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Critical Thinking (2) Critical thinking requires critical questioning

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Critical thinking theory has its roots in the works of Benjamin Bloom, a psychologist at the University of Chicago. Bloom (1956) categorized thinking into six processes. **Bloom's Taxonomy,** as it is called, is one of the most influential critical thinking models and continues to be as applicable today as it did then.

The six levels, listed in Table I, are in order of increasing levels of reasoning. Ideally, our goal as educators is *to move students from the lower levels of thinking to the upper levels, and if it is critical thinking that we are after, then we have to aim for levels 4-6.*

One way of doing this is to **ask students good questions.** (Table 1 matches question types with levels of reasoning). Another way is to **teach students to ask good questions** (King, 1995).

Table 1. **Bloom's Taxonomy of Learning Objectives**

If questions sound like…	***….it is probably this reasoning level***
"Who…?" "What…?" "Where…?" "List…" "Select…" "Define…"	**1. Knowledge** (remember terms, facts)
"Explain" "Predict" "Compare" "Summarize" "Interpret" "Give an example" "Contrast"	**2. Comprehension** (understand meaning of facts and ideas)
"Calculate" "Solve" "Apply" "Given------. Use this information to…"	**3. Application** (use information in new situation)
"Distinguish…" "How does ------ relate to ------? "What conclusion can you	**4. Analysis** (Find evidence to support generalization, see

draw" "How would you classify…?"	organization, see patterns)
"Design…" "Construct…" "Develop…" "Can you propose an alternative…?" "Could you predict the outcome if…?"	**5. Synthesis** (generalize, create new ideas from old sources)
"Evaluate" "Appraise" "Justify which is better" "Evaluate…..argument based on established facts."	**6. Evaluation** (make judgments about validity of ideas, of information based on a set of criteria)

Here are a few thoughts.

Have students generate questions.

- You may ask your students to generate their own questions (*about what they read in their textbooks, hear in lectures, and encounter during class discussions)* for use in review sessions or quizzes.
- Give them Bloom's taxonomy as a guide, and ask them to label their own level of reasoning. Recognizing and categorizing questions associated with the different levels encourages critical thinking.
- Encourage them to generate high level questions.

Create a classroom climate that encourages thinking.

- When asking questions, allow sufficient time for students to reflect on the questions asked or the problems posed.
- Coach reluctant students with follow-up questions. Your nonverbal message should be encouraging, smiling and not challenging.
- Arrange the seating arrangement so that the students share the stage with the teacher and all can interact with each other. This helps to minimize the passive mode the students adopt when all are facing the teacher.

Encourage Collaborative Learning:

Shared learning gives students an opportunity to engage in discussion and take responsibility for their own learning. Cooper (1995) argues that putting students in group learning situations is the best way to foster critical thinking.

Sources.

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- Cooper, J. L. (1995). *Cooperative learning and critical thinking.* Teaching of Psychology, Vol.22, Issue 1.

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