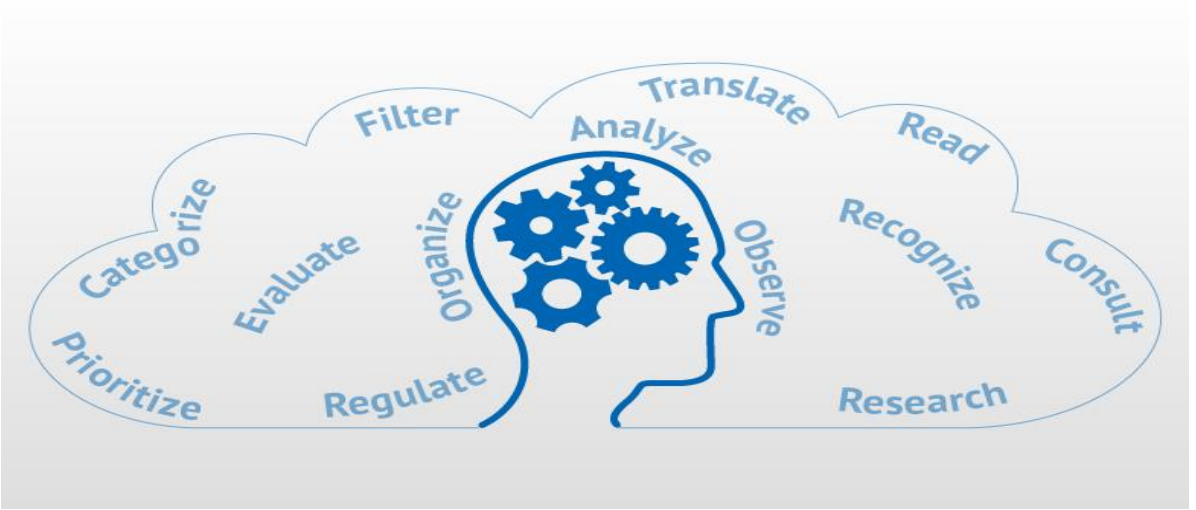
Clinical Education: Developing Clinical Reasoning

Kim B. Smith, PT, DPT

Assistant Professor, Nova Southeastern University

Assistant DCE



Why doesn’t the student see the problem?

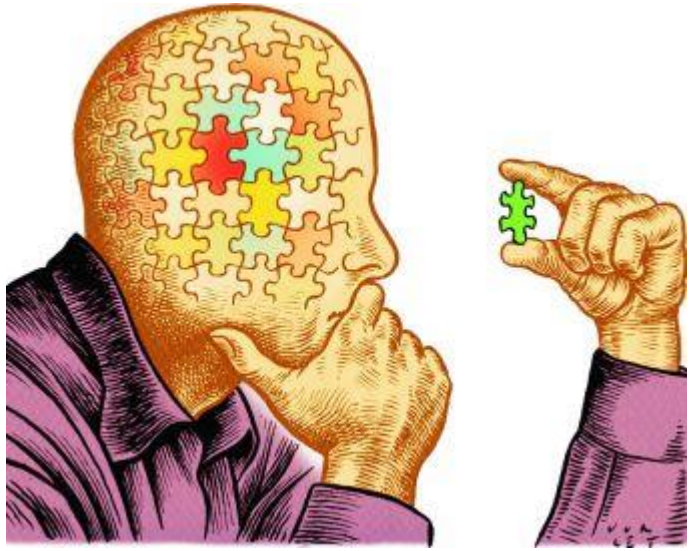
Clinician

It’s clear to me!

Student

“ Novices are rule-governed. Experts learn to break rules.”

Gail Jensen, PT, PhD, FAPTA



Dreyfus & Dreyfus Model of Skill Development Applied to Development of Physician Competence Carraccio, 2008

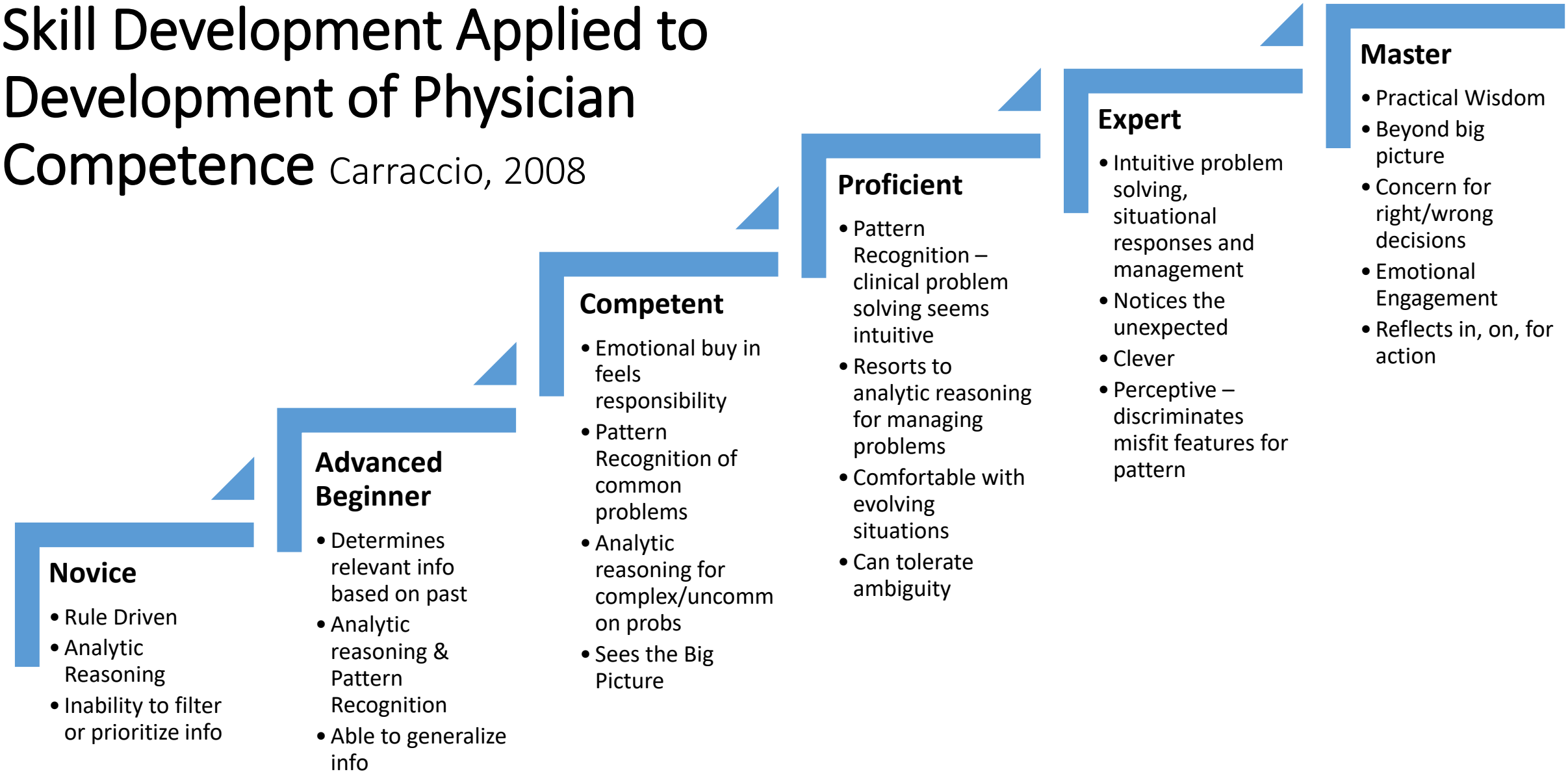
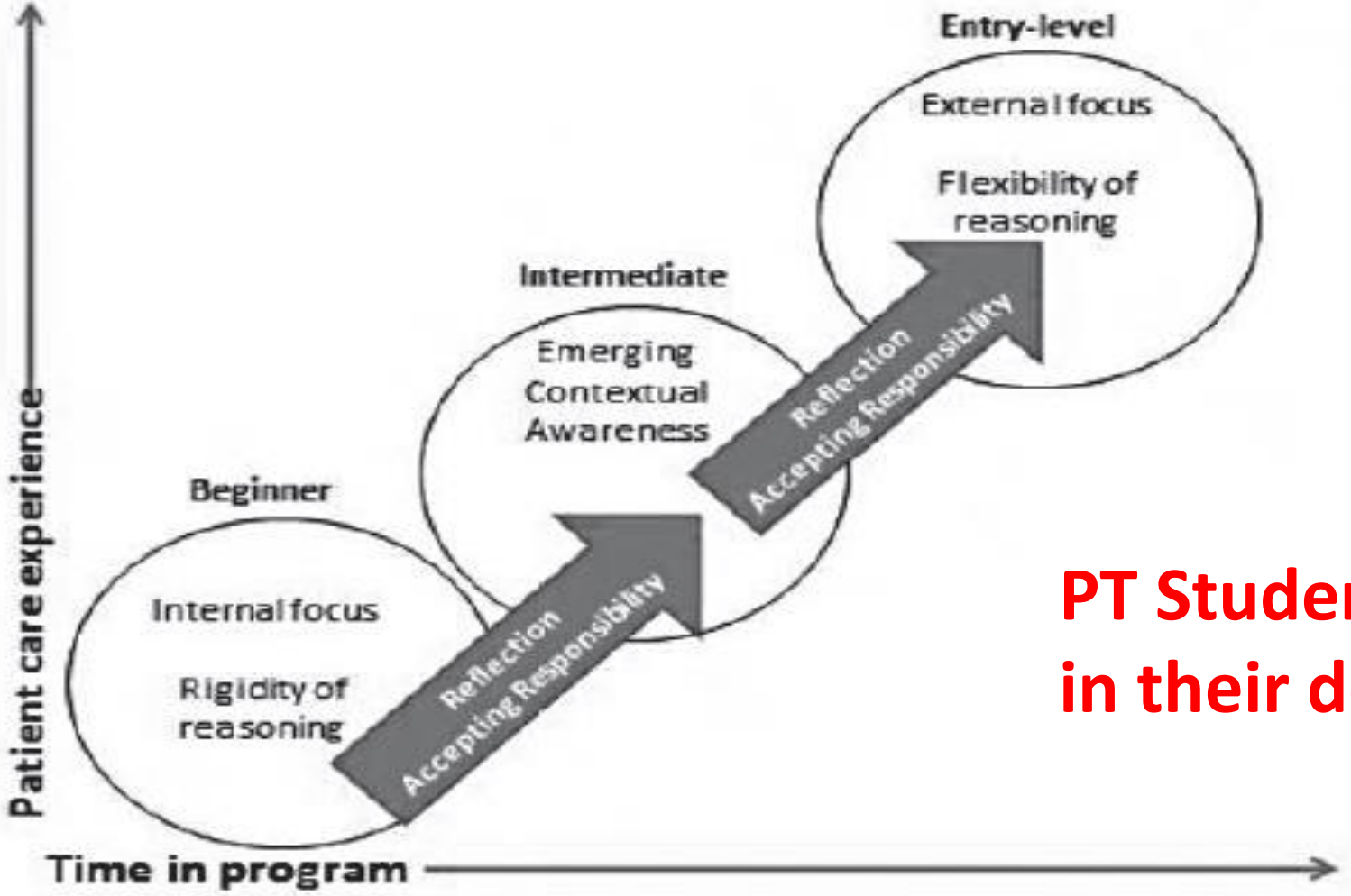


Figure 2. Conceptual Framework



PT Students also evolve in their development!

Furze J, Black L, Hoffman J, Barr JB, Cochran TM, Jensen GM. Exploration of Students' Clinical Reasoning Development in Professional Physical Therapy Education. Journal of Physical Therapy Education. 2015;29(3):22-33.

Clinical Reasoning Models

Hypothetico-Deductive Reasoning

- Gather evidence
  - Hypothesis Testing
- Information Processing

Inductive Narrative Approach

- Pattern Matching (Chunking)
- Illness script

ANALYTICAL

Backward Reasoning

NON-ANALYTICAL

Forward Reasoning

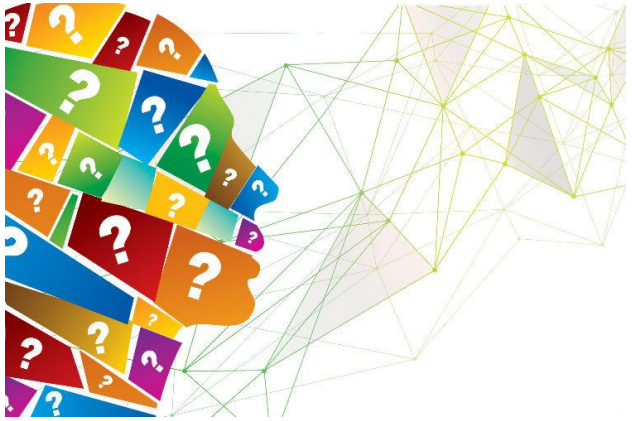
Clinical Reasoning

	STUDENT	EXPERIENCED CLINICIAN
Approach	Analytical: Hypothetico-deductive	Non-Analytical Pattern Recognition (Chunk)
Diagnosis/Hypothesis	Isolated Facts	Integrated/Contextual
Knowledge Organization	Redundant /Disorganized	Organized/ efficient
Effort	High (Cognitive Load)	Low
Steps	Not prioritized	Prioritized
Thinking	Slow	Fast

Prolonged effort/practice

During, SJ. 2017, July 24.

Knowledge Organization: CI Role



- Build effective chunks (associate info)
- Optimize cognitive load to “free up” working memory
  - Provide worked examples (e.g. “solved” cases)
  - Start with common (classic) & gradually increase complexity
  - Limit feedback
- Be explicit: Explain How/Why of your pattern recognition
  - Make Invisible -> Visible
  - Think out loud -> Pause **Slow down your thinking*
- Have student identify errors/mistakes: Where is the lesion in the chunk?
  - Diagram their thinking
- Deliberate practice: See/Touch/Feel
  - Breakdown component parts
  - Give feedback

Working memory is needed for learning!

During, SJ. 2017, July 24

Knowledge Organization: Teaching Strategies to address faulty chunks

- Give time for the student to think (cognitive load)
  - "Pause for the cause"
- Find "common ground" & "point of departure"
  - Intermediate steps: signs/symptoms, problem lists, summary
- Create algorithms/flowcharts/concept maps
- Compare and contrast assignments
- Create prototypic patient assignments
  - Textbook case presentation
- Change key features in patient presentation: *What if?*
- Discuss essential concepts multiple times and in differing ways
- Use near peer instruction

During, SJ. 2017, July 24

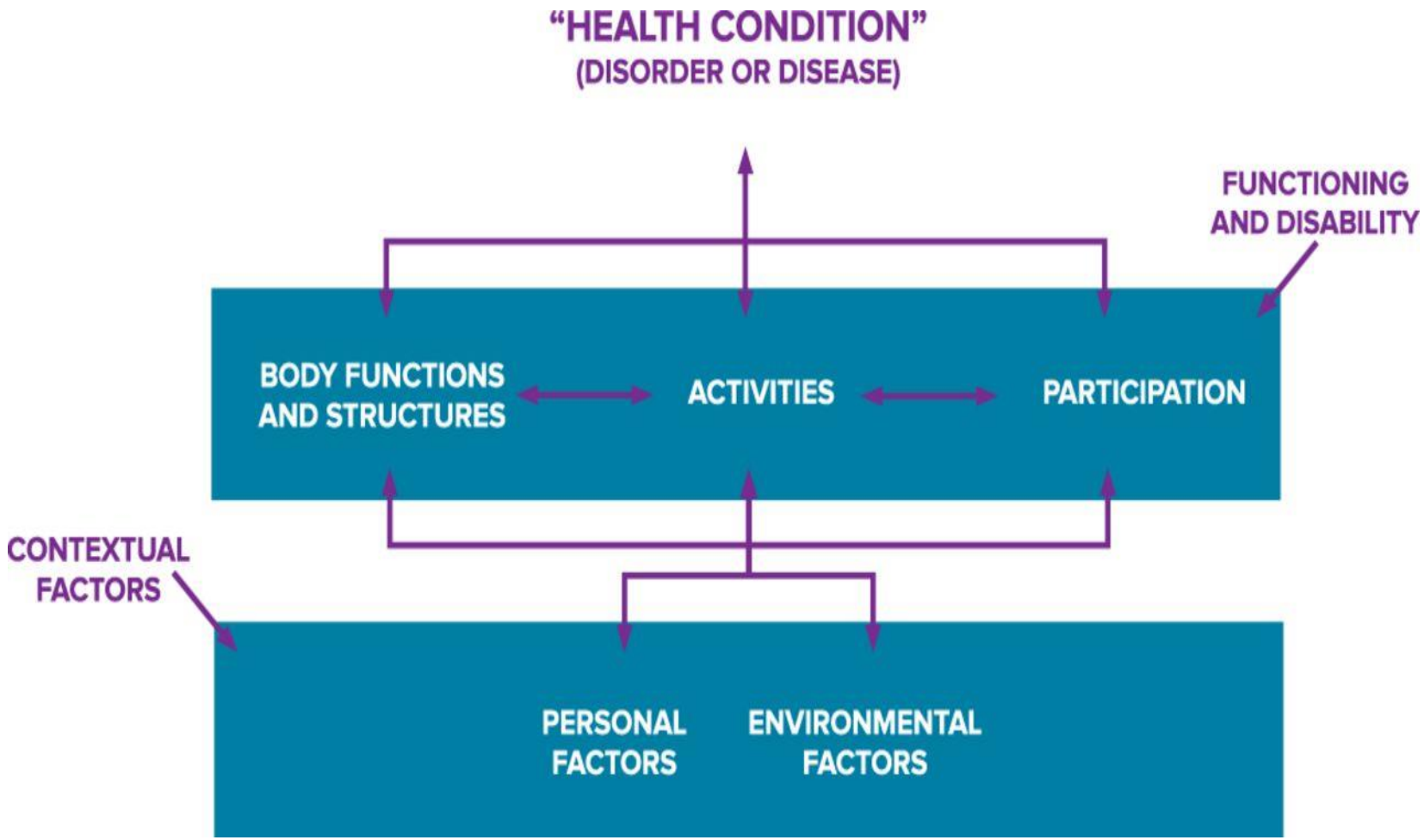
Facilitating Clinical Reasoning in your students

- Communication of expectations
  - "strike zone"
- Pre-session Planning
  - Chart review
  - Summary of prior sessions
  - Patient goals for session
  - Student goals for session
- Signal for help
  - Predetermine a sign/word/look
- Think "Out loud"
  - Student
  - Therapist

Tools for Facilitating Clinical Reasoning

- ICF Model
- Reflection
- 5 Micro Skills for Clinical Teaching
- The 5-Minute Clinical Manager
- The Physical Therapy Clinical Reasoning & Reflection Tool

International Classification of Functioning, Disability and Health (ICF) model of functioning and disability



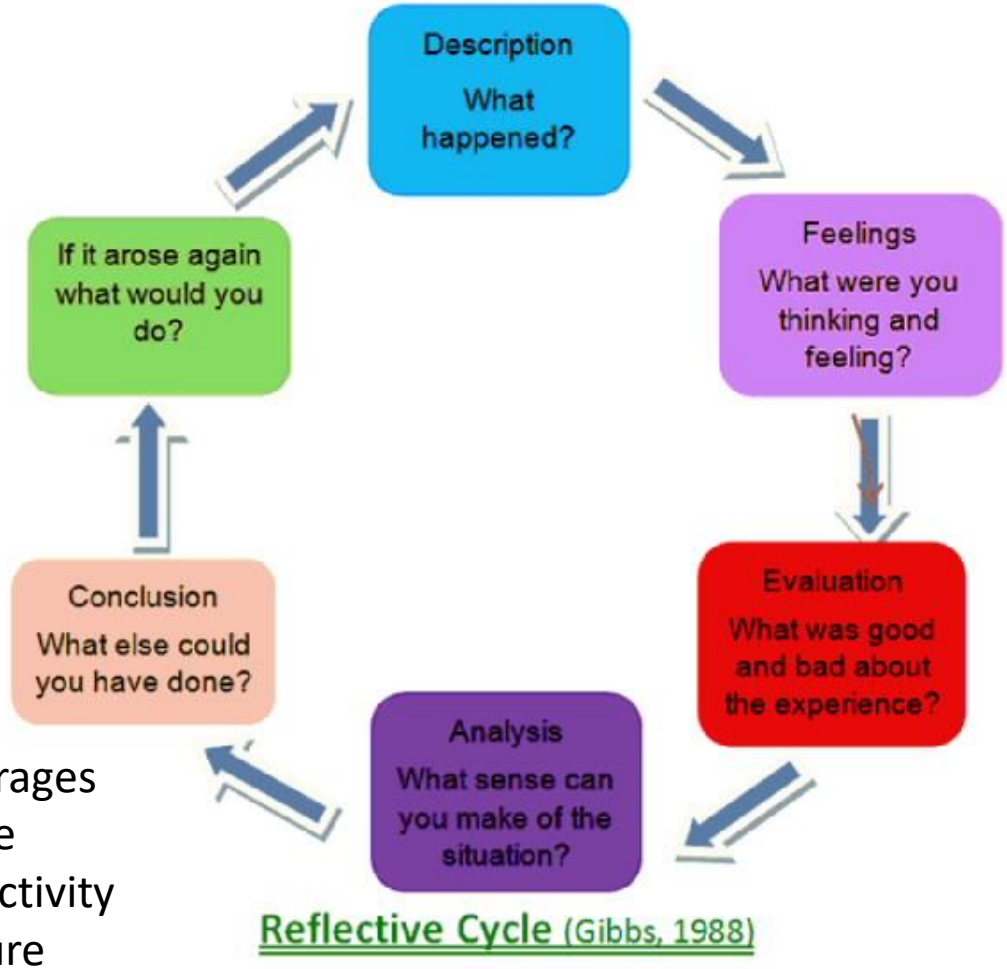
© 2014 by American Physical Therapy Association

The Reflective Practitioner: Donald A. Schon (1982)

Key questions to facilitate reflection

- Reflection on-action – following an event and thinking back upon the encounter
- Reflection in-action – during the event making changes in behavior in response to the situation
- Reflection for-action – making changes for the future based upon previous

Reflection: Clinical Narrative



Reflective Cycle (Gibbs, 1988)

Gibbs' reflective cycle encourages systematic thinking about the phases of an experience or activity using the headings to structure the reflection.

Five Microskills for Clinical Teaching

Neher, JO, Gordon, KC, Meyer, B, and Stevens, N.A. Five-step "Microskills" Model of Clinical Teaching. Journal of the American Board Family Practice. 5:419-424, 1992.

- Get a commitment – what is the pt's problem?
- Probe for supporting evidence – why? What is the evidence?
- Teach general rules – teach pattern recognition
- Reinforce what was right
- Correct mistakes – create an environment where it is safe to admit to a mistake

THE 5-MINUTE CLINICAL MANAGER
A Method for Efficient Evaluation and Feedback

Strategy for efficiently structuring an interaction with a learner.

- **Step 1:** 1-minute learner commitment; establishing goals
- **Step 2:** 1-minute rationale evaluation: probe for supportive findings/evaluate the thinking leading to that commitment
- **Step 3:** Step 3: 1-minute praisings: reinforce what was correct/give positive feedback
- **Step 4:** 1-minute reprimands; constructive guidance about errors or omissions
- **Step 5:** 1-minute take home lesson; teach a general principle

Adapted from Blanchard K, Johnson S. The One-Minute Manager, HarperCollins Publishers Inc., New York, 1903.
Nether JO, Gordon KC, Meyer B, Stevens N. A Five-Step "Microskills" Model of Clinical Teaching. J AM Brd of Fam Pract July-Aug, 1992; Vol. 5 No. 4, 419-424.
Nova Southeastern University Physician Assistant Program Preceptor Handbook 1995-1996.

The Physical Therapy Clinical Reasoning and Reflection Tool (PT-CRT) Atkinson & Nixon-Cave, 2011

Reflection Points: (Questions)

I. Initial Data Gathering/Interview
II. Generation of Initial Hypothesis
III. Examination
IV. Evaluation
V. Plan of Care
VI. Interventions
VII. Reexamination
VIII. Outcomes
IX. Mentor Feedback

Guide to Physical Therapist Practice

+

ICF

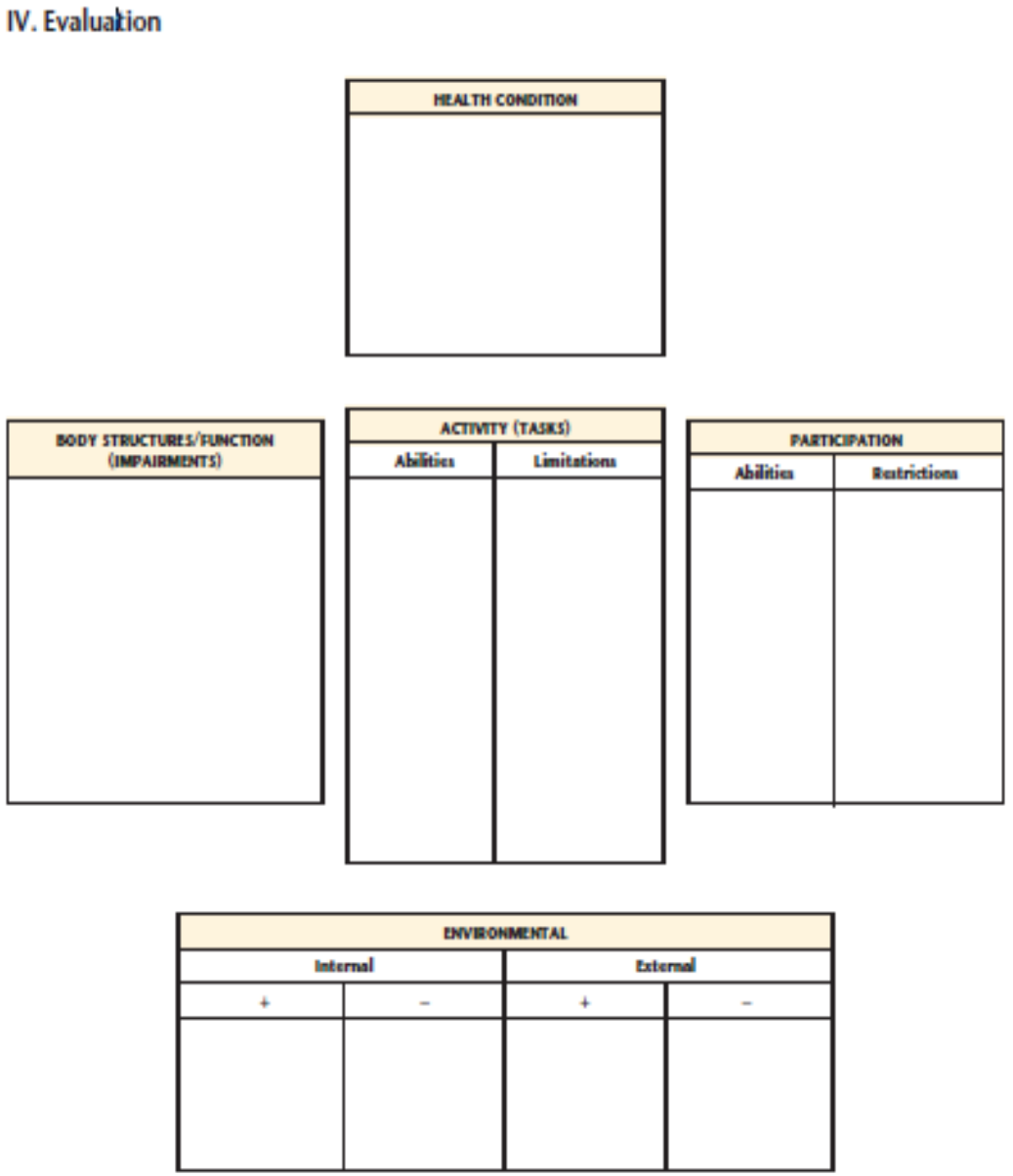
PT-CRT sample

II. Generation of Initial Hypothesis

a. Body Structures/Function
b. Impairments
c. Activity Limitations
d. Participation Restrictions

Reflection Points:

- Can you construct a hypothesis based on the information gathered?
- How did you arrive at your hypothesis?
- What is your strategy for the examination?
- How might the environmental factors affect your examination?



IV. Evaluation

a. Diagnosis
b. Prognosis

Reflection Points:

- How did you determine your diagnosis
- How did you examination findings support/negate your initial hypothesis?
- What factors might support/interfere with the patient's prognosis?
- How can you determine capacity for progress toward goals?

MENTORSHIP

Ongoing self-assessment and reflection on teaching abilities in mentors is important to advance mentorship

- Questions to ask self:
  - Am I intervening too often or too little
  - Am I providing clear feedback
  - What can I do to make the student more comfortable with the mentoring process
  - Am I creating a collaborative mentoring environment
  - Did I consider the background information on the learner
  - Am I utilizing the teaching tools effectively
    - Modeling my clinical reasoning – Talking out loud
    - Facilitating clinical reasoning of the student

References

- Atkinson H, Nixon-Cave K. A tool for clinical reasoning and reflection using the International Classification of Functioning, Disability and Health (ICF) framework and patient management model. Phys Ther. 2011; 91: 416-430.
- Carraccio C, Benson B, Nixon J, Derstine P. From the educational bench to the clinical bedside: translating the Dreyfus developmental model to the learning of clinical skills. Acad Med. 2008; 83:761-767.
- Durning SJ, Artino AR, Schuwirth L, van der Vieuten C. Clarifying assumptions to enhance our understanding and assessment of clinical reasoning. Acad Med. 2013; 88:442-448.
- Durning SJ. Teaching Clinical Reasoning:“Lessons Learned” in Medical Education – Keynote Address. Clinical Reasoning Symposium, July 24, 2017, Creighton University. Furze J, Black L, Hoffman J, Barr JB, Cochran TM, Jensen GM. Exploration of Students' Clinical Reasoning Development in Professional Physical Therapy Education. Journal of Physical Therapy Education. 2015;29(3):22-33.
- Furze J, Huhn K. Assessing Clinical Reasoning for Learning and Competence: Education and Practice across the Continuum. Clinical Reasoning Symposium, July 20-23, 2017, Creighton University.
- Gilliland S, Wainwright SF. Patterns of Clinical Reasoning in Physical Therapist Students. Phys Ther. 2017;97(5):499-511.
- Huhn K, Black L, Christensen N, Gilliland S, Wainwright S. Clinical reasoning: a conceptanalysis. WCPT Congress Platform Presentation, Abstract no. RR-PL-1305, Cape Town, South Africa, 4 July 2017.
- Neher, JO, Gordon, KC, Meyer, B, and Stevens, N.A. Five-step "Microskills" Model of Clinical Teaching. Journal of the American Board Family Practice. 5:419-424, 1992.