What Questions Engage Students?

"What's in a question, you ask? Everything. It is a way of evoking stimulating response or stultifying inquiry. It is, in essence, the very core of teaching." (John Dewey, 1933)

Research on questioning behavior in university classrooms by Barnes (1980) reveals some surprising facts. First, a very small portion of most classes is spent in instructor questioning (3.7 %). Second, the great majority (82%) of those questions are at the lowest cognitive level (rote memory). Third, almost a third (32 %) of those questions that are asked elicit no learner response. In short, whether the class is called a seminar or a lecture, the main activity is the instructor lecturing with learners passively listening. Good questions engage students in thinking about or discussing course issues.

In asking good questions, we aim to:
a) Increase student engagement, and
b) Develop higher-order cognitive skills

Good questions are: High-level, Divergent, Structured and Straightforward. There are times and places for other types of questions, but questions of this type produce two to three times more responses (Andrews 1980) *and* help develop cognitive skills.

To encourage the greatest student engagement:
a) Try to incorporate **all four engaging categories** in each question.
b) **Display the question** on a blackboard, by overhead or data projector.

Not Engaging	Engaging
Low Level Questions	**High Level Questions**
Require only rote memorization and content paraphrasing. For example: • *Who are the main characters in Hamlet?* • *What proportion of offspring will demonstrate a dominant heritable trait if both parents are heterozygous for the dominant allele?*	Require application, analysis, synthesis, or evaluation (Bloom 1956) (elicits higher-order thinking). For example: • *If Laertes was left out of the play would it still be Hamlet? Why?* • *Characterize the evidence required to establish the heritability of a behavioral trait.*
Convergent Questions	**Divergent Questions**
Imply a single right answer to a question (riskier to answer). For example: • *What is Hemmingway's main theme in "A Farewell to Arms?"* • *What cell type in the blood carries hemoglobin?*	Suggest many possible correct responses (safer to answer). For example: • *What are some of the themes in "A Farewell to Arms?"* • *Propose an experiment to test the hypothesis that malaria can be transferred between people.*
Unstructured Questions	**Structured Questions**
Vague, non-specific, wide open; requires time to organize a good response (difficult to know what is required; risky to answer). For example: • *What should a doctor do?* • *How do you characterize a population?*	Direct the learner to a specific approaches, specific areas of the subject matter or frameworks to arrive at an answer. For example: • *What could a general practitioner prescribe for these unusual symptoms?* • *In what ways could you use 'mark and recapture' to estimate flock size in a population of birds?*
Multiple Questions	**Straightforward Questions**
Contains several questions or is interspersed with background information. For example: • *What are some of the reasons Tolstoy is condemning him? I mean... what is the main problem? At the end of the story, we have a religious solution. Some of you said you didn't think that fit with the rest of the story.* • *How do bacterial resistance genes, such as those in the blue part of your text, contribute to cell type selection after genetic manipulation?*	Clear; addresses one issue at a time. For example: • *What are some of the reasons Tolstoy is condemning him?* • *What are some ways to select for successful transformation in bacteria?*

Adapted from Ray V. Rasmussen, AACE Journal, 1984, 12(2), pp. 38-47.