# How can I encourage my students to examine for cognitive error?

A GUIDE TO PROBING FOR COMMON COGNITIVE ERRORS

Prepared by Office of Medical Student Education Faculty Instructional Development

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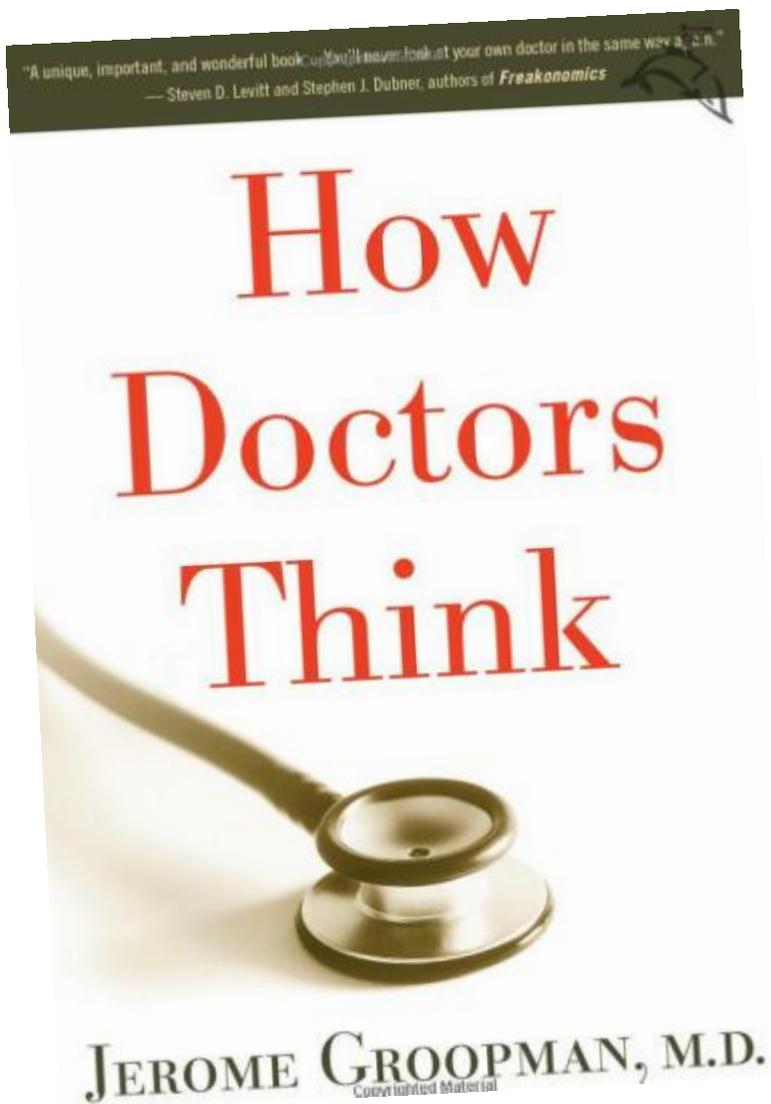
Developing habits of reflection in and on practice and teaching

- **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.**
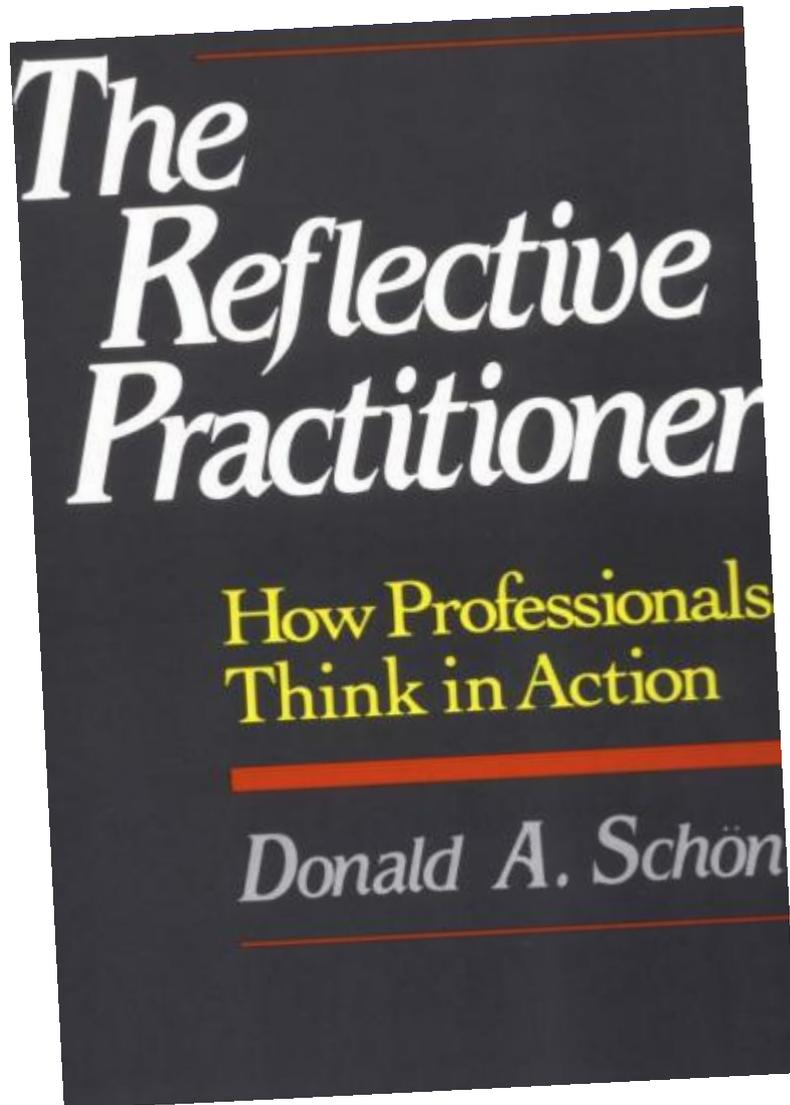
Reflective Conversations

- **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.**

- **Reflection-IN-action refers to developing habits of mind that encourage reflecting in the course of decision-making. E.g., thinking of <u>alternative hypotheses</u> for the causes of symptoms, or wondering whether the approach is a good one to take in a particular case.**
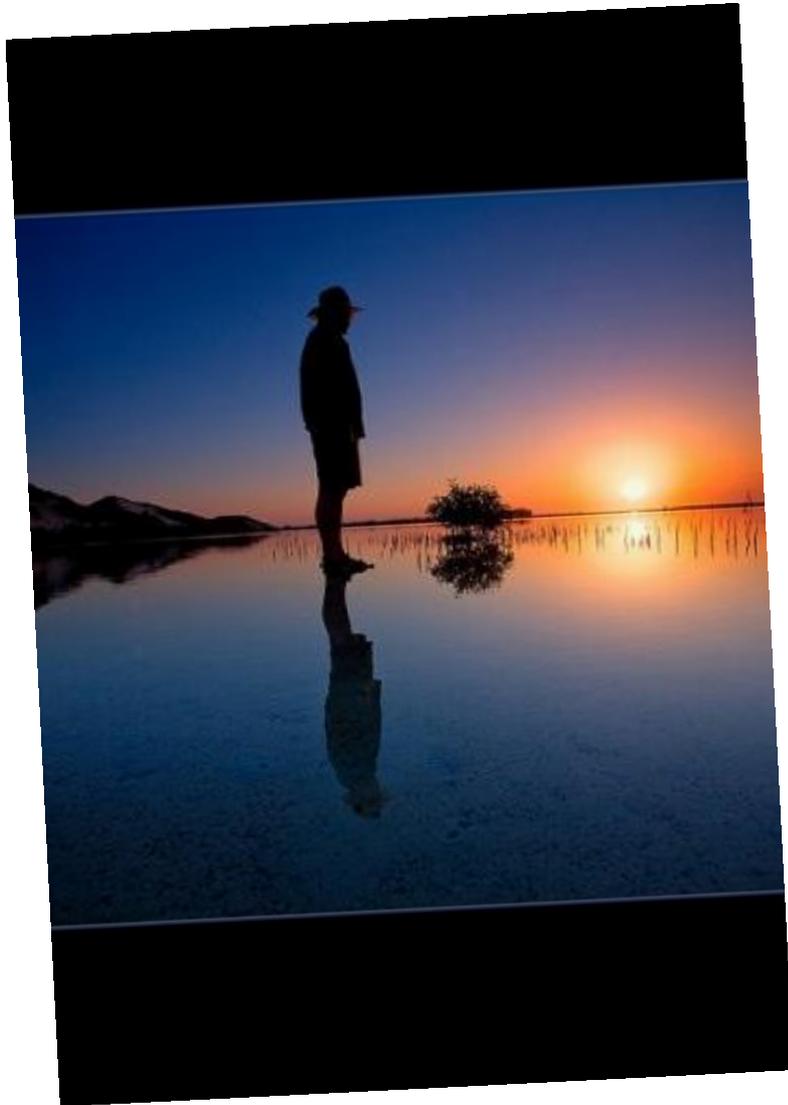
Reflection ON action…

- **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**

An <u>evaluative</u> thinking process after the case concludes. Typically, this encourages reviewing action for error after engagement in an event or case.

GETTING INTO THE REFLECTIVE HABIT

- **Ordinary situations may not provoke reflection in action.**

- **Dissonance between what is expected and what actually happens does.**

- **Therefore, teachers should deliberately and strategically guide learners to reflect during the decision-making process and afterward to develop reflective intellectual habits of mind.**

{ Framework for Reflective Practice

Reflection-DURING-action
During an experience

IN
Active
Learning

Reflection-BEFORE-action
Before an experience

FOR
Planning

Cyclical Learning Process

ON
Post
Activity

Reflection-AFTER-action
Following an experience

Plack & Santasier (2004)
Schön (1983)
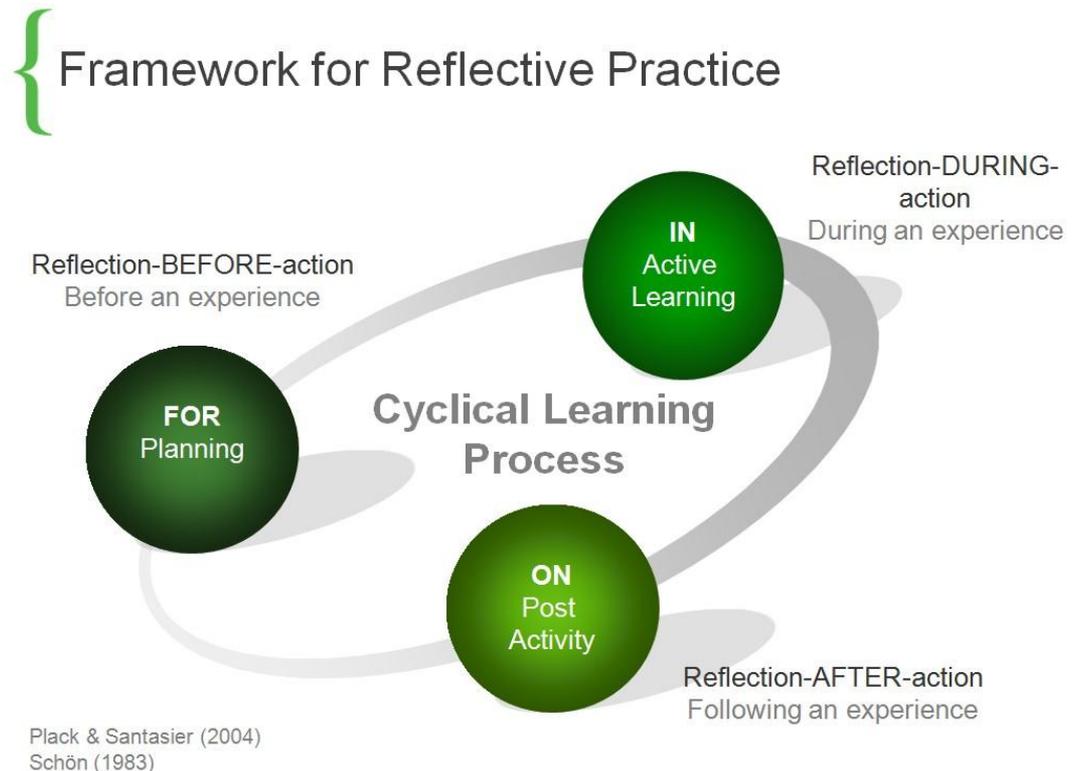
I cannot teach anybody anything; I can only make them think.
- Socrates

Promoting Reflection Through Questioning

- "Although questioning is at the heart of the reflective process, different strategies are available for the medical educator who is using the questioning process to facilitate reflection. Individuals can engage in the reflective process in writing or verbally and individually or with others." Plack & Santasier (2005, 1549).

WHY QUESTIONS?

Questions…

- Encourage Critical Thinking
- Promote self-evaluation
- Facilitate consideration of alternative perspectives and alternative solutions
- Expose assumptions
- Promote synthesis of multiple perspectives
- Enables thoughtful consideration of what is happening versus perception

To teach students to question…

- Establish trusting relationship for teaching/learning
- Practice questioning by engaging in reflective practice and learning
- Expect students to engage in complex higher order thinking, e.g., analysis, interpretation
- Promote metacognitive engagement in learning

Plack & Santasier (2005)

Common cognitive errors

One way to cultivate the reflective habit is to encourage students to examine their decision-making (or someone else's) for cognitive error. The following slides provide examples of questions for each type of cognitive error above. These errors are discussed in detail in Groopman (2007).

Attribution error

Did I attribute the problem to an immediate cause without investigating multiple hypotheses as to the cause of illness or symptoms?

Availability error

How might the most recent experience I've had or heard about color my opinion or judgment?

Diagnosis momentum

- **Did I simply adopt previous diagnoses of other physicians without being mindful or critical about whether the facts support it?**
- **Are there are other plausible explanations for the patient's symptoms.**

Affective interference

- **Do I have some emotional connection to this case?**
- **Did I allow an emotional response to cloud my thinking and judgment?**

Bayesian analysis

- **Did I miss information *peculiar* to this patient when considering the statistical likelihood of this patient having a particular disease/condition?**

Vertical line error

- **Was I thinking inside the box just to find one cause to explain it all?**

- **Or did I keep a skeptical eye on test results?**

Framing error

- **Did I frame my inquiry so that I was looking to confirm a particular diagnosis?**

- **Is it possible that in looking for "X" I missed "Y"?**

Search Satisfaction error

Is it possible that I stopped looking or thinking once I found *something*?

Commission bias

- **Is it possible that I just wanted to *do something*, rather than embrace the more reflective stance of: *Stand there – don't just do something?* (i.e., Reflect, then Act)**

ON REFLECTION

"[T]he reflective process is of critical importance for pediatricians [physicians] to be able to make informed evidence-based decisions in a client centered treatment milieu. Incorporating the reflective process may enable trainees to more effectively attain those competencies that the ACGME considers essential to quality care such as doctor-patient interaction and lifelong learning. However, reflection is an analytic skill that must be mastered as well."

- Plack & Santasier (2005, 1550)

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