Active Learning 101
A Starting Point for Engaging Teaching
Agenda

9:15-10:15  Intro to Active Learning
10:15-11:15 Activity Design
11:15-11:45 Resources for Active Learning
11:45-1pm  Lunch with Active Learning Veterans
1pm        Wrap Up
Introduction to Active Learning

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Assistant Professor of Practice
Dept. Chemistry and Chemical Biology
Director, TRIAD Coalition

Dr. Alice Seneres
Director of Integrated Academic Support Programs
Learning Centers
What is active learning?

- Brainstorm your ideas with your group and generate a list (or definition or description) on the whiteboard near your table.
What is active learning?

- Engaging learners in activities such as group discussion, reading writing, and problem-solving
- Promotes analysis, evaluation, and creation of course content
- Encourages students’ leadership, communication, motivation, critical thinking, and interpersonal skills

Forms of Active Learning

Cooperative or collaborative learning, problem-based learning, case methods, simulations, peer instruction, group discussion, self-assessment, think-pair-share, brainstorming, role-playing, debates, guided inquiry, ...
What does active learning look like?

Draw your classroom (or your ideal classroom) on the white boards

https://dcs.rutgers.edu/active-learning/events/open-house

https://dcs.rutgers.edu/classrooms/active-learning-spaces
What does Active learning look like?

http://www.eecs.umich.edu/eecs/about/articles/2011/Data_mining_11.html

http://controlyourbuilding.com/blog/entry/these-17-university-facilities-managers-are-using-social-media-the-right-way

http://youvis.it/qusmTd

http://www.rollins.edu/biology/
Making the case for active learning

- Active learning (compared to passive learning) improves academic achievement, quality of interpersonal interactions, self-esteem, and perceptions of greater social support

- Students in active learning classrooms out perform their peers in traditional classrooms and their own grade expectations as predicted by test scores.

- Cooperative learning results in positive outcomes related to effort to achieve (e.g., long-term retention, higher-ordered critical thinking skills, metacognition, and creative problem solving), interpersonal relationships, social supports, and psychological health
Making YOUR case for active learning

- Describe your goals, reasons, and rationales for using/including active learning in your course.

- Generate a list of desired student outcomes on the whiteboard.

- Comment on any concerns you have about “making the case”
  - to your colleagues or
  - with the students in your class

  who might question, challenge, resist, or not “buy into” active learning
Direct Instruction versus Active Learning

Direct Instruction
- Can convey large amounts of information to listeners
- Teacher-directed and teacher-paced
- Students have more passive role (listening, taking notes) than the lecturer

Active Learning
- Can be student-directed and student-paced
- Students have more active role
- Student can engage with the content in a variety of ways
Questioning Activity

● Work in pairs or groups
● What questions could you ask about the object placed in front of you?
  ○ Using the whiteboards at your table, write down as many questions as possible about your object in 2 minutes.

This activity is courtesy of the Learning Assistant Alliance (https://www.learningassistantalliance.org/)
Questioning Activity

- What do you notice about your questions?
- **Open** vs. **closed** questions
  (or divergent/convergent)
  - **Label** your questions: O or C
  - **Convert** a closed question to an open question

This activity is courtesy of the Learning Assistant Alliance (https://www.learningassistantalliance.org/)
Reflection on Questioning Activity

- What features of this activity influenced how you (the student) engaged with the material or responded to the prompt/task/assignment?

- What does this activity tell us about how we design/structure our own active learning activities?
Self-Reflection for Active Learning

● What is your motivation to use active learning?

● What are you hoping to accomplish?

● What kind of activities are you planning to include (if you already have an idea)?

● What concerns/questions do you have?
Active Learning: Activity Choice & Design

Ismael Lara
Dena Novak
Jeniffer Obando
How do I choose the right activity for my class?
Choose...with Bloom’s!

- **Bloom’s taxonomy** is a classification system used to define and distinguish different levels of human cognition. (i.e., thinking, learning, and understanding)

- Used to help guide assessment, classroom activities, and other instructional strategies
Objectives

Activities

Bloom’s Taxonomy

- Remember: recall facts and basic concepts (define, duplicate, list, memorize, repeat, state)
- Understand: explain ideas or concepts (classify, describe, discuss, explain, identify, locate, recognize, report, select, translate)
- Apply: use information in new situations (execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch)
- Analyze: draw connections among ideas (differentiate, organize, relate, compare, contrast, distinguish, examine, experiment, question, test)
- Evaluate: justify a stand or decision (appraise, argue, defend, judge, select, support, value, critique, weigh)
- Create: produce new or original work (design, assemble, construct, conjecture, develop, formulate, author, investigate)
Strategies We Will Discuss Today

- Remembering/Understanding
  - Taboo Game
- Applying/Analyzing
  - Picture Prompt
- Evaluating/Synthesizing
  - Brain Drain
<table>
<thead>
<tr>
<th>Verbs</th>
<th>Types of aligned activities/assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall</td>
<td>Objective test items such as fill-in-the-blank, matching, labeling, or multiple choice questions that require students to:</td>
</tr>
<tr>
<td>Recognize</td>
<td>• recall or recognize terms, facts, and concepts,</td>
</tr>
<tr>
<td>Identify</td>
<td>• summarize</td>
</tr>
<tr>
<td>Interpret</td>
<td>• find or identify examples</td>
</tr>
<tr>
<td>Exemplify</td>
<td>• illustrate a concept or principle</td>
</tr>
<tr>
<td>Summarize</td>
<td>• etc.</td>
</tr>
<tr>
<td>Describe</td>
<td></td>
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<tr>
<td>Explain</td>
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Taboo Game

1. One student faces the class. Behind him/her, a word is written that the rest of the class can see.

2. The objective is for the class to shout words or concepts related to the word on the board and eventually get the student to guess the word.

3. Useful for review, minimal prep required
<table>
<thead>
<tr>
<th>Verbs</th>
<th>Types of aligned activities/assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply</td>
<td>Activities such as problem sets, labs, case studies, papers, debates, concept maps, or simulations that require students to:</td>
</tr>
<tr>
<td>Execute</td>
<td>• use procedures to solve or complete familiar or unfamiliar tasks</td>
</tr>
<tr>
<td>Implement</td>
<td>• determine which procedure(s) are most appropriate for a given task</td>
</tr>
<tr>
<td>Analyze</td>
<td>• discriminate or select relevant and irrelevant parts</td>
</tr>
<tr>
<td>Differentiate</td>
<td>• determine how elements function together</td>
</tr>
<tr>
<td>Organize</td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
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<tr>
<td>Calculate</td>
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Picture Prompt
Picture Prompt

1. Show students an image (photo, graph, diagram, cartoon, etc.) with no explanation, and ask them to identify/explain it, and justify their answers.

2. Alternatively, ask students to write about it using terms from lecture, or to name the processes and concepts shown.

Picture Prompt

3. Students may work on this individually and then share in small groups. Or, they may begin individually/in small groups and then share as a whole class.

4. After students have explored all options, give students the “right answer” (or your expert insight) and use this to frame discussion.

Evaluating & Synthesizing

<table>
<thead>
<tr>
<th>Verbs</th>
<th>Types of aligned activities/assessments</th>
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</thead>
<tbody>
<tr>
<td>Evaluate • Critique • Assess • Create • Generate • Plan • Produce • Design • Develop</td>
<td>Activities such as case-studies, critiques, problem sets, studies, research projects, or treatment plans that require students to: • test, monitor, judge, or critique based on established criteria, data, or standards • make, build, design or generate something new</td>
</tr>
</tbody>
</table>
Brain Drain
Brain Drain

1. Divide students into groups of 5 or 6. Hand out to each student an empty grid with a prompt or task at the top to brainstorm, 5-6 rows (one for each group member) and 3-4 columns.
   a. Each row represents a brainstorming round.
   b. Each column represents a distinct component of the focus issue.

Brain Drain

2. Each person brainstorms possible answers in row one, filling in each of the columns in that row with their response to the prompt.

3. After three minutes, rotate papers clockwise. Each student works on the same problem in row 2, without repeating any answers from row 1.

Brain Drain

4. Continue until sheet is filled in, with each progressive round generating more creative responses to the original issue.

5. After the entire sheet is completed, groups debrief to find the best answers and optionally present to the rest of the class.

**Issue:** Develop a plan to clean up the local park, determining how you will gather the human resources needs, the financial resources needed, and how you will publicize your project.

<table>
<thead>
<tr>
<th>Round</th>
<th>Human Resources</th>
<th>Financial Resources</th>
<th>Publicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Volunteers from local high school</td>
<td>Bake sale</td>
<td>Flyers posted in public spaces</td>
</tr>
<tr>
<td>2</td>
<td>Partnership with local environmental organization</td>
<td>Fundraising night at Applebee's</td>
<td>Social media campaign #pickupthepark</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td></td>
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</tbody>
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Next Steps: Design Your Activity!
Designing Your Activity:

- Think about a learning challenge from your own classroom
  - What do students struggle with? What topic or skill is particularly tricky?
- Determine where the challenge falls on Bloom’s Taxonomy
  - What skill or kind of thinking do you need students to engage in?
Designing Your Activity:

- Move to the table that fits your selected Bloom’s level
- Choose an activity and design it using the worksheet
  - Discuss with your table as you select your activity and move through the worksheet
Contact Info

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Resources for Active Learning
Resources for Active Learning

Table 1: Learning Assistants
Table 3: Instructional Design
Table 4: Solstice Wireless Display Sharing
Table 5: Tools for Flipping the Class
Table 6: CatchBox Throwable Microphone & Student Monitors
Center of the Room: Collaborative Instructor Hub
Lunch with Active Learning Veterans
Active Learning Veterans

Christine Altinis-Kiraz, Assistant Teaching Professor, Chemistry & Chemical Biology

Daijiro Okada, Assistant Director of Undergraduate Study, Economics

Joseph P. Hughes, Professor, Economics

Justin Kalef, Associate Undergraduate Director, Philosophy
Conclusion
Conclusion

• Upcoming Events
  • Spring workshops to be announced soon
  • Active Learning Symposium – May 15th

• Certificate Presentations

• activelearning.rutgers.edu
  • Events
  • Teaching Tools
  • Resources
  • Learning space information
  • Course Information Form
Thank You!
The Active Learning Community