

- **How many years have you been teaching in higher education?**
- https://www.polleverywhere.com/multiple_choice_polls/keSgQLav8QWkwcR

- **Which of the following categories best includes your discipline?**
- https://www.polleverywhere.com/multiple_choice_polls/82SddkZ7RcBpqij

- **Which of the following best describes your predominant teaching method?**
- https://www.polleverywhere.com/multiple_choice_polls/orB3pyQjARVjchA

- **I predominantly teach:**
- https://www.polleverywhere.com/multiple_choice_polls/sY7njG1RlluAvuR

- **How positive do you feel about the ability of a more active learning method to improve student outcomes?**
- https://www.polleverywhere.com/multiple_choice_polls/pEdQGJ3cMi2YsuC

Strategies to hold students accountable for preparing, participating, and reviewing.

Instructor-specific factors that help make active learning successful.

Benefits/positives for teachers and learners in the active classroom.

Using student answers to drive the (uncertain) direction of class.

How can I best use lecture in an active classroom?

Including everyone in a discussion, really...everyone.

Designing an activity.

What's happening around campus with active learning?

Strategies to hold students accountable for preparing, participating, and reviewing.

BEFORE CLASS:
Read or watch videos

align

- Online homework
- Posts on discussion board
- Reading questions to be collected
- In class quiz next class

Points

Students don't do optional



DURING CLASS

- Turn in short answers
- Classroom response system
- Groups and random calling: Social pressure to be prepared and engaged.

Points



AFTER CLASS
Higher level thinking

align

- Online homework
- Weekly quiz
- Posts on discussion board
- Essays

Points

Students don't do optional

Instructor-specific factors that help make active learning successful.

- **Be organized.** Students pick up on disorganization and misalignment.
 - Example: Homework or reading has not prepared them for in-class activity
 - Example: Tests do not reflect what was practiced in homeworks or class activities.
- ***Connect with students.*** Be human and not intimidating.
 - Tell them personal details about yourself. Ask them about themselves.
 - Make a mistake? Own it and apologize.
 - Invite students to meet you.
 - Walk around during activities. Provide encouragement.
- ***Demonstrate care for student well-being.***
 - Struggling student? Ask if non-academic life okay.
 - Be explicit in statements that you want all students to succeed.

Instructor-specific factors that help make active learning successful.

- **Keep expectations high for all students.**
 - Active learning means students have more chance to practice reaching your expectations.
- **Require students to reflect on how they learn.**
 - “Turn to a neighbor and explain how you approached the problem.”
 - “What was the most difficult concept for you today?”
- **Reflect on your own teaching and make adjustments.**
 - Ask for feedback from students and colleagues and incorporate suggestions.
 - Mid-semester feedback from students.

Benefits/positives for teachers and learners in the active classroom.

Learners

- Stay awake and engaged.
- Multiple chances to find out what you know/don't know.
- Expectations are clear.
- Routine practice rather than cramming.
- Community.
- Collaboration.
- Increased learning/performance.

Teachers

- Fun, students are more engaged.
- Students questions are more specific and informed.
- Live data about what students are getting/not getting.
- Uncover misconceptions quickly.
- Your expectations become very clear to students.
- No need to spend time on material students can master on their own.
- Connect with students in the classroom rather than just office hours.

Using student answers to drive the (uncertain) direction of class.

Round 1



226 responses, 94% correct

A. 4%

B. 2%

C. 0%

D. 94%

No need to give a mini-lecture on this concept!

Round 1



202 responses, 65% correct

A. 35%

B. 65%

Round 2



200 responses, 84% correct

A. 17%

B. 84%

Not good enough to say class is proficient on this concept. Let them collaborate and explain their thinking to each other.

Round 1



217 responses, 25% correct

A. 21%

B. 25%

C. 54%

Is there a problem with wording on this question? Did I find a misconception? Listen to students talking to each other, ask them...

Round 1



229 responses

What do they think if I don't give them options?

phenolalanine
phenyl
lysine
isn't
trp gly leu
uuc codes phe one
stop
thr glu lys acid
leucine ser
codon

If a known inherited mutation for colon cancer (that arose in the fourth or fifth decade of life) ran in your family, would you do embryo selection against this mutation? Why?

“Not sure, never given serious thought to it before.”

“Yes. To ensure that my child would not suffer from the disease and if possible, ensure my bloodline from then on to be free from the disease.”

“No, I do not agree with it ethically, and it is expensive and difficult.”

“Yes, i think the financial costs of the testing would be much less than the pain and suffering caused by colon cancer.”

“No. There is always a chance that environment or other factors could affect whether or not the mutation was expressed.”

How can I best use lecture in an active classroom?

1. Ask a question first.

Let them struggle with it alone and collaboratively.

Build anticipation.

Reveal your opinion/answer. Be the expert and expand in mini-lecture from here.

2. Lecture in no more than 5-10 minute segments.

Experimental studies show engagement drops drastically after 10 minutes.



Including everyone in a discussion,
really...everyone.



Although everyone discusses and participates in small groups, only some answers are shared with whole class.

- Technology – anonymous in classroom (not to professor)
- Think –pair-share. Let students think alone. Then talk in groups before a student is the “reporter” for the group.
- Synthesize answer on notecard, pass to peers or to professor to report out.

When everyone is included...

“It is easy in a lecture to become overwhelmed or to get left behind. This, not only negatively affects our performance as students, but also decreases our confidence.

In the active learning courses that I took here at UNC, students seldom get left behind because the professor can use class data to figure out when there is a lack of understanding and there is no getting away from understanding application because we are asked and encouraged to figure these types of problems out.”

“It makes me feel like I have the potential to be on the same level as students that excel above me.”

“As a first generation African American female in science, I feel that the active learning system increases inclusion, and allows students the opportunity to collaborate with a diverse group.”

Last school year, I took a chemistry course in a lecture-style course and ended up earning a D. I took this same course with another professor in an active learning classroom and earned an A. And after taking this course in an active learning-styled class, I felt that I actually thoroughly understood the material. I could even convey and teach this material to other students.

“Teachers must be aware that there are institutional barriers in place that prevent students from certain backgrounds from performing as well as their peers. More importantly, teachers must know that although these differences exist, those same students are still capable of success.”

Questions to ask while designing an activity

1. Is it aligned with my objectives and the assignments outside of class?
2. Is it practicing an authentic skill in my discipline or helping them learn a difficult concept?
3. Am I showing them how it is relevant to real life outside the classroom?
4. Are students doing something (action verbs)
5. What pedagogical tool works best with activity? (Notecards, classroom response system, google doc, think-pair-share, whole class discussion, etc.)

Some action

Students **verbs** **solve** problems
Students **discuss/argue** different perspectives
Students **draw** models or graphs
Students **peer evaluate** and give feedback
Students **demonstrate** processes with kinesthetic models

Students **synthesize** analogies
Students **interpret** real data
Students **simulate** processes or **role play** scenarios
Students **explain** a concept
Students **predict** outcomes
Students **design** experiments

What's happening around campus with active learning?



- Many disciplines have always used and continue to use (e.g. foreign language instruction)
- Active learning is a spectrum that faculty are choosing to incorporate at different levels.
- Data from large class redesigns (Psyc 210, Chem 261, Biol 101, Econ 101, pharmacy, nursing) all showing positive outcomes for all students— shift in performance and closing of achievement gaps in some of these studies.
- Support:
 - CFE 100+ and 40+ redesign grants (all disciplines)
 - AAU grant project to mentor Biology, Physics, and Chemistry faculty (with course release) in high structure, active learning.
 - Finish Line Project to focus on STEM redesigns.