**11:15-12:00 How to make it work.** Blended and active learning sound great, but won’t it take too long to implement? How can you cover all the course material using these approaches? What if the students hate it? This session deals with the realities of busy academics implementing active and blended learning in their courses.

**How to make it work**

John L. Falconer and Janet deGrazia

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Active learning means

- students engage with the material,
- participate in class
- collaborate with each other.

Don't expect students simply to listen and memorize instead, have them
- help demonstrate a process
○ analyze an argument
○ apply a concept to a real-world situation.

Using 12th century technology in the 21st century- how smart is that? Rich Felder
Watching my professor solve problems in class makes me good at watching my professor solve problems in class.

Why don’t more faculty incorporate active learning?

Scared talk students
Students resistant
Identify the most important issues

Not clear it is better

Students will not like the change

Student evaluations of faculty will be lower

Will not "cover" all the material

No time to work through example problems in class

Requires time to develop new class notes

People are resistant to change
"Class, I’ve got a lot of material to cover, so to save time I won’t be using vowels today. Nw lts bgn, pls trn t pg 122."
“Our second-worst assumption as teachers is that if we don’t cover something in class, the students won’t learn it”

- Richard M. Felder

What is our worst assumption?
“Our second-worst assumption as teachers is that if we don’t cover something in class, the students won’t learn it”

“Our worst assumption is that if we do, they will”

- Richard M. Felder
Most instructors teach mostly by lecturing

Some professors might say:

“I’ve been lecturing for 25 years and I have the best teaching evaluations in my department.”

“I’m the living proof that lecturing works – I learned from lectures.”

“There’s so much content to cover, I don’t want to take time out of class for those other methods.”

“Why should my course be different from all the other engineering courses on campus?”
“I need to get tenure and teaching doesn’t matter for tenure, so I don’t want to put in the effort to use these methods.”

Start slow so not overwhelming
1. Start with clickers: e.g., introduce one clicker question
   some active learning is better than no active learning
2. Reading quizzes
3. Screencasts
4. etc.

Creating reading quizzes; incorporated into a learning management system.
a number of textbooks provide reading quizzes

Respondus that allows questions to be created and put into a csv file that automatically uploads
Why are students resistant to active learning?

"I absolutely dislike clicker questions at the beginning, considering them tricky, but with time you learn to appreciate their point. Clicker questions actually are very beneficial."

Graduate students more resistant:
I learned from lectures as an undergraduate. I want you to lecture more

What are students resistant to active learning?
- People tend to resist change
- Takes students out of their comfort zone
- They might not see the point
- May not easily or immediately perceive the learning advantage
- It's not what they expect
- Requires they do more work
- May think that educators aren’t doing their job
- Can cause anxiety in students who are shy or introverted
- Might feel academic anxiety
- May view them as a form of evaluation

How to decrease student resistance

- **Explain your teaching methods and the benefits. More than once!**
- Give students time to think before sharing in class,
- Let students know it’s okay to make mistakes
- Start using active learning early in your course
- Start small
○ Student resistance to active learning activities decreases over time (Shaw et al, 2019)

Which do you think results in more long-lasting learning? When the instructor or TA:
A. give you the answer,
B. help you figure it out by giving hints?
Do you expect to have a job someday that requires you to figure things out on your own?
A. Yes
B. No

Why using clickers?

Difference in learning is 2.5 x standard deviation

Only top 1% of students in traditional section scored above average in transformed section!
Average results (Laws et al., 1999)  

After traditional methods  

Before instruction  

After active engagement
How to make ConcepTests and clickers work

Supposedly similar teaching methods are implemented very differently by different faculty members.

Two rooms side by side in the same department both “using clickers.” In one, students love it, in the other they hate it. Implementation has a critical effect.

D. Duncan, University of Colorado Boulder
Practices that lead to **Failure** using clickers

- Fail to explain why you are using clickers.
- Use them primarily for attendance.
- Don’t have students talk with each other.
- Use only factual recall questions.
- Don’t make use of the student response information.
- Fail to discuss what learning means or the depth of participation and learning you expect.
- Think of clickers as a testing device, rather than a device to inform learning.

*If you believe that the teacher, not the students, should be the focus of the classroom experience, it is unlikely that clickers will work well for you.*

*D. Duncan, University of Colorado Boulder, 2016*