

## USING QUESTIONS

### *Developing Organized Thinking and Creativity*

#### *Organizing Your Thinking and Presentations*

- Define goals for yourself and organize your class material with this in mind.
- To begin each class session, put a brief “agenda” of goals or topics on the board. Invite students to comment on or add to the list.
- Help students restate and articulate what they are expected to learn, via well-directed questions. If they have their own organized view of how the course is going, they will learn better.
- Define key concepts at the start of a discussion or presentation to help students use them to organize the material to follow. Use these concepts as a focus of discussion and restate them at the end.
- Vary the cognitive level of questions so that students get practice in thinking at different levels and for different purposes, and understand the relationships among them.
- When presenting facts, ask inductive questions which lead students to synthesize and generalize.
- Ask students to define concepts by examples, and try to find instances which relate to their own direct experiences.
- Ask questions which encourage students to form hypotheses or explore “if-then” relationships.
- Use probing and following questions which ask students to deepen their ideas, provide justifications for conclusions, or articulate assumptions.
- Give reasons and explanations for your own conclusions to provide a model for students’ thinking.
- Ask deductive questions requiring implications or extensions of concepts and theories.
- Ask questions involving comparisons and contrasts which require students to develop bridging concepts or dimensions.
- Ask open-ended questions with multiple right answers or questions for which “rightness” is secondary. This encourages spontaneity and reduces anxiety over being right or wrong.
- Use “brainstorming,” a technique which involves listing a number of ideas or answers before attempting any evaluation or selection. Evaluation is not abandoned, but rather postponed so as not to interfere with the flow of ideas.
- Ask students to react to each other’s ideas directly (especially when you aren’t sure what to say!). This will add diversity and reduce the tendency to look to the instructor for the “right” solution. Encourage constructive conflict and differences of opinion.

- Bring up a familiar concept or topic in an unexpected context: How would world politics change if energy supplies were unlimited? What would happen in a confrontation between Hitler and Cleopatra? How would a turbine blade feel if revved too fast? (This approach has been used successfully by a group called Syntectics to solve very hardheaded engineering problems.)
- Ask questions by analogy, simile, or other indirect comparison. Stimulate new concepts by asking for comparisons among apparently unrelated elements.
- Encourage students to use their own reactions (feelings, perceptions, values) as starting points for exploration of a topic.
- Helping students organize their own learning.
  - When completing a topic area, ask a student to summarize the main points for the class.
  - Point at, and help students define, habitual errors or blind spots they have in attacking questions or problems of a certain sort.
  - In helping students master a specific problem, also help them generalize so that they can apply similar methods to future problems of the same type.
  - Explicitly discuss with the class criteria for valid or invalid conclusions, and encourage them to formulate such criteria for themselves so that they can evaluate their own and others' thinking.

Reprinted with permission from Andrews, J. *TEACHING ASSISTANCE: A HANDBOOK OF TEACHING IDEAS*.  
TA Development Program, University of California-San Diego, 142.