

Teaching Notes for Physicians:

Questioning as a teaching tool

Always the beautiful answer

Who asks a more beautiful question

- E.E. Cummings

Background

We use questions in our daily lives to elicit information; but in an educational setting, careful questioning has many uses and is one of our most powerful teaching tools. These guidelines will help you to craft beautiful questions, enhancing your teaching and deepening the learning experience for your learners.

Why ask questions?

Truly instructive questions will promote thinking and shift the focus from the teacher, as knowledge source, to the learner, as knowledge seeker(1).

- *Diagnose*

Ask open-ended factual questions (‘what do you know about ...?’) for diagnosing knowledge; adult learners will be motivated to learn by discovering gaps in what they know, and you can tailor your teaching to learners’ needs by selecting relevant content. Probing (‘why is x a differential’) and clarifying (‘can you explain?’) questions are useful for diagnosing misunderstandings. Questions can help you monitor learners’ progress, too.

Questions can be used to: (1-4)

- **Diagnose limits:** of knowledge, understanding, clinical reasoning
- **Stimulate:** learner involvement, reflection, higher order learning
- **Reinforce:** important points, relevance of content to learners

Diagnose higher-level clinical reasoning capability by asking questions that require learners to synthesize, analyze, and evaluate what they have learned. (3-6)

Determining knowledge level (7)

Level low to high	Question type
Factual recall	<i>what is?</i>
Understanding	<i>which study do you order?</i>
Analysis	<i>what are possible causes?</i>
Synthesis	<i>what do these results mean?</i>
Evaluation	<i>were the appropriate tests ordered?</i>

- *Stimulate*

Stimulate learner interest and involvement by using questions that ask for more than simple recall. Reflect learners’ answers back to the group to involve everyone(1). Avoid answering too many questions with factual detail; reflecting back to the group will encourage learners to interact and take on increasing responsibility for their own learning. Adults learn when they can make connections between new material and what they already know(8); ask learners to ‘link back’ by describing previously-encountered clinical presentations, schemes, and basic science relevant to your topic, making those connections explicit. Use hypothetical questions (‘what if this patient was..?’) to make learners apply new information in different contexts. Promote thinking and problem-solving by focusing on what learners don’t know (‘what do you need to know about x?’).

- *Reinforce*

Ask learners to identify the most important issues, reinforcing high-priority content and enabling you to check understanding. Ask learners to summarize what's been taught. Hypothetical questions will show learners the relevance of new information and get them thinking in new directions; 'where can I apply this new knowledge?'

Good questioning technique

- Pose, pause, pounce
- Order is important
- One question at a time
- Beyond recall
- No trivia, obscure points
- Give clear feedback
- No question goes unresolved
- Involve everyone

How to ask good questions

- *Climate*

If your question is met with a wall of glassy stares and dense silence, either you asked the wrong question, or learners are too intimidated to venture an answer. Create a safe climate for open discussion by using people's names; stress that incorrect answers are opportunities for better teaching and learning, not for humiliation; and stress that no-one knows all the answers. Practice what you preach, and be happy to admit it when you don't know the answer; this is an opportunity to role model your good research skills and exemplify the practice of evidence-based medicine. Don't be a predator; if you are singling out individuals to answer, explain why.(1) Perhaps they have seen a relevant case, and the group could learn from their recounted experience. With a reticent group ask learners to discuss answers with their neighbours or in small groups before sharing more widely.

- *Technique*

Don't let silence panic you into answering your own question; learners need time to

think and formulate their response. Pose that question, then pause for up to 10 seconds before you consider rephrasing or a change of approach. Pouncing means following the answer up with another question, asking learners to elaborate, clarify, and reflect. Let learners discover knowledge for themselves by ordering your questions; move from the specific (convergent, with one good answer) to the general (divergent, many good answers), from easier to harder, and from simple to complex. Ask one question at a time. Asking for 'just the facts, ma'am' tests recall only; use probing questions to stimulate thought. Avoid asking learners about trivial or obscure points. Don't interrupt; be attentive. Acknowledge every answer, giving immediate, clear feedback, but vary your responses. By nodding or pointing, you can keep the focus on learners' responses rather than drawing it back to you, so learners won't feel they need your comment after every answer (9). Remove yourself from the role of sole arbiter in a question-answer series by inviting group opinion on individual answers; 'what do we think?'(1) Anticipate the range of responses, particularly in the presence of a patient; learners will be embarrassed if they cannot answer, and patients could be distressed by unexpected responses ('cancer', 'terminal'). Hypothetical questions should be avoided at the bedside. Finally, never let a question go unresolved - even if it means returning to it at the next session.

- *Teaching mixed groups*

Teaching at multiple levels is a frequent challenge encountered in the clinical setting. Mixed groups of students, clerks and residents can be engaged once everyone knows what is expected of them in advance; ask students to focus on interpreting the history, clerks might develop a list of differential diagnoses, and residents could concentrate on evidence-based practice.(3) Develop an arsenal of questions at different levels. Be sensitive to the hierarchy; don't ask a more junior learner the question that your resident couldn't answer, and deflect the students' questions back to the resident.

Measures of success

Postman and Weingartner(1) suggest that the following indicators are evidence of a healthy climate of enquiry:

- Learners are self-directed, becoming increasingly responsible for determining their own learning needs and for choosing effective learning methods.
- Learners begin to ask their own questions with increasing frequency and relevance, and begin to question statements made by others, including teachers and texts.
- Learners begin to use each other as resources.
- Learners become increasingly flexible and willing to modify their positions in the face of new evidence.
- Learners show improved observation skills, generalization skills, and ability to apply new information.

Enjoy your teaching!

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