

# TEAK/TA Teaching Workshop



## Session 2: Keeping Students Engaged

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# Session Activities...

- Lecture and questioning techniques
- Objectives:
  - Plan a lecture that keeps your students focused on the class or lab
  - Pose good questions to your class or lab
  - Apply a new technique to a lesson you are developing

# Outline

- Lecture and Discussion Starters
- Applying Questioning Techniques and Stories
- Attention span
- Planning activity

# Lecture and Discussion Starters

- Help focus the discussion
- Set expectations
- Create relevance

Your ideas...



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# Choose Appropriately

- Consider your audience (age, background, knowledge)
- Consider the topic and goals for the class
- Consider the time available
- Does it focus or distract?
- Does it create relevance?
- Does it make information memorable?

# Activity: Applying Techniques to Your Lessons

## Directions:

- Develop 3 lesson starters to use with your topic.
  - Could be questions, stories, case studies, etc...
  - Don't have to use all – just generate some ideas!



# Pay Attention!

- One model for attention span: 3-5 minutes per year of age.
- Doesn't apply to 20-year-olds!
  - Young children: 3-5 minutes/yr of age
  - Maxes out at about 20 minutes
- Stray thoughts can enter your mind every 7-8 seconds.
  - Be more interesting than them so your audience comes back to you!

# Helping Class to Focus

- What are some techniques for not losing your class's attention?

# Asking Questions

**Questions are the most common way to break up a lecture.**

What are/could be some problems with asking questions?

# Asking a question: Problems

- People are unwilling to answer (shy, not engaged in the lecture, not sure of their answer)
- Nobody knows the answer
- People answer the wrong question
- Not giving students time to think!
  - Could have students jot notes before asking for answers. This brings out quiet student. (You can call on kids who write a lot in response to your question).
  - Take a drink of water or count to 30 before answering your own question.

# How did today's session start?

- The Who – Slip Kid
- What class(es) do you think this might be relevant to, and why?
- Can somebody define “slip” (in terms of Materials Science)?

# Types of Questions

- Question should be meaningful to students and one they can most likely answer.
- Factual Questions
  - Don't make it sound like, "If you don't know the answer, you're stupid!"
- Application and Interpretation Questions
  - Found to produce gains in student comprehension.
  - How does theory x relate to problem y?

# Other Types of Questions

- Connective and cause and effect questions
- Comparative questions
- Evaluative
- Critical Questions: Help students become critical readers
  - So and so, an expert in his field, thinks such and such. Under what circumstances could this be true?

# Learning Theory: Bloom's Taxonomy

More on this later in the quarter...



# Good Questions Gone Bad

- Listen and build on what is said.
- If no one answers,
  - Rephrase the question
  - Break problem down into its parts
    - Clarify problem
    - Identify knowns and unknowns. What's relevant?
    - What are the possible solutions
    - Ask lead-in questions

# Notes for next time!

- Cut back on the learning theory business
- Add slides on different learning styles, and corresponding ideas for classroom activities that support each.

# Cognitive Domain

- The cognitive domain involves knowledge and the development of intellectual skills
- There are six major categories, from the simplest behavior to the most complex
- The categories can be thought of as degrees of difficulties.

# Bloom's Cognitive Domain Taxonomy

Level	Categories
1	<b>Knowledge</b> of terminology; specific facts
2	<b>Comprehension</b> Grasping (understanding) the meaning of informational materials
3	<b>Application</b> The use of previously learned information in new and concrete situations to solve problems that have single or best answers.
4	<b>Analysis</b> The breaking down of informational materials into their component parts
5	<b>Syntheses</b> Creatively or divergently applying prior knowledge and skills to produce a new or original whole
6	<b>Evaluation</b> Judging the value of material based on personal values/opinions, resulting in an end product, with a given purpose, without real right or wrong answers.

# Guided Questioning Techniques

- Use a variety of question types.
- Teach toward the type of questions you want students to ask.

Technique	
Convergent thinking	Represents analysis and integration of remembered information
Divergent thinking	Brings out interpretation or explanation
Evaluative questions	Deal with values, judgment and choice
Open-ended questions	Encourage involvement
Closed-ended questions	Simple recall

# Activity: Applying Techniques to Your Lessons

## Directions:

- Develop 3 questions that you could ask during your lesson.
  - Try to address different cognitive levels: some knowledge, some comprehension, some application, etc.



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