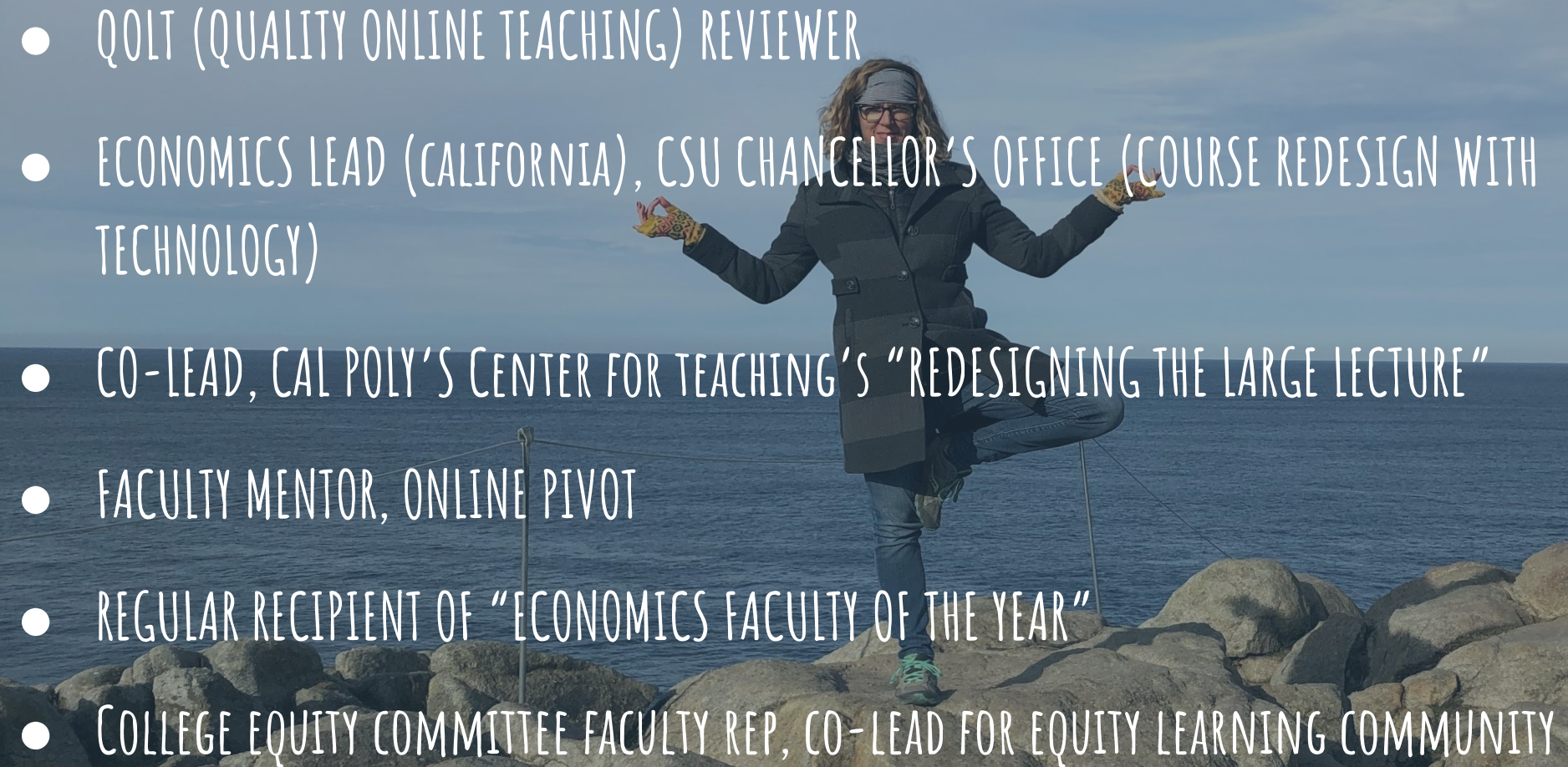


HOW TO USE ICLICKER AND TECH TOOLS TO BUILD CONNECTION



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- 
- QOLT (QUALITY ONLINE TEACHING) REVIEWER
 - ECONOMICS LEAD (CALIFORNIA), CSU CHANCELLOR'S OFFICE (COURSE REDESIGN WITH TECHNOLOGY)
 - CO-LEAD, CAL POLY'S CENTER FOR TEACHING'S "REDESIGNING THE LARGE LECTURE"
 - FACULTY MENTOR, ONLINE PIVOT
 - REGULAR RECIPIENT OF "ECONOMICS FACULTY OF THE YEAR"
 - COLLEGE EQUITY COMMITTEE FACULTY REP, CO-LEAD FOR EQUITY LEARNING COMMUNITY



AGENDA

- **Why** tech tools in active learning?
- Using **polling** in **multiple modalities** and with **teamwork**
- **Examples**
- **Q and A**

FIRST THINGS FIRST...

**We are
exhausted.**

AND SO ARE STUDENTS.

**Complaining is not
a strategy.**

WE NEED LOW-COST, HIGH-BENEFIT
INTERVENTION STRATEGIES
(FOR US AND THEM!)

WHAT'S NEEDED
NOW MORE THAN
EVER?

Flexibility.



WE TEACH AT AN
INTERESTING MOMENT.
**What should
we do?**

WORTH REMEMBERING

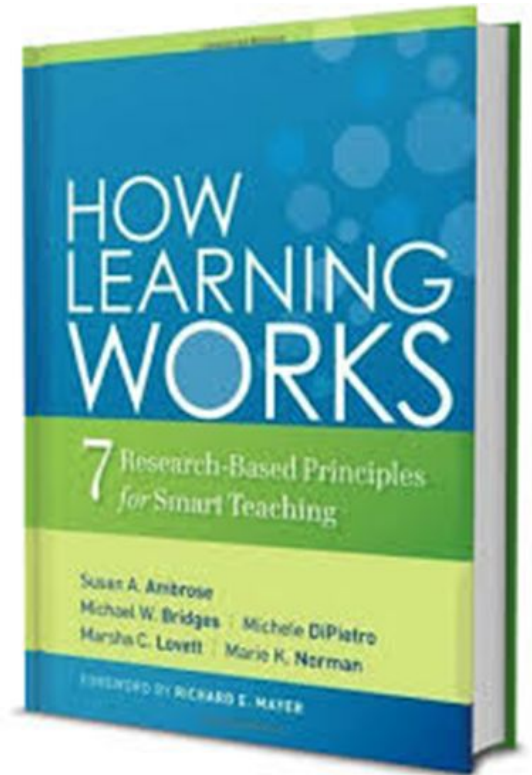
*At their age, we
probably were **not**
like average
students*



THE DISCONNECT MATTERS

We must rely on learning science to bridge it

Works for all types of learning (online, hybrid, face-to-face)



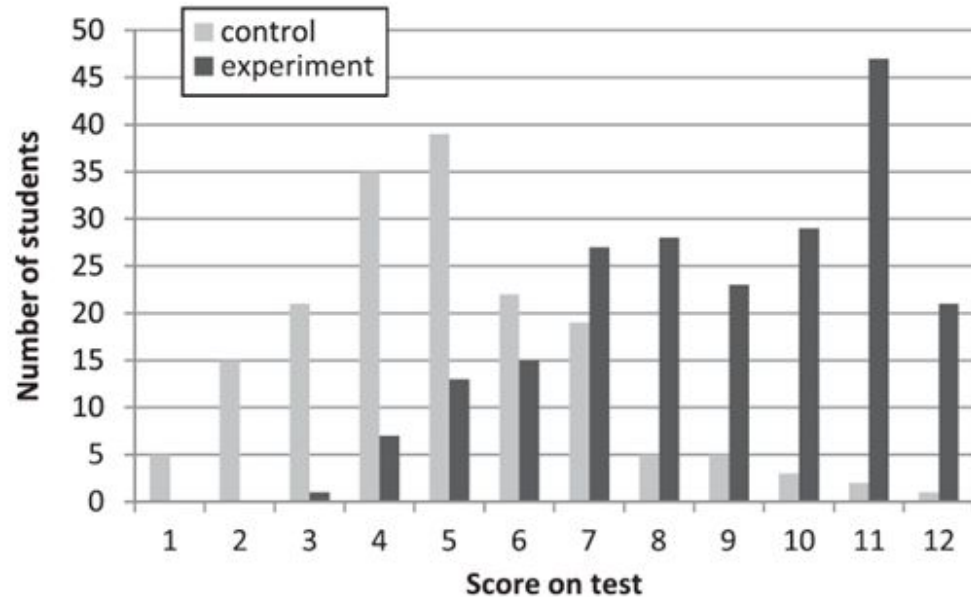


OUR DEFAULT MODEL: PASSIVE

Active Learning +
PEER ENGAGEMENT + ACCOUNTABILITY.

IMPROVED LEARNING IN A LARGE-ENROLLMENT PHYSICS CLASS (DESLAURIERS ET AL 2011)

Fig. 1. Histogram of student scores for the two sections.



“We compared the amounts of learning achieved using two different instructional approaches under controlled conditions. We measured the learning of a specific set of topics and objectives when taught by 3 hours of traditional lecture given by an experienced highly rated instructor and 3 hours of instruction* given by a trained but inexperienced instructor using instruction based on research in cognitive psychology and physics education. The comparison was made between two large sections ($N = 267$ and $N = 271$) of an introductory undergraduate physics course. **We found increased student attendance, higher engagement, and more than twice the learning in the section taught using research-based instruction.**”

**instruction in the experiment group consisted of problems with peer instruction, no lecture*

WHAT TO DO IN CLASS NOW?

- Applications
 - Discussions
 - Mini-Lectures on hard stuff
 - Harder/more complex problems
 - Presentations/Debates
- 
- A photograph of a classroom full of students, mostly young women, sitting at their desks. They are all looking towards the front of the room, presumably towards a lecturer. The students are dressed in casual attire. The image is slightly dimmed to allow the white text of the list to stand out.

CUTTING THROUGH THE CHAOS, KEEPING IT SIMPLE AND DELIBERATE

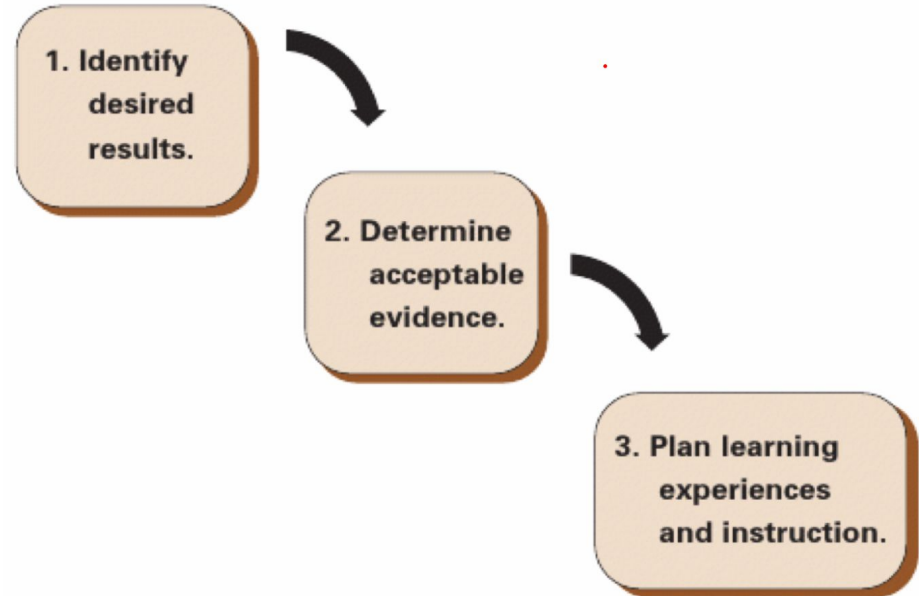
Backward design:

What do you **REALLY** want them to know?

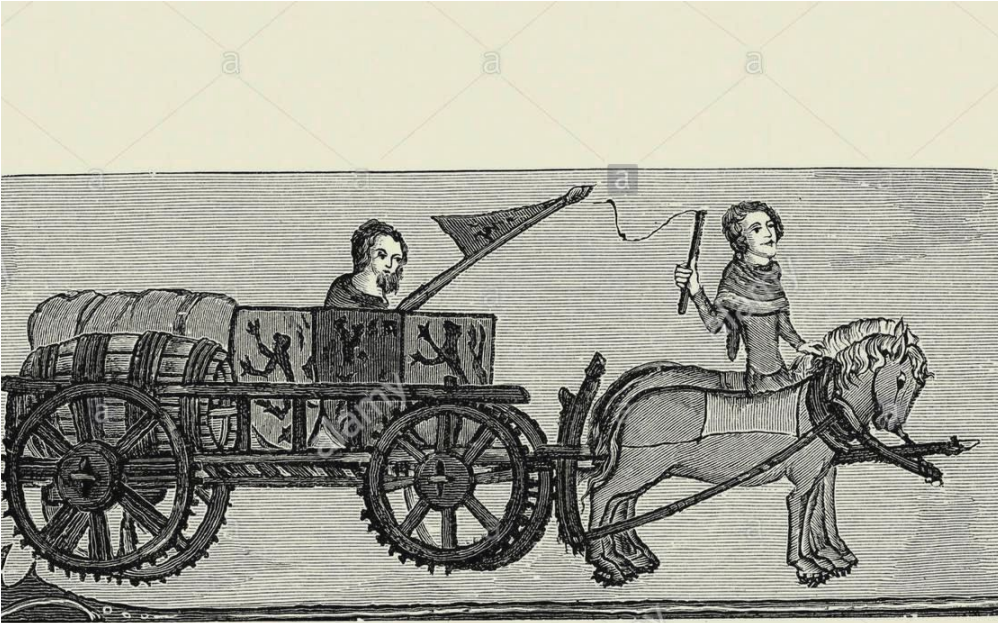
- Are you driving the class content (as much as you can?)
- This is what drove my teaching evolution

Figure 1.1

UbD: Stages of Backward Design



14TH CENTURY VS. 21ST CENTURY TRANSPORTATION



CART, A.D. 1338—1344.
MS. Bodl. Misc. 264.



CAN YOU SPOT THE DIFFERENCES?



EDUCATIONAL TECHNOLOGY: **progress(?)**





zoom

EDUCATIONAL TECHNOLOGIES HELP WITH

→ Engagement

- ◆ formative assessment
- ◆ team-based learning

→ Grading

→ Pivoting modalities if needed

→ Equalizing voices in the classroom

→ Creating effective online instruction...

→ and then leveraging it when we return to the classroom

(PLAYPOSIT) VIDEOS + EMBEDDED QUESTIONS

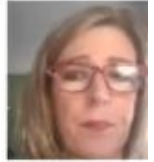
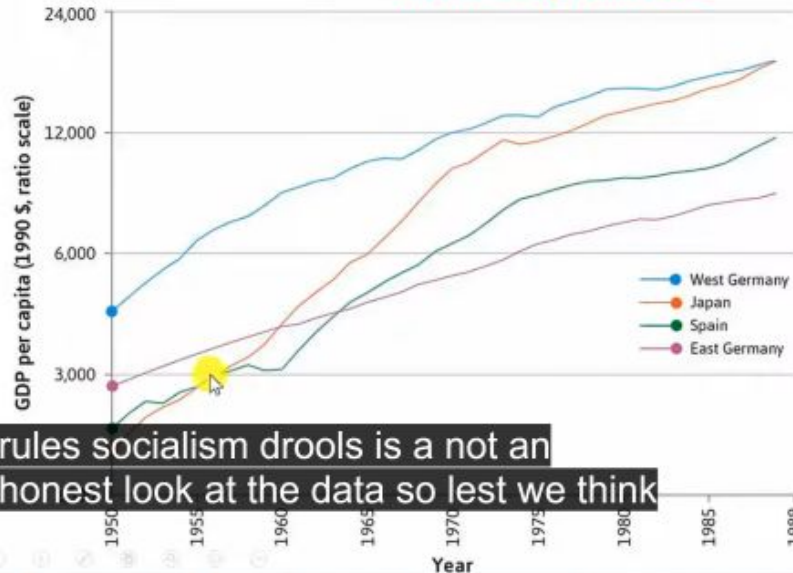
What is wrong with the assertion that capitalism always creates faster growth than socialism in this graph?

- ☐ Japan grew faster than "both" Germanies, despite being the closest to socialism of all three
- ☐ although East Germany is richer than West Germany, West Germany started from a lower position
- ☐ although West Germany is richer than East Germany, East Germany started from a lower position
- ☐ Spain is the richest of all countries shown, and it has a monarchy

10:59 23/24

DID CAPITALISM CAUSE THE HOCKEY-STICK GROWTH?

In an economy made up of interactions of millions of people, we cannot measure and understand all interactions. Sometimes, **natural experiments** can help us investigate causal relationships.



Example:

The division of Germany at the end of World War II into two separate economic systems, **capitalist in the west and centrally planned in the east.**

OTHER VIDEO + QUESTION SOFTWARES


- PlayPosit
- EdPuzzle
- Kaltura
- Nearpod
- Ted-Ed
- Others?

A WORD ABOUT INTERLEAVING

When students are **assessed** on a concept **at least 3x** throughout the term and were **required to view answers**, **performance improved 11%**

(Integrating Cognitive Science and Technology Improves Learning in a STEM Classroom," Butler et al., Educational Psychology Review, June 2014)



A close-up photograph of a woman with long dark hair and brown eyes. She has a wide-eyed, surprised, or perhaps shocked expression on her face. Her right hand is pressed against her mouth, with her fingers partially covering it. She is wearing a dark blue jacket. The background is slightly out of focus, showing what appears to be an outdoor setting with a concrete surface and a dark object in the distance.

COURSE CLIMATE
MATTERS.... NOW
MORE THAN EVER

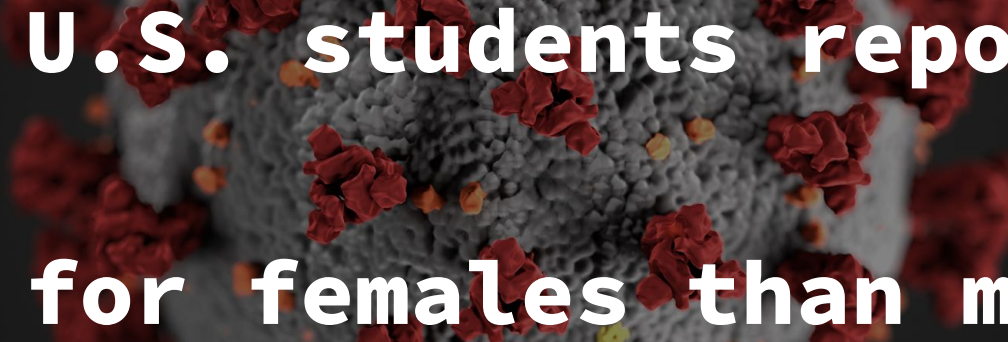
learning
interacts with
the social,
emotional and
intellectual
climate

**First-year
stress is
complex and
compounding.**



STRESSORS KEEP COMING

Meta-Analysis:



**56 % of U.S. students report
anxiety
(higher for females than males)**

"A meta-analysis of the prevalence estimate of anxiety yielded a summary prevalence of 41% (95% CI = 0.34-0.49), with statistically significant evidence of between-study heterogeneity ($Q = 88801.97$, $I^2 = 100\%$, $p \leq 0.0001$). A subgroup analysis reported anxiety prevalence in Asia as 33% (95% CI: 0.25-0.43), the prevalence of anxiety in Europe as 51% (95% CI: 0.44-0.59), and the highest prevalence of anxiety in the USA as 56% (95% CI: 0.44-0.67). A subgroup gender-based analysis reported the prevalence of anxiety in females as 43% (95% CI: 0.29-0.58) compared to males with an anxiety prevalence of 39% (95% CI: 0.29-0.50). University students seem to have a high prevalence of anxiety, indicating an increased mental health burden during this pandemic." (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8758929/>)

SHARE YOUR STORY- IT MATTERS

(BY SOME ACCOUNTS: ABOUT 1/3 OF STUDENT MOTIVATION)



<https://www.youtube.com/watch?v=w1LSS9Q3mnQ>



SELF-DIRECTED LEARNING



Requires helping students monitor and adjust their approaches

SELF-REGULATED LEARNING

Takes place over time:

Before, during and after a learning session

- **Planning**
- **Self-Monitoring**
- **Self-Evaluating**


Schraw, 1998

- **Forethought**
- **Performance/
Volition
Control**
- **Self-Reflection**

Zimmerman, 1998, 2002

LOW-STAKES PLENTIFUL PRACTICE REDUCES
STRESS AND IMPROVES EFFORT

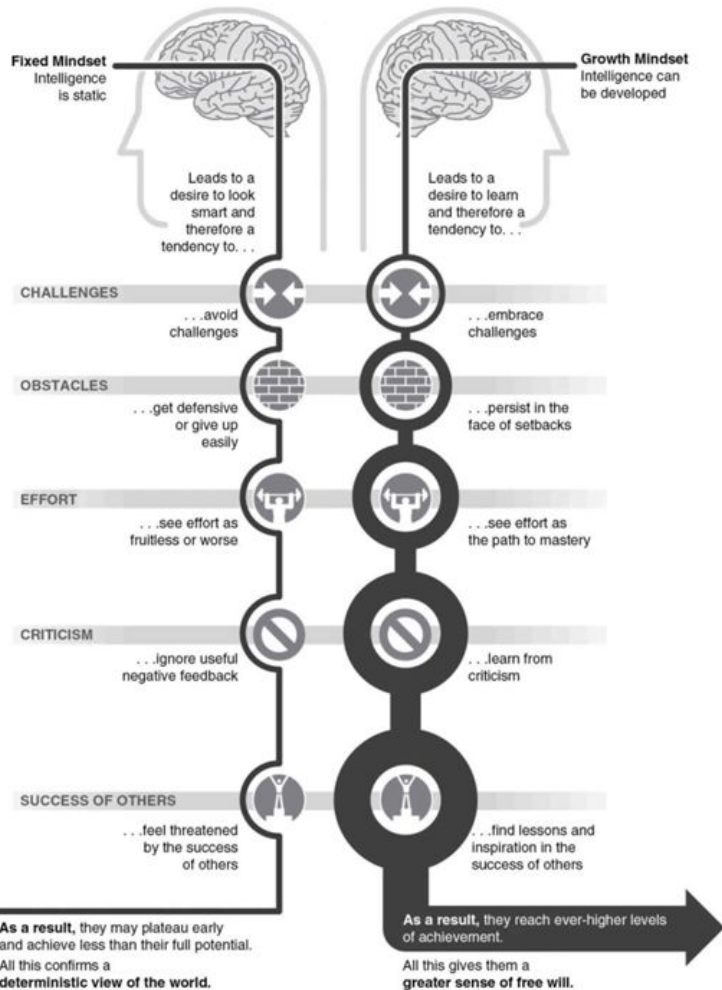




RESILIENCE

Message A Growth Mindset

**Improve resilience, effort and
motivation**



HOW POLLING SOFTWARE HELPS ME

**It connects all of the other
moving parts together**



It is my constant.

LEVERAGE: HOW DO I MAKE USE OF ALL THE RESOURCES I CREATED DURING LOCKDOWN?



What national stockpile is mentioned, and what is it for?

- ☐ Chickens, for vaccine reasons
- ☐ Beans, for police non-lethal weapons
- ☐ Aircraft, for military reasons

SUBMIT

03:30
09:28



GOVERNMENT
AS CORRUPT
AND SELF-
INTERESTED



least partly inside the u.s. of course
this does not mean that all governments



YouTube





Top reasons I use iClicker:

1. **Engagement:** Increases (inclusive) student engagement with material
2. **Peer Effect:** Works well with **team-based learning** (emphasis on problem-based learning and peer accountability)
3. **Nimble:** Works well in any modality to support active learning
4. **Flexible, “Just-in-time”:** It is compatible with any delivery, requires no prior set-up

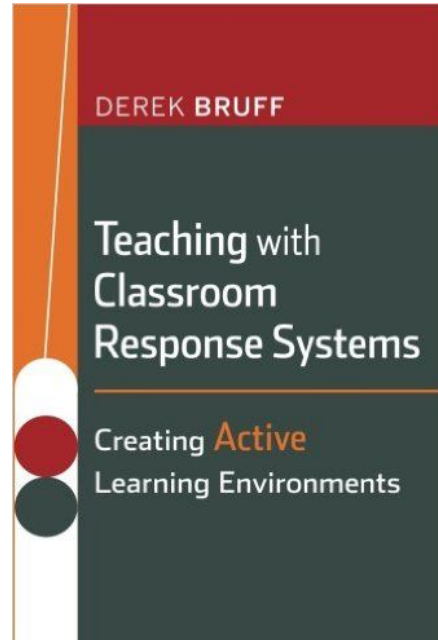


Top reasons I use iClicker:

- 5. **Growth Mindset:** allows more low-stakes practice
- 6. **Fosters Community:** in a fragmented world
- 7. **Energizing: It connects me to my students** in ways that cannot happen otherwise

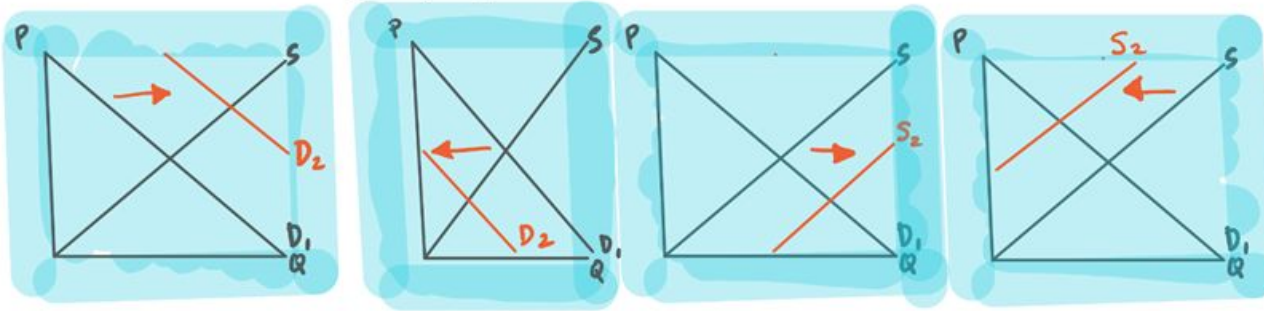
POLLING SOFTWARE (LIKE ICLICKER) USEFUL FOR:

- Recall
- Conceptual understanding
- Application
- Critical thinking
- Student perspectives
- Experiments
- Confidence level



TARGET QUESTIONS

If the popularity of cashews were to rise following the publication of new research into their health benefits, touch on the graph that shows the outcome. (Remember to assume all other things equal)



CONCEPTUAL UNDERSTANDING QUESTIONS

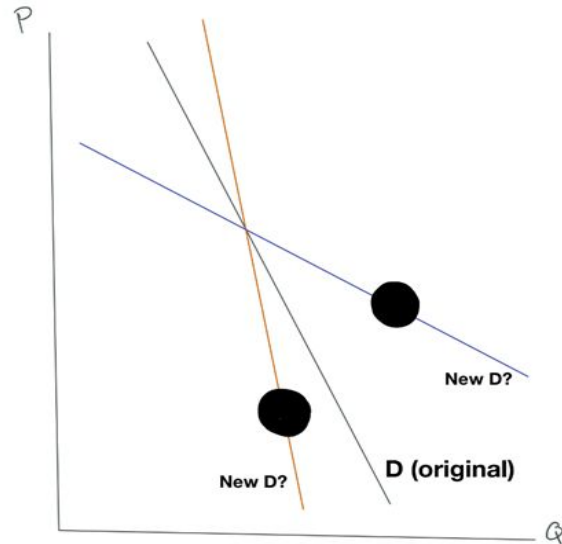
Which of the following is the best example of a complementary good for gasoline?

Touch on the best answer.



CONCEPTUAL UNDERSTANDING QUESTIONS

Consider what would happen to the demand curve for a pharmaceutical drug whose patent protection expires and multiple new generic substitutes appear on the market. Touch the new demand curve for this product (touch the dot of the curve you choose)



ASYNCHRONOUS 'ASSIGNMENTS'

Break free with Assignments

Students can work at their own pace with iClicker's new asynchronous feature

- ✓ Deliver pre-authored, lightweight assessment for students to complete before, during, or after class
- ✓ Teaching asynchronously? Promote participation and gather student feedback, no matter what 'class' looks like
- ✓ Utilize flexible polling question types for students to work through on their own
- ✓ Complement iClicker's real-time engagement tools and take-anywhere study guides

ENERGIZE DISCUSSIONS

Merit-based immigration

Would you favor a **'merit' based immigration system that rewards more highly skilled immigrants** than low-skilled immigrants?

- a. Yes
- b. No
- c. Not sure

^ Response

Count



A

7 (23%)



B

13 (43%)



C

10 (33%)



PROVOCATIVE QUESTION

Is migration a basic human right?

Is migration a basic human right?

- a. Yes
- b. No

TEAM ACCOUNTABILITY AND PEER LEARNING

Provocative question
Wed (poll)
Apr 20, 2022

Poll

Session 3 - 04/20/22

35 Participants , 100.00% Class Average

Team quiz on material

Quiz

tRAT- 04/20/22

35 Participants , 85.19% Class Average

Individual quiz on material

Quiz

iRAT - 04/20/22

32 Participants , 70.74% Class Average

INDIVIDUAL (THEN TEAM) QUIZ

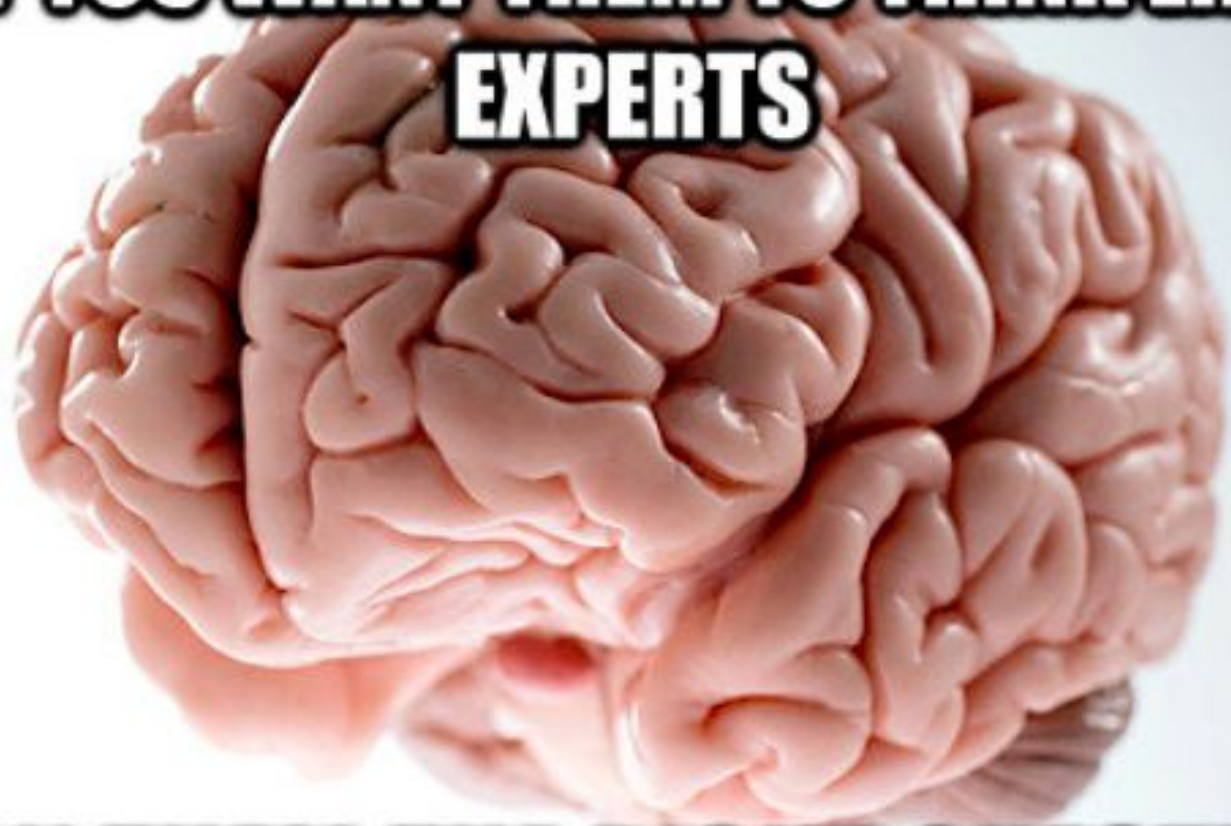
1. (Hamilton video) Since some people benefit from having a divided economy in which some citizens have more opportunity and privilege (“overprivilege”) than others, there may be incentives for them to protect the “wall” keeping others out. This describes the:
 - a. Tunneling tax problem
 - b. Human capital problem
 - c. Principal-agent problem
 - d. Bargaining theory problem
 - e. Stratification economics theory
2. (H of E) What does the film “Harvest of Empire” argue?
 - a. That it is prior political actions by the U.S. during the Cold War that have created the incentive for Russia to engage in stealth propaganda wars
 - b. That César Chavez would have been less successful if the farming industry were more concentrated
 - c. That the political instability we have contributed to in Latin America creates the kind of chaos and disarray that leads to more immigration, and the U.S. thus has a moral obligation to its people who feel unsafe in the situation that we helped create
 - d. All of the above
 - e. A and B
3. (CC) What did the Mariel Boatlift experiment conclude?
 - a. That raising the minimum wage hurts low-skilled workers and small businesses especially hard
 - b. That Americans’ opinions of immigration are largely shaped by politicians who craft overly simplistic stories like the false Mariel “boatlift” of immigrants from Venezuela
 - c. That it is primarily the overall state of the economy (recession or expansion) that determines whether Americans support more open immigration
 - d. That crime rises more in border cities and large cities when immigration “events” happen than in rural or inland areas
 - e. That a large influx of low-skilled immigrants did not create a surge in unemployment



STUDENTS' PRIOR
KNOWLEDGE
CAN BE A HELP...
OR A HINDRANCE

*Preconceptions
quizzes.*

**IF YOU WANT THEM TO THINK LIKE
EXPERTS**



ASK THEM THE RIGHT QUESTION

RECALL QUESTIONS

An economy that has the lowest opportunity cost of producing a particular good is said to have:

- ☐ an absolute advantage in production of that good.
- ☒ a comparative advantage in production of that good.
- ☐ a production possibility frontier.
- ☐ an increasing opportunity cost in production of that good.

Bloom's Level: Remembering | Chapter: Chapter 2 | Level of Difficulty: Easy |

Question Type: Multiple Choice | Question Order: 1 |

Topic: Comparative Advantage and Gains from Trade

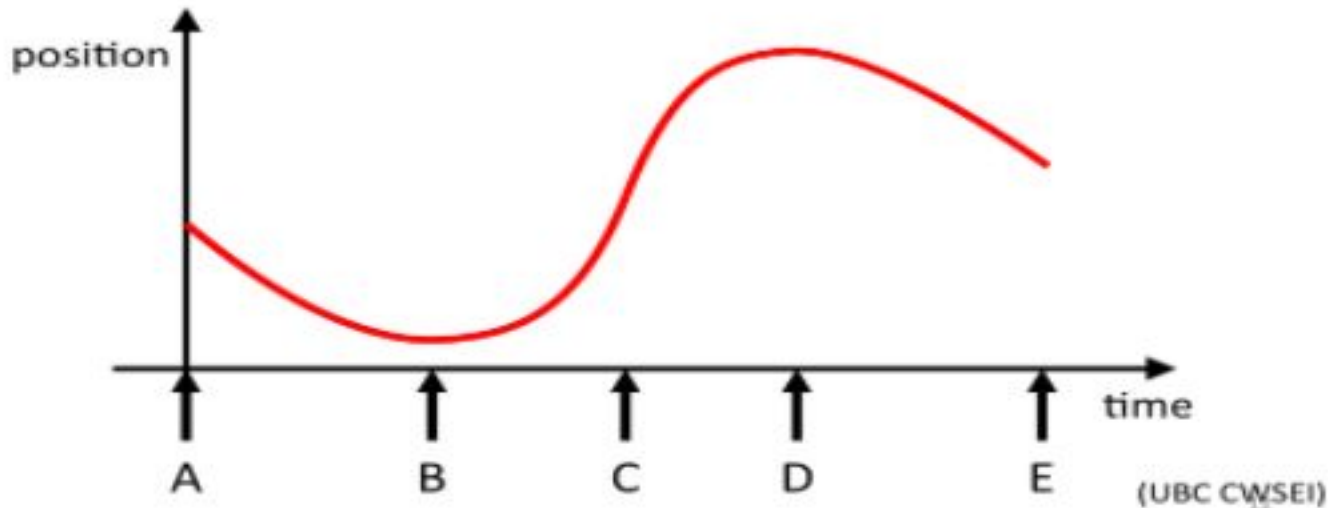
CONCEPTUAL UNDERSTANDING QUESTIONS

What is the definition of velocity?

- a) time over distance
- b) distance over time
- c) distance over time, but with a direction implied
- d) acceleration over time
- e) more than one

OR BETTER YET...

John is walking to school. This graph shows his position as a function of time. When is John moving with the greatest velocity?

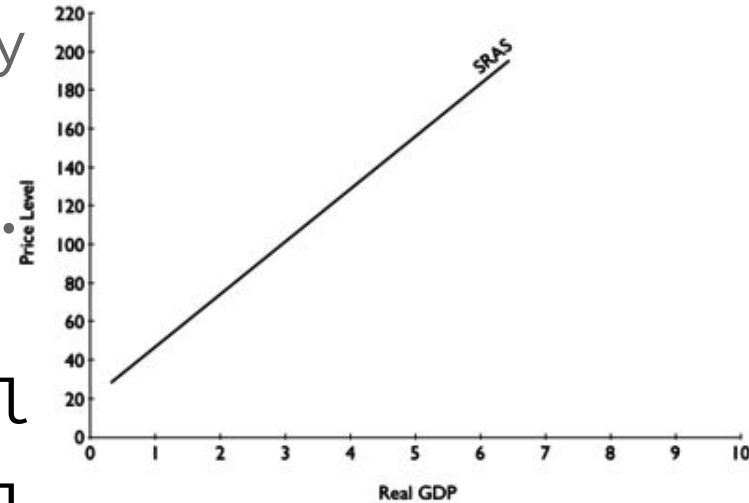


MORE CONCEPTUAL UNDERSTANDING QUESTIONS

Graph the effect of wages becoming MORE sticky than they currently are (assume current state is shown below in SRAS).

Is your graph:

- a) Less steep than the original
- b) More steep than the original



APPLICATION QUESTIONS

In the 1970s, the organization of petroleum exporting countries (OPEC) instituted an oil embargo to the U.S. which led to high inflation and high unemployment.

- a. SRAS shifted left
- b. SRAS shifted right
- c. AD shifted left
- d. AD shifted right

CRITICAL THINKING QUESTIONS

What do you think is the most important takeaway from today's class?

- a) That the **poor suffer from a “tunneling tax”** and so are unable to make productive choices with cash grants; in-kind aid like mosquito nets is best
- b) That **microloans (small cash loans) to women yield more benefit** than similar-sized loans to men
- c) That **aid programs have been too pushy with ethical/moral guidelines** attached to aid and this has caused confusion and failure
- d) That **cash is more valuable (and flexible) in alleviating poverty than in-kind aid** but lack of banking infrastructure makes cash grants difficult

STUDENT PERSPECTIVES QUESTIONS

- Ross Cheit , Ethics Policy class at Brown university:

Are you morally obliged to report cheating if you know about it?

- The room began to hum, but no one so much as raised a hand.
- “within 90 seconds, Cheit had roughly 150 student responses displayed on an overhead screen, plotted as a multicolored bar graph – 64 percent said yes, 35 percent, no.”

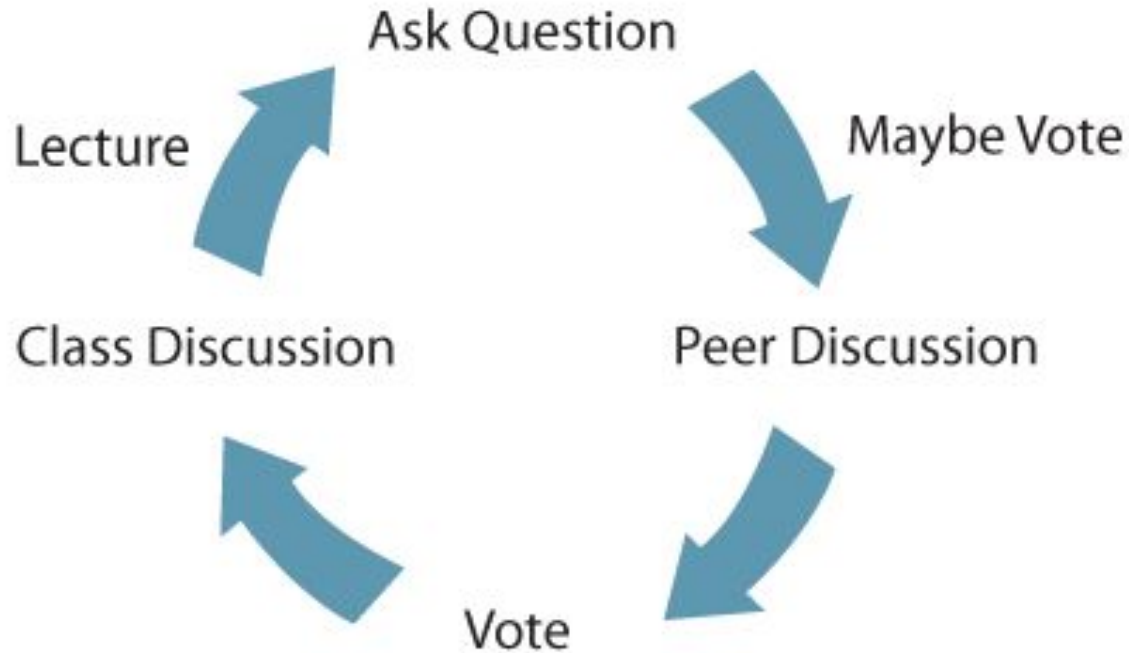
STUDENT PERSPECTIVES QUESTIONS

Choose A or B.

If 100% choose A, all get 3 points.

If anyone chooses B, they get 1 point per person and each person who answers A earns 0.

PEER INSTRUCTION BASIC FORMAT



Peer Instruction Model by Eric Mazur

FINDING
THE SPARK
AGAIN...



NO
MATTER
WHAT
THE
RECIPE...

The key ingredient: the chef

**Choose a technique that fits your
personality and keeps you
motivated and engaged.**

Questions?

