Designing Multiple Choice and Open-Ended Questions to Assess Student Learning

Description:
Effective question design not only quantifies student learning so that grades can be assigned; it also focuses student attention on what’s most important for them to know. Which question format is best suited for the learning goals in your particular course? How do you create questions that measure both mastery of content and promote problem-solving and critical-thinking abilities? This workshop will explore best practices for designing multiple choice and open-ended questions, and delve into the advantages and disadvantages of common question types.

Learning Outcomes:
• Identify advantages and disadvantages of different question formats
• Discuss discipline-specific literature that identifies best practices for question design
• Design a multiple-choice question around a discipline-specific idea that goes beyond simple recall of information
• Design an open-ended question around the same concept that measures both content mastery and higher-order cognitive abilities

Example Agenda:
(may be tailored to your course needs and meeting time)

* = indicates active learning/group participation activities

1. Large Group Discussion (10 minutes)
Facilitator introduces learning outcomes, Bloom’s Taxonomy, and basic purposes of question design (using 5-6 slides or slides handouts).

2. Small Group Discussion (10 minutes)
Individuals and then pairs of TAs brainstorm advantages and disadvantages of multiple-choice versus open-ended questions. Each pair then shares their conclusions with the class as the facilitator writes/summarizes results on the board.

3. Presentation on Question Format (5 minutes)
Facilitator shares 2-3 slides about advantages and disadvantages of various types of questions (multiple choice, open-ended, other formats) and distributes handouts with summary of advantages/disadvantages of each question format, Bloom’s Taxonomy, and case studies.

4. Case Study Discussion* (10 minutes)
• TAs break up into groups of 3-5.
• Each group examines examples of discipline-specific exam or homework questions and discusses provided questions, such as:
  o Are there structural/phrasing concerns that make your question unclear? How can you make the question clearer?

http://prepare.cte.cornell.edu
o Identify the level of Bloom’s Taxonomy assessed by your question.
o Suggest a modification to the question that would allow a higher level of Bloom’s Taxonomy to be assessed.

5. Presentation on Basics of Question Design (5 minutes)
Facilitator presents 2-3 slides about basic principles of question design, connecting them to the case studies just discussed and reviewing differences between exam, homework, and in-class response questions. Facilitator distributes handout with principles for good multiple choice and open-ended question design and a discipline-specific list of 2-3 potential concepts.

6. Discipline-Specific Breakout* (30 minutes)
• TAs again form groups of 3-5 to discuss the facilitator-provided list of concepts around which a question can be designed (or to choose their own).
• Groups design 2-3 learning outcomes for their topic, addressing content, skill, and process mastery.
• TAs create and share:
o a multiple-choice exam question around their topic that assesses a higher-order cognitive ability beyond declarative knowledge,
o an open-ended exam or homework question that allows students to demonstrate their thought process and specific skills as well as mastery of content