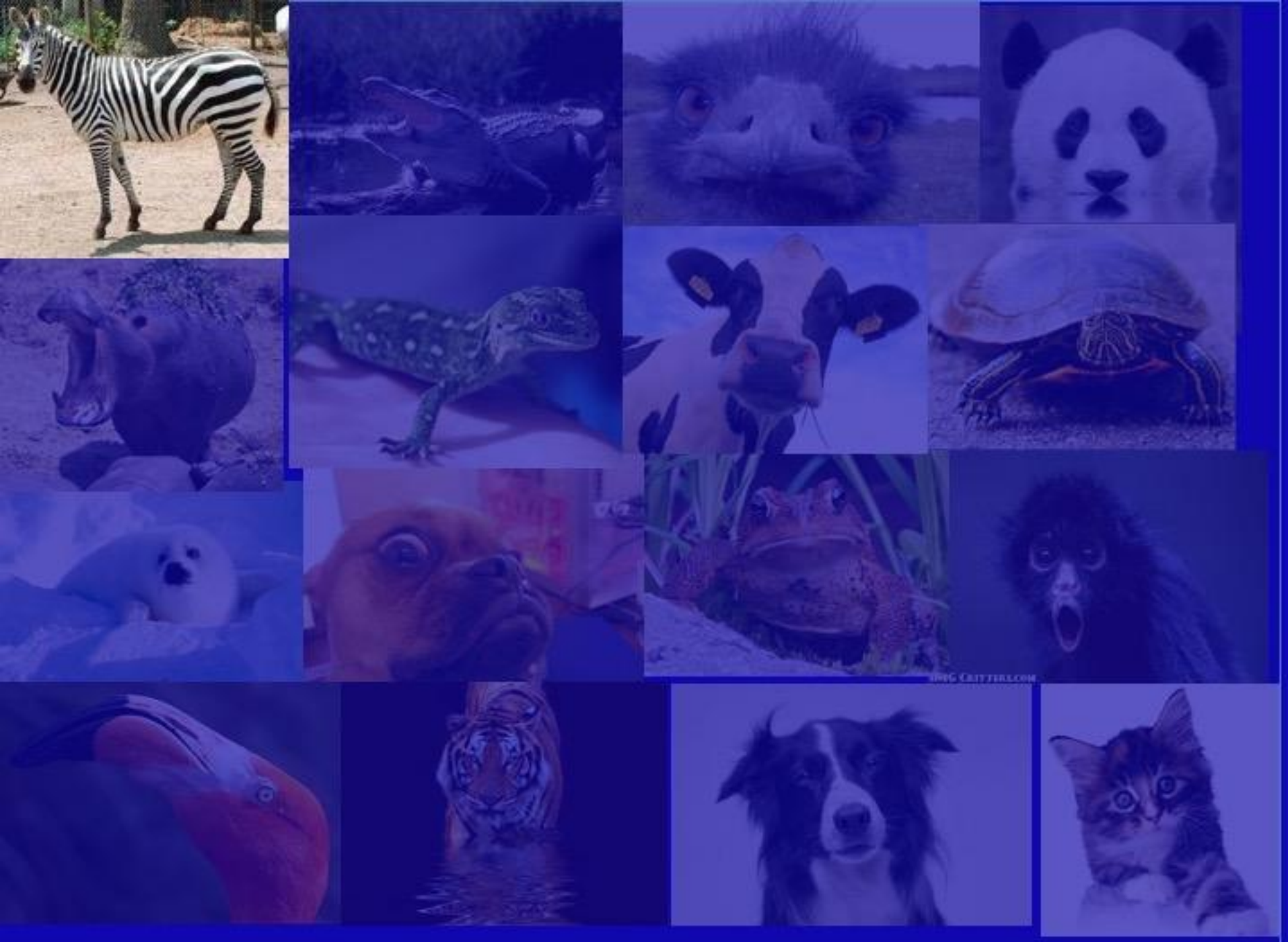


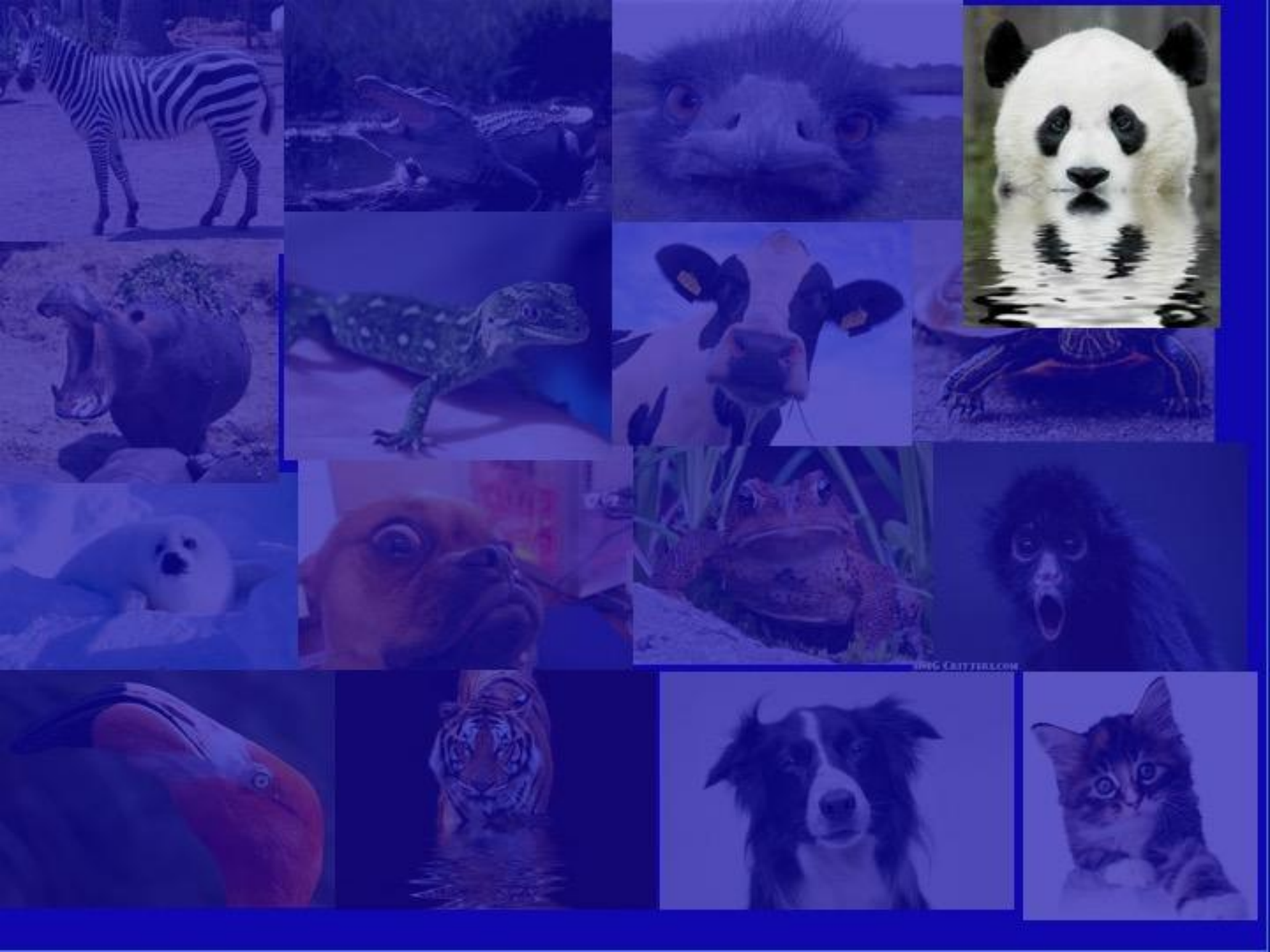




















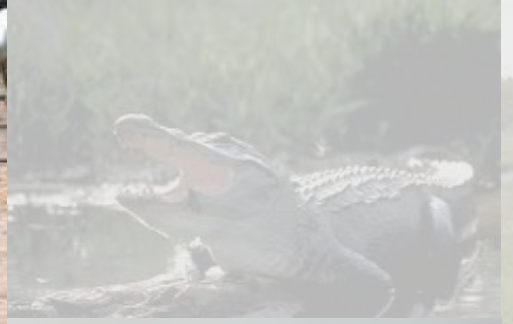


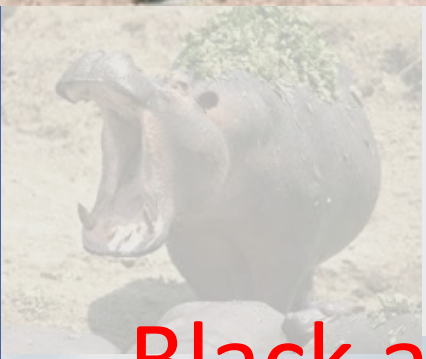



Your class are herbivores


OMG Critters.com

Black and White animals are herbivores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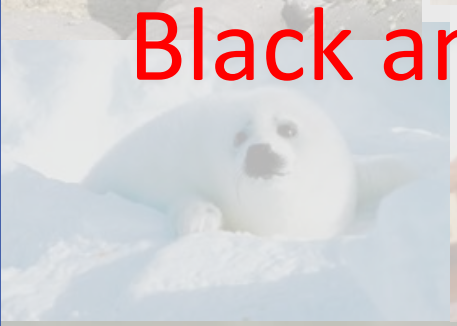
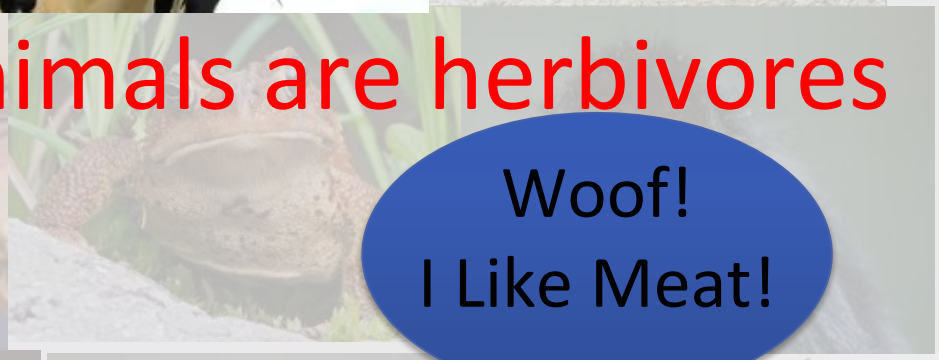
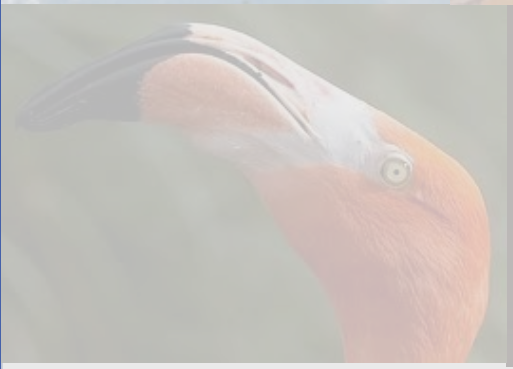
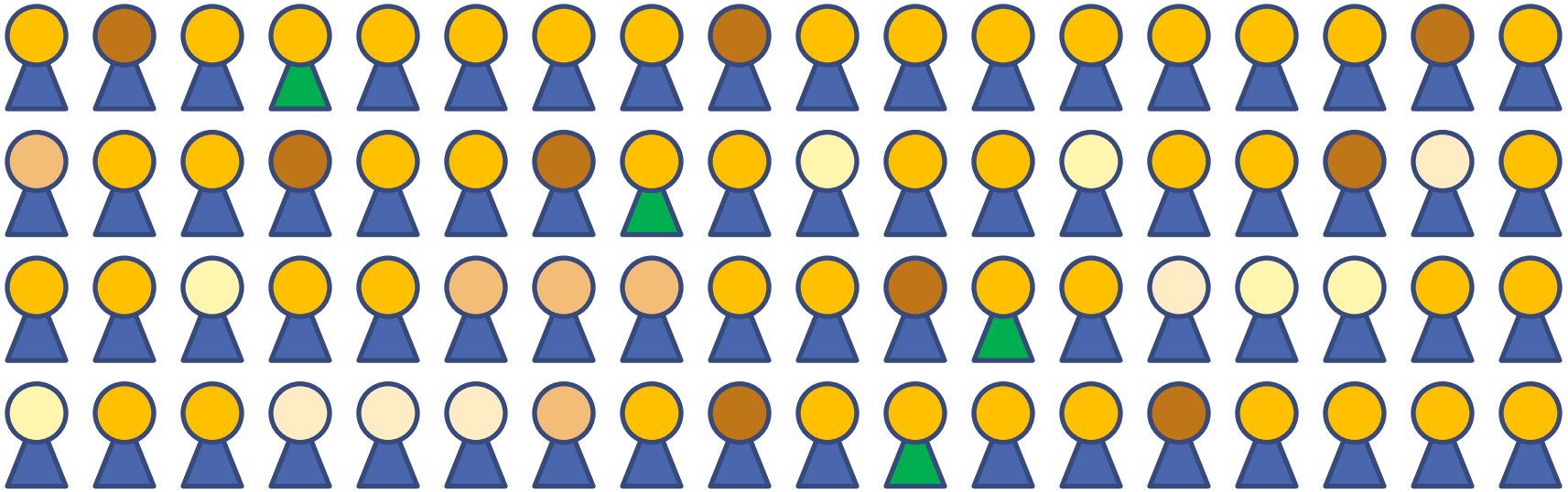




Woof!
I Like Meat!




Why engagement of all students is necessary



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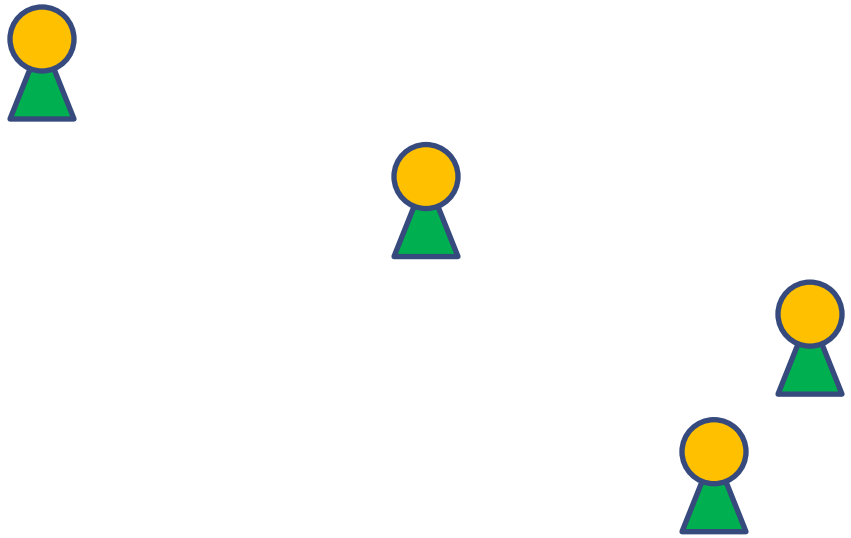
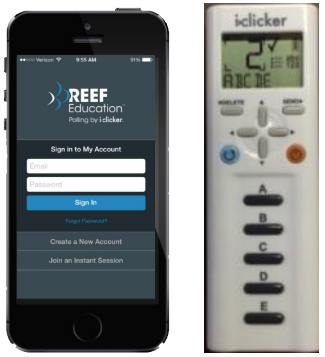


What can REEF do for you?

A. Give every student a voice
B. Assign participation grades
C. Track student understanding
D. Identify at risk students
E. All of the above



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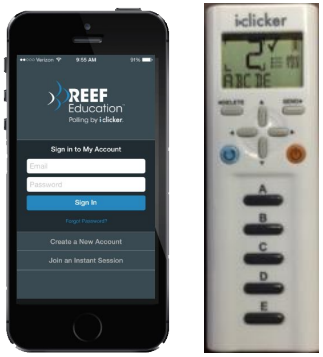

What do classrooms look like today?

Polling improves Engagement

- Behavior change (pre-reading)
- Boosts confidence
- Challenge students to think
- Break up the class
- Assign grades
- Keep instructor connected to students' learning
- Attendance

How motivated are you to take this physics class on a scale from A-E

A. Very motivated
B. Somewhat motivated
C. A little motivated
D. Not Motivated
E. Actively unmotivated

What grade do you expect in this class?

A. A

B. B

C. C

D. D

E. F

What grade do you expect *to earn* in this class?

A. A

B. B

C. C

D. D

E. F

Climbing the Rope

When you climb up a rope, the first thing you do is pull down on the rope. How do you manage to go up the rope by doing that??

a) this slows your initial velocity, which is already upward

b) you don't go up, you're too heavy

c) you're not really pulling down—it just seems that way

d) the rope actually pulls you up

e) you are pulling the ceiling down

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When you pull down on the rope, the rope pulls up on you!! It is actually this upward force by the rope that makes you move up! This is the "reaction" force (by the rope on you) to the force that you exerted on the rope. And voilá, this is Newton's Third Law.

Any Questions?

- More examples yet to come

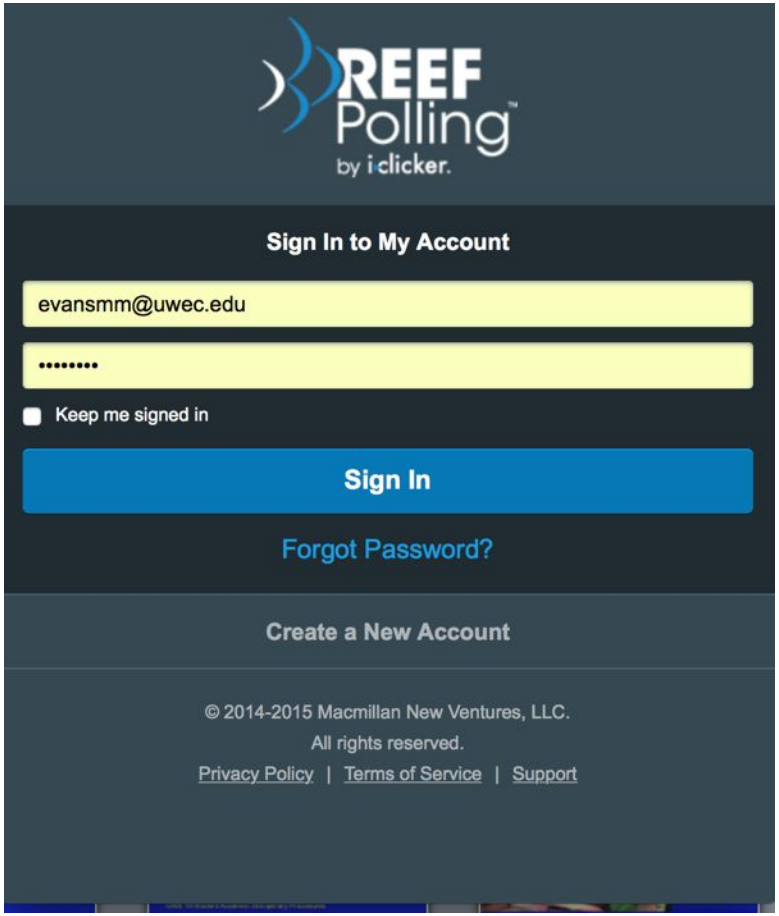
REEF Polling on a device

Apple, Android & Web

Laptop, Tablet or Phone

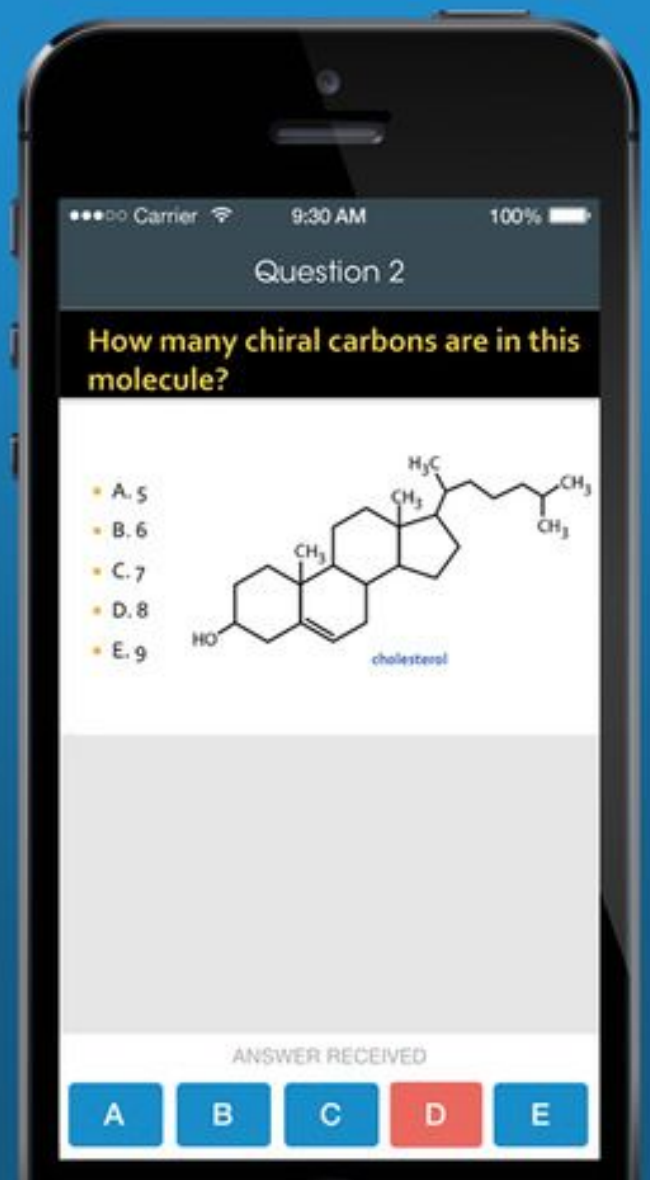
i>clicker
REEF

i>clicker
Remotes

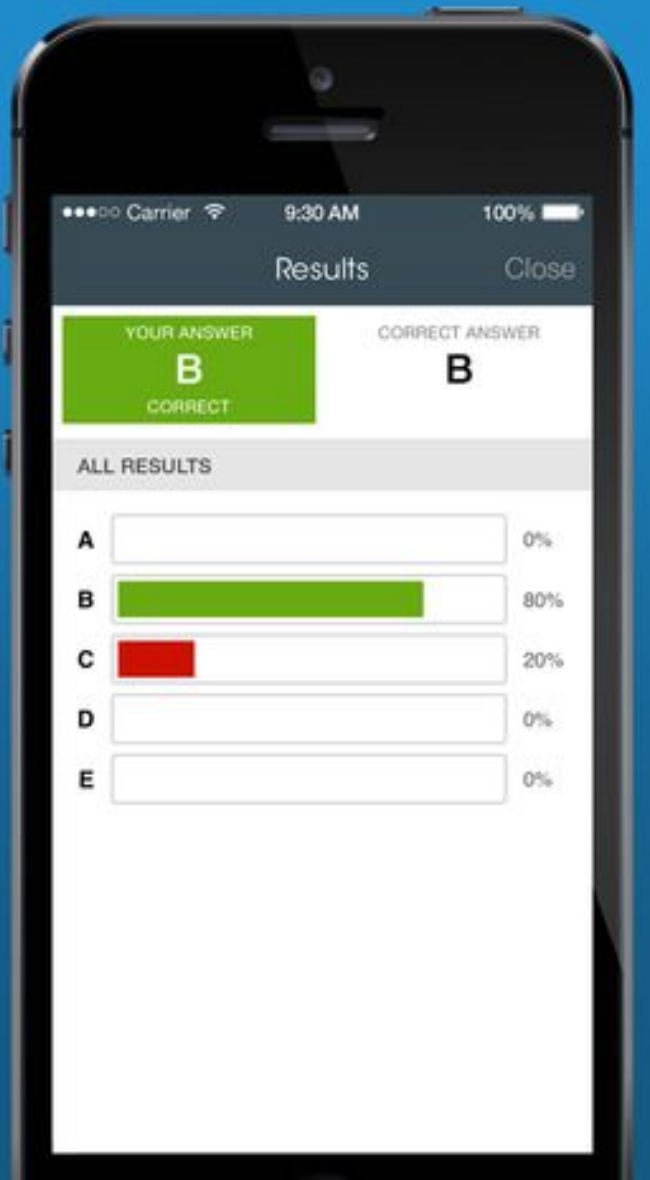


Both device and clicker can be used in same class!

Receive high-resolution images of your instructor's screen



View result details including class results



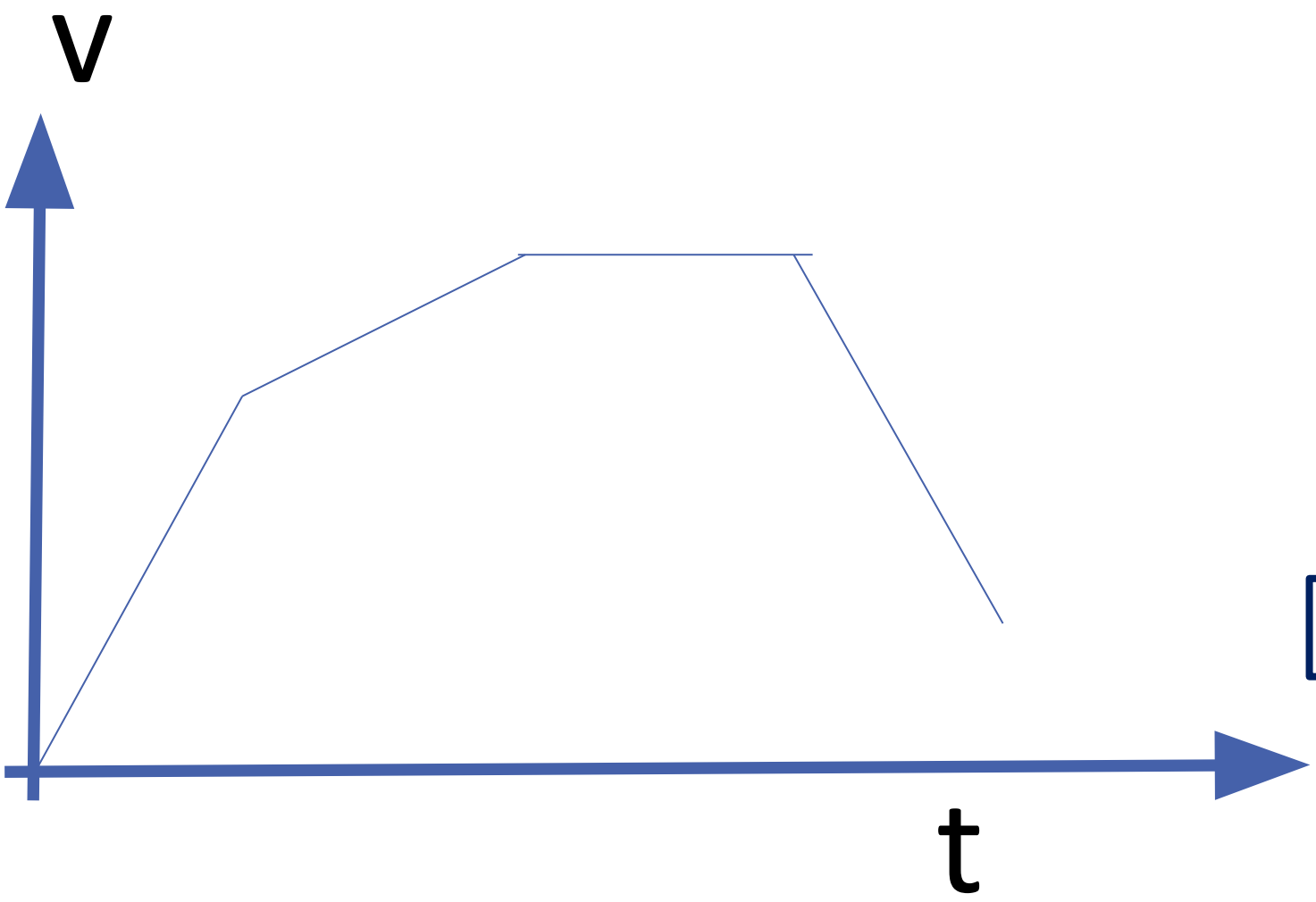
Reviewing Sessions

Classroom Extension

Study Tool

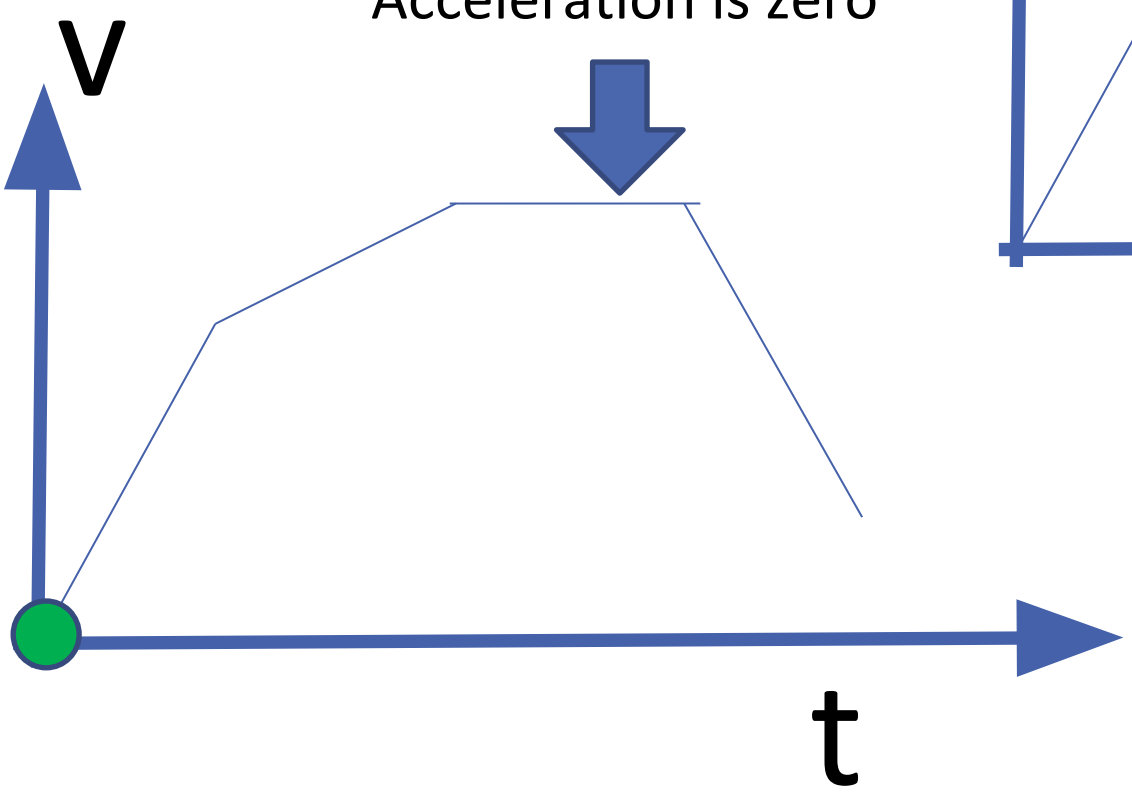
Self-Assessment

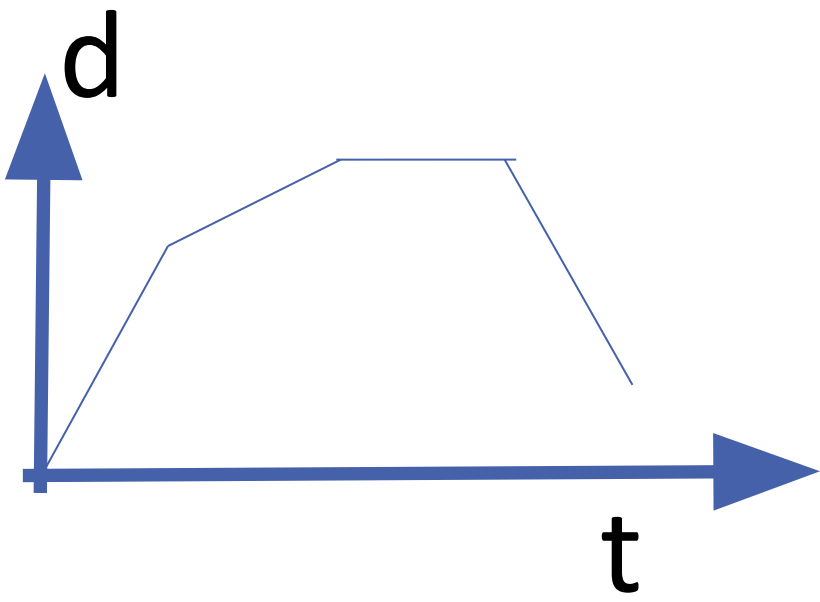
Click on the graph where the velocity is zero

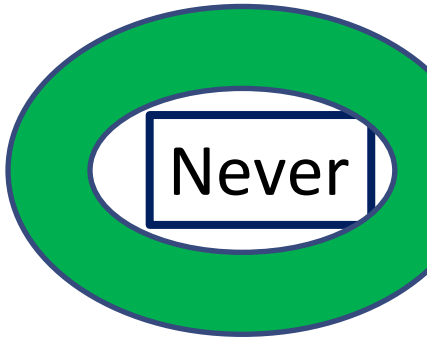


Never

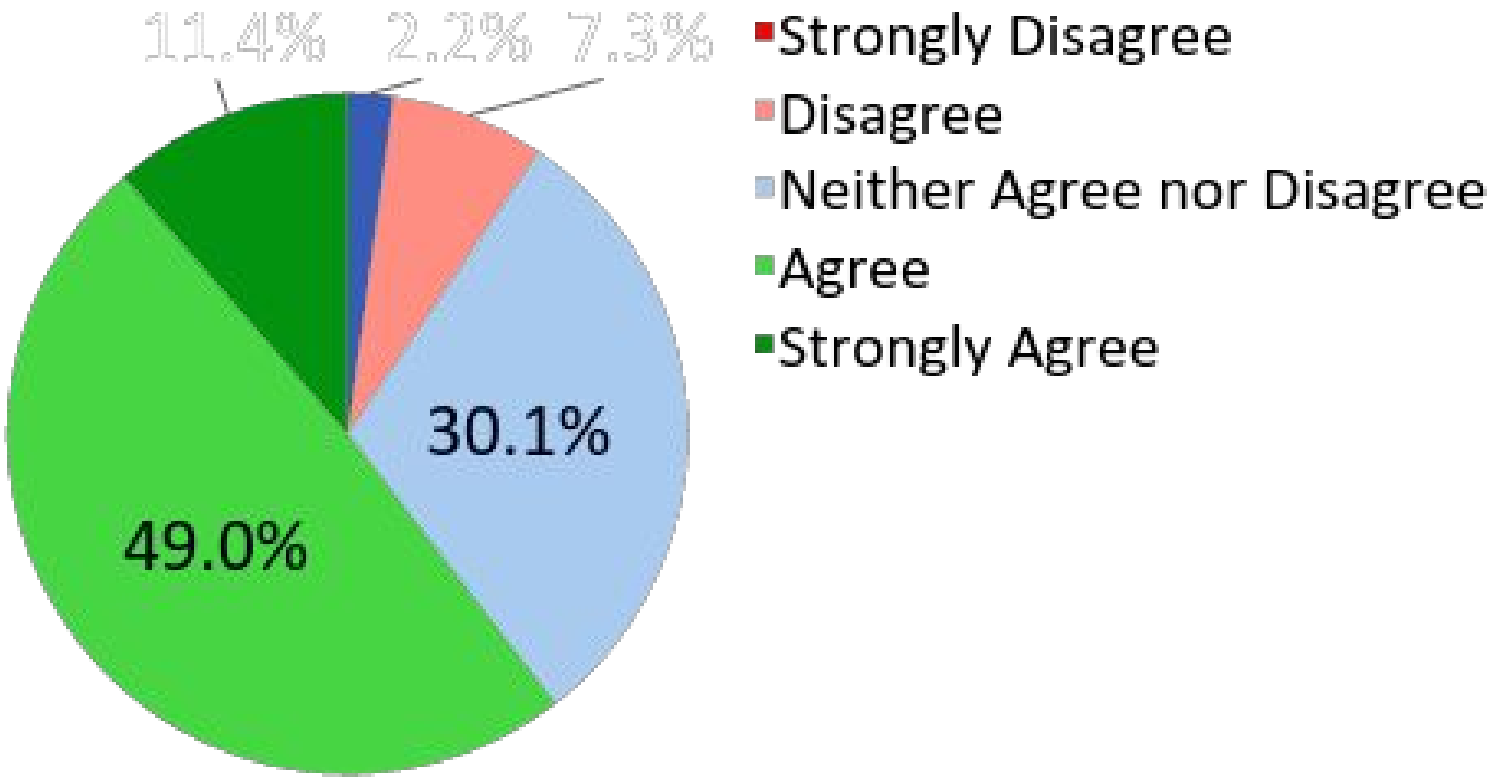
Click on the graph where the velocity is zero



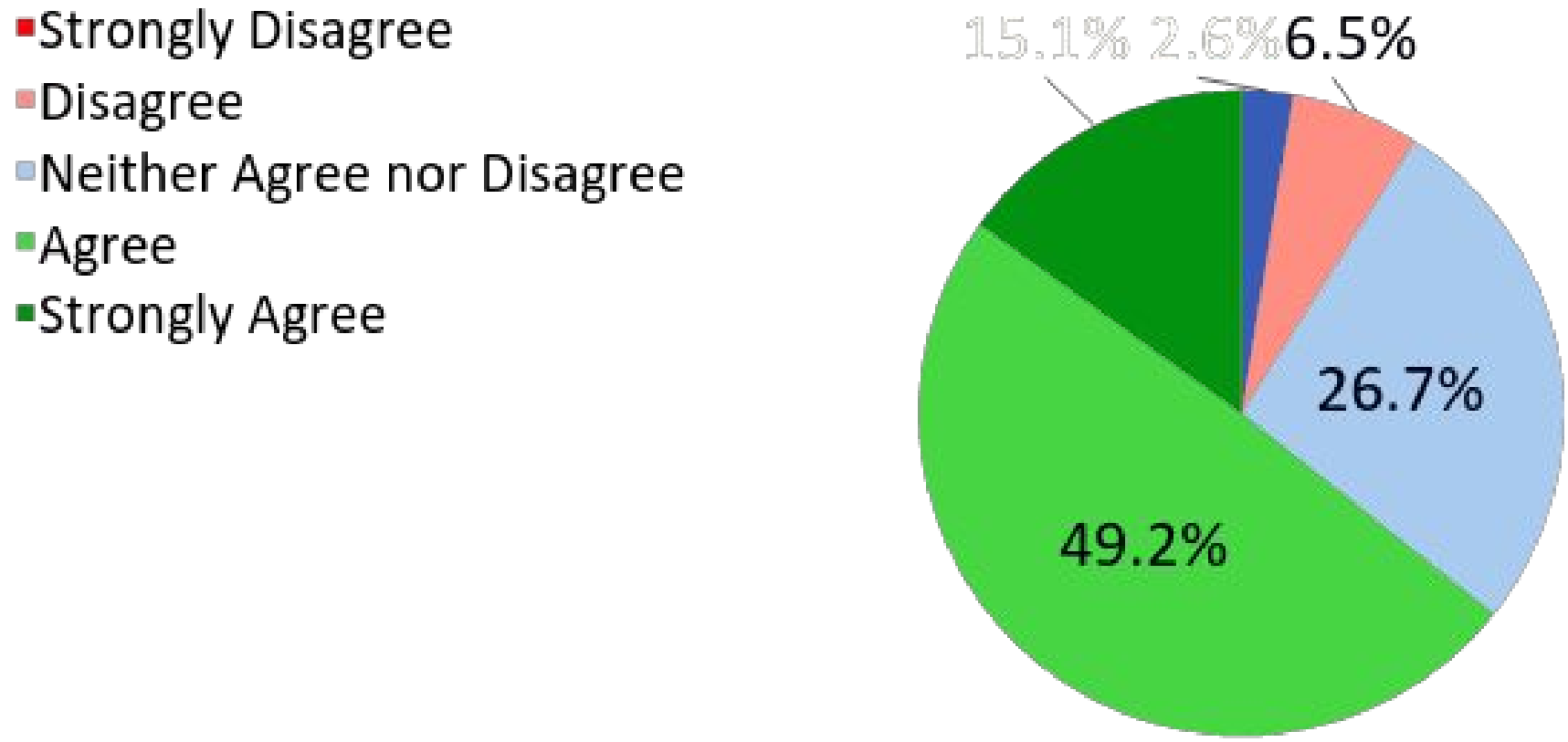




Level of agreement: “I really enjoy using REEF polling in class”



Level of agreement: “Using REEF polling helps me learn”



Advice to Faculty: Be consistent and sell, sell, sell

- Add a clicker policy to your syllabus
- Explain your grading policy
- Explain why you are using polling
- Explain again later in the semester why you are using the clickers when good questions come up
- True for any new technique you use!

When a ball is thrown in the air at the very top its acceleration is

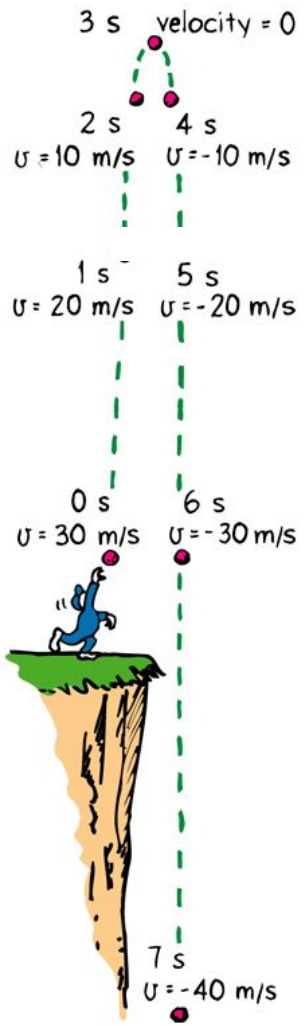
A Slightly positive

B Zero

C Slightly negative

D $-9.8\ m/s^2$

E A little bigger than $-9.8 m/s^2$



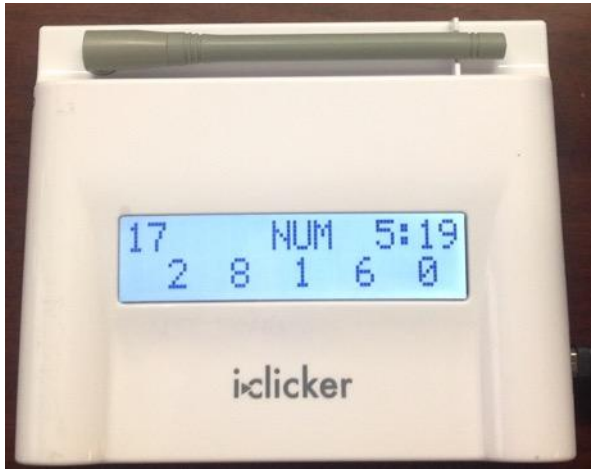
Let's try that again!

(Students groan)

YOU decide what to do next!

- Show results
- Take away most common wrong answer & poll again
- Peer instruction
- Ask another probing question

i>clicker inspired *Just in Time Teaching*!



Desktop unit shows distribution of answers A-E

If a car is at rest, and has an acceleration of 0 $^{m}/_{s^2}$ how fast is it moving 1s later?

- A 0 $^{m}/_{s^2}$
- B 0 $^{m}/_{s}$
- C -9.8 $^{m}/_{s^2}$
- D -9.8 $^{m}/_{s}$
- E +9.8 $^{m}/_{s}$

When a ball is thrown in the air at the very top its velocity is

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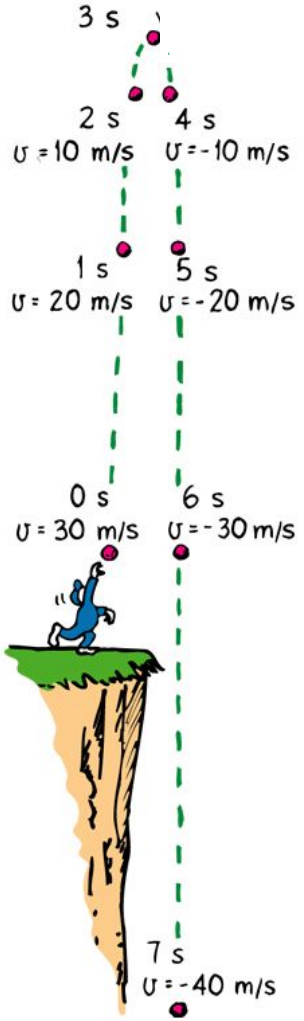

When a ball is thrown in the air at the very top its acceleration is

A ~~Slightly positive~~

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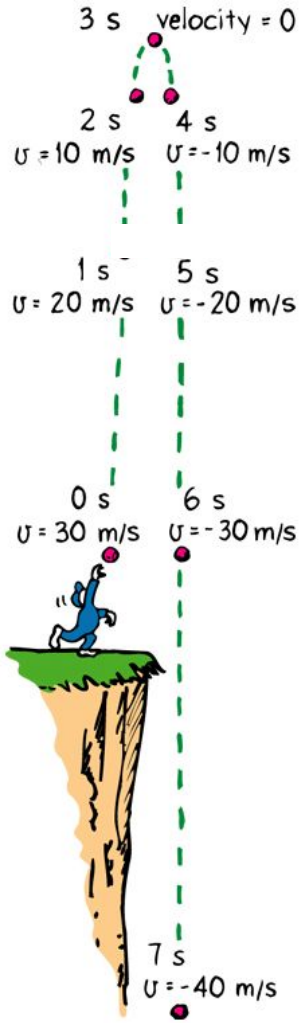

Make it CHALLENGING!

- Don’t make it too easy, or they drift off
  (I shoot for questions with less than 2/3rds get it correct)

Make them talk to each other!

- Learning happens! Listen to them!

Bring it back to group discussion

- Help them wrap up the concept

You flip 2 pennies. Which result is most common?

A. 2 Heads
B. 1 head and 1 tail
C. 2 Tails
D. All equally likely
E. A & B most common and equally likely

Think-pair-share

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	Coin #1 Heads	Coin #1 Tails
Coin #2 Heads	2 Heads	Heads & Tails
Coin #2 Tailss	Heads & Tails	2 Tails

Your sister in law calls to say that she's having *identical* twins. Which of the following is the most likely?

- A) Twin boys
- B) Twin girls
- C) One girl and one boy
- D) All are equally likely
- E) A & B are equally likely

Tests vocabulary *and* statistics

- A)Twin boys
- B)Twin girls
- C)One girl and one boy
- D)All are equally likely
- E) A & B are equally likely
- And IF you are in a genetics class…

Fraternal Twins

Identical Twins

	Baby #1 Boy	Baby #1 Girl
Baby #2 Boy	2 Boys	~~Boy & Girl~~
Baby #2 Girl	~~Boy & Girl~~	2 Girls

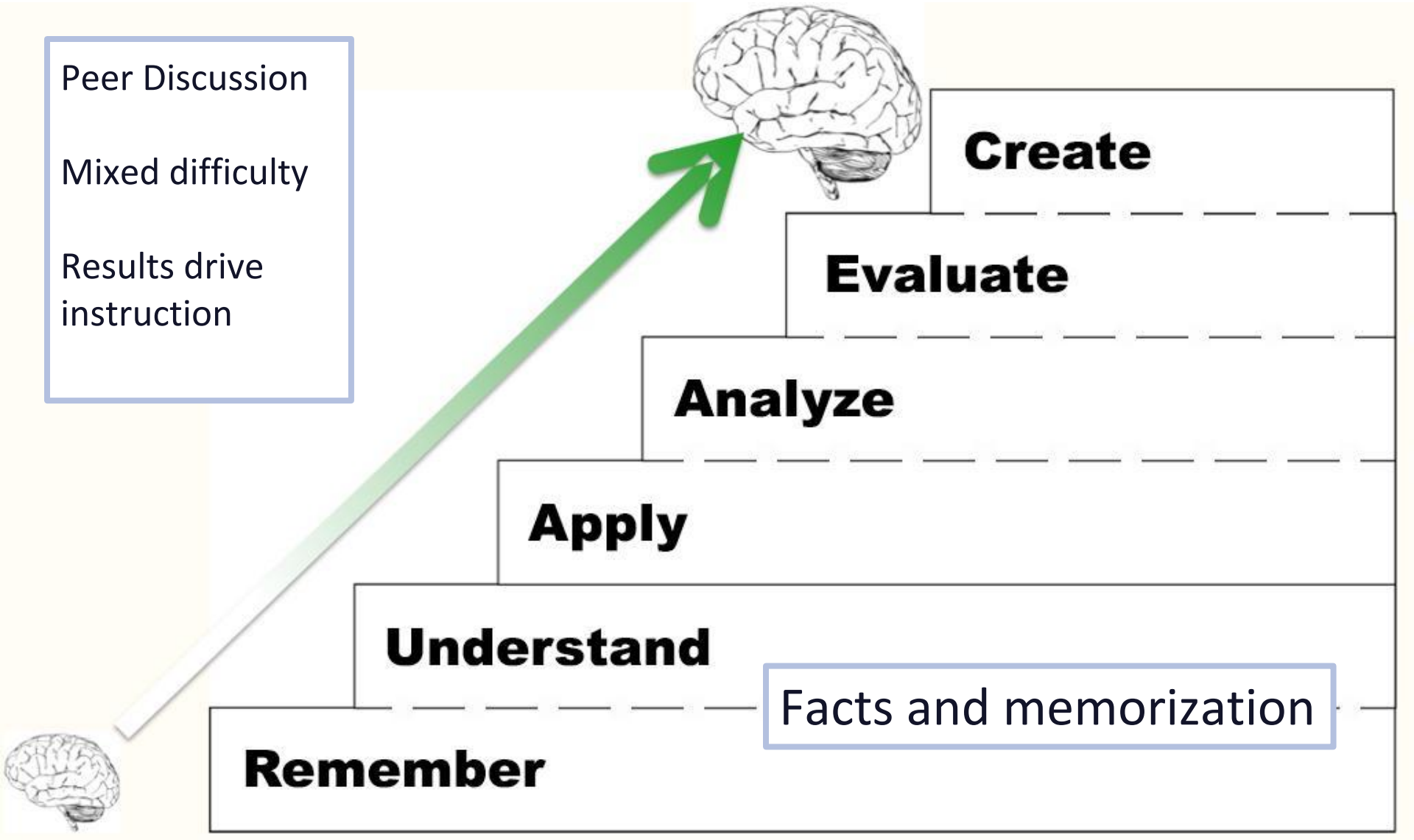
http://marvelousfacts.blogspot.com/2010/11/interesting-facts-about-twins-identical.html

Bloom's Taxonomy & Polling Questions

Peer Discussion

Mixed difficulty

Results drive instruction



Thank you!

- Matt Evans: evansmm@uwec.edu

You will be sent a summary of this presentation.