

Communication Skills: Asking Questions to Learn

Description

Asking questions is part of the learning process. As they are formulating questions, students also practice thinking in varying degrees of complexity. A question that simply requests a restatement of information is a question that doesn't challenge either the questioner or the responder. A question that asks "what if" regarding the relationships of variables, is not only more challenging to answer but is more challenging for the questioner to create. When posing a more complex question, the questioner is forced to think about possible cause and effect relationships, is required to think inductively or deductively, engages in criterion-based evaluation, and in the process of questioning creates new knowledge that inspires other questions. This lesson proposes a typology for asking questions based on Bloom's Taxonomy.

Learners

Providing opportunities for learners to ask and answer questions at different levels of cognitive complexity results in additional opportunities to learn. When students practice a new skill or learn new course content or read new material, they can question and respond to each other to gauge their understanding of the new content.

Equipment

No equipment is needed for this exercise, however there must be something for students to practice asking questions about. A common reading, a lecture, a guest speaker, a video or Power Point presentation, a demonstration, an exercise, a paper or other assignment, preparation for an exam, all offer content and opportunities that can become the basis for formulating questions.

Facilitator

Bloom's Taxonomy is the result of the work of an ad hoc committee appointed by the American Psychological Association in the 1950's. The charge of the committee was to develop a tool by which classroom teachers would be able to identify current cognitive capabilities of their students, present a structure to facilitate curriculum planning to enhance cognitive development, and give educators a common language for discussing educational innovation. Classroom instructors can use the levels of Bloom's Taxonomy in similar ways to identify what their students know and to develop units that encourage students to think in more complex ways.

Instructions

Students need to understand the differences in the various levels of Bloom's Taxonomy before they can think or work at these levels. Simple exercises such as giving students several objects and asking them to use the objects in various ways to illustrate the levels

of the Taxonomy may be a helpful learning activity. For example, to introduce new students to a laboratory setting, how could the questions be used to acquaint students with lab equipment?

When checking the extent to which students understand a reading assignment, partner the students. One partner receives a slip of paper containing an assignment to write a question from the reading at a specific level, the other partner describes the type of information that would be needed to answer the question. Together, the partners develop the answer. Create groups of four students from the partners and ask them to write a question that combines both types of questions from their partner's exercise. When questions combine two or more levels of the Taxonomy, they are considered "complex" questions.

A course or entire curriculum could be developed using questions and creating assignments that focused on increasingly more complex levels. And, of course, discussion questions, writing assignments, and exams can be developed at various levels of the Taxonomy.

The *Taxonomy* has six increasingly demanding classifications by which to manage or organize information or knowledge:

The *Knowledge* level, the most basic level, simply requires students to recall or to identify previously learned information. Questions phrased at the knowledge level simply ask for recall or identification of previously disseminated information. Ex: "What is the recommended daily amount of calcium required by astronauts?"

The *Comprehension* level demonstrates understanding of a term, concept, theory, or other information, by converting it into another form. For example, paraphrasing, giving examples, or creating an analogy or metaphor are ways to demonstrate understanding. Questions phrased at the comprehension level would ask for a specific piece of information to be translated into another form. Ex: "Can you give an example of the types of foods astronauts must eat on a daily basis to maintain their health?"

The *Application* level applies previously learned information to a new or different context. Application often requires problem solving or practical applications of knowledge. Questions phrased at the application level might provide a specific context and ask how information would be useful in that context. Ex: "Since refrigeration is not available in space, how can the nutrients commonly found in food requiring refrigeration be supplied to astronauts?"

The *Analysis* level focuses on the relationships of variables to each other and to a whole. Analysis seeks to identify cause and effect relationships, for example, or might request breaking a whole entity into its components to understand the structure or operation of the entity. Questions phrased at the analysis level might describe a situation and then ask students to identify the variables that have caused or been

responsible for the situation. Ex: “Why does space travel cause astronauts’ to experience calcium deficiency?”

Synthesis level asks students to integrate known information resulting in something not previously known. To synthesize is to create. Questions phrased at the synthesis level often require that students use specific, known information to create new information for use in a different context. For example: “Use all of the groups of food in the food pyramid, and consider the nutritional requirements of astronauts. What meals and snacks would you recommend for a two day period that could be prepared in space and meet the astronauts’ nutritional requirements?”

The most complex level of the taxonomy is *Evaluation* or *Assessment*. Evaluation or assessment appraises value or quality when compared to an explicit or implicit standard(s) or criteria(ion). Sometimes the student is also asked to develop the standard(s) or criteria(ion). Questions phrased at the evaluation or assessment level ask students to justify a choice when compared to standard(s) or criteria(ion). Development of the standard(s) or criteria(ion) might also be a part of the question. Ex: “Identify what you feel are the major nutritional demands of astronauts. To what extent do you believe the meal plans you developed in the last question will satisfy these nutritional demands? What would you suggest for nutritional demands that are not met by your meal plans?”

References and Resources

- Anderson, L., & Krathwohl, D. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom’s taxonomy of educational objectives*. New York: Addison-Wesley/Longman. (An interesting recent work co-authored by Krathwohl who served on the original committee that developed Bloom’s Taxonomy.)
- Bloom, B. S. (Ed.). Engelhart, M., Furst, E., Hill, W., & Krathwohl, D. (1956). *Taxonomy of educational objectives. Handbook I: Cognitive domain*. New York: David McKay. (Handbook I is the “definitive work” focusing on Bloom’s Taxonomy for cognitive objectives.)
- Krathwohl, D., Bloom, B. S., & Masia, B. (1964). *Taxonomy of educational objectives: Handbook II: The affective domain*. New York: David McKay. (Handbook II focuses on objectives regarding learning and the emotions.)
- Vrchota, D. (2004). “Challenging students’ thinking with Bloom’s taxonomy.” *Communication Teacher*, 18 (1), 2-5. (Describes the application of Bloom’s taxonomy as a model for organizing questioning with student presentations.)