Active Learning
Making Thinking Visible

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Learning Objectives

• Define active learning
• Describe why active learning strategies are important
• Discuss pros and cons of specific active learning techniques and how they might be used in the health sciences classroom
• Identify challenges to using active learning and solutions to overcome them
• Differentiate between cooperative learning and other types of active learning.

“It is a miracle that curiosity survives formal education.”

~ Albert Einstein

Why Active Learning?

The Lecture

• Students do not:
  • Learn core concepts
  • Retain knowledge
  • Develop higher-level cognitive skills
  • Change attitudes
  • Transfer knowledge to other settings

Lecture vs. Active Learning

Fink (2003) Creating Significant Learning Experiences

Forgetting Curve

“People usually forget 90% of what they learn in a class within the first 30 days... the majority of this forgetting occurs hours after class.”

~ John Medina in Brain Rules

Retention


Active Learning

Broadly defined...

Involves students in doing things, and thinking about the things they are doing.

Eison and Bonwell (1993) Active Learning: Creating Excitement in the Classroom

Active Learning

Broadly defined...

Involves students in doing things, and thinking about the things they are doing.

“Does it make their thinking visible?”

- Activate prior knowledge
- Involve MOST students
- Metacognition/Reflection
- Feedback

Eison and Bonwell (1993) Active Learning: Creating Excitement in the Classroom

What is active learning?

- Students involved in more than listening
- Developing skills rather than transmitting information
- Engaged in activities like reading, discussing, writing
- Higher order thinking (analysis, problem-solving)
- Can be cooperative or individual

Eison and Bonwell (1993) Active Learning: Creating Excitement in the Classroom

Why active learning?

- Students are more engaged and energized.
- It facilitates deeper learning, critical-thinking and problem-solving
- Works especially well for preparing for clinical practice and integrating basic and clinical sciences.
- It allows for practice and feedback.
- It is more fun!

Eison and Bonwell (1993) Active Learning: Creating Excitement in the Classroom
Bloom's Taxonomy

Traditionally Lecture-based Classroom Instructional Design

<table>
<thead>
<tr>
<th>Bloom's Taxonomy</th>
<th>Instructional Design</th>
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<tbody>
<tr>
<td>Remember</td>
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Easy Part

Hard Part

Adapted, with permission, from Julie Schell (2017)

Bloom's Taxonomy in the Classroom

Traditional Lecture-based Classroom

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Bloom's Taxonomy in the Classroom

Flipped Classroom – Active Learning

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Prior Knowledge

Learning is the interaction of NEW INFORMATION with PRIOR KNOWLEDGE

Adapted from Julie Schell (2016) and Daniel Willingham (2014), with permission
Retrieval Practice or “The Testing Effect”

“It is firmly established that retrieving information from memory changes memory, increasing the likelihood that information will be successfully retrieved again in the future.”


Two potential strategies

1. Chunked or punctuated lecture
2. Structured, collaborative learning

Traditional vs. Punctuated Lecture

What teaching methods can we use for retrieval practice in the classroom?

Useful Tool for Retrieval and Feedback

<table>
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<th>IF-AT Cards</th>
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<tr>
<td>Immediate Feedback Assessment Technique</td>
</tr>
<tr>
<td>Scratch off cards</td>
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<tr>
<td>Immediate Feedback</td>
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<td>Allows for partial credit</td>
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Audience Response System a.k.a. Clickers

- Use in punctuated lecture
- Question (first retrieval)
- Poll (reflect on what they know)
- Discussion (with peers or faculty-led)
- Re-Poll (spaced retrieval)
- Explanation/Feedback

www.epsteineducation.com

https://www.turningtechnologies.com/lcd/
Make sure students focus **ATTENTION** where it is most important!

- Design of learning materials
- Connections with:
  - previous content (prior knowledge)
  - future experiences (patient care)

**Active Learning Strategies**

- Think-Pair-Share
- Minute Writes
- Muddiest Point
- Notes Exchange
- Socratic Questioning
- Debates
- Role playing
- Games
- Audience Response System
- Case-based learning
- Blended Learning
- Three step interview
- Focused listing
- Cooperative Learning (PBL, TBL)

**Case-Based Learning**

- Good for large classes
- Can use audience-response system (ARS)
- Often preceded by assigned reading, "mini-lecture," or other resources.
- Usually not done as groups, but could.

**What is cooperative learning?**

- A type of active learning
- Structured form of small group problem solving
- Learn to collaborate
- Individual accountability
- Instills team building skills
- Sharpens social skills

**Cooperative Learning**

- Examples
  - Team-based learning (TBL)
  - Problem-based learning (PBL)
  - Peer instruction
- Tips for Success
  - Team formation (heterogeneous, permanent)
  - Clear expectations/procedures
  - Closure/wrap-up/feedback

**Key Points**

- Active learning should make thinking visible.
- Active learning can be messy and unpredictable.
- It’s okay for things to be messy and unpredictable.
- Retrieval/testing enhances learning.
- Interactive or punctuated lecture to increase engagement and attention
- Cooperative learning helps develop communication, teamwork, and collaborative decision making skills.
- Design materials to emphasize how this will be important in students’ careers.