Entrance ticket

• As you get settled, please write down on a Post-it one challenge or concern you have about implementing active learning in your classroom.
• Place Post-it at the front of the room.
Learning objectives

• Gain familiarity with various active learning strategies.
• Discuss common challenges of implementing active learning and troubleshoot solutions.
• Identify useful resources and references for follow-up.
Active learning

• Faculty often think of active learning very differently.

• How would you define active learning?
  – On a sheet of paper, write for 30 seconds.
  – Turn to your neighbor and discuss for one minute.
  – Share with the group.
Active learning

• “Active learning is generally defined as any instructional method that engages students in the learning process” – Prince 2004

• Considering this definition:
  – Brainstorm and write down three active learning strategies/activities within 30 seconds
  – Turn to your neighbor, share each others strategies and come up with one more strategy. You have 2 minutes.
Active learning strategies

Simple
- Entrance/exit tickets
- Minute paper
- Think-Pair-Share
- Brainstorming
- Muddiest point
- Large group discussions
- Guided notes
- Concept maps

Complex
- Problem-based learning
- Team-based learning
- Case studies
- Audience response systems
- Role playing
- Games
- Jigsaw
- Debates
- Flipped classroom
- Small group discussions
- Concept maps
- Large group discussions
- Guided notes
- Brainstorming
- Think-Pair-Share
- Minute paper
- Entrance/exit tickets

Concept maps
- Debriefing
The entrance ticket/exit ticket

• Requires students to reflect on their learning/knowledge
• Can be implemented:
  – via paper or electronically
  – at the beginning of class or end of class
• Example questions:
  – What is the most significant thing you learned today/last class?
  – What remains unclear or remains confusing?
• Important to close the loop and discuss during class
• Similar to other strategies:
  – Minute paper
  – Muddiest point
Think-pair-share

- **Think**
  - Give a question prompt.
  - Allow student 15-60 seconds to think or write/type a response.

- **Pair**
  - Instruct students to pair up with a neighbor to discuss each others answers. Give 1-5 minutes.
  - Circulate the room to monitor discussions.
  - May need to remind them to switch speaking roles.

- **Share**
  - Ask students to share their responses.
  - Close the loop by giving your best answer.
Brainstorming

• Can be completed individually, in pairs, or in groups
• Can be paper or electronic
• Tips:
  – Give a clear prompt
  – State rules before starting
  – Set a time limit
  – Have students share their brainstorms with the rest of the class
Active learning strategies used in my classrooms

Simple
- Entrance/exit tickets
- Minute paper
- Think-Pair-Share
- Brainstorming
- Muddiest point

Guided notes
- Small group discussions
- Audience response systems

Role playing
- Large group discussions
- Concept maps

Complex
- Problem-based learning
- Case studies
- Team-based learning
- Flipped classroom
- Jigsaw
- Debates
Active learning strategies used in my classrooms

• Flipped classroom

Image from UW Center for Teaching and Learning.
https://www.washington.edu/teaching/teaching-resources/engaging-students-in-learning/flipping-the-classroom/
Approach taken in my courses

- Pre-class
  - Screencasted videos that use guided notes. Recorded via Panopto
  - To clearly communicate expectations, create “road maps” for each unit

**Required pre-class preparation**
- Videos
  - 8.1 – Drug delivery to the anterior segment of the eye (20 minutes)
  - 8.2 – Dosage forms for anterior segment of the eye (18 minutes)
  - 8.3 – Counseling points (4 minutes)
  - 8.4 – Drug delivery to the posterior segment of the eye (9 minutes)

**Recommended reading**
- Remington Education: Pharmaceutics
  - Chapter 10

**Learning objectives**
Upon completion of this topic, the student should be able to:

1) Define the following terms: lower conjunctival sac, retinal blood barrier
2) Differentiate between the anterior segment of the eye and the posterior segment.
3) Describe the nasolacrimal apparatus and how it impedes ocular drug absorption.
4) Discuss the tear layers and the total volumes of tears that are available.
5) Describe the layers of the cornea and how this impedes corneal permeability.
6) Discuss the absorption of drugs from the anterior segment of the eye including absorption through the cornea and through the conjunctiva/sclera. Identify how lipophilicity and MW of the drug are involved.
7) Explain the barriers to drug absorption from topical administration (spillover, nasolacrimal drainage, permeability, transporters, metabolism, etc.).
8) Discuss strategies to improve drug absorption from the anterior segment of the eye.
9) Describe the types of ophthalmic dosage forms and their design features. Discuss the retention times of each of the dosage forms.
10) Identify the function of ingredients used in ophthalmic dosage forms. You will be responsible for the ingredients in the table provided.
11) Identify the mechanisms that viscosity enhancers can produce gelation upon administration.
12) Counsel patients on the proper use of ophthalmic dosage forms.
13) Discuss administration to the posterior segment of the eye and the types of dosage forms used. Discuss the special design features for delivery of drug to the posterior segment.

**Practice problems**
Ophthalmic drug delivery

---

**Rx**

Scopolamine HBr 0.25%
Dispense (15 ml)

How much sodium chloride should be used to make the solution isotonic? E value = 0.12

Step 2. Calculate the weight of sodium chloride necessary to make the solution isotonic.

\[
\frac{15\text{mL soln}}{100\text{mL soln}} \cdot 0.9\text{g NaCl} = 0.135\text{ g NaCl}
\]

Step 3. Calculate the amount of sodium chloride to add.

\[
\frac{0.135\text{g NaCl}}{0.0805\text{g NaCl equivalents}} = 1.67\text{ g NaCl}
\]
Approach taken in my courses

• In-class
  – Formative assessments through a game
    ▪ Kahoot
    ▪ Just-in-time-teaching
  – Small group discussions
    ▪ Case studies
    ▪ Practice problems
Approach taken in my courses

In-class activities
Kahoot demo

–To play...
  ▪ Go to kahoot.it
  ▪ Enter game pin
  ▪ Enter nickname

–To get started as a faculty...
  ▪ Create a free account at https://kahoot.com/
Challenges of implementing active learning
Common perceived challenges of implementing active learning

• Getting students to prepare for class
• Takes time away from content coverage
• Large class sizes
• Difficult to share control of class session with students
• Getting students on-board
• Takes faculty effort to implement
Challenge – Getting students to prepare for class

• **Reason**
• **Accountability**
• **Interaction**
• **Student-friendly**
• **Efficient**
Challenge – Getting students to participate

**Content**: provide specific instructions for the activity

**Participation**: allow sufficient time for participation in the activity

**Reflection** (time to debrief): provide time to debrief to help students connect learning and the intended outcomes
Advice on implementing active learning

• Select strategies that work with your own personal teaching style.
• Ensure alignment between learning objectives, content, active learning activities, and assessments.
• Clear communication with students.
• Get comfortable with classroom chaos.
• Know that the first time will not be perfect. Develop a feedback system to continuously improve.
• Get student advice on the process.
• Stick with it. It gets easier.
Resources

• Cheatsheet

• 5 Minute University (5MU)
  – Available by emailing 5minuteu@gmail.com

• Howard M and Persky A. Helpful Tips for New Users of Active Learning. 2015. AJPE

5 Minute University topics:

| Lesson 1: Instructional Alignment | Lesson 2: Getting Students to Prepare for Class |
| Lesson 3: The Minute Paper        | Lesson 4: Critical Thinking                  |
| Lesson 5: Creating Better Presentations | Lesson 6: Students in Our Classroom |
| Lesson 7: Lesson Planning         | Lesson 8: Encouraging Classroom Participation |
| Lesson 9: Effective Feedback      | Lesson 10: Writing Effective Exam Questions   |
| Lesson 11: Think - Pair - Share   | Lesson 12: Teaching Resources                 |
Thank you! Enjoy the rest of your summer!

Connie Remsberg
cremsberg@wsu.edu