



Methods of Teaching 101: Why and How to Incorporate Team- and Problem-based Learning into your Medical Education Sessions

To actively participate, visit **Pollev.com** and type in **karenmlounsbury608** to join the session

Karen M. Lounsbury
Professor of Pharmacology
Assistant Dean for Pre-clinical Curriculum
Larner College of Medicine, University of Vermont
Burlington, VT 05405
karen.lounsbury@med.uvm.edu

Objectives of this Session

Prework:

- Outline the different roles for faculty and students in an active classroom compared with didactic lectures
- Describe the importance of objective-driven sessions and the 4 Ss of Team-based Learning
- Recognize the primary differences in delivery and assessment for Team-based and Problem-based Learning modalities used by Larner College of Medicine

Session:

- Discuss the benefits of active learning for medical knowledge, communication, and professionalism in medical education
- Recognize the value of active learning concepts using Team-based Learning and Problem-based Learning
- Describe the most common complaints about active learning from faculty and students and develop strategies to overcome challenges
- Outline specific ideas for creating active learning sessions that link specific objectives to assessments, follow standard procedures, and are responsive to faculty and student feedback

How are you feeling about the prospects of using active learning in your teaching?

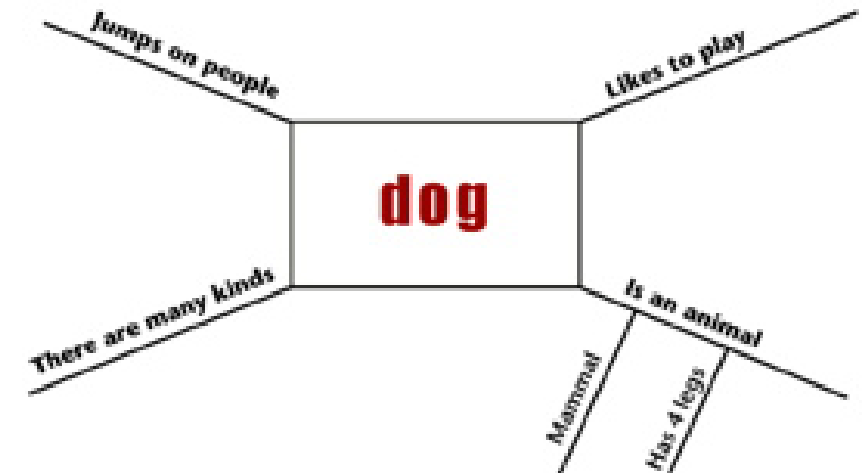
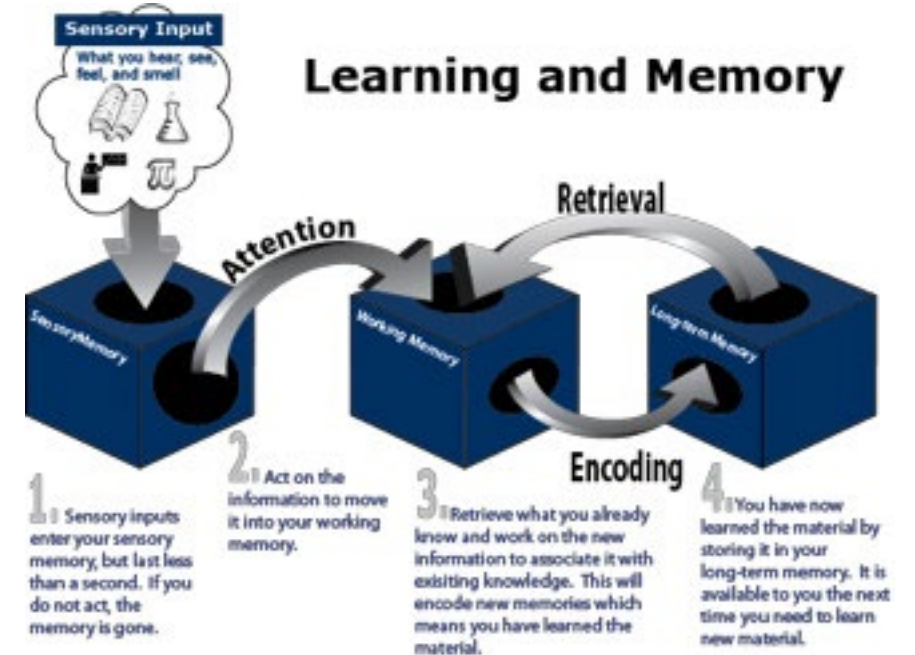
To respond, visit [PollEv.com](https://www.pollEv.com) and type in **karenmlounsbury608** to join the session



The science supporting active learning
and specific advantages for medical
education

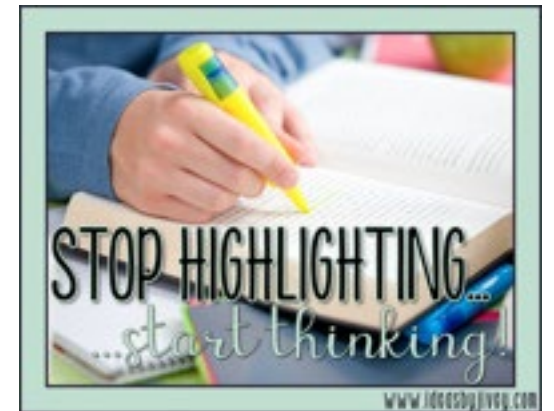
Best Teaching Strategies

- "All new learning requires a foundation of prior knowledge." Learners make sense of their experiences (and learning) using their own knowledge organizations
- Any technique that requires you to solve a problem (retrieve prior knowledge) **before** being shown the solution is beneficial to long term encoding/storage and the building of complex knowledge organizations



Misconceptions for Study Techniques

- Re-reading highlighting are believed to be the best study techniques
 - This notion has been debunked by studies in all levels of learners, but still persists!
- Learning and then retrieving and applying through Active Learning is better for retention



reflective learning

contemplation, practice and
experience

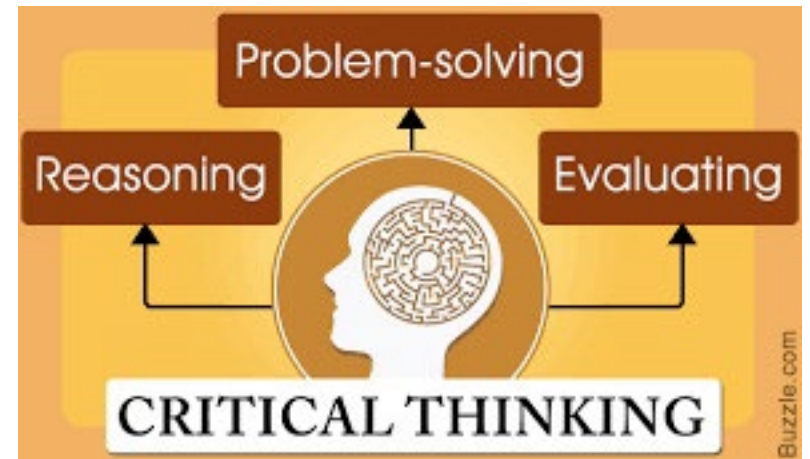
Reduce the cramming mentality before exams!

- Not fun, not effective



Training of Physicians: Metacognition leads to improved Critical Thinking and Diagnostic Reasoning

- Thinking about one's own thinking processes
- Evaluate the process, identify knowledge gaps, find the resources to fill those knowledge gaps, and apply that new knowledge to solve future problems.
- This process is also key to developing good diagnostic reasoning skills



To respond, visit **PolleEv.com** and type in **karenmlounsbury608** to join the session

Recognize the value of active learning concepts
using 4 multiple choice questions

Think for 30 sec, pair share, answer

To respond, visit [PollEv.com](https://www.pollEv.com) and type in **karenmlounsbury608** to join the session

1. Which of the following results from using class time for active learning?

- A. Less interaction with the instructor
- B. Less material can be covered
- C. More learning from peers
- D. More study time outside of the classroom

To respond, visit [PollEv.com](https://www.pollEv.com) and type in **karenmlounsbury608** to join the session

1. Which of the following results from using class time for active learning?

- ~~A. Less interaction with the instructor—explains difficult concepts~~
- ~~B. Less material can be covered—many concepts don't need in-class time~~
- C. More learning from peers—builds team skills
- ~~D. More study time outside of the classroom—less time reviewing after~~

Careful Design is necessary to balance pre-work and in-class material

USMLE Performance

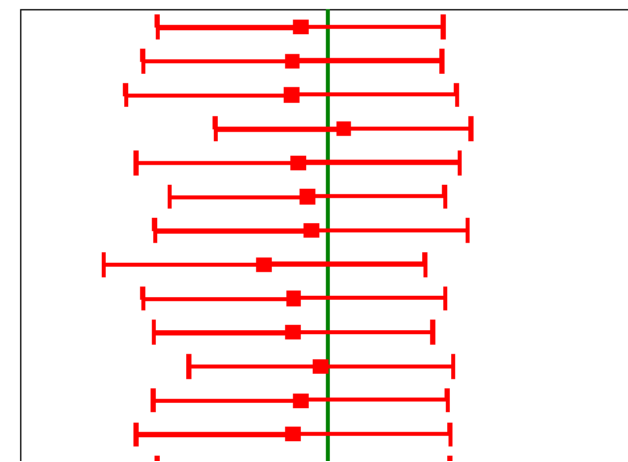
Step One Score Distributions: Graphs represent the school mean (+/- 1 standard deviation) as compared to the national mean.

PERFORMANCE ON FIRST ATTEMPT

	Examinees from Your Medical School	Examinees from U.S. & Canadian Medical Schools
Percent Passing	99	96
Total Test	Mean (SD) 234 (16)	Mean (SD) 230 (19)

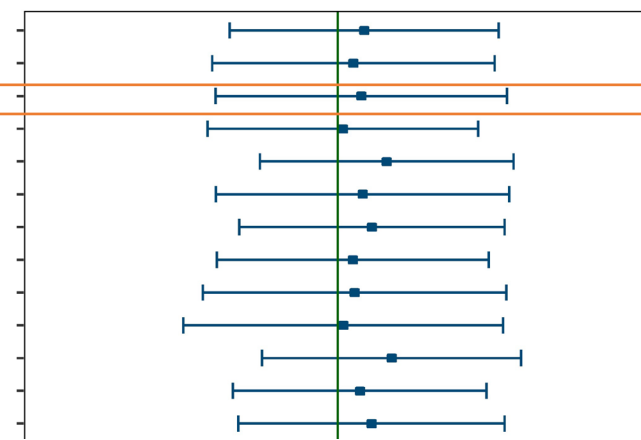
2018 (Co2020)

- 1-MK: Applying Foundational Science Concepts
- 1-PC: Diagnosis
- 1-PC: Management
- 1-PBLI: Evidence-Based Medicine
- 2-Behavioral Sciences
- 2-Biochemistry
- 2-Genetics
- 2-Gross Anatomy & Embryology
- 2-Histology & Cell Biology
- 2-Microbiology & Immunology
- 2-Nutrition
- 2-Pathology
- 2-Pharmacology



2021 (Co2023)

- 1 - MK: Applying Foundational Science Concepts
- 1 - PC: Diagnosis
- 1 - Communication & Interpersonal Skills
- 1 - PBLI: Evidence-Based Medicine
- 2 - Behavioral Sciences
- 2 - Biochemistry
- 2 - Genetics
- 2 - Gross Anatomy & Embryology
- 2 - Histology & Cell Biology
- 2 - Microbiology & Immunology
- 2 - Nutrition
- 2 - Pathology
- 2 - Pharmacology



Training of Physicians: Effective Teams

- Sets clear and demanding performance goals
- Task-oriented discussion in which everyone participates
- There will be disagreement (viewed as good)
- Everyone is respectful of each member of the team
- Decisions are made when there is general agreement



To respond, visit **PollEv.com** and type in **karenmlounsbury608** to join the session

2. Effective sessions align competencies, session content and assessment through which of the following?

- A. Exam questions
- B. Pre-work and Session objectives
- C. Step 1 study guides
- D. Student evaluations

To respond, visit [PollEv.com](https://www.pollEv.com) and type in **karenmlounsbury608** to join the session

2. Effective sessions align competencies, session content and assessment through which of the following?

~~A. Exam questions—objectives drive assessment~~

B. Pre-work and Session objectives

~~C. Step 1 study guides—caution against minimizing to only Step 1~~

~~D. Student evaluations—caution against curriculum changes without faculty curriculum committee oversight~~

Establish Session Objectives that link to Course Objectives and Competencies

To respond, visit **PollEv.com** and type in **karenmlounsbury608** to join the session

3. The most effective application questions in team-based learning sessions have which of the following characteristics?

- A. Each student team works on a different problem
- B. Student teams report answers after the session is over
- C. Student teams select one best answer from the options offered
- D. Student teams work on only basic science problems

To respond, visit [PollEv.com](https://www.pollEv.com) and type in **karenmlounsbury608** to join the session

3. The most effective application questions in team-based learning sessions have which of the following characteristics?

~~A. Each student team works on a different problem--SAME~~

~~B. Student teams report answers after the session is over-- SIMULTANEOUS~~

C. Student teams select one best answer from the options offered--SPECIFIC

~~D. Student teams work on only basic science problems—SIGNIFICANT~~

4 Ss of Active Learning

To respond, visit **PolleEv.com** and type in **karenmlounsbury608** to join the session

4. Which of the following Active Learning teaching modalities at Larner College of Medicine does not have a readiness quiz component (RQ or iRAT/gRAT)?

- A. Case-based learning
- B. Problem-based learning
- C. Team-based learning
- D. Workshop

To respond, visit [PollEv.com](https://pollEv.com) and type in **karenmlounsbury608** to join the session

4. Which of the following Active Learning teaching modalities at Larner College of Medicine does not have a readiness quiz component (RQ or iRAT/gRAT)?

- ~~A. Case-based learning—RQ taken on own before class (quiz flexibility)~~
- B. Problem-based learning—no preparation, self-directed learning**
- ~~C. Team-based learning— iRAT/gRAT taken in class (attendance)~~
- ~~D. Workshop—RQ taken on own before class (quiz flexibility)~~

Most modalities include quizzing

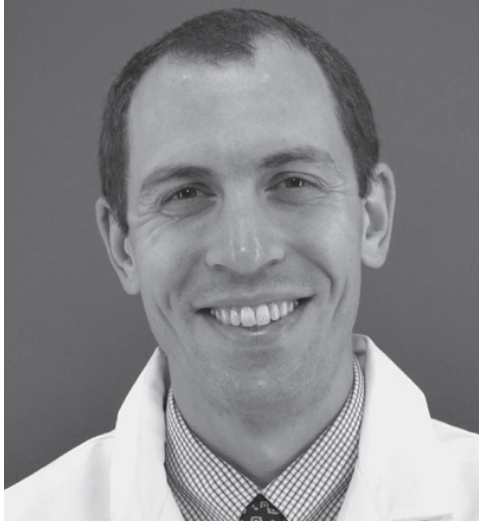
Quick Overview of Active Learning SOPs	Team-Based Learning	Case-Based Learning	Workshop	Problem-Based Learning	Integrative Review	eLearning Module
Independent Learning (Before class)	Yes	Yes	Yes	No	Yes - previously taught material should be identified	N/A
Time Estimate for Independent Learning (Students)	1:1.5 ratio for class time, prior to class	1:1 ratio for class time, prior to class	1:1 ratio for class time, prior to class	1:1 ratio for class time, after class	1:1 ratio for class time, prior to class	Calendar indicates time needed to complete and meet objectives
Prep Materials Due for Uploading	Monday the week prior to the session	Monday the week prior to the session	Monday the week prior to the session	N/A	Materials for review identified a week in advance	N/A
Prep Materials Available to Students	5 days ahead of session	5 days ahead of session	5 days ahead of session	N/A	5 days ahead of session	All materials available 5 days prior to calendar event
# of Objectives per preparatory hour	Approx. 10 for Independent Learning and 5 for in-class	Approx. 10 for Independent Learning and 5 for in-class	Approx. 10 for Independent Learning and 5 for in-class	Students set objectives.	5 in-class objectives covered	10 or fewer objectives
Graded Component	IRAT & GRAT in class	7-10 question RQ completed by 7 am day of class	7-10 question RQ completed by 7 am day of class	N/A	None	7-10 question RQ completed by 7am day after calendar event

To respond, visit **PollEv.com** and type in **karenmlounsbury608** to join the session

What challenges do you predict for introducing more Active Learning sessions?

Enter one or two words to form a word cloud

Panel Presentation and Discussion



- Andy Hale, MD: Asst. Professor of Medicine, Course Director and Instructor, Cardiovascular, Respiratory and Renal
- John Miller, MD: Asst. Professor Internal Medicine, Course Director and Instructor, Convergence
- N. Karina Lopez, MA, ME: Instructional Designer, Curriculum Team, Office of Medical Education

Team-based Learning vs. Problem-based Learning

- Introductions: What experience with TBL and PBL?
- Compare and Contrast the preparation, delivery, and assessment
- What questions will help decide which topics or types of learning should be delivered by TBL vs. PBL and why?
- What are best practices and common pitfalls in the design of TBLs?
- Questions from Audience

Faculty Challenges

- Myths and Anecdotes of horrific experiences, some are true
- FEAR of consequences
 - Why change what is working?
 - We are gutting the curriculum!
 - Students will hate this.
 - Why are my evaluations so bad now?
- TIME
 - Sessions take a significant amount of time to develop, especially MCQs for readiness quizzes, case questions, and formative quizzes
- Resources
 - More tech training
 - Trust in Instructional Designers
 - Team approach to teaching
- Compensation
 - Clinical faculty especially need supportive Chairs to protect time



Student Challenges

- Orientation
 - Buy-in: Different from previous successful strategies
 - Expectations
 - Quiz fatigue
- Faculty Dev.
 - Pacing of Sessions
 - Quantity/Density of Prework
 - Alignment of quizzes and exams with objectives
- Student Services
 - Students from underrepresented groups (imposter syndrome)
 - Students with processing disabilities (session pacing)

Advice for TBL

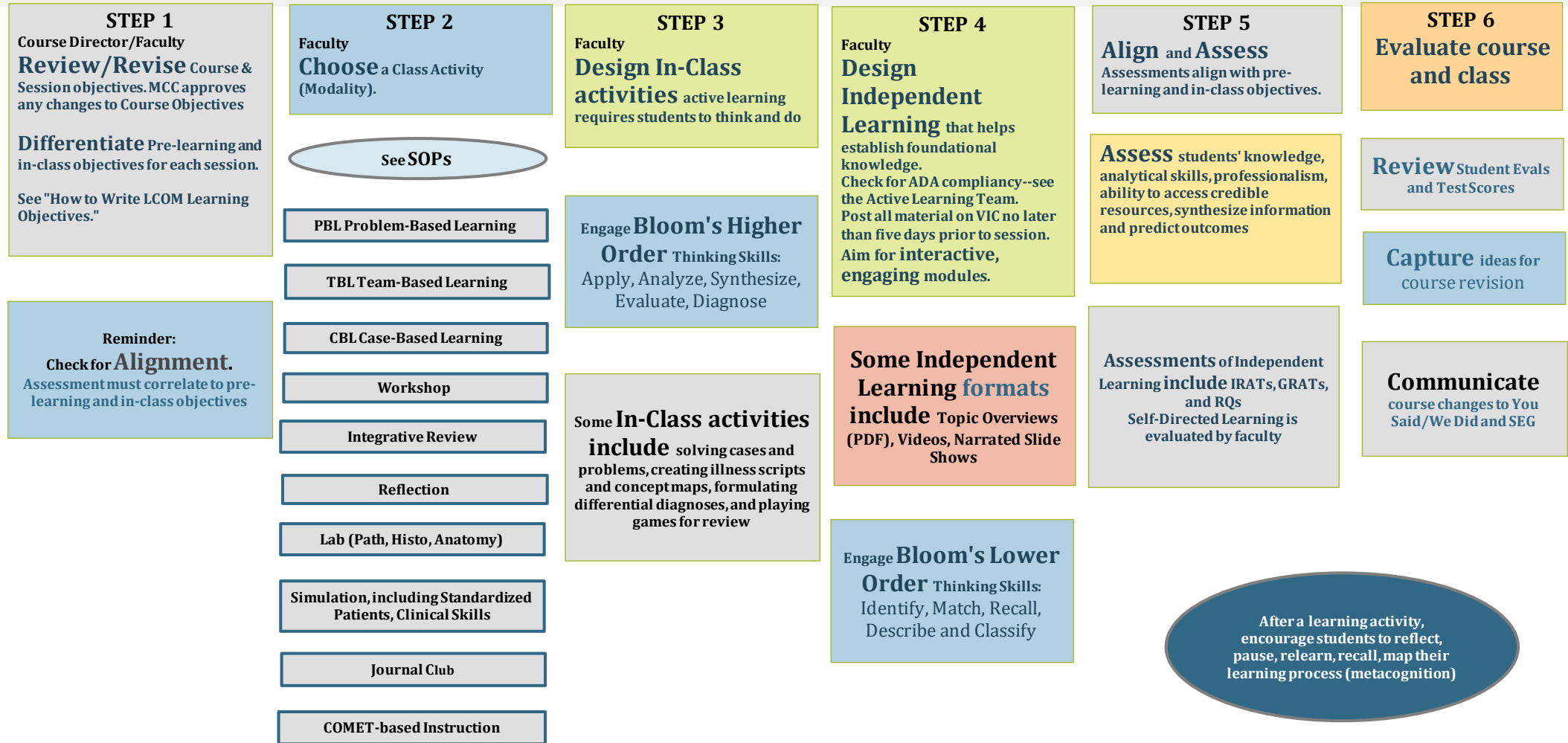
- Limiting pre-work, aligning objectives to sessions, and session pacing are the hardest challenges
- Following SOPs for session modalities that limit pre-work and session content is critical
- We made a lot of changes based on student proposals that do not strictly follow desired pedagogy, so check with your course director
 - Release of answers was the most controversial until COVID
 - Release of session recordings took its place
- Review evaluations from students and possibly ask for a peer faculty evaluation to improve your session

Advice for PBL

- Gather small group faculty well in advance and make sure they are trained in PBL methods to ensure consistency between groups
- Choose problems or cases that build on student's previous learning (not recommended for the first experience with a topic)
- A clear rubric for faculty to evaluate students
- Evaluate outcomes

A Six-Step Active Learning Design Process

An overview of transitioning to Active Learning in the LCOM curriculum



The Curriculum Team, part of the Office of Medical Education, comprises a manager, curriculum coordinators, and instructional designers. Our [mission](#) is to support faculty and course directors.

[Contact an Instructional Designer](#) today to start planning an upcoming session.

What Are the Faculty Saying?



Jay Silveira, PhD, recommends the Curriculum Team to his faculty colleagues:

“Take full advantage of what the Curriculum Team can do for you — the time savings can be enormous.”



Rebecca Wilcox, MD, shares her thoughts on the Curriculum Team:

“They are a community of creative individuals that are passionate about education.”

Science of Learning



Learning Modalities



In the News



Faculty Support



<http://www.med.uvm.edu/activelearning/home>

Teaching Academy Resources



Develop Skills
in Educational
Scholarship

Educational Research
and Scholarship Series

Medical Education
Grand Rounds

Writers Workshop &
Manuscript Marathon

Medical Education
Research Group

Medical Education
Fellowship Program



Develop Skills
in Teaching

Clinical Faculty
Development Series

Snow Season Education
Retreat

Mentoring

Essentials of Teaching
and Assessment



Find
Funding

Frymoyer Scholars
Program

UVM Health Network
Medical Group Education
Award

Teaching Academy
Curriculum Development
Award *

Teaching Academy
Travel Award*



Get
Involved

Attend Events

Read the Newsletter

Apply for Membership



For more information visit:
<http://med.uvm.edu/teachingacademy>

*Open to Teaching Academy members only

Thank you

