USING QUESTIONS TO FACILITATE LEARNING: PROMOTING INQUIRY, NOT ANSWERS

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How do questions facilitate learning?

Effective questions…

- Engage the audience

- Direct attention to Specific topics/aspects, what's important about it

- Make new connections - asking question that helps students synthesize info from different sources or make connections to other sources

- Make students think and discover their answers

- Emphasize process, and learning through articulation.

- Enhance memory.

What is an "Effective" question?

Sometimes it helps to define something by articulating what it isn't. So, let's ask:

 – *What makes a question ineffective?*
- *How do ineffective questions harm or discourage learning process*?

Ineffective questions …
- Confuse the issue, misdirect attention

- Require less depth of inquiry or reflection

- Promote assumptions (without inquiry or investigation)

- Affect confidence - decrease or overly increase confidence on the part of the learner.

Effective questions… do not!

A Taxonomy of Questions

- **Convergent v. divergent**

    o *Convergent* Questions - <u>Closed</u> questions that look for specific answers from a <u>finite</u> list of possible answers. These tend not to encourage deep thinking or reflection. Convergent Questions are also Known Answer Questions (KAQs).

    o *Divergent* Questions- <u>Open</u>-ended questions that require dialogue and deeper thinking or problem-solving; generally, there is not one answer, or no

easy answer. Divergent questions encourages multiple perspectives, divergent thinking. Divergent Questions > Discussion. [Preferred method of questioning] Patrick & Urhievwejire (2012).

- **Target Cognitive Level**

  o Questions should aim for a particular "cognitive" level of engagement, that is, lower order or higher order thinking.

  o *Higher order* level questions require students to think about *HOW knowledge applies* to particular circumstances or to synthesize knowledge acquired at over time or in different contexts.

  o It can be helpful to combine lower and higher order thinking questions:

    ▪ *Lower order* – <u>What</u> field of knowledge does this case involve?

    ▪ *Higher order* – <u>How</u> does that knowledge apply to *these* facts under these circumstances?

  o Instructors ought to identify the cognitive level at which the question is or should be directed. Consider using Bloom's taxonomy as a guide to select the verb appropriately gauged to the level of challenge you want to create.

  o Anderson & Krathwohl (2000) generated a model of learning objectives based upon their revision of Bloom's taxonomy identifying *synthesis* as the <u>highest</u> level of engagement in learning.

    ▪ Unfortunately, most questions in lectures are aimed at simple *recall* and basic comprehension levels.

    ▪ Such questions may serve as *threshold questions*, to monitor for understanding or to determine the range of knowledge in the classroom, but instructors should strive to engage students at the higher level of analysis, evaluation, or synthesis.

- **Target "Knowledge Dimensions"**

  o Questions may be designed to target various dimensions of knowledge. We should choose strategically the dimensions of knowledge we want to trigger.

    ▪ *Factual* questions ask (WHAT)

    ▪ *Conceptual* questions ask about (knowledge of classifications, taxonomies, theory)

    ▪ *Procedural* questions ask (HOW)

- ▪ *Metacognitive* questions ask about (process) and promote (reflection)

   o *My note*: On metacognition and domains of knowledge, see also, Schraw & Dennison (2004).

- **Question Circles**

   o Question circles pose compound questions aimed at multiple domains. While compound questions might seem as though they have the potential to confuse, when articulated well, they promote deeper reflection on issues of ethics, professionalism and decisoin-making.

   o Questions Circles are defined by their inclusion of two or three of the following fields:

      ▪ **Subject matter** (topic, field)

      ▪ **Personal reality** (meta reality, self in process, relationship to subject matter)

      ▪ **External reality** (circumstances, conditions or factors)

   o When questions target the *interrelation* of these domains they engage students at the deepest, most reflective level. The following are examples of such *compound* questions:

      ▪ **Under what circumstances** would it be appropriate to ask patients **about medication behavior**?

      ▪ If there were **disagreement on the team about the patient's plan of care**, how **would you resolve** these differences?

      ▪ Under what circumstances would it be **appropriate for you** to act against a **team decision** when the patient **not taking medication as prescribed**?

Activity: Formulate questions in "Knowledge Domains"

- ▪ Ask students to formulate questions based on a case scenario presented. Questions should be of various types, e.g., **Conceptual; Procedural; and Metacognitive.**

   - ▪ **Procedural** - How would you ask the patient about whether he is taking the medication as prescribed? [method]

   - ▪ **Conceptual**: What does the CDC say about the role of prescribing antibiotics for non-productive cough? [involves theory, rule of thumb, law or principles]

   - ▪ **Metacognitive**: How would you address the physician if you thought she informed the patient incorrectly? [Involves reflection on self, issue and process; such

questions are stated as hypothetical, e.g., asking someone to imagine what if or how someone else would respond under particular circumstances, requiring anticipation or prediction.]

IF ACTIVITY LEADS TO MORE INQUIRY, THEN THAT'S WHERE LEARNING OCCURS.

INQUIRY STRATEGIES CAN IMPROVE THE QUALITY OF OUR TEACHING.

What else should we consider in asking questions of students?

- **Psychological safety** – Students are reluctant to participate for fear of looking foolish or being wrong. How can we create an environment of psychological safety to encourage students to participate and do so more often? The audience suggested the following:

  - We could allow students to use a "Lifeline", that is, to ask to consult with students nearby if they are not sure of the answer.

  - Use the Think-Pair-Share method or ask for teams or small groups to consult and then respond. Use an audience response system that allows for *anonymity*.

  - Be careful not to mix facts and opinions when making statements to correct students – that is, model reflective thinking without directly saying, *hey, you're wrong!*

- **Phrasing** [Framing] – How you frame (set up) or phrase (language use) the question makes a difference in whether it invites a thoughtful response or a quick yes/no answer. Frame and phrase your questions strategically.

- **Get comfortable with silence -** If silence ensues, reframe the question, but resist answering it!

- **Wait time** - Deliberately offer sufficient time to respond. Time it. One minute etc. If silence, resist answering the question – reframe your question to invite a response.

- **Sequencing** - Build on prior knowledge; big picture, then little picture

- **Balance** (of type) – Ask a variety of *types* of questions. For example, don't only ask factual (recall) questions. Ask procedural, conceptual questions, or divergent <u>and</u> convergent questions.

- **Rapid-reward** – Offer rewards to students for responding to questions, and ask follow up questions to continue the momentum.

- **Participation**. Risk takers may dominate; the issue is to identify how we can encourage others to participate. One approach is to create participation rules, e.g., everyone

participates twice per session; take turns leading discussion, prepare in advance so you feel confident in participating.

Comment on Socratic Method

The Socratic Method gets at the underlying assumptions and beliefs of the learner by posing questions to promote examination of the correctness of one's reasoning on the issue. The correctness of reasoning, then, and not the answer is at issue. In true Socratic Method, students should also question the reasoning of the instructor, as in the adage, Question Authority.

The goal of true Socratic teaching, then, is to have learners LISTEN to one another's ideas and build upon them to arrive at co-constructed meaning of concepts, new ideas and more questions.

Note
This outline was inspired by the presentation by STUART HAINES [11/2/2012] at the University of Arizona College of Pharmacy, and draw on the work of others in active learning, metacognition and reflective engagement.

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