Best Practices for Teaching & Learning
Session 5: Interactive Teaching and Active Learning

1. Introduction to this session

   - The goal of this session is to illustrate how to incorporate various active learning techniques in a course to increase understanding and transfer.

   - By the end of this session, you will be able to:
     - _Apply_ relevant research on active learning to your teaching
     - _Discuss_ the impact of active learning exercises in the classroom and _evaluate_ the time requirements for different active learning strategies
     - _Develop_ activities and/or techniques that will help students achieve the learning objectives in your course

2. Discussion

   - What type(s) of interactive teaching techniques have you used or experienced?
   - What are the pros and cons of those interactive techniques?

3. Benjamin Bloom's findings of instructional methods

   a) The 2-Sigma Effect: the benefits of one-on-one teaching methods

   b) Brainstorming session: why is one-on-one teaching so effective?

4. Active Learning Methods

   a) Active/interactive teaching methods can bring many of the benefits of one-on-one teaching to classes and large lectures

   b) Active vs. Interactive Learning
   - When students are actively learning, they:
     Think, write, predict, calculate, and classify

   - When students are interactively learning, they may start with active learning, but also:
     Discuss, persuade, collaborate, and argue

   c) Time scales for active learning and interactive lecturing
     You don't need to change the entire format of course to increase active learning!
       i.   < 2 minutes
       ii. 2 – 5 minutes
       iii. 5 – 20 minutes

   d) <2 minute activities

   - Do you have a question? (10 seconds) Keep in mind how long 10 – 30 seconds feels.

- Pose a question and give students time to think about it (30 seconds)
    i. What procedure (formula, technique) could I use here?
    ii. Is what I just wrote correct? Why or why not?
    iii. What would you guess is the next step (the outcome, the conclusion)?
- MUD cards (1-2 minutes)

e) 2-5 minute activities

- Quick-thinks: are brief, active-learning exercises that can be inserted in lectures and require students to process information individually and/or collaboratively. Each can be used as a comprehension check focusing on a different cognitive outcome, ranging from relatively low-level knowledge skills to higher-level skills such as analysis and synthesis.

- Quick-think examples:
    i. Compare or contrast
    ii. Reorder the steps
    iii. Support a statement
    iv. Reach a conclusion
    v. Paraphrase the idea
    vi. Correct the error
    vii. Complete a sentence starter
    viii. Select the best response

- Methods for integrating quick-thinks include:
    i. MUD cards
    ii. Classroom response devices (clickers)
    iii. Student response cards
    iv. Web-based system to collect answers, such as Socrative

- It is extremely important both to construct good questions and to communicate to your students about why you are using technology to ask in-class concept questions and your policies regarding answering the questions.

f) 5-20 minute activities

- 5-20 minute activities are centered around:
    1. Long discussions and/or demonstrations that focus on:
        i. multiple-choice questions
        ii. open-ended questions

    2. Participatory activities

- Discussion Questions
  What were the teaching elements?
  Why was this activity done this way?

5. Pair-Share Activity

Select two activities on the *Active Learning Strategies* handout and discuss for each activity:

    i.   How would you integrate the activity into a course in your discipline to facilitate a specific learning objective?

    ii.   What are the expected time requirements, both in class and in terms of preparation time?

    iii.   What are the potential benefits or pitfalls of the activities (and how could you evaluate these)?

6. Think-Pair-Share Activity

What active learning strategies could you use to:

    i.   Help students achieve one of your learning objectives?

    ii.   Provide you and your students with information on whether students have met the learning objective?

What are the potential pros and cons of the activities?

7. Post-Session Assignment