

Questioning Techniques that Promote Thinking and Learning

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At the end of this session you will be able to:

- Establish an appropriate environment for questioning.
- Distinguish between types of questions and describe types that stimulate higher order thinking
- Utilize specific questioning techniques in various clinical or educational situations
- Develop logical questions that link to your learning objectives

We will consider...

- Rationale for the use of questioning
- The qualities of a good questioning environment
- Use of wait time
- Types of questions
- Links to learning objectives
- Strategies for various situations

*“Reading without a
question is a waste of
time”*

J. Pelley

Personal Exercise 1

- Think of a topic you have recently taught or have recently learned something about.
- Teachers: Write a few questions that you might ask a learner(s) about that topic in any setting (lecture, small group, individual):
- Students: Write a few questions that you need to know about that topic (to guide your reading).

How do they begin?



A collection of colorful question words and question marks arranged in a grid-like pattern. The words are: HOW (green), WHERE (blue), WHAT (red), WHY (yellow), WHO (purple), and WHEN (orange). There are also two black question marks, one on the left and one on the right.

HOW
WHERE
WHAT
WHY
WHO
WHEN

?



What is a question?

- “An expression of inquiry that invites or calls for a reply”
- “A point or subject under discussion or consideration”
- For our purposes, may be interrogatory or directive

Why do educators ask questions?

- Assessment
 - To determine learner's knowledge base
 - What they know
 - What they do not know
 - To determine learner's understanding
 - Logical reasoning
 - Faulty reasoning
- Teaching
 - To encourage deeper thinking
 - Identify opportunities for clinical pearls
 - Provide immediate feedback

What is a good questioning environment?

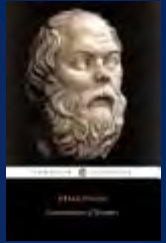
- Set expectations for responses
 - “I don’t know” is okay
 - “Incorrect answers are learning opportunities”
 - Group vs individual?
- Tone should be conversational, not inquisitorial
- Questions should be clear – avoid “read my mind”
- Avoid interrupting learner during answer
- Utilize “face-saving” strategies
- Effective handling of incorrect answers

- Pimping?

“Proper pimping inculcates the intern with a profound and abiding respect for his attending physician while ridding the intern of needless self-esteem. Furthermore, after being pimped, he is drained of the desire to ask new questions – questions that his attending may be unable to answer.”

(Brancati, JAMA 1989)

What is the Socratic Method?



- The use of questions to stimulate critical thinking
- Utilizes and scrutinizes learner's existing knowledge and beliefs
- Fosters collaborative and open-minded discussion, although somewhat oppositional and contradictory

The Socratic Method in Healthcare Education Oh

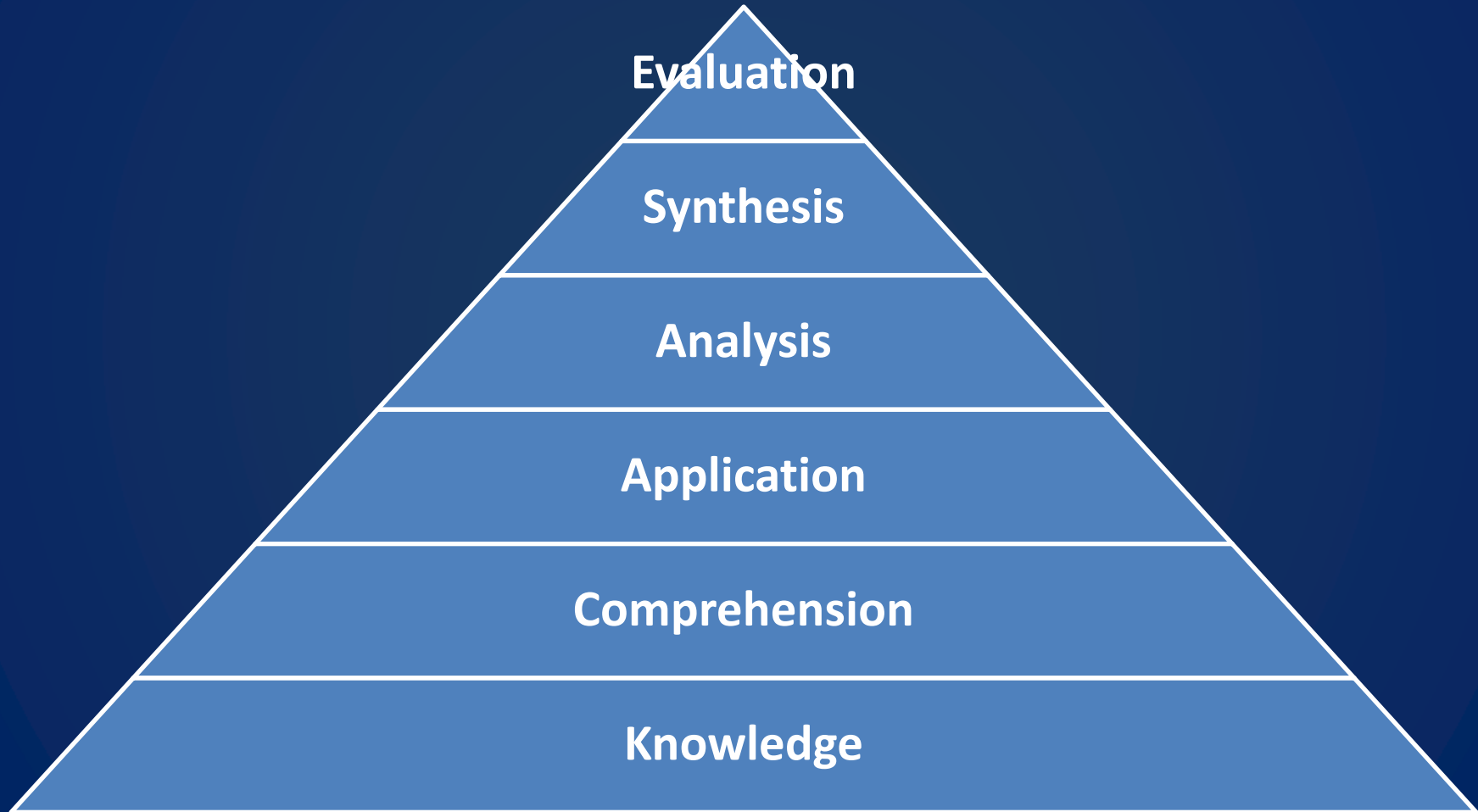
- Ask questions in logical, stepwise fashion to stimulate critical thinking
 - Use baseline medical knowledge to interpret patient information in context of individual personal circumstances.
- Diagnose the learner's understanding to identify immediate learning needs
- Teach learners clinical pearls and encourage them to self-question



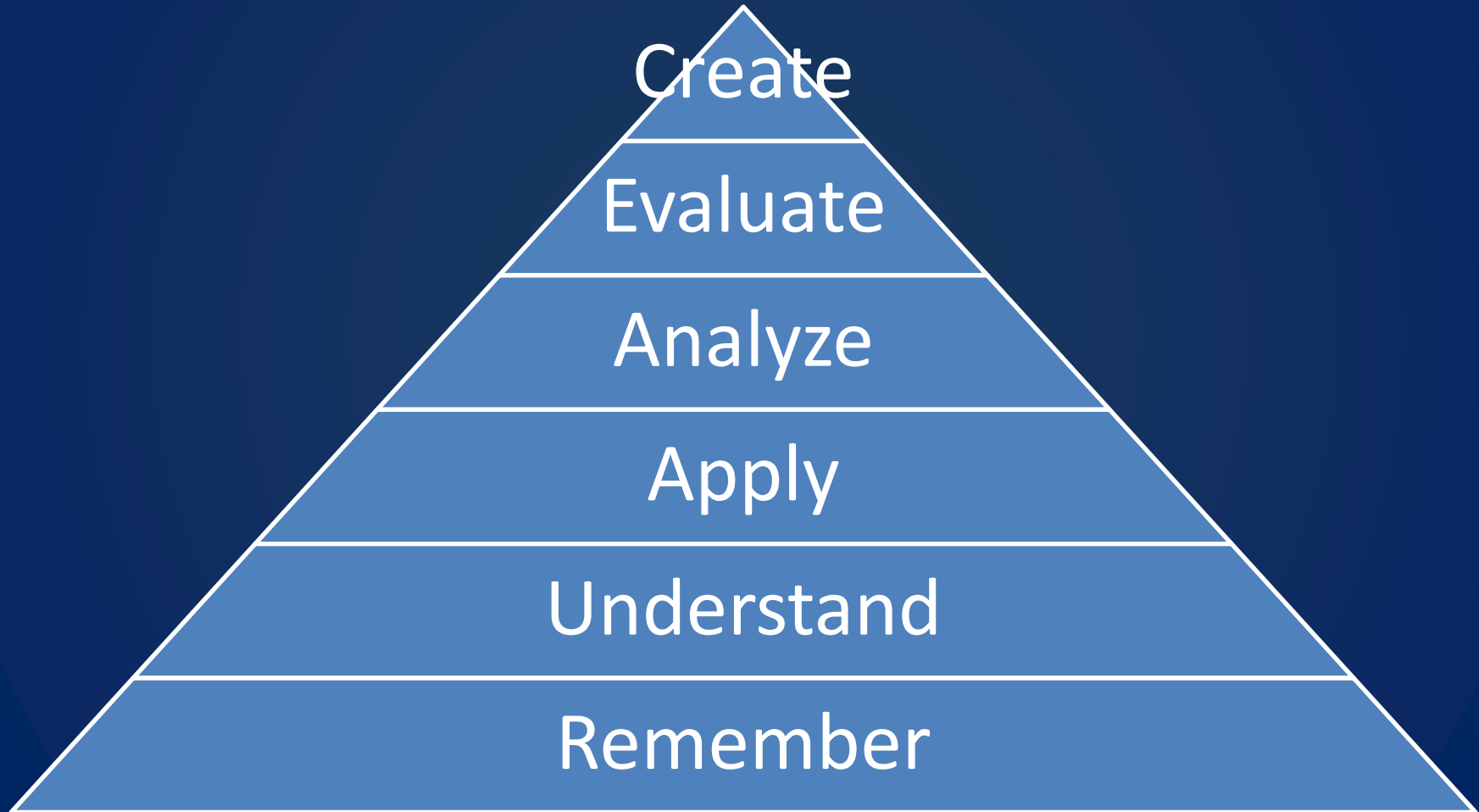
“Open” and “Closed” Questions

- What’s the difference between “closed” and “open” questions?
 - Closed – where/when/who/what is
 - Open – why/how/what do
- When and how might the use of a “closed” question be beneficial?
- When and how might the use of an “open” question be beneficial?

Original Bloom's Taxonomy



Revised Bloom's Taxonomy



Examples of questions

- **Remember:** “What is the definition of autonomy?”
- **Understand:** “Why do you think this is a conflict between beneficence and autonomy?”
- **Apply:** “What are the possible outcomes for the various options for care?”
- **Analyze:** “Why do you think the patient is making this decision?”
- **Evaluate:** “What do you think about the way this case was handled?”
- **Create:** “If you were consulted on this case, what would your recommendations be?”

Examples of questions

- **Remember:** *Where is* McBurney's point?
- **Understand:** *How does* appendicitis lead to peritonitis?
- **Apply:** Do you think this patient could have appendicitis? *What else* could cause his symptoms?
- **Analyze:** *How important* are the laboratory values in your thinking?
- **Evaluate:** *Why* would an ultrasound be better than a CT in this patient with suspected appendicitis?
- **Create:** *What is* your plan of care for this patient with suspected appendicitis?

Examples of Questions

- **Remember:** What is pre-eclampsia?
- **Understand:** How does pre-eclampsia develop?
- **Apply:** What else could cause protein in the urine?
- **Analyze:** How do laboratory values play a role in your approach to a patient with pre-eclampsia?
- **Evaluate:** Do tocolytics work for pre-eclampsia?
- **Create:** If we expectantly manage her, what else do we need to do?

Return to Personal Exercise 1

- What are you asking the learner to do?
 - Remember a fact?
 - Understand or describe something?
 - Apply knowledge to solve a problem?
 - Analyze information to solve a problem?
 - Evaluate an idea or opinion?
 - Create a plan or solution?

Linking Learning Objectives with Questions

Linking Objectives with Questions

- **Objective:** Define the 4 major principles of medical ethics
- **Question:** What major ethical principles are under consideration here? (**Remember, Understand**)

- **Objective:** Understand the role of unconscious bias in medical decision making
- **Question:** What do you think is the motivation behind this patient's decision? (**Analyze**)

Linking Objectives with Questions

- **Objective:** Know the mechanism of pain sensation in a patient with appendicitis
- **Question:** What nerve root is primarily involved in the pain of appendicitis? (**Remember**)
- **Question:** How does the pain pathway work in a patient with appendicitis? (**Understand**)

- **Objective:** Know the management of a patient with appendicitis
- **Question:** What is your plan of care? (**Create**)

Personal Exercise 2

- Choose a set of learning objectives that fits well with your area of teaching or need for learning. Plan a logically sequenced set of questions that will stimulate higher order thinking and are linked to the learning objective. Note which of Bloom's taxonomy domains best represent the questions.

Perform a complete and accurate physical examination on a child

- **Remember:** What are the 4 components of a lung exam?
- **Understand:** What is the mechanism of increased vocal fremitus in a child with pneumonia?
- **Apply:** At what point during the physical examination would you attempt a lung exam?
- **Analyze:** How do your physical examination findings relate to the CXR findings?

Plan the laboratory evaluation for an infant who presents with pallor

- **Remember:** *What is* the most common cause of microcytic anemia in children?
- **Understand:** *Why is* the Mentzer index usually elevated in children with iron-deficiency anemia?
- **Analyze:** *How do* the metabolic panel results relate to this child's anemia?
- **Evaluate/Create:** *Order a* laboratory evaluation on this child with pallor and *justify* your expenditures to the insurance company.

Strategies for Various Situations

- Large group lectures
- Small group sessions
- Individual discussions

Large group lectures

- Plan questions ahead
 - Link to lecture objectives
 - Logical sequence
 - Remember → understand → apply
 - Ask questions at beginning and then again at end to assess understanding
- Targeted questioning with follow-up targets
- Use of audience response systems
- Consider video recording your lecture

Small group sessions

- Link to learning objectives
 - Use facilitator guide when available
- Elicit prior knowledge/experiences to diagnose the learners – avoid assumptions
- Group vs individual?
- Encourage other students' comments on answers
- Involve everyone
 - E.g. get commitments – “who wants a CBC?” Ask for justification

Individual discussions

- General questioning strategies apply
 - Conversational
 - Clear questions, logically sequenced
- 2 specific strategies
 - One-minute preceptor
 - Chart stimulated recall

One Minute Preceptor

Neher

- Get a commitment
 - What do you think is going on here?
 - What do you see on the x-ray?
- Probe for evidence
 - Why do you think that?
 - Was there anything else you considered?
- Teach general rules
- Reinforce things done well
- Correct mistakes

Chart Stimulated Recall

ABEM

- Uses written documentation to assess thinking and stimulate dialogue
- Open-ended questions
 - What was the most important history you obtained here and why?
 - What physical examination findings were elicited and were they documented in your note?
 - What was your primary diagnosis after talking with the patient?
 - What was your priority in determining a plan?

Encouraging students to self-question

- Beginning of teaching session:
 - “Write down questions that arise during our discussion”
- Middle of teaching session:
 - “Write down 3 questions that you need to answer to take care of this patient.”
- End of teaching session:
 - “What did you need but didn’t know to help you most with this situation?”
 - “What learning objectives do you need to read more about?”

What types of questions are these?

- What is a question?
- Why do educators ask questions?
- What is a good questioning environment?
- What's the difference between a "closed" and an "open" question?
- When and how might the use of a "closed" question be beneficial?
- Plan a set of questions that link...

Take home points...

- Pay attention to your questioning style
- Balance factual and thought-provoking
- Plan potential questions ahead of time
- Use logical sequencing
- Link questions to learning objectives
- Form good self-questioning habits

A few reading materials

- Cho et al. Analysis of questioning technique during classes in medical education. *BMC Medical Education* 2012, 12: 39.
- Turner T, Palazzi D, Ward M. Asking questions to stimulate learning. In: *The Clinician-Educator's Handbook*; 2008: 171-180.
- Oh RC. The Socratic method in medicine – the labor of delivering medical truths. *Fam Med*. 2005; 37: 537-39.

A few reading materials

- Wear D, et al. Pimping: Perspectives of 4th year medical students. *Teach Learn Med* 2005; 17: 184-191.
- Schneider J, et al. Questioning skills: The effect of wait time on accuracy of medical student responses to oral and written questions. *Acad Med* 2004; 79: S28-S30.
- Krathwohl D. A revision of Bloom's taxonomy: an overview. *Theory Into Practice* 2002; 41: 212-218.