

Teaching in Stereo

Strategies for Class Participation

Derek Bruff / derekbruff.org / [@derekbruff](https://twitter.com/derekbruff)

Stereoscopes

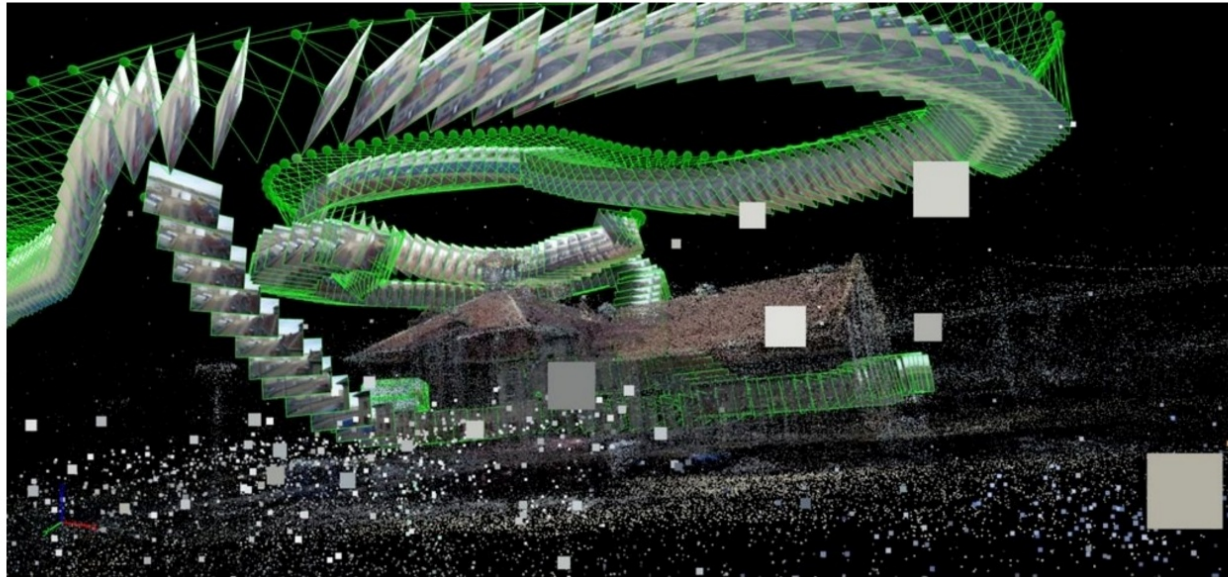


View of Boston, c. 1860



View-Master, c. 1980

Photogrammetry



According to Howard (2015), how many students will account for 75 to 95 percent of college classroom discussion, regardless of class size?

- A. 5 to 8
- B. 10 to 13
- C. 15 to 18
- D. 20 to 23









"Colourful army," maistora, Flickr

Structured ways for students to learn from and with each other can enhance the learning experience for all students.



"Colourful army," maistora, Flickr

Medium



"Sled, Lead, Gas." Scott Hecker, Flickr CC BY

Colleges are
in the inter

Strongly
agree

Agree

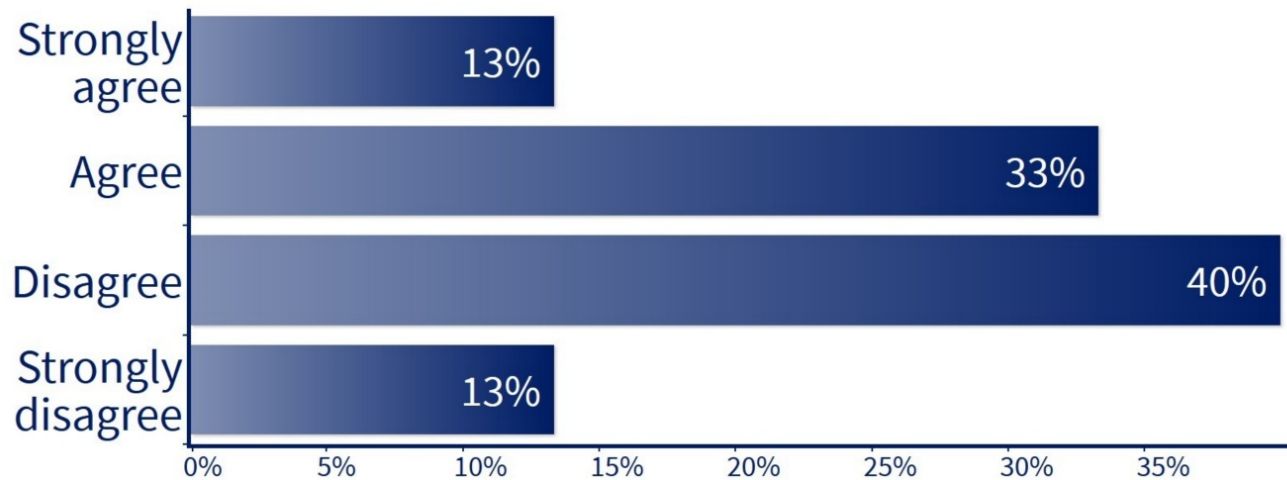
Disagree

Strongly
disagree

In-Class Polling

Colleges and universities should be given wide latitude to use electronic surveillance in the interests of campus security, even if that means students' privacy is not always respected.

🔒 Poll locked. Responses not accepted.



Misconception Questions

Your sister calls to say she's having twins. Which of the following is more likely? (Assume she's not having identical twins.)

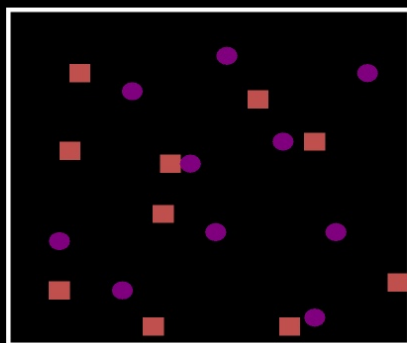
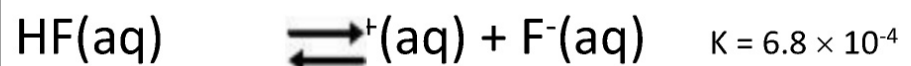
- A. Twin boys
- B. Twin girls
- C. One girl and one boy
- D. All are equally likely.



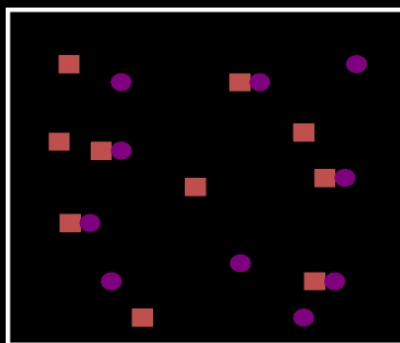
"Prams," Rich Brooks, Flickr (CC-BY)

Representation Questions

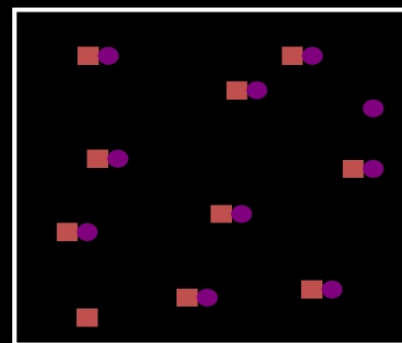
Which solution best represents HF disassociation in solution? (What does the equilibrium picture look like?)



A



B



C

Barbara Reisner, Chemistry, James Madison University

Critical Thinking Questions

64-year-old female. Two months blurred vision.
20/200. How would you treat?

- A. Focal laser
- B. Bevacizumab
- C. Intravitreal triescence
- D. Vitrectomy
- E. Intravitreal jetrea



Janice Law,
Ophthalmology,
Vanderbilt U.

Counterfactual Questions

If a Viking and a samurai fought, who would win?

- A. Viking
- B. Samurai

Rob MacDougall,
History, Univ. of
Western Ontario

Advanced Polling

Draft an intro (first 2 sentences) to a blog post on the Vigenere Cipher

🔒 Poll locked. Responses not accepted.

"What if you could send messages that were completely secure? At the time of its creation, the Vigenere cipher did just that."

7 months ago

"For centuries, cryptanalysts held the advantage over cryptographers when monoalphabetic substitution ciphers were the most secure forms of encryption available. This changed overnight with the invention of "the indecipherable" Vigenere cipher."

7 months ago

"Growing up, my brother and I used to pass notes encrypted with simple substitution ciphers. At 10 years old, we thought our code was advanced; we could never have imagined a cipher as complicated as the Vigenere."

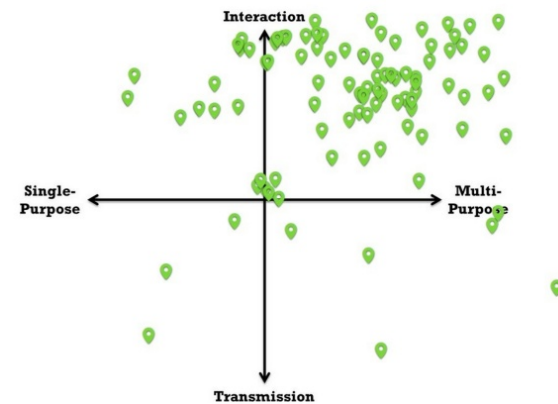
7 months ago

"The Vigenere Cipher was also known as "le chiffre indéchiffrable" because it remained unsolved for three centuries. It has now been reworked in many different ways and continues to be a commonly used cipher."

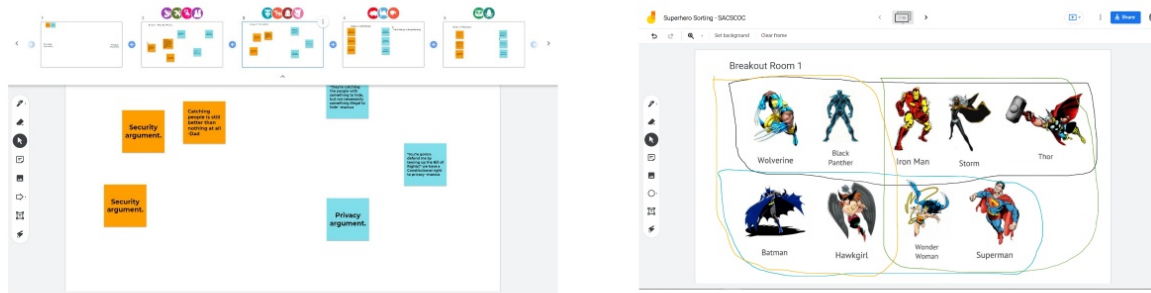
7 months ago

Place Classroom #1 on the flexibility-paradigm axes below.

i Start this poll to accept responses



Visual Organizers



MATH 1111 - Who's Winning? ☆ ○ ☰

File Edit View Insert Format Data Tools Add-ons Help Last edited: 11/11/2020 10:00 AM

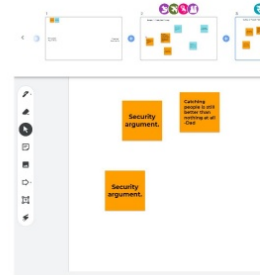
100% 123 - Default (A1) - 10 -

	A	B	C	D	E	F	G	H	I
1	What advice would you give to those sending and receiving encrypted messages in each of the following situations?								
2									
3	Cipher Bureau	Situation 1 - Cryptanalysts Winning	Situation 2 - Cryptographers Winning	Situation 3 - Not Sure Who's Winning					
4	1 - Pretty Bad Privacy		-Allude to something but don't admit to your plans. Then, you can communicate and the cryptanalysts will waste their time decrypting.	-Act as if you're in situation 2, so that you're safe even if it turns out cryptographers are winning. If you are encrypting information, then there is a reason behind it. By decrypting a message, another party has access to private information.					
5	2 - Puzzle Pals	-Don't share super sensitive information - Come up with better codes and ciphers	-Don't get over-confident or sloppy - Switch it up (keep changing your settings)	- Switch it up - Don't share super sensitive info.					
6	3 - Cipher Squad	-Send short messages because they are harder to break. - Encrypt as much as you can - Don't include everything in one message - Talk in phrases - Save in small files - Talking about something normal when talking about the code	- Since the Cryptographers are winning they can send messages without worrying because they know their messages are secure - Keep doing what you're doing - If it's working and your plans are going off without a hitch, go for it - Don't become complacent - Keep advancing - make your cipher more time efficient	- Understand that anything you write could be read by anyone, so be cautious and don't write or share anything incriminating. - If you're not sure, act as if your code is being broken - probably the best way to act at all times. - Keep innovating and adapting to changes.					
7	4 - The Zodiacs								
8									
9									
10									

el

Ready-Set-Go Questions

Vis

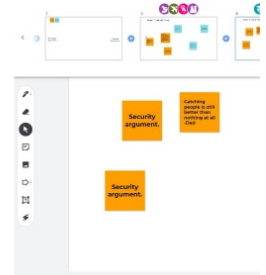


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Ready-Set-Go Questions

15:16:04 From Derek Bruff: Q2: What challenges do you expect when teaching this year?
15:16:32 From Derek Bruff :

Vis



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15:16:55 From Romina: equal engagement, technology challenges

15:16:56 From Ronnie: Virtual complications, Worry, Concern, Frustration,

15:16:56 From Kevin: quarantines, remote students, technology issues

15:16:56 From Joanne: restrictions, expectations, communication, uncertainty

15:16:56 From Dylan: Keeping students engaged in a rotating hybrid course, and adapting on the fly.

Vis





Backchannel

- Notetaking
- Sharing resources
- Commenting
- Amplifying
- Asking questions
- Answering questions
- Offering suggestions
- Building community
- Opening the classroom

<https://derekbruff.org/?p=472>

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Backchannel

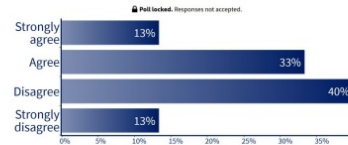
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In-Class Polling

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Macrosception Questions

Your class asks to see their library books, which of the following is more likely to occur (they are not having critical theory)?

- A. Fairly likely
- B. Fairly unlikely
- C. Don't know
- D. All are equally likely

Representator Questions

Which of the two represents the distribution of the following? (The left graph is the appropriate distribution for the data.)

Critical Thinking Questions

Of these old books, "The invisible man" is the most interesting. How would you rate it?

- A. Excellent
- B. Good
- C. Fair
- D. Poor
- E. Very poor

Counterfactual Questions

If a thing had a normal height, who would it be?

- A. Volney
- B. Sartre

Advanced Polling

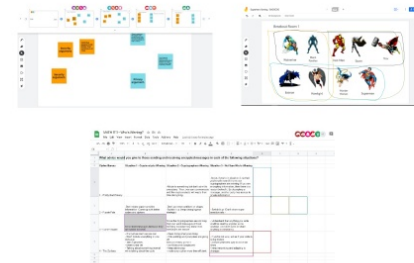


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Visual Organizers



Structure



"Trusses." Derek Bruff, Flickr (C)

S
t

Ready Set Go

What ideas do you have for structuring discussion or group work to foster more student participation?

for 30 seconds

for 1 minute

during class

before class

THINK

Ask students to respond to a question independently.

with pen and paper

or a laptop

in writing

as you doodle

turn to your neighbor

walk across the room

group size = 2

group size = 3 or 4

- PAIR -

Have students compare answers in small groups.

come to consensus

agree to disagree

explain your reasoning

share your opinion

with the whole class

with another group

verbally

in writing

SHARE

Ask students to share their work with the class.

via polling software

via whiteboard

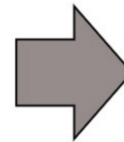
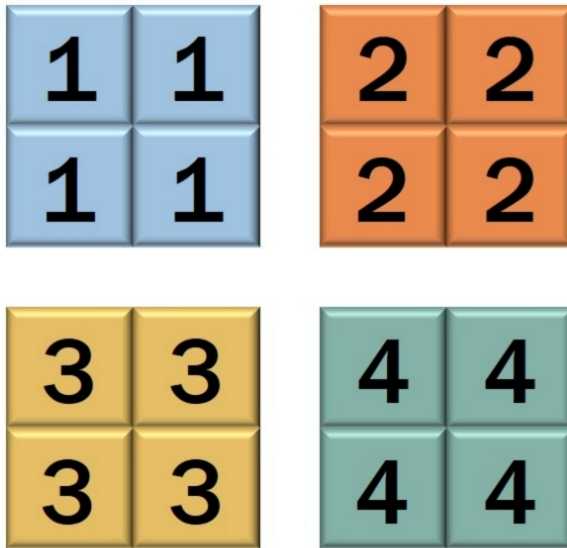
class discussion

time for telling

JIGSAW

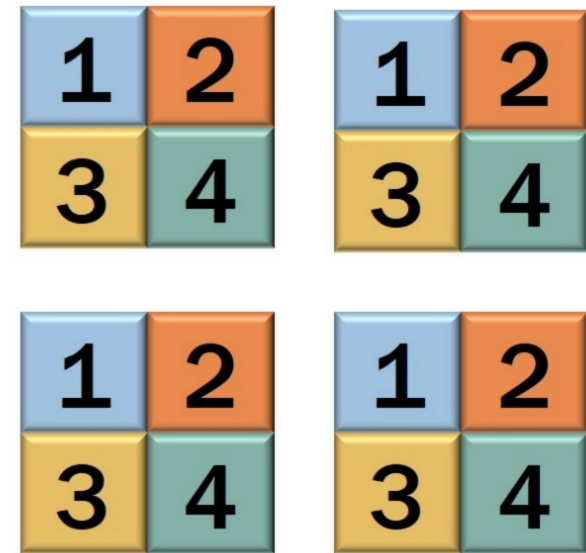
Round 1 – Focus Groups

Divide students into groups and give each group a different text to read and discuss.



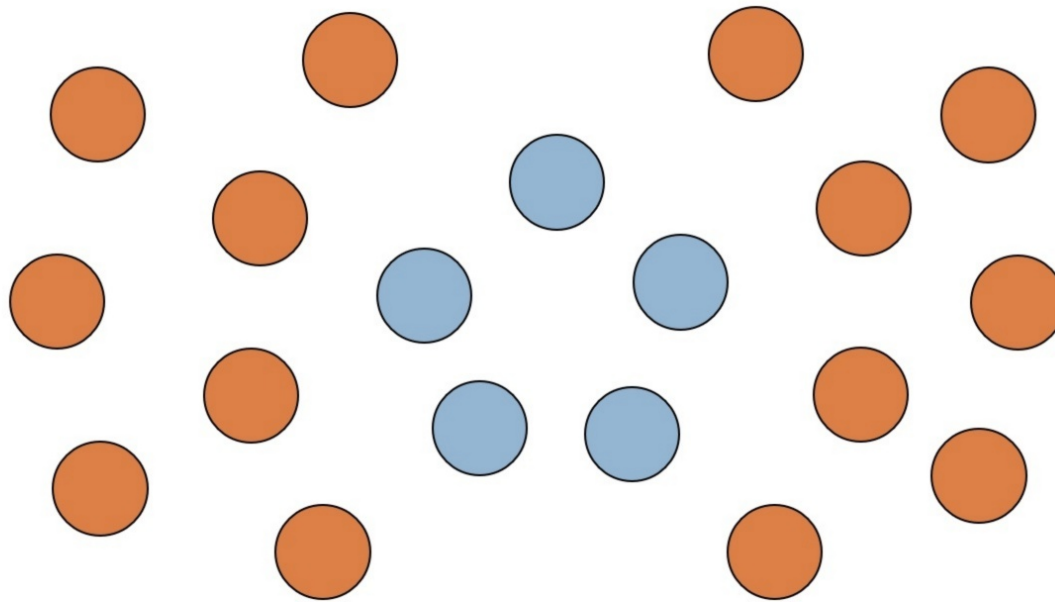
Round 2 – Task Groups

Mix the groups so that students can bring their specific focus to a common task or problem.



FISHBOWL

Students
in the
fishbowl
discuss
the topic
or reading
at hand.

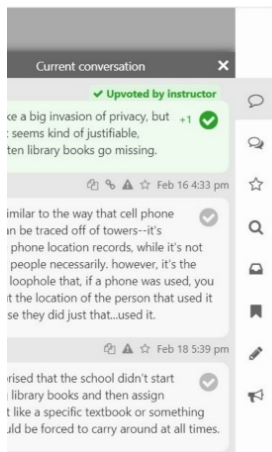


Students
outside the
fishbowl
observe
and reflect
on the
discussion.

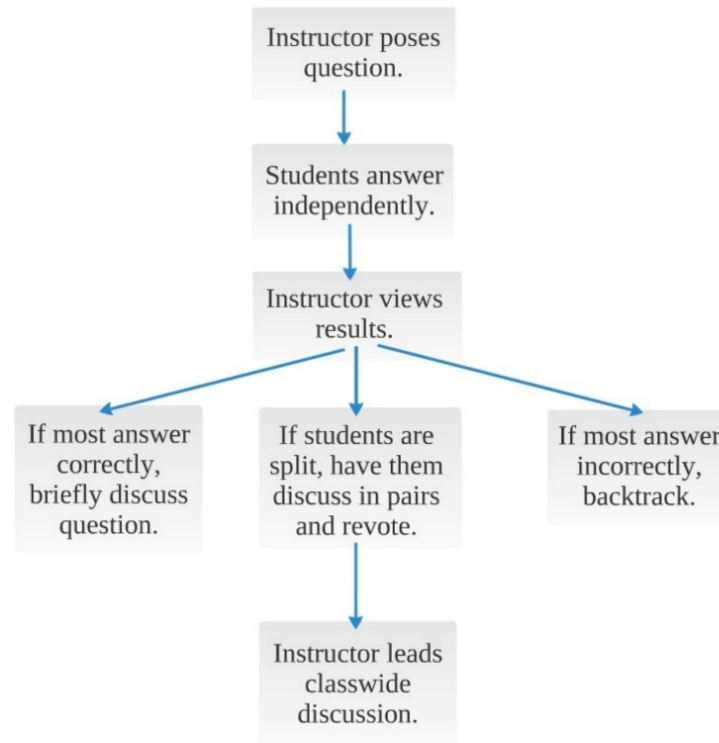
Structured Reading Groups

- Discussion leader
- Passage master
- Devil's advocate
- Creative connector
- Reporter

Parrott & Cherry (2011)



Peer Instruction



Students in the fishbowl discuss the topic or read at hand.

Social Annotation

Perusall

MATH 1111-0... X

- My Courses
- Course home
- Settings
- Gradebook
- Student view
- Notifications
- Notes
- Add to my calendar

Content

Library

- An Absurdly Basic Bug ...
- Singapore police can a...
- This Site Published Eve...
- One-Time Pod: Episod...
- Let's Crack Zodiac - Ep...
- Show more...

Chats ?

Groups +

- Announcements
- General discussion

One-on-One +

Hashtags ? +

- #accountability
- #crazy
- #grades
- #irony

We also had to evade physical surveillance, of course, but that gets easier every time they add a new layer of physical snooper -- all the bells and whistles lull our beloved faculty into a totally false sense of security. We surfed the crowd down the hallways, heading for my favorite side-exit. We were halfway along when Darryl hissed, "Crap! I forgot, I've got a library book in my bag."

"You're kidding me," I said, and hauled him into the next bathroom we passed. Library books are bad news. Every one of them has an arphid -- Radio Frequency ID tag -- glued into its binding, which makes it possible for the librarians to check out the books by waving them over a reader, and lets a library shelf tell you if any of the books on it are out of place.

But it also lets the school track where you are at all times. It was another of those legal loopholes: the courts wouldn't let the schools track us with arphids, but they could track library books, and use the school records to tell them who was likely to be carrying which library book.

I had a little Faraday pouch in my bag -- these are little wallets lined with a mesh of copper wires that effectively block radio energy, silencing arphids. But the pouches were made for neutralizing ID cards and toll-booth transponders, not books like --

"Introduction to Physics?" I groaned. The book was the size of a dictionary.

Chapter 2

This chapter is dedicated to Dark Delicacies, my neighborhood bookstore in my adopted hometown of Burbank, California. Darkdel relies heavily on signings and special events and is thoroughly embedded in its community as a hub for genre readers, collectors, and creators. It's no wonder that when their scumbag landlord raised the rent on the space they'd had for 25 years, writers from all over the world raised the money to help them relocate around the corner.

[Dark Delicacies](#)

"I'm thinking of majoring in physics when I go to Berkeley," Darryl said. His dad taught at the University of California at Berkeley, which meant he'd get free tuition when he went. And there'd never been any question in Darryl's household about whether he'd go.

"Fine, but couldn't you research it online?"

"My dad said I should read it. Besides, I didn't plan on committing any crimes today."

"Skipping school isn't a crime. It's an infraction. They're totally different."

"What are we going to do, Marcus?"

"Well, I can't hide it, so I'm going to have to nuke it." Killing arphids is a dark art. No merchant wants malicious customers going for a walk around the shop-floor and leaving behind a bunch of lobotomized merchandise that is missing its invisible bar-code, so the manufacturers have refused to implement a "kill

Current conversation X

Upvoted by instructor +1

AB: This seems like a big invasion of privacy, but it also almost seems kind of justifiable, given how often library books go missing.

Feb 16 4:33 pm

AW: This is similar to the way that cell phone pings can be traced off of towers--it's legal to trace phone location records, while it's not legal to track people necessarily, however, it's the same kind of loophole that, if a phone was used, you can figure out the location of the person that used it simply because they did just that...used it.

Feb 18 5:39 pm

T: I'm surprised that the school didn't start tracking library books and then assign every student like a specific textbook or something that they would be forced to carry around at all times.

Feb 19 9:50 am

Enter your comment or question and press Enter. Mention a friend by typing @. Add hashtags by typing #.

Gallery Walk



Ground Rules

- Listen respectfully, without interrupting.
- Allow everyone the opportunity to speak.
- Criticize ideas, not individuals or groups.
- Avoid inflammatory language, including name-calling.
- Ask questions when you don't understand; don't assume you know how others are thinking.
- Don't expect any individuals to speak on behalf of their gender, ethnic group, class, etc.

Source: Center for Innovative Teaching and Learning, IU-Bloomington, <https://is.gd/ZtidVu>

Structure



Ready Set Go
 What ideas do you have for structuring discussion or group work to foster more student participation?

Social Annotation



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Parrott & Cherry (2011)

for 30 seconds
 for 1 minute
 during class
 before class

turn to your neighbor
 walk across the room
 group size = 2
 group size = 3 or 4

with the whole class
 with another group
 verbally
 in writing

THINK - PAIR - SHARE

Ask students to respond to a question independently.
 with pen and paper or a laptop
 in writing
 as you doodle

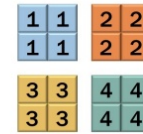
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Ask students to share their work with the class.
 via polling software
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 time for telling

JIGSAW

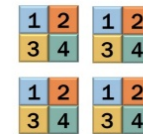
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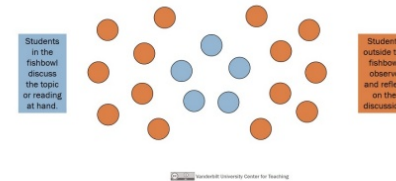


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FISHBOWL



Gallery Walk

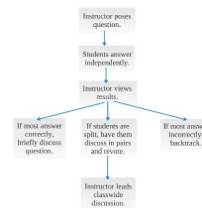


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Source: Center for Innovative Teaching and Learning, NJ-Bloomington, <https://cilt2016.org>

Peer Instruction



What ideas do you have for
"teaching in stereo" in your
courses?

Add your idea as a sticky note
on this Jamboard:

<https://is.gd/Stereoidideas>

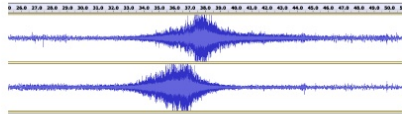
Agile Teaching



"29 valley," Simon Williams, Flickr (CC)

Stereoscopes

Photogrammetry



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Strategies for Class Participation
Derek Bruff / derekbruff.org / @derekbruff

Agile Teaching



What ideas do you have for "teaching in stereo" in your courses?

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Medium

In-Class Polling

Advanced Polling

Backchannel

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Ready-Set-Go Questions

Visual Organizers

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Peer Instruction

THINK - PAIR - SHARE

JIGSAW

FISHBOWL

Gallery Walk

Ground Rules

- Listen respectfully, without interrupting
- Allow everyone the opportunity to speak
- Constructive ideas, not feedback or praise
- Avoid inflammatory language, including name-calling
- Avoid generalizations and absolutes (never, always, don't)
- Encourage you to have their effects and to bring
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