

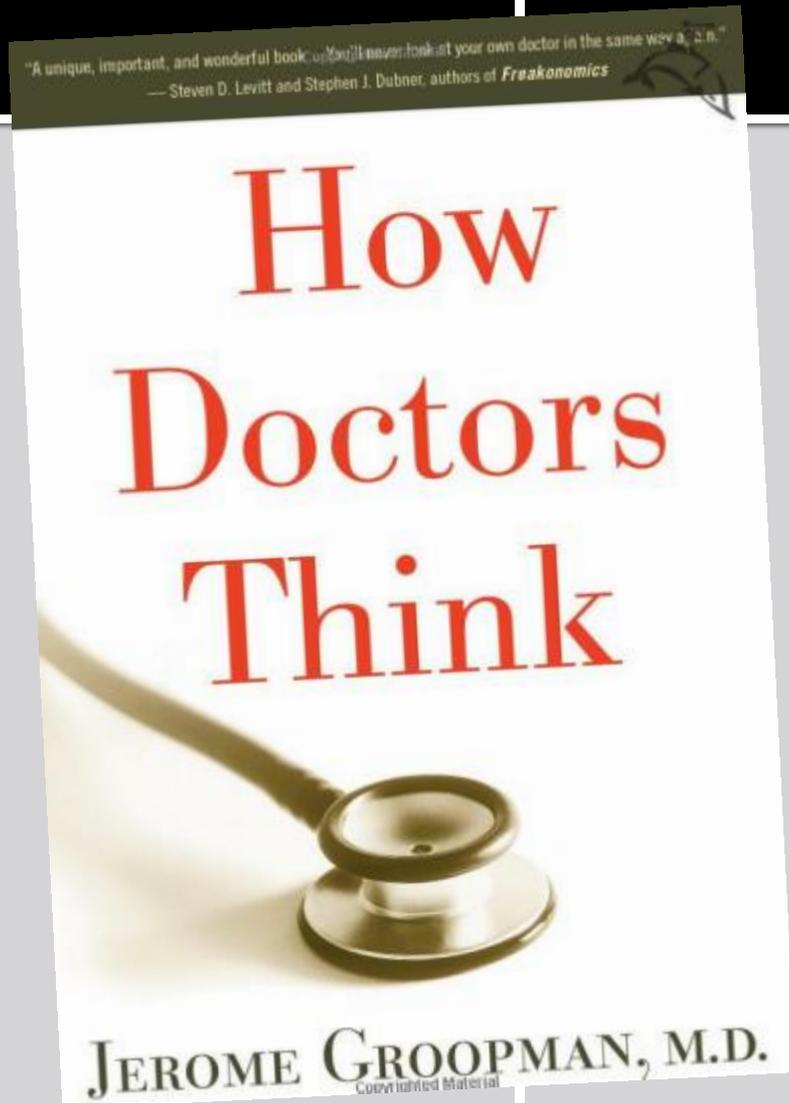
# The **Role of Reflection** in Medical Education

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# Why do we care about reflection?

- **Increased metacognitive awareness** of self and process is associated with improved learning outcomes in many educational contexts as well as professional practice (Azevedo, 2010).
- **The ACGME** Residency Director Manual states that residents should have structured learning experiences that promote “self assessment and reflection skills and habits”, which addresses two competencies, Interpersonal Communications and Problem-Based Learning. Resident assessment ideally includes “reflections on practice[ and] conversations with mentors” (p. 36).
- The **LCME** requires medical students to achieve competence in the same areas (core competencies) as residents. To become reflective practitioners later on, medical schools need to cultivate intellectual habits of reflection on the part of faculty and students from the beginning.

# Intellectual habits of reflection for learning and practice



- Dr. Jerome Groopman's book, *How Doctors Think* (2007) emphasizes that reflection in the process of addressing and after the conclusion of patient cases is critical to becoming a good doctor.
- Groopman highlights how experienced doctors engage in reflective practice by examining their performance for cognitive error and doing so in consultation with colleagues (peers or mentors) as well as patients.
- Groopman also cites Donald Schön's (1983) work on reflection in and on action and its wide usage in medical education.

# Reflective Conversations

## The Reflective Practitioner

How Professionals  
Think in Action

Donald A. Schön

**Donald Schön** (1983) addressed the concept of reflection as reflection-in-action and reflection-on-action in *The Reflective Practitioner*. Many others incorporated this concept into their discussion of teaching medical students or residents to become reflective practitioners.

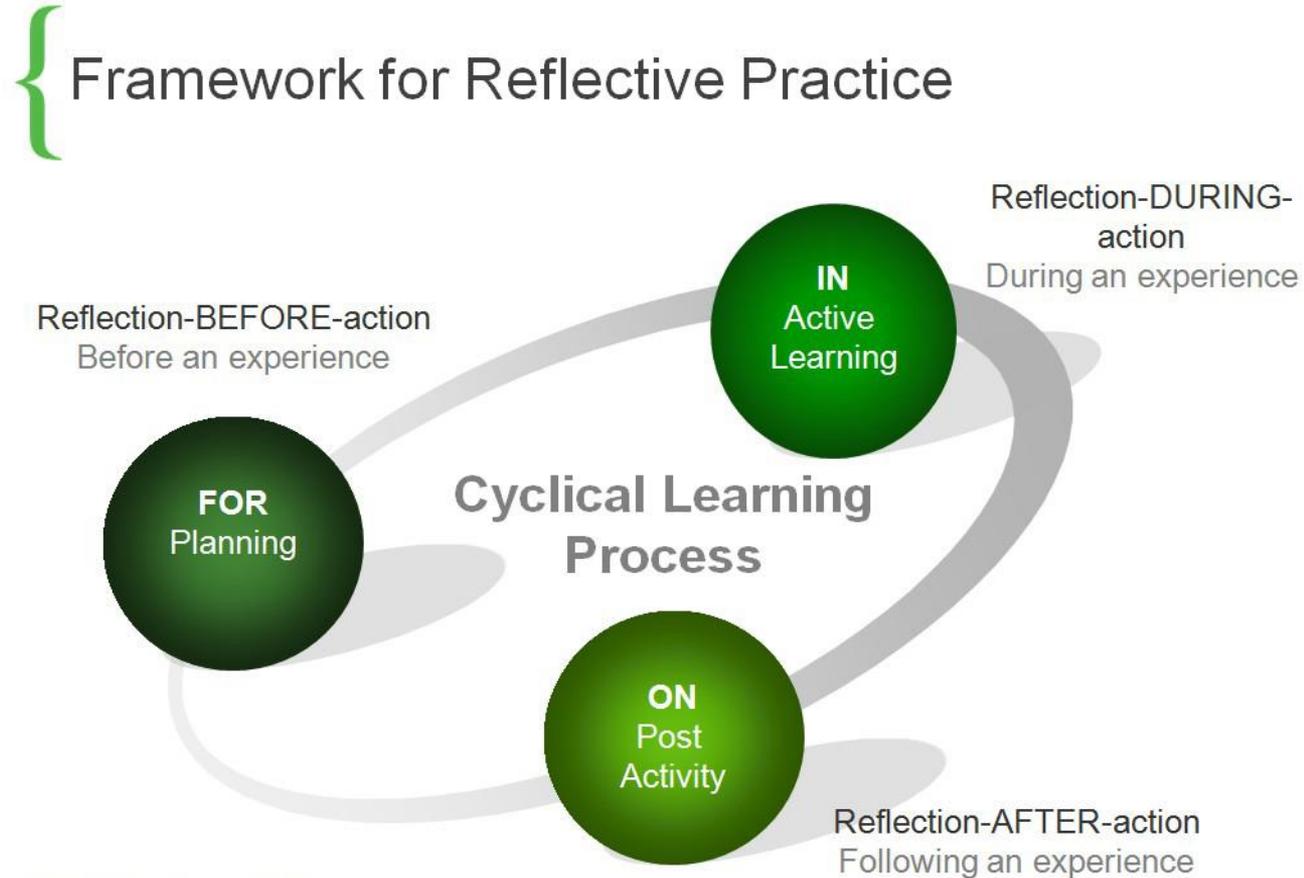
- **Ordinary situations** may not provoke reflection in action.
- **Dissonance** between what is expected and what actually happens does.
- **Teacher deliberately and strategically guide learners to reflect in decision-making process** to develop reflective intellectual habits of mind.

# Expanding

## Schön's Model for Reflective Practice and Lifelong Professional Learning

Plack & Santasier (2004) expanded Schön's work to include a prospective aspect to Schön's reflective practice framework.

- Reflection DURING (IN)
- Reflection AFTER (ON)
- Reflection BEFORE (FOR taking action; planning, carrying forward lessons learned)



Plack & Santasier (2004)  
Schön (1983)

# Reflection **IN**

- Habits of mind that encourage reflection *in the course of decision-making*.
- E.g., thinking of alternative hypotheses for the causes of symptoms, or wondering whether an approach is the best course to take in a particular case.

REFLECTION



**IN**

# Reflection

ON

An evaluative thinking process after the case concludes, e.g., reviewing actions and decisions for error.

- Process and self
- Decision-making
- One's role in the process
- What might have gone wrong
- What worked well
- How to avoid error
- How to improve thinking and performance

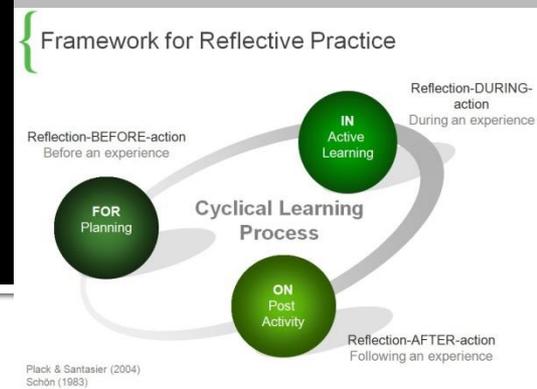
REFLECTION



ON

# Reflection

# FOR



- Schon's educational framework for lifelong professional learning encourages Reflection **IN** practice and Reflection **ON** practice.
- Santasier & Plack (2004) indicate that such reflection is iterative and should result in **Prospective Reflection**.

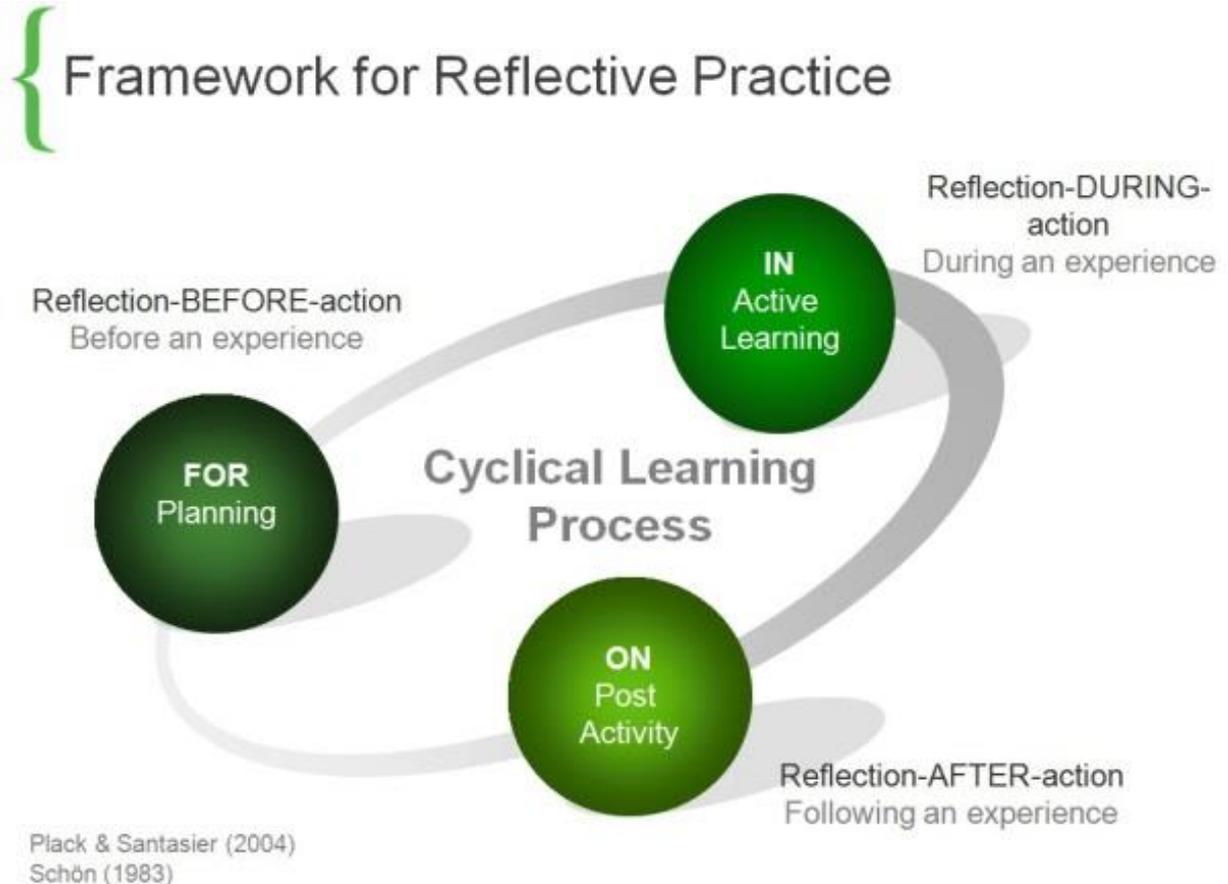


# Reflection

# FOR

The next step in an iterative approach to reflective thinking, learning and practice is **Reflection FOR** practice, that is...

- **PLANNING** new actions
- Making decisions
- Carrying forward lessons learned examining practice and performance.



# Proximity & Perspective

Assign students roles in learning situations to introduce them to multiple perspectives and ways of thinking through clinical problem-solving

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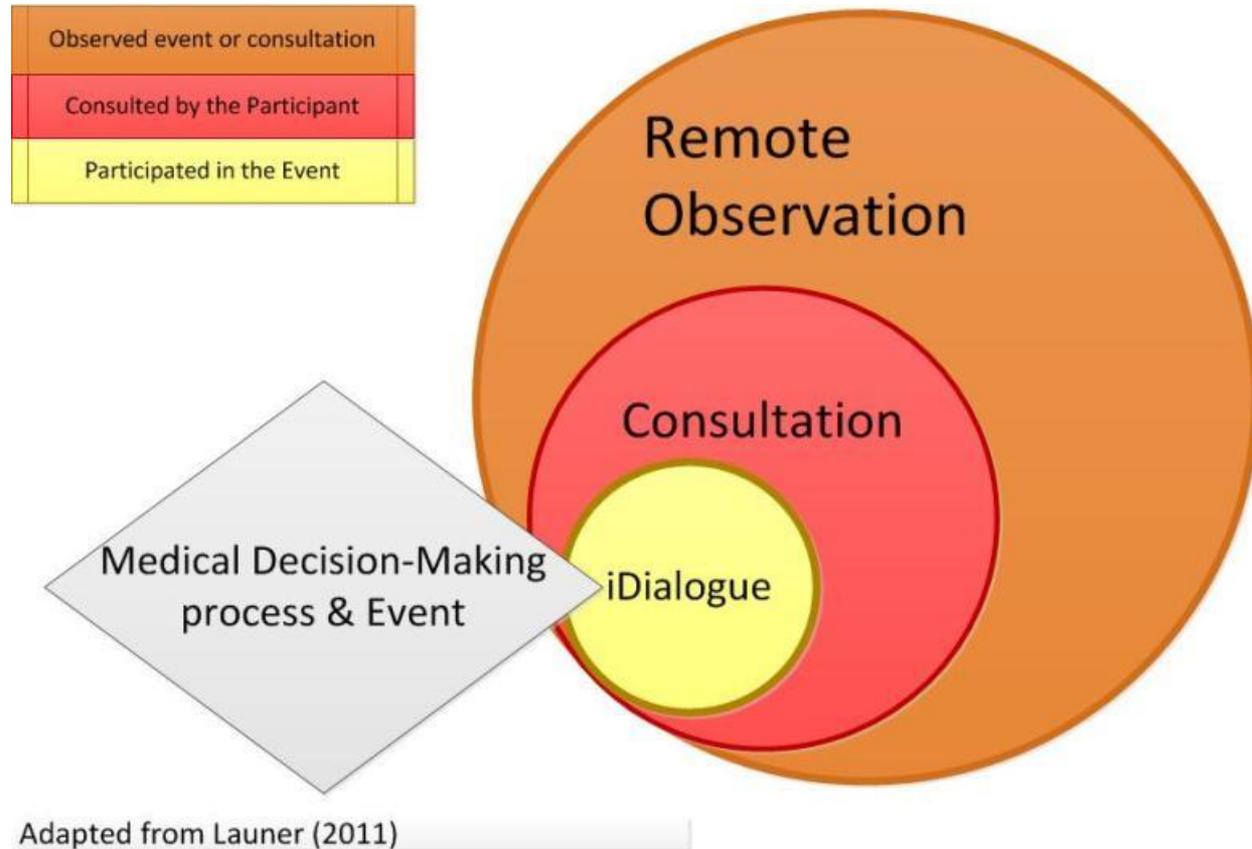
# The Concept of Proximity & Reflection

- Our proximity to a problem can alter our perspective and the kind of reflection in which we engage or the guidance we might be able to offer.
- Student awareness of their proximity to the problem (the case, patient, symptoms or disease) is an important part of reflective practice that can help avoid error.

# Proximity

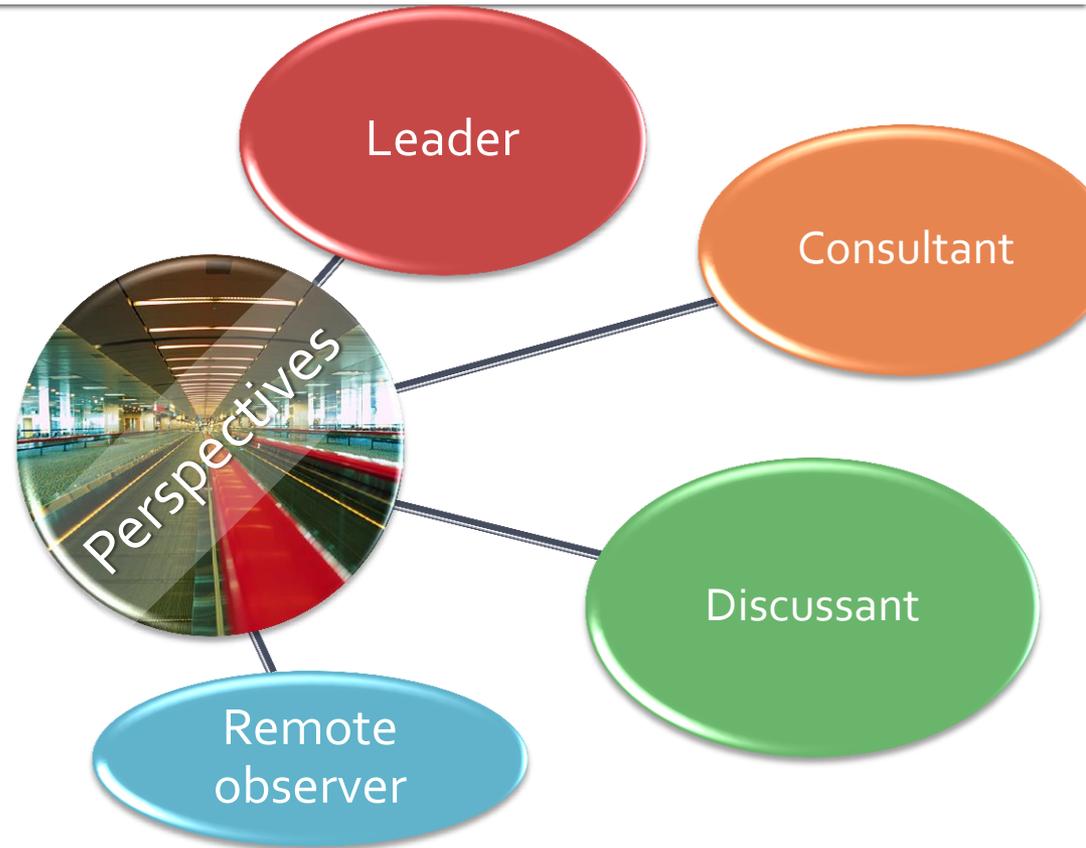
Launer (2011) suggests there are three kinds of reflection based on proximity:

- **Inner dialogue** - Talking to oneself about a problem and what to do about it.
- **Dialogue** - Talking to a trusted colleague.
- **Witness** – An observer witnesses the event or dialogue and can offer a (remote) perspective.



# Participant Roles in Small group and case-based learning

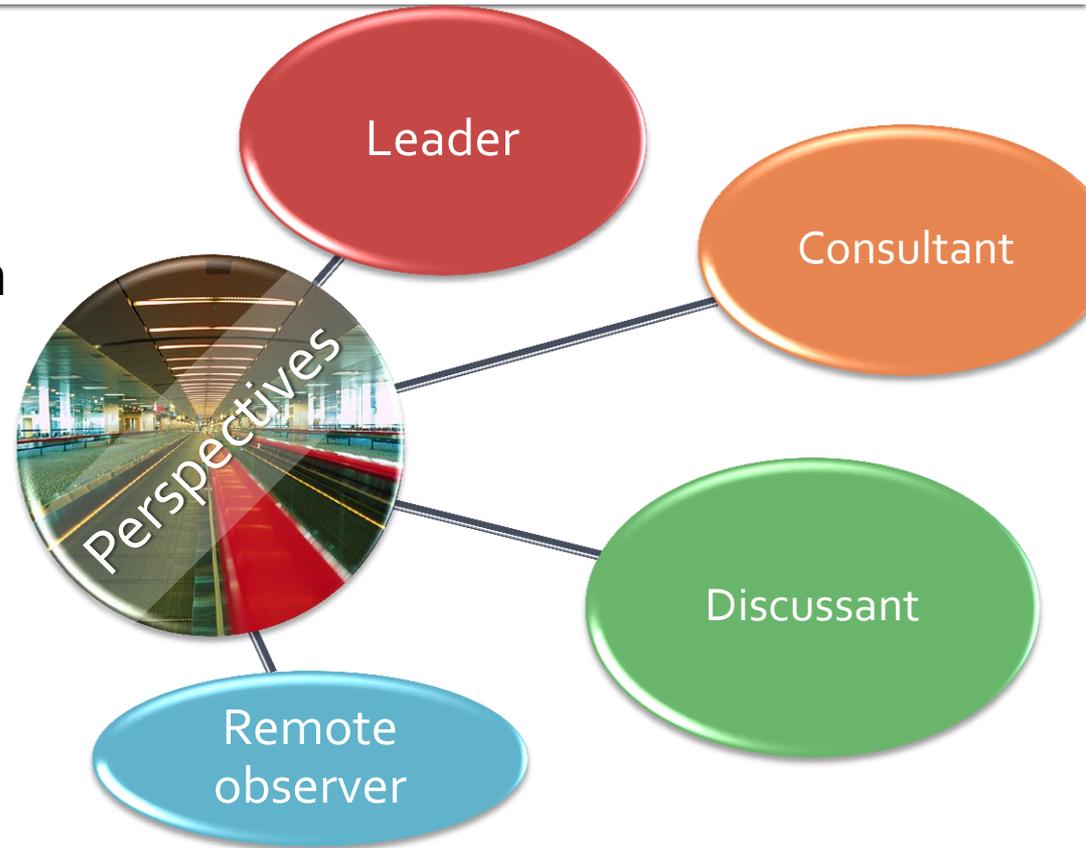
- Deliberate performance of specific roles in small group learning situations can enhance reflective thinking in conversation and practice.



# Participant Roles in Small group and case-based learning

Medical students could perform any one or more of these roles:

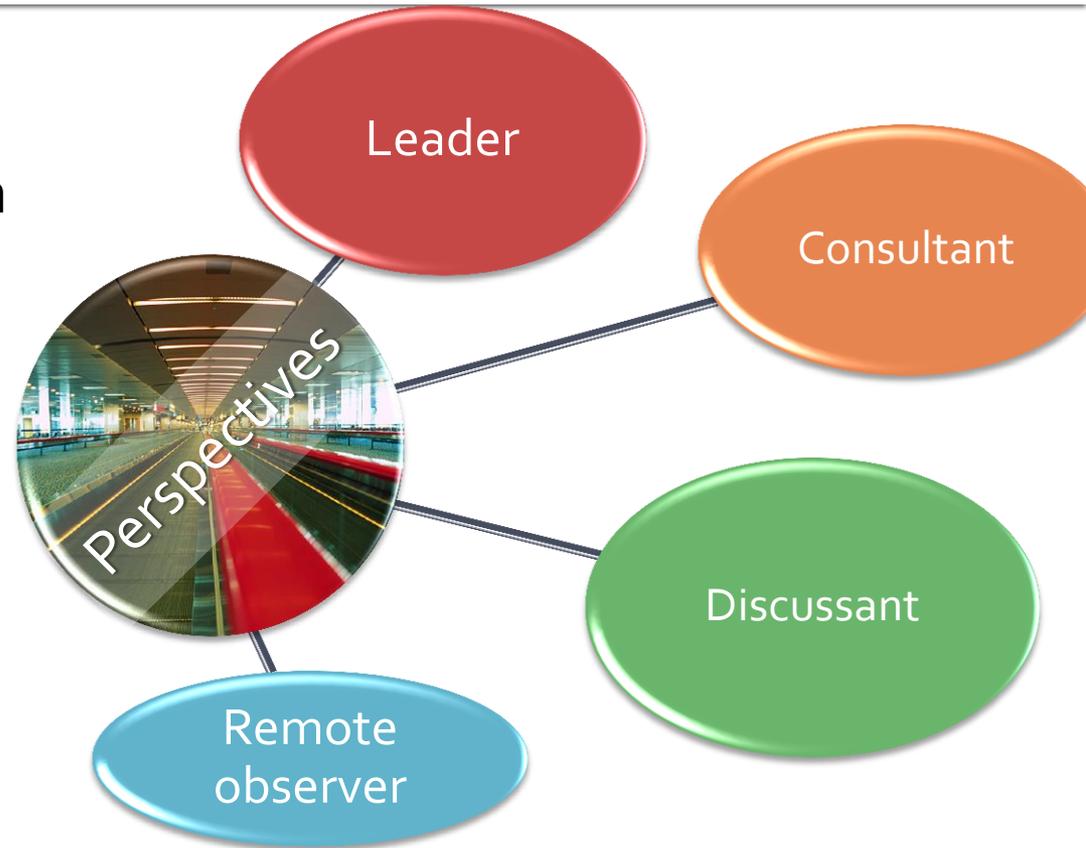
- **Leader** (Leading or facilitating discussion)
- **Consultant** (Providing assistance when someone else is “stuck”)



# Participant Roles in Small group and case-based learning

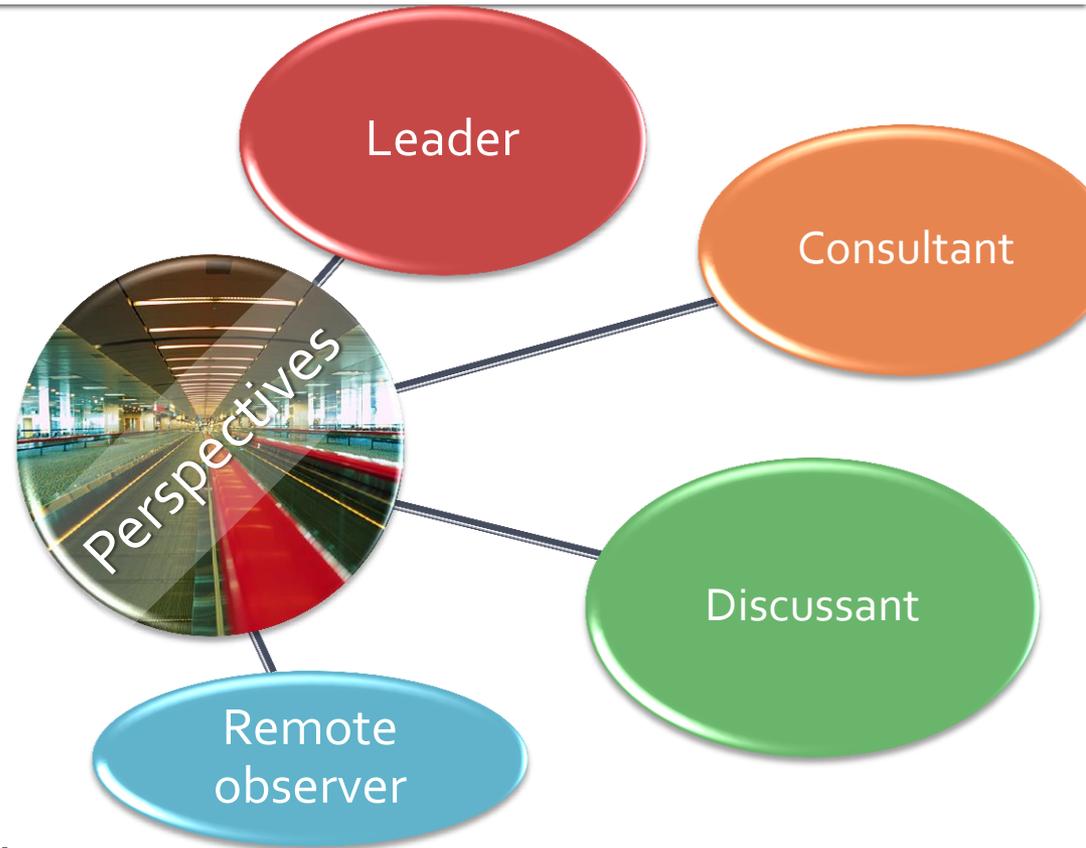
Medical students could perform any one or more of these roles:

- **Discussant** (Summarizing discussion points – uses higher order thinking, synthesis, evaluation)
- **Remote Observer** (Actively listening but not outwardly participating).



# Participant Roles in Small group and case-based learning

- Each perspective offers learners an opportunity to consider what others say or how they think in order to advance their own thinking .
- Students have multiple opportunities to see how other perform these various roles, all of which are integral to medical practice.



# Inquiry-based Teaching/Learning

Fostering Reflection through Inquiry in Clinical Settings

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# Inquiry-based Teaching Promotes Reflection...

## IN & ON case, self, process & progress

### **Gunderman suggests that:**

- Residents should think like researchers (90) and, therefore, GME should foster “curiosity, skepticism, creativity and willingness to make mistakes” (p. 90).
- Residents should be encouraged “to suspend judgment, to question the received view, to look at a problem from multiple perspectives, and to create new approaches” (p. 90).
- We should encourage medical students to develop this mindset for reflective learning and practice.

# Fostering Intellectual Habits of Mind

- Dr. Gunderman (2009) describes a framework for teaching medical students and residents
- This approach is aimed at cultivating intellectual habits of mind for ...
  - Reflection
  - Self-assessment
  - Curiosity
  - Critical thinking
  - Creativity.

# Fostering Intellectual Habits of Mind

## **Gunderman advises the educational framework should:**

- Offer clear objectives
- Foster development of mentor/apprentice relationships
- Provide challenging learning tasks with multiple dimensions
- Encourage reflection and self-directed learning
- Encourage multiple perspectives

# Fostering Intellectual Habits of Mind

## **Gunderman advises the educational framework should:**

- Enable students to function as members of a team
- Grant students substantial control over their success or failure
- Offer increasing responsibility to contribute to patient care in meaningful ways
- **Provide constructive feedback**

# Inquiry

moves learners beyond mere transmission of facts

- Thus, Gunderman **promotes the use of Socratic questioning** to foster deep understanding, and avoid reliance on mere transmission of knowledge.

“Understanding is fostered largely through questioning. This is one of the great insights embodied in the so-called Socratic Method, which seeks to draw out understanding through questioning, if we are going to understand something we need to become actively engaged in reflecting on it, attempting to discover for ourselves what it means and why it is important. Socrates’ method of interacting with his interlocutors was not so much to tell them things as to stimulate them questioning to think for themselves. It is simply impossible to acquire genuine understanding in a passive fashion. The learner must be an active inquirer, or at least co-investigator, with the educator” (p. 89).

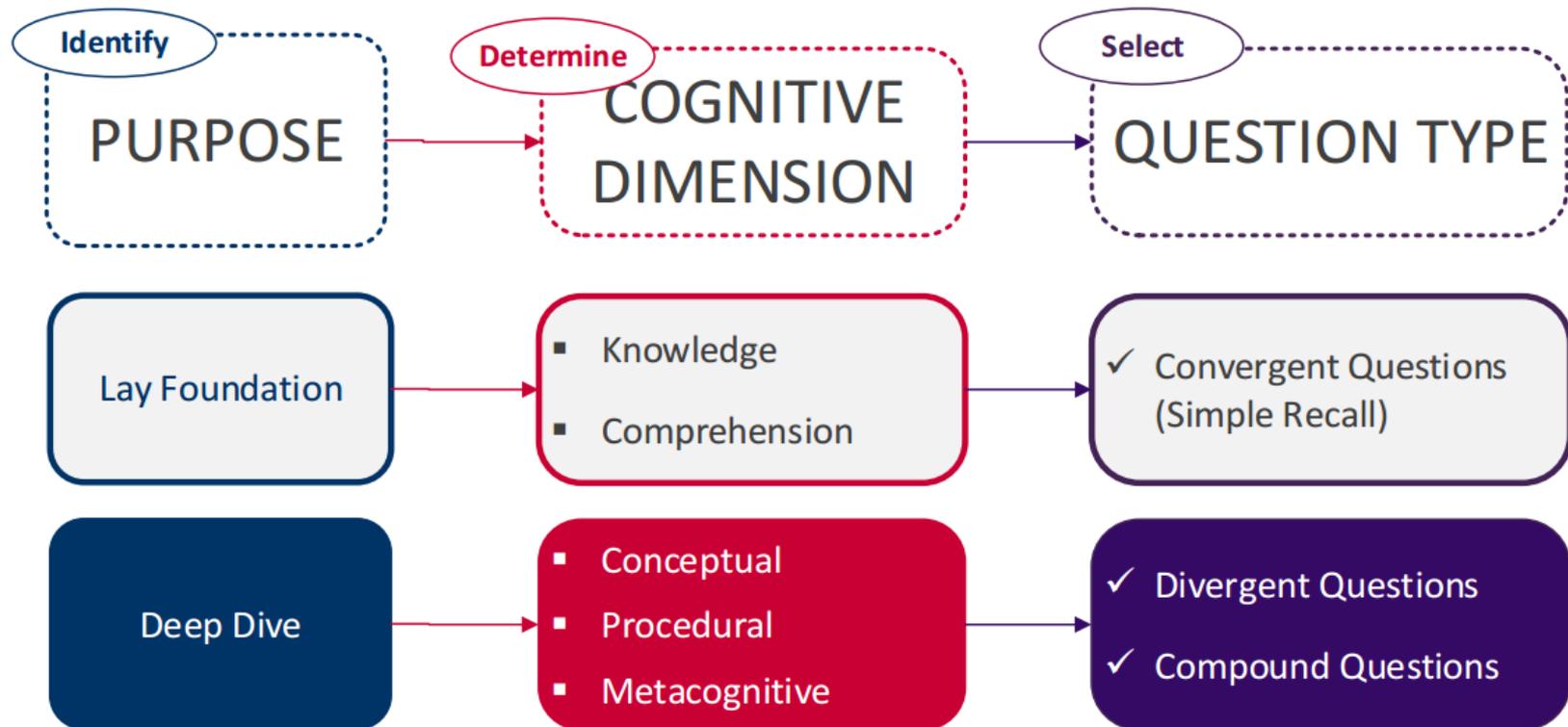
# Inquiry

moves learners beyond mere transmission of facts

- Residents and other clinical educators should engage in an inquiry-based approach to facilitate such discussion.
- Avoid answering questions too soon
- Prompt students to rethink the problem by asking questions
- Asking students to articulate reasons for the questions they pose, as well as the diagnoses or treatment plans they suggest.

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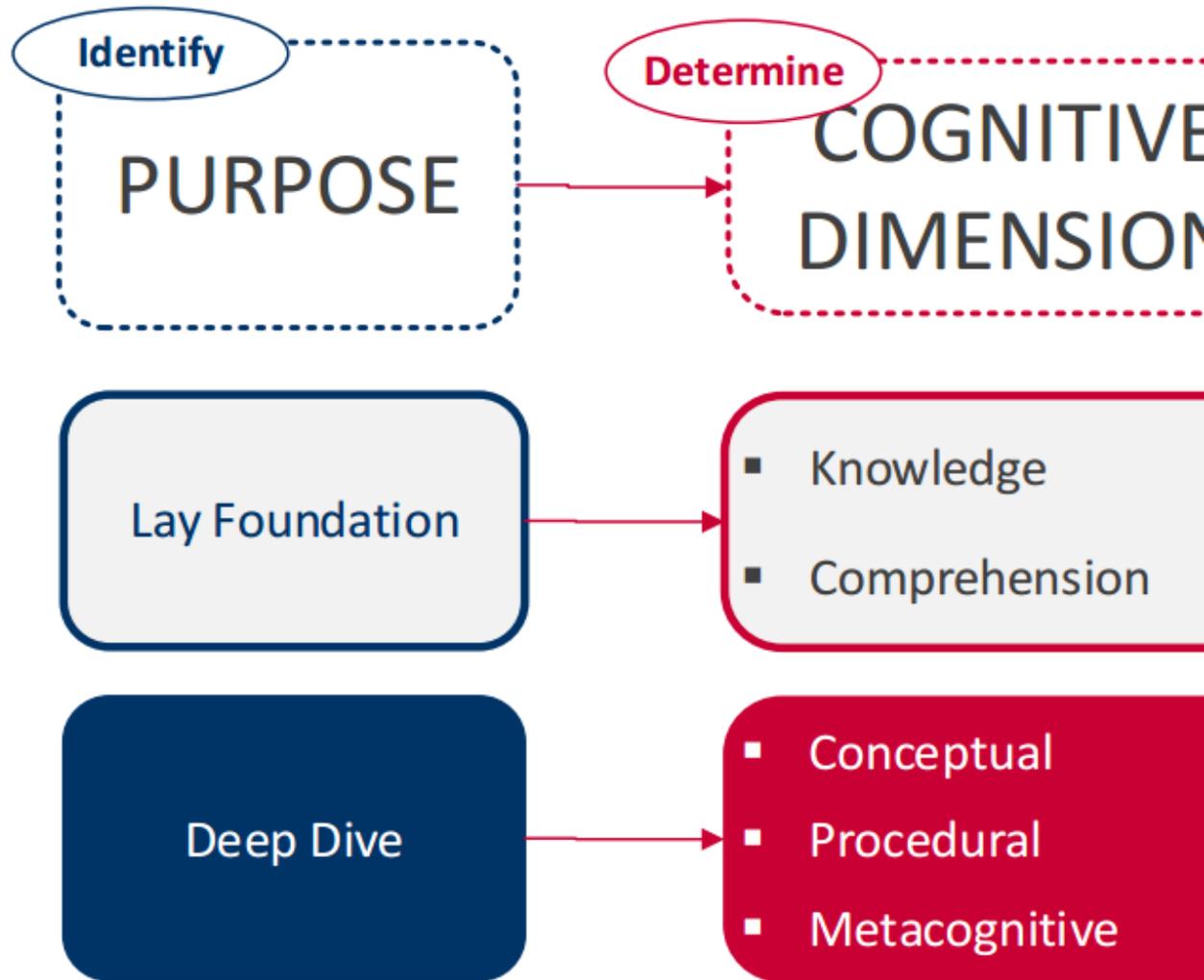
# Inquiry-based Strategies



# Identify

## The Purpose of the Inquiry

- First, determine the purpose of the intended inquiry
- Are you attempting to lay foundation or take the student on a deep dive?
- In other words, do you want to check the student's knowledge level or do you want to engage the student in more complex investigation.



# Purpose of the Inquiry

- Bloom's revised taxonomy categorizes recall and comprehension as lower-order thinking.
- These are considered uncomplicated tasks because they ask the learner to recount or demonstrate something they already know.



# Purpose of the Inquiry

- When you seek to determine the learner's level of knowledge or comprehension, you lay foundation with recall and comprehension questions – rather than complex questions that ask the learner to evaluate or synthesize knowledge or demonstrate skill.



# Purpose of the Inquiry

- Bloom's revised taxonomy categorizes application, analysis, synthesis, evaluation and creation or production as higher-order thinking.

## DEEP DIVE



Invite the deep dive

# Purpose of the Inquiry

- These are considered complicated tasks because they require the learner to analyze or synthesize facts to arrive at new understandings, in addition to recounting or demonstrating something they already know.

# DEEP DIVE



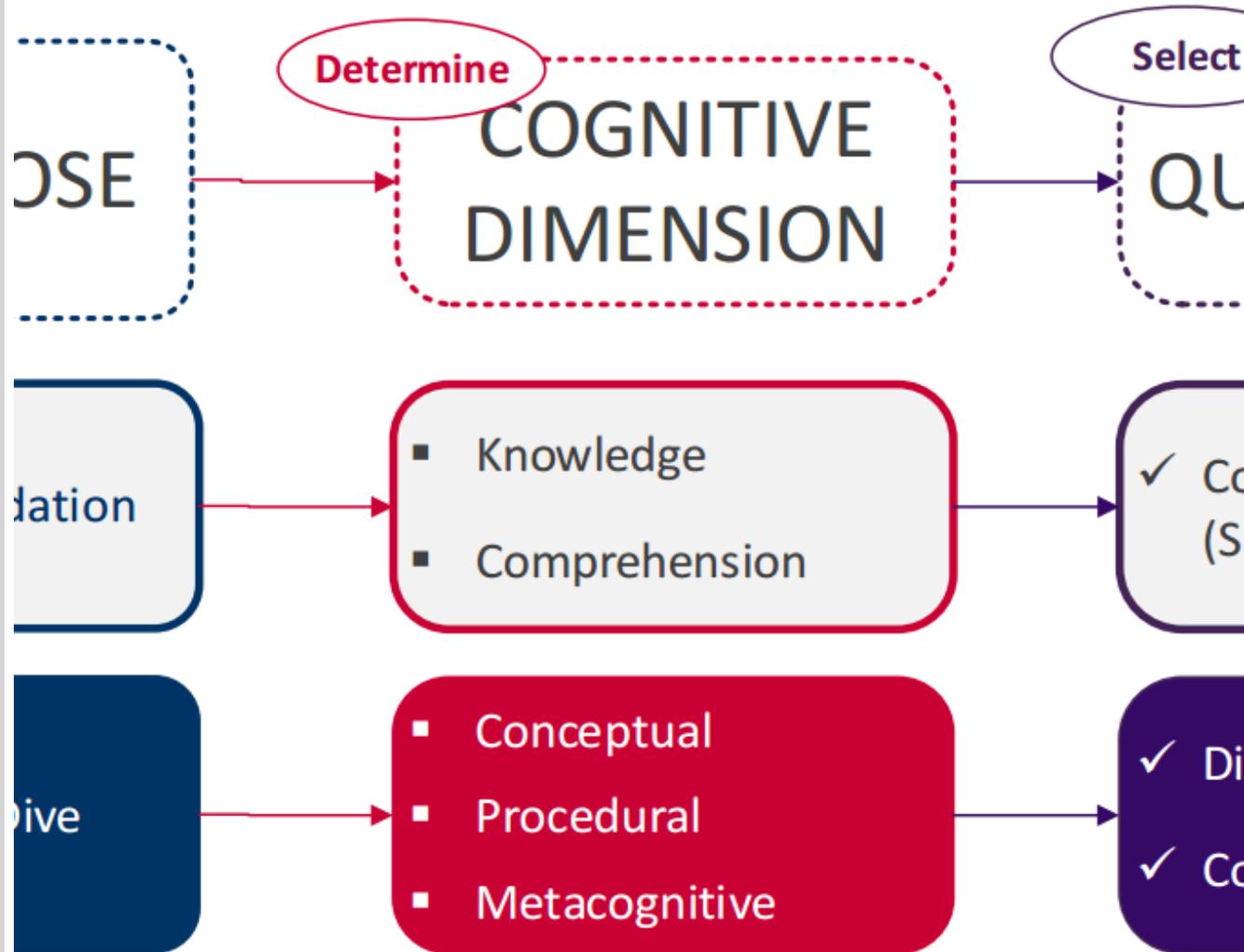
Invite the deep dive

# Determine

## The Target Cognitive Dimension

Second, determine the target cognitive dimension of the learner – *the kind of thinking you want to promote*

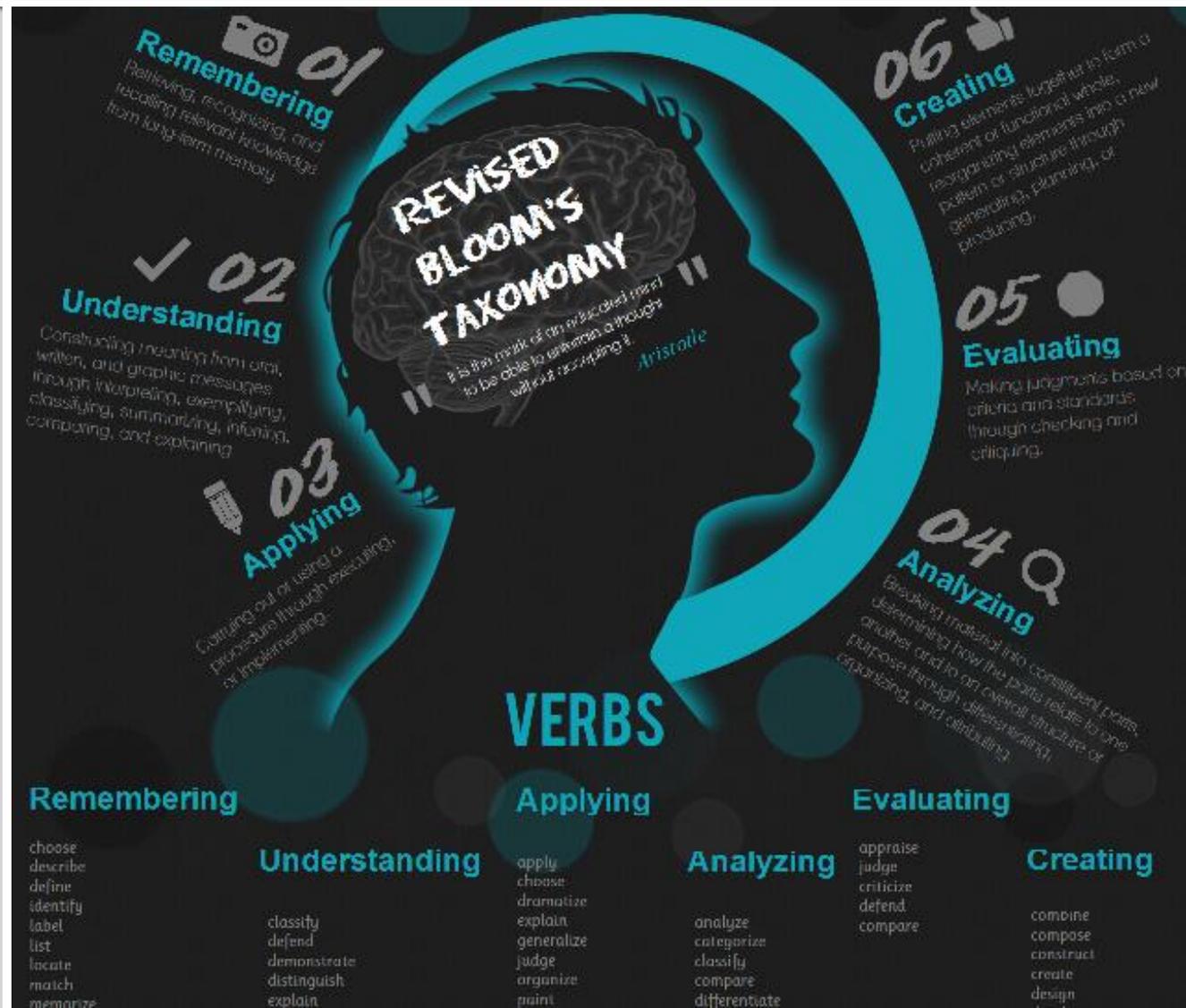
- **Do you want to them to...**
  - **Recall** what they know?
  - **Synthesize** multiple pieces of information to arrive at some conclusion?
  - Reflect on or self-assess (**evaluate**) performance?



# Target Cognitive Dimension

## Bloom's Revised Taxonomy

- You can use or revised taxonomy to guide your teaching.
- Think about the cognitive dimension in which you would like the learner to engage. Bloom's Taxonomy

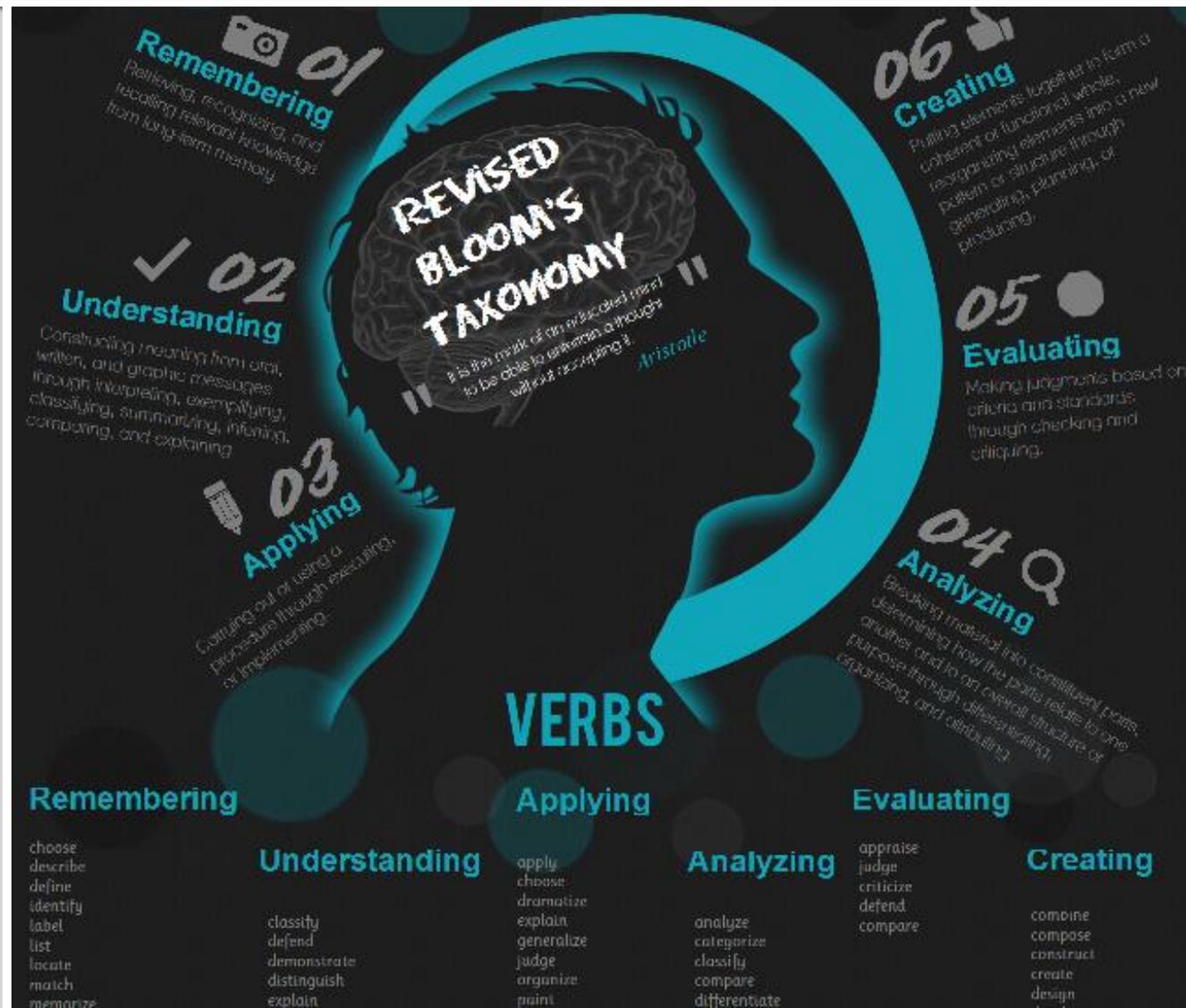


# Target Cognitive Dimension

## Bloom's Revised Taxonomy

Ask yourself: Do you want the learner to ....

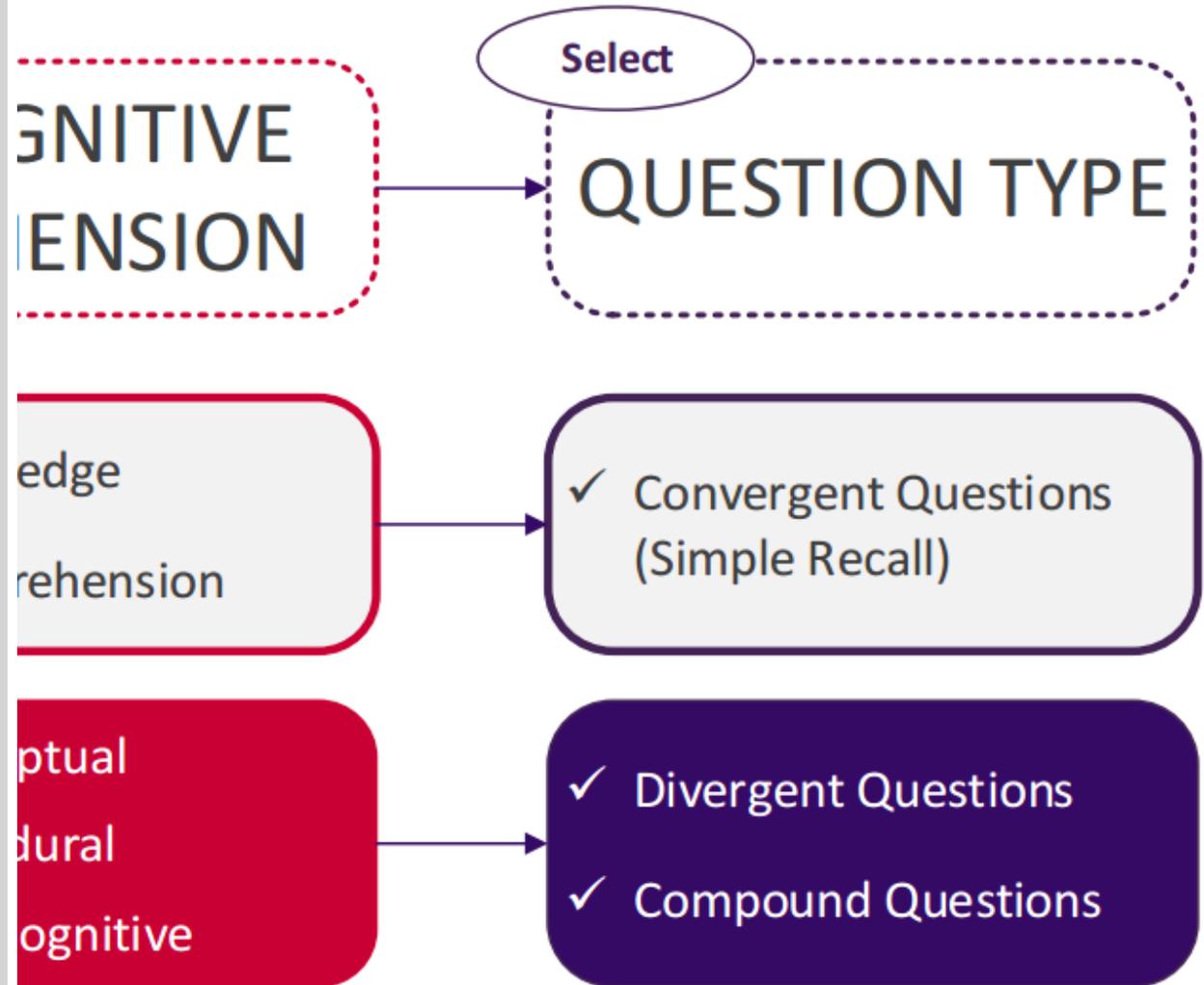
- Demonstrate knowledge
- Demonstrate comprehension
- Apply knowledge
- Analyze data
- Synthesize all facts to date
- Evaluate
- Formulate a plan



# Select

## The Question Type

- Third, select the kind of question that will promote the kind of thinking in which you want the medical student to engage.
- For example, a **YES/NO (convergent) question** would **target basic recall** and **lay foundation** for more complex questions.



# Question Types

## *For Deeper Dives*

Medical students should be encouraged to ask questions that inquire into the...

- **Process** of investigating or working through a case, developing differentials or plans of care
- Various **Perspectives** on the problem – are there other ways to think about this patient's case?

### Inquiry Strategies for a Reflective Approach to Medical Problem Solving

Question the Process	Question the Problem
<ul style="list-style-type: none"> <li>• How do I know that?</li> <li>• What else do I need to know?</li> <li>• How could/should I find out?</li> <li>• How will it help me to differentiate from among the possible diagnoses?</li> <li>• Is there another approach I/we can take?</li> <li>• Are these problems due to a single cause? Multiple causes? Multiple related causes?</li> <li>• How can I/we narrow POSSIBLE causes to highly PLAUSIBLE or PROBABLE causes?</li> </ul>	<ul style="list-style-type: none"> <li>• Are these problems due to a single cause? Multiple related causes?</li> <li>• Which facts support my current diagnosis?</li> <li>• Which facts do not support my current diagnosis? How do they lead me to continue investigating?</li> </ul>
Question Perspectives	Question How to Approach
<ul style="list-style-type: none"> <li>• Have I/we framed the inquiry in a way that helps or hinders us from reaching a conclusion supported by evidence?</li> <li>• How could I/we (re)frame the problem?</li> <li>• How could I/we reframe the question?</li> <li>• Am I/are we biased in some way?</li> <li>• What assumptions am I/are we making?</li> <li>• What kind of questions should I/we be asking?</li> </ul>	<ul style="list-style-type: none"> <li>• What have I learned from this case?</li> <li>• How can problem-solving approach to the current case be improved?</li> <li>• Have I/we made any cognitive errors?</li> <li>• How/why did I/we make these errors?</li> <li>• How/why could I/we avoid these errors?</li> </ul>

# Question Types

## *For Deeper Dives*

Medical students should be encouraged to ask questions about

- Case content
- How to approach cases in the future based on what's been experienced or learned

Process	Question the Case
<p>among the possible</p> <p>?</p> <p>? Multiple causes?</p> <p>to highly PLAUSIBLE or</p>	<ul style="list-style-type: none"> <li>• Are these problems due to a single cause? Multiple causes? Multiple related causes?</li> <li>• Which facts support my conclusions?</li> <li>• Which facts do not support my conclusions? Should this cause me to continue investigating? Why? Why not?</li> </ul>
Reflections	Question How to Approach Future Cases
<p>What helps or hinders us / evidence?</p> <p>sking?</p>	<ul style="list-style-type: none"> <li>• What have I learned from my approach in past cases?</li> <li>• How can problem-solving in past cases help me take an effective approach to the current case?</li> <li>• Have I/we made any cognitive errors? What are they?</li> <li>• How/why did I/we make those errors?</li> <li>• How/why could I/we avoid these in future cases?</li> </ul>

# Reflective Inquiry

*Remember...*

- How we frame questions determine the perspective our investigation will take.
- Learners should be encouraged to consider HOW they frame questions and whether this perspective will bias their clinical investigation.



perspective

**FRAME THE QUESTION**

# Reflective Inquiry

*Remember...*

**HOW** we phrase questions is equally important.

- Phrasing can determine whether the person to whom the question is directed will be receptive to answering the question.
- Particular phrasing could cause confusion – for example, with patients, the medical student should use lay terms rather than clinical terms.



Phrase

**(RE)WORDING THE QUESTION**

# Summary

- **Increased metacognitive awareness** of self and process is associated with improved learning outcomes in many educational contexts as well as professional practice (Azevedo, 2010).
- **Professionals** must engage in reflective, lifelong learning to be effective (Schön, 1983).
- **Inquiry-based strategies** for teaching and learning are one way to promote reflection in, on and for professional practice.

# Engage in Inquiry-based Teaching

## to Encourage Inquiry-based Learning

- This process offers an inquiry-based strategy you can use in clinical teaching and can encourage your medical students to use for learning in clinical settings.

### IDENTIFY

WHY you want to ask the question  
(Or why the learner wants to ask the question)

### DETERMINE

the KIND OF THINKING in which you want the learner to engage

### SELECT

the TYPE of question that will accomplish that objective