Small Teaching Online and in the Classroom: Small Changes, Big Impact

Lindsay Good, MEd
Pennsylvania College of Health Sciences

AMATYC 2021
TODAY’S OBJECTIVES

OBJECTIVE 1
Become familiar with small teaching techniques

OBJECTIVE 2
Experience small teaching techniques

OBJECTIVE 3
Apply small teaching techniques to online and F2F teaching
Small Teaching Pre-Test

Hey, students!

Go to student.desmos.com and type in:

8MH 2B8
What is Small Teaching?

An approach that seeks to spark positive change in higher education through small but powerful modifications to course design and teaching practices.

(Lang, 2016, p. 5)
Why Small Teaching?

- Brief (5 – 10 min) classroom or online learning activities
- One-time interventions in a course
- Small changes in course design or communication with students
Why Small Teaching?

Strategies have a foundation in the learning sciences.
Small Teaching

Knowledge
- Retrieving
- Predicting
- Interleaving

Understanding
- Connecting
- Practicing
- Self-Explaining

Inspiration
- Expanding
- Growing
- Motivating
RETRIEVING

“If you want to retrieve knowledge from your memory you have to practice retrieving knowledge from your memory.”

(Lang, 2016, p. 20)
Retrieving in Practice

Name 2 things that you learned from the last session that you attended.

Share those 2 things with someone at your table.
Retrieving in Practice

- Homework Review
- Weekly Quiz
- Closing Questions
  - One concept learned; one question
  - Space out due dates
- Syllabus Retrieval Activity
Why does retrieving work?

- Every time information is retrieved from the long-term memory, neural pathways are strengthened that lead from the long-term memory to the working memory
“Predictive activities prepare your mind for learning by driving you to seek connections that will help you make an accurate prediction.”

(Lang, 2016, p. 49)
Predicting in Practice

Small Teaching Pre-Test

Hey, students!

Go to student.desmos.com and type in:

ZQZ 5QT
Predicting in Practice

- Pre-test – lesson or unit
- Mid-class prediction
  - Without calculating, what do you think the answer will be?
- End-of-class prediction
Without completing any calculations, which bag do you think will finish first? Explain.

Start time for both bags:

20:30

https://www.visnos.com/demos/hbok
Why does predicting work?

- Students are invested in the solution – is my answer correct?
- Predicting forms pathways in the brain that lead to a dense web of connections
"Our brains need time to undertake the processes of encoding, consolidating, and organizing newly learned material, and the gaps between spaced learning sessions allow it that time." (Lang, 2016, p. 67)
Interleaving in Practice

Solve each system by substitution.

1) \[ x + 4y = -22 \]
   \[ -2x - 2y = 14 \]

3) \[ -6x + y = -17 \]
   \[ -7x - y = -22 \]

2) \[ x - 2y = 7 \]
   \[ -3x + 6y = -1 \]

4) \[ 4x + 7y = -14 \]
   \[ x + 4y = -8 \]

Solve each system by elimination.

5) \[ 10x + 10y = -10 \]
   \[ -9x + 2y = -24 \]

6) \[ 4x - 8y = -4 \]
   \[ -12x + 5y = -26 \]

7) \[ -5x - y = 2 \]
   \[ 4x + 3y = 5 \]

8) \[ x - 2y = -1 \]
   \[ -5x + 8y = 11 \]

Solve each system by graphing.

9) \[ y = \frac{10}{9}x + 7 \]
   \[ y = -\frac{2}{9}x - 5 \]

10) \[ y = -\frac{3}{4}x - 9 \]
    \[ y = 3x + 6 \]
Interleaving in Practice

- Include a certain percentage of review on each quiz or exam or use cumulative exams altogether
- Teach a concept over multiple days
- Use blocked practice and mixed practice
Interleaving in Practice

- IV Push Example
  - Introduced topic day 1 and gave self-graded practice problems
  - Re-taught concepts day 2 and assigned activity
  - Quizzed day 3
Why does interleaving work?

- Helps develop long-term memory retention
- Provides students the opportunity to determine the strategy to solve the problem
"...build bridges between the disconnected islets" (Lang, 2016, p. 92)
Connecting in Practice

Provide a framework for learning

[Shared Google Doc]
Connecting in Practice

- Preview Content
  - Pre-Lecture Notes
- Provide students with an organizing framework
  - Content Guide
- What do you already know and what do you want to know?
Why does connecting work?

- Activating what students know fires up connections and makes them stronger
- “Neurons that fire together, wire together” (Lang, 2016, p. 95)
- Unless connections are made multiple times, they are lost
“Whatever cognitive skills you are seeking to instill in your students, and that you will be assessing for a grade, the students should have time to practice in class”.

(Lang, 2016, p. 113)
Practicing in Practice

- Make time for in-class practice
- Space out practice during class (multiple, short practice times rather than one longer time period)
- Practice mindfully – ask why?
Why does practicing work?

- Active, mindful practice helps students to lighten the load on their working memory
- Thinking occurs when you combine information in new ways
SELF-EXPLAINING

Self-explanation can help learners fill gaps and make inferences in “learning-productive ways.” (Lang, 2016, p. 147)
Self-Explaining in Practice

- Explain to a partner what is effective about small teaching.
- Which strategy you will try first and why?
Self-Explaining in Practice

- Provide opportunities for peer instruction
- Require students to explain their work and monitor their responses
- Think aloud technique
Why does self-explaining work?

- Students must thoroughly understand a concept in order to explain it to another student.
- Provides opportunity for students to connect with instructor.
“Whatever we do, we have to remember that the brains in our classroom do more than think; they feel, and those feelings play a valuable role in our efforts to motivate and inspire student learning.” (Lang, 2016, p. 193)
“People either have a fixed or growth mind-set when it comes to their attitudes and beliefs about learning and intelligence.”

(Lang, 2016, p. 199)
Step outside your comfort zone, “just aim to keep yourself thinking.”

(Lang, 2016, p. 238)
Takeaways on Small Teaching

- Step out of your comfort zone
- Take the risk!
- Bring others along side of you in a peer learning group
- Explain to your students why you are doing what you are doing
REFERENCES


QUESTIONS?