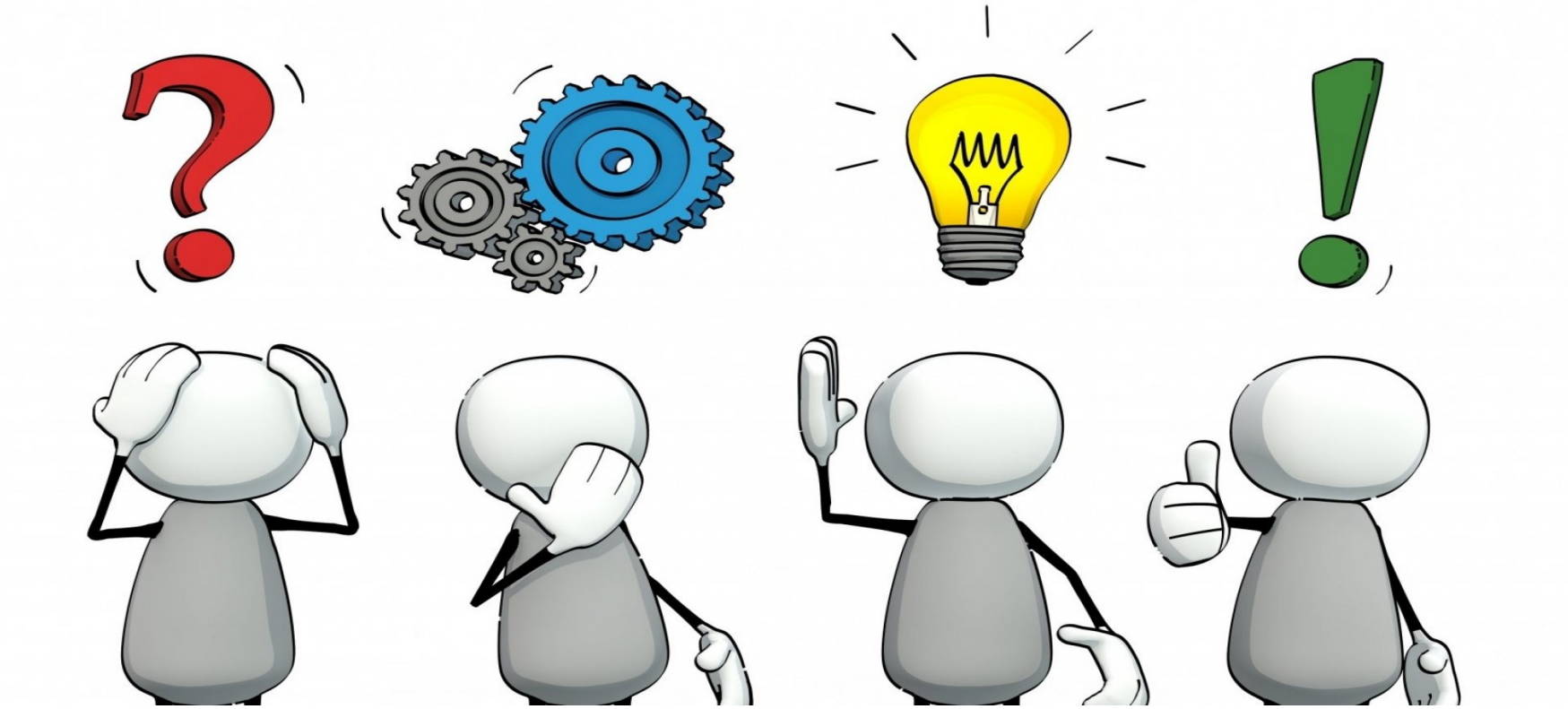
HELPING STUDENTS LEARN TO CLINICALLY REASON DURING FIELDWORK



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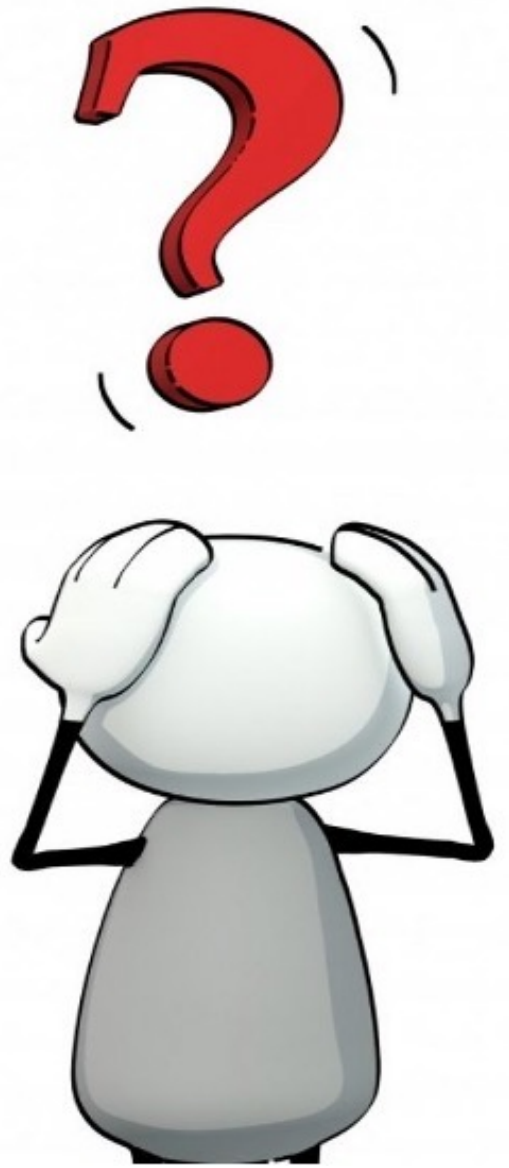
Disclosure
I disclose that I have no financial relationship or interest in any commercial organizations pertaining to this educational activity

Learning Objectives

- State the problem solving steps
- Name and describe 4 of 6 steps of the cognitive apprenticeship model
- Identify one way to incorporate articulation and one way to incorporate reflection into your clinical education practice
- Identify one way to create a positive learning space for students

The Problem:

What is Clinical Reasoning?

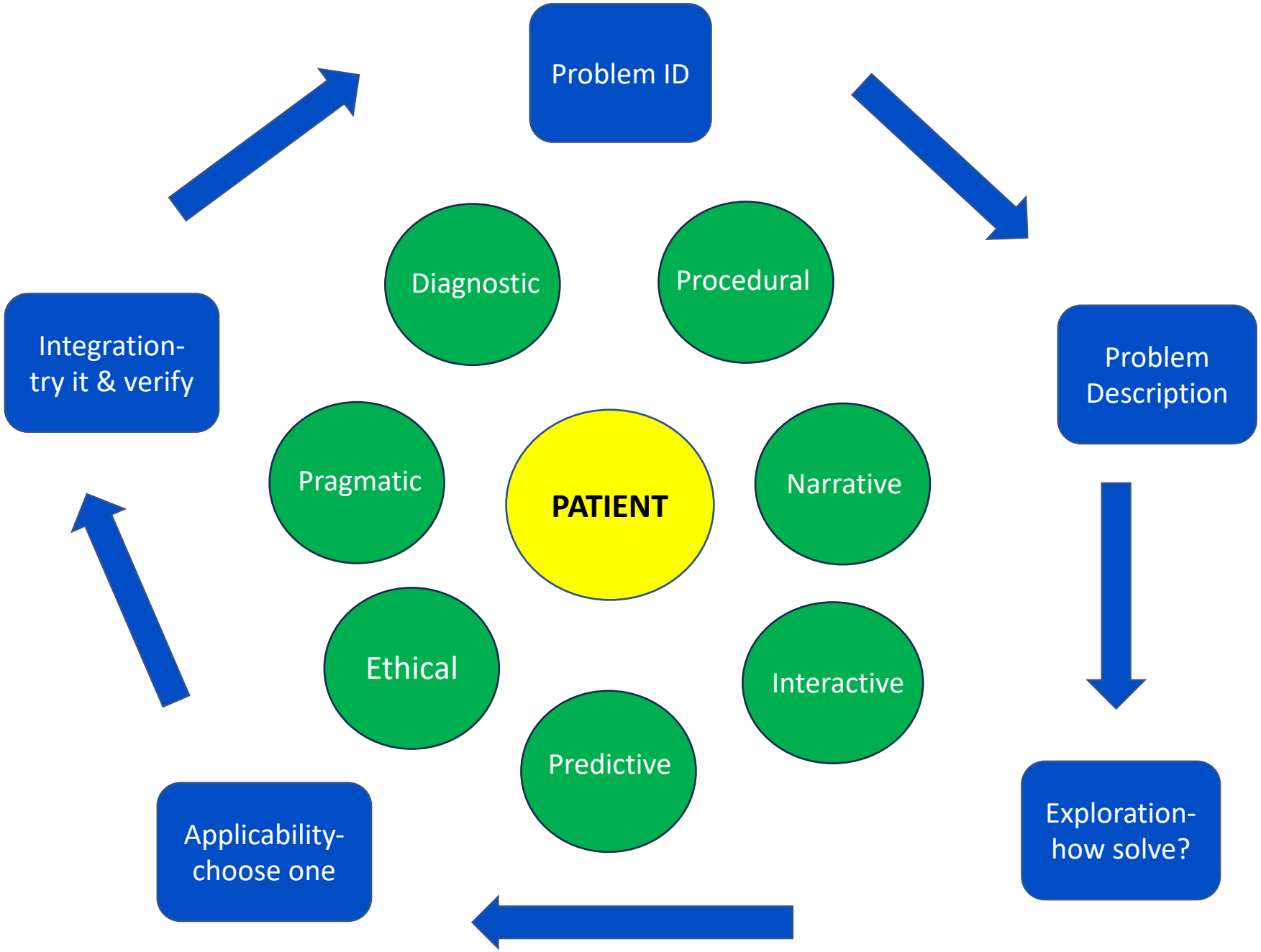


- Students starting with limited knowledge
  - more use of CBL in school

- Little time
  - 6-12 weeks

- Instructors have no set pedagogy
  - 10% of papers address topics of teaching in clinical education (Roberts et al., 2015)
  - CI credentialling workshops cover issues for documentation, level of supervision, addressing problems but only briefly discuss CR
  - CI's tend to rely on their own experience as a student

- Patient care first clinical instruction second



Garrison (1991); Schell (2014), Schell & Schell (2018)

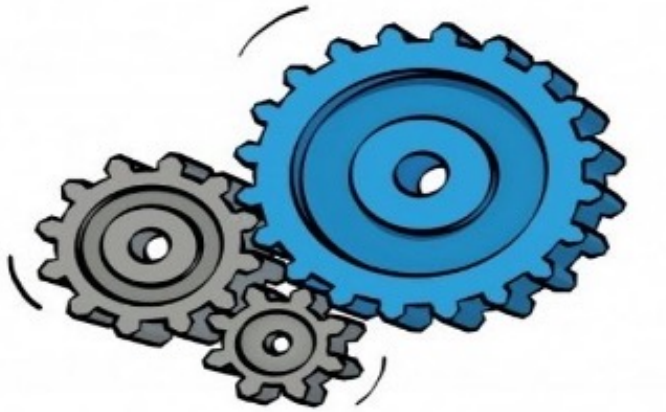
Characteristics of Novice

- Uses more procedural and diagnostic reasoning
  - Gilliland & Wainwright (2017) found novices focused on biomechanical causes of pain (the structure -muscle, joint etc. and severity of pain)
  - Tend to use rules with limited attention to context and no flexibility with the rules
- Use more Hypothetico-deductive reasoning but not well and tend to make two common errors
  - Fail to generate key hypothesis due to jumping prematurely to one idea and not considering others (Confirmation bias and premature closure)
  - Hang onto one hypothesis despite conflicting findings
- Uses narrative reasoning to establish a rapport but goes not further
  - No manipulation, encouraging, use of humor or voice tone to motivate
- Recognizes overt ethical issues
- Does not prioritize well
- Tend to reason in a more step by step format

Self Assessment of Clinical Reflection and Reasoning Scale (Royeen et al., 2001)

- Likert scale 5 strongly agree to 1 strongly disagree
- Examples
  - I don't make judgements until I have sufficient data
  - Prior to acting, I seek various solutions
  - When there is conflicting information about a clinical problem, I identify assumptions underlying the different views
  - I ask for the viewpoints of client's family members
  - I anticipate the sequence of events likely to result from planned interaction
  - Regarding a proposed intervention strategy I think, "what makes it work?"
  - I use clinical protocols for most of my treatment

??? Good questions to ask students to check on their reasoning???



The Solution:

Cognitive Apprenticeship Model

Apprenticeship

- A way to move from novice to competent in a trade
- Good for teaching a visible skill but not necessarily the thinking and decision making behind the work
- Collins et al. (1991) state

“the teacher’s thinking must be made visible to the students and the student’s thinking must be made visible to the teacher”

to reach and understand the heuristics involved in expert work (p. 3).

CONTENT types of knowledge required for expertise

- **Domain knowledge** subject matter specific concepts, facts, and procedures
- **Heuristic strategies** generally applicable techniques for accomplishing tasks
- **Control strategies** general approaches for directing one's solution process
- **Learning strategies** knowledge about how to learn new concepts, facts, and procedures

METHOD ways to promote the development of expertise

Modeling teacher performs a task so students can observe

Coaching teacher observes and facilitates while students perform a task

Scaffolding teacher provides supports to help the student perform a task

Articulation teacher encourages students to verbalize their knowledge and thinking

Reflection teacher enables students to compare their performance with others

Exploration teacher invites students to pose and solve their own problems

SEQUENCING keys to ordering learning activities

- **Global before local skills** focus on conceptualizing the whole task before executing the
- parts
- **Increasing complexity** meaningful tasks gradually increasing in difficulty
- **Increasing diversity** practice in a variety of situations to emphasize broad application

SOCIOLOGY social characteristics of learning environments

- **Situated learning** students learn in the context of working on realistic task
  - **Community of practice** communication about different ways to accomplish meaningful
  - tasks
- **Intrinsic motivation** students set personal goals to seek skills and solutions
- **Cooperation** students work together to accomplish their goals

Figure 1. Description of the cognitive apprenticeship model. Adapted from "Cognitive apprenticeship: Making thinking visible" by Collins, A., Brown, J. S., & Holum, A., 1991, *American Educator, 15,* p. 14-15

CAM Methods

Modeling

- Making supervisor's thinking visible
- Observation of experts
- Describing actions and thinking

Coaching

- Expert observes student demonstrating a skill
- Individualized feedback
- Formative assessments

Scaffolding

- Hints, reminders, access to resources, informal chatting
- Simulations and scenarios
- Guidance during interventions

Articulation

- Making student's thinking visible
- Socratic questioning
- Students explain rationale

Reflection

- Informal or formal discussions with supervisor or peers on actions completed
- Comparison with expert

Exploration

- Self-directed learning in related content areas
- Encouraged to explore and form own learning goals

Application to Practice

- Clinical educators view modeling, coaching, and scaffolding as methods to prepare the student to perform more complex tasks and a way to ensure patient safety in the clinical environment (Cole & Wessel, 2008; Olmos-Bega et al., 2015; Stalmeijer et al., 2013)

- Page & Ross (2004) analyzed the interactions of 15 physical therapy instructors and their students occurring at various times throughout the clinical education rotation. scaffolding 19.62%, modeling 12.9%, coaching 19.2%, articulation 9.86% and reflection 4.08%

Articulation and Reflection

- Modeling, coaching, and scaffolding promote rote learning;
  - when a student is presented with problem X then the response should be Y.
- Articulation and reflection are the cornerstones of problem solving and are the metacognitive strategies used to develop clinical reasoning
- It is a time of connecting theory to practice
- Work through problems and learn from that experience
- Allow for new knowledge to be connected to old knowledge as well as force the student to verbalize thoughts (Murphy, 2004).

ARTICULATION

verbalizing knowledge, plans and strategies before the event (Collins et al., 1991).

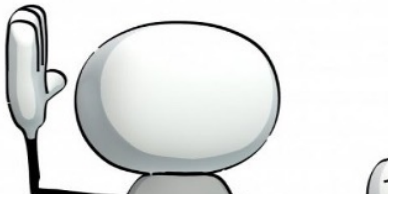
- A student could practice procedural reasoning as he/she describes the intervention plan or method of evaluation (Edwards et al., 2004)
- A student expresses interactional reasoning when rehearsing with the CI how to tell a patient they will be discharged from therapy (Fleming, 1991).
- During the treatment session ask "What are you seeing?" Or "What do you want to see?"
- While practicing a technique on the CI
- Requires the CI to be able to provide feedback in constructive manner and ask the right questions
  - Avoid "Why" Instead "what are you considering.." "What are you thinking?" "What made you decide to place this here?"

REFLECTION

a comparison of one's actions and takes place after the event

- Helps to recall salient aspects of patient cases and responses to interventions
  - This increases the number of illness scripts one has available
- Pattern recognition to occur as one connects new knowledge to previous knowledge in order to form a hypothesis
- Way to identify strengths and weaknesses in performance and reasoning
- Allows for comparison of self to a standard such as the student evaluation form
- Reflections shared between the student and CI also serve to improve interactions between the pair and provide an opportunity for professional socialization (Ziebart & MacDermid, 2018).
- Reflection allows for exploration of that interaction to discover alternative viewpoints as well as one's biases (Delany & Watkins, 2009; Wainwright et al., 2010; Ziebart & MacDermid, 2018).

Reflection



- Takes time ☹
- Reviewing treatment notes or evaluations
  - Tell me what made you choose that activity
  - How did you determine what should be addressed in your goals?
  - What made you prioritize one thing over another
- Journaling/Vlogging
- School discussion boards
- Field notes taken by the student
- Flowcharts and concept maps
- Did the student talk about interest or response to intervention beyond the physical?
- Provide a safe space for mistakes

The PT Clinical Reasoning and Reflection Tool

Atkinson & Cave, 2011

IV. Evaluation

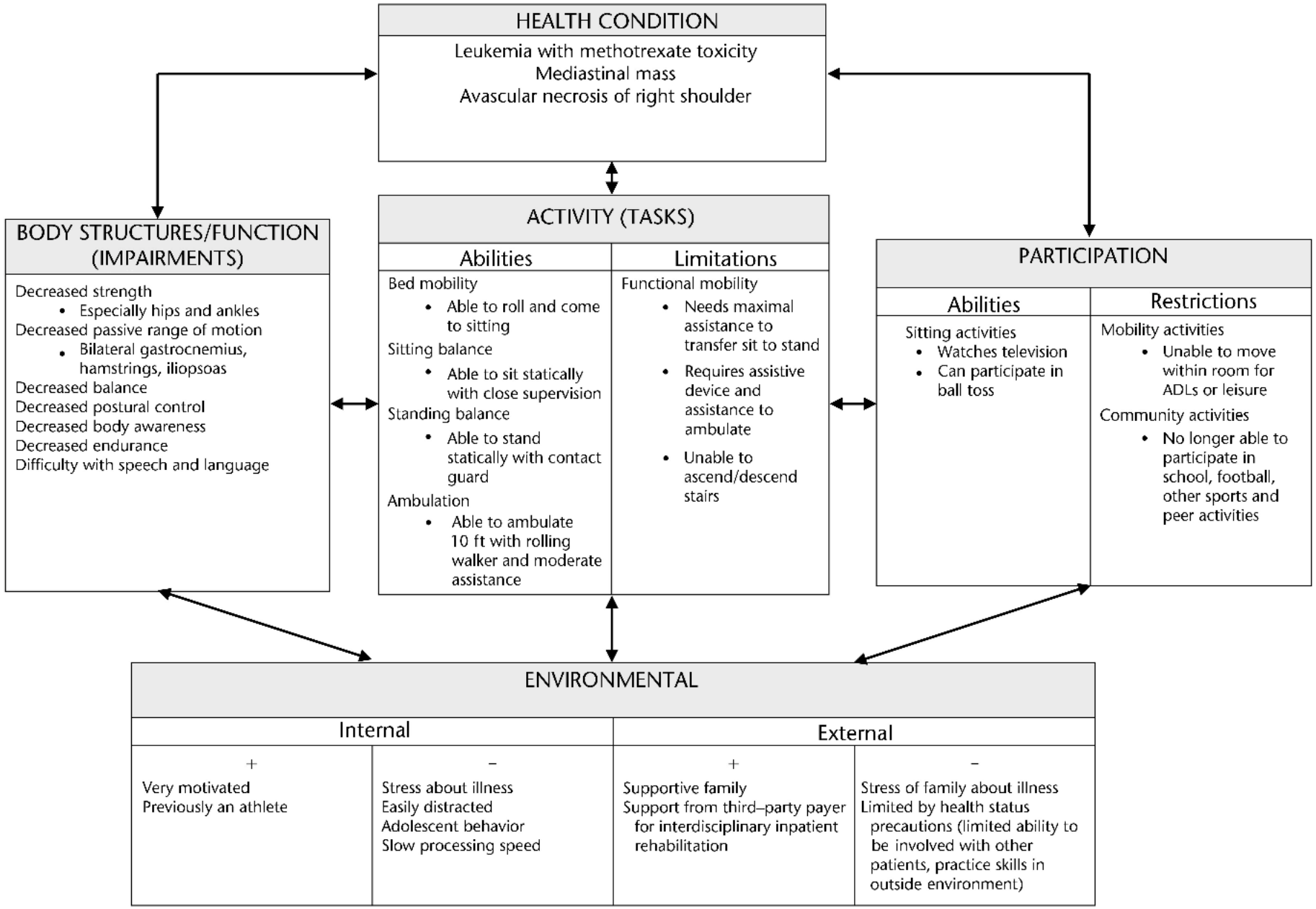
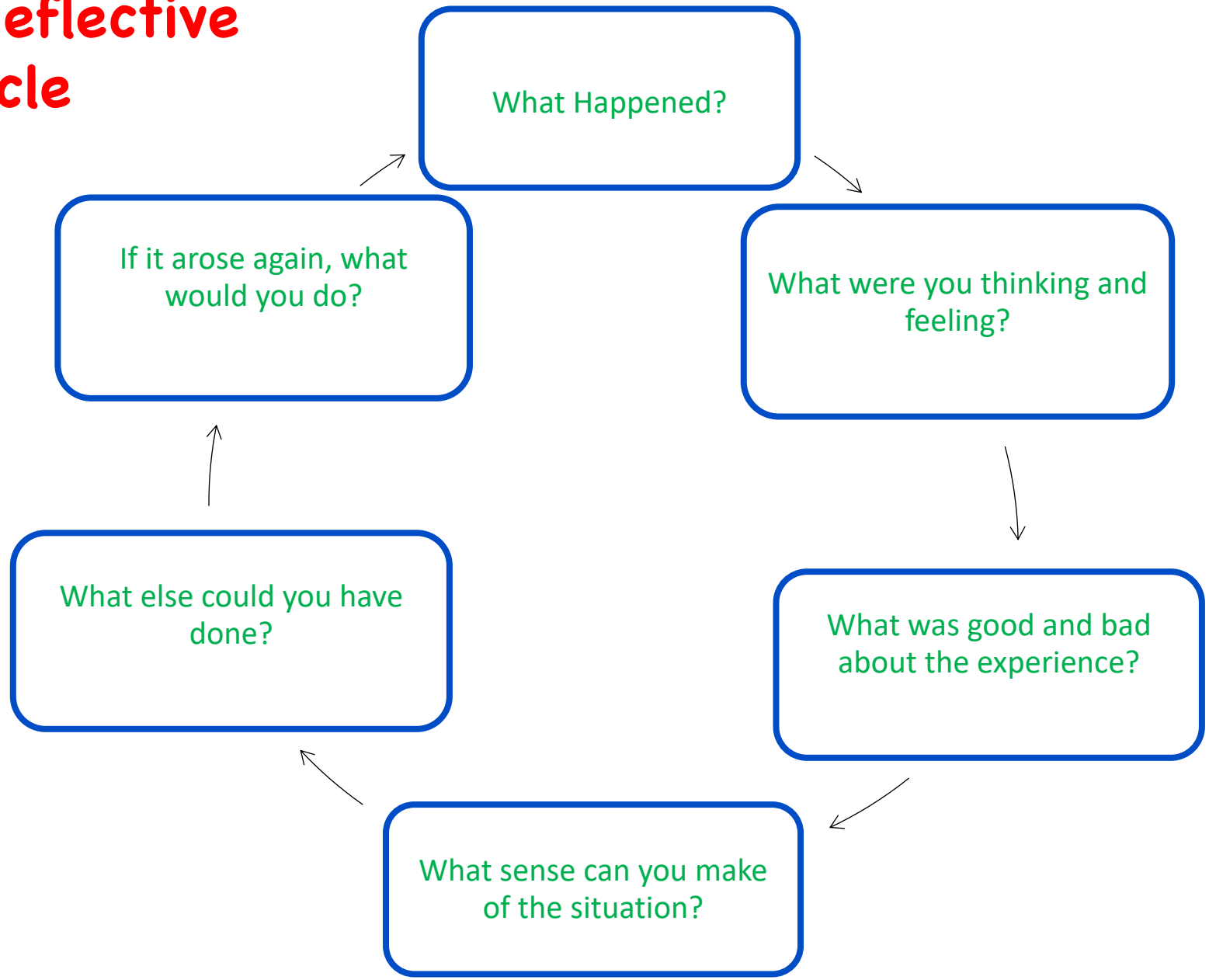


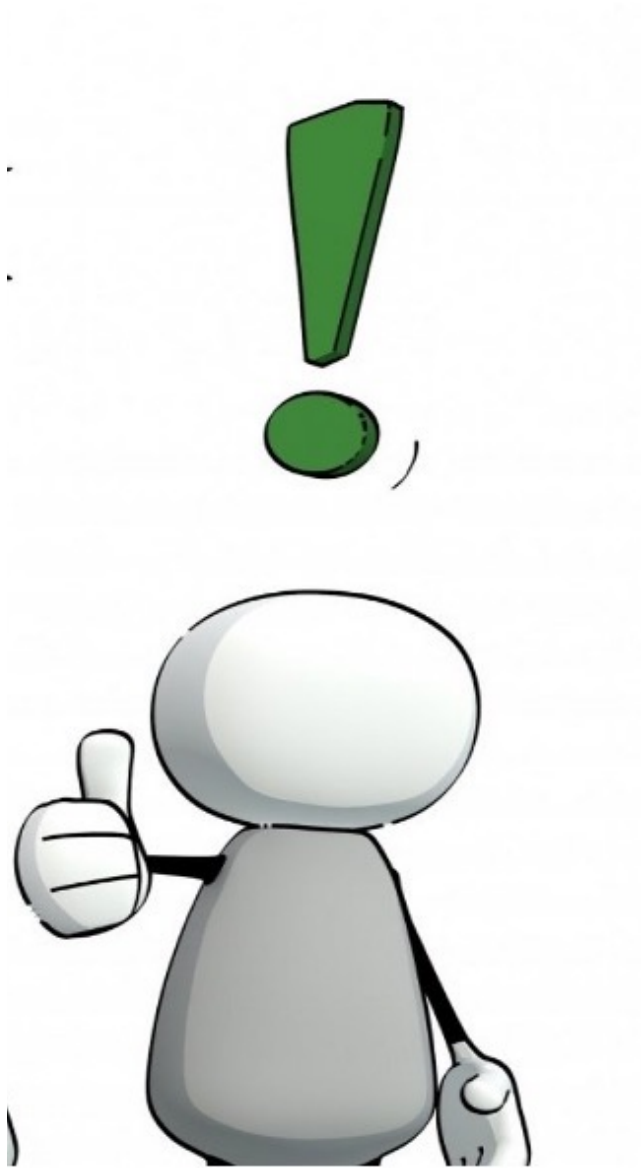
Figure 1.

GIBBS REFLECTIVE CYCLE

Gibbs's Reflective Cycle

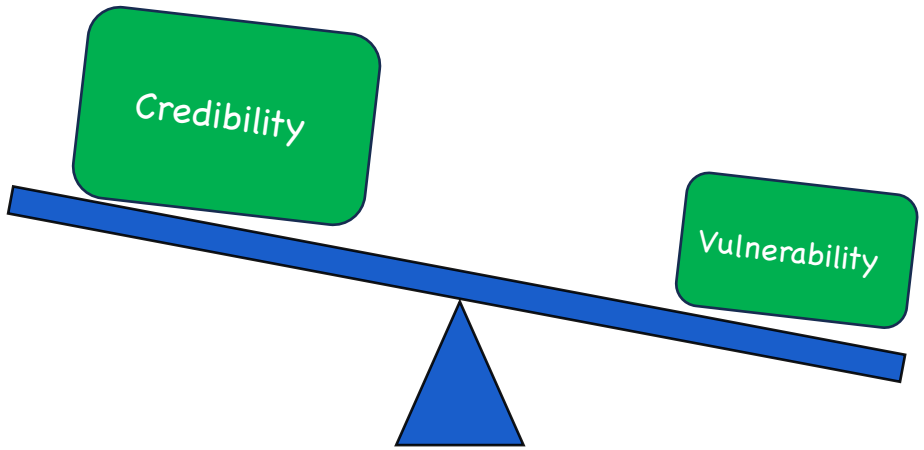


Check the Learning Environment



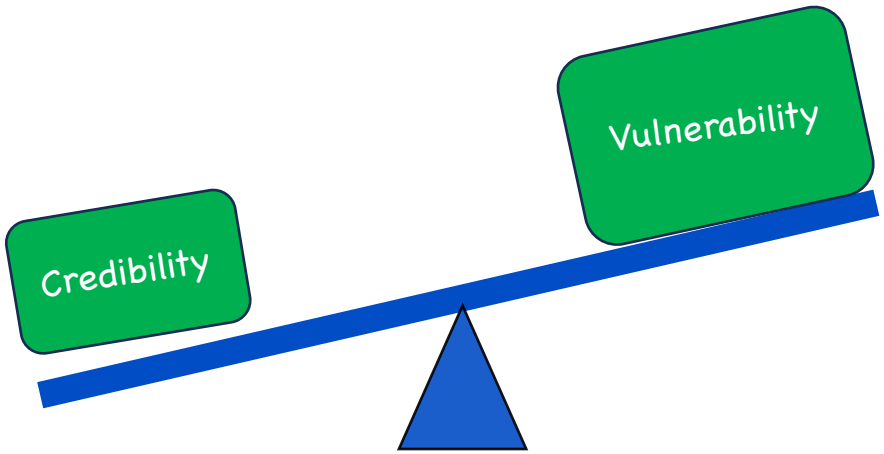
Vulnerability when Risking

Expert/CI



Experts have more credibility thus can afford greater vulnerability

Novice/Student



Novices have less credibility thus are more vulnerable when risking

Molloy, E & Bearman, M. (2019)

Create a Safe Environment to Encourage Vulnerability

- "According to the students what they appreciated most in reflection was supervisors' suggesting ways in which they could address their strengths and weaknesses" (Stalmeijer et al., 2009, p. 543)
- Establish and maintain eye contact
- Get to know the student as a person and engage him/her that way
- Let the student know that you have their best interest at heart
- Introduce the student and include them in discussions
- Ask questions to see that thinking –Articulation
- Model Intellectual Candor

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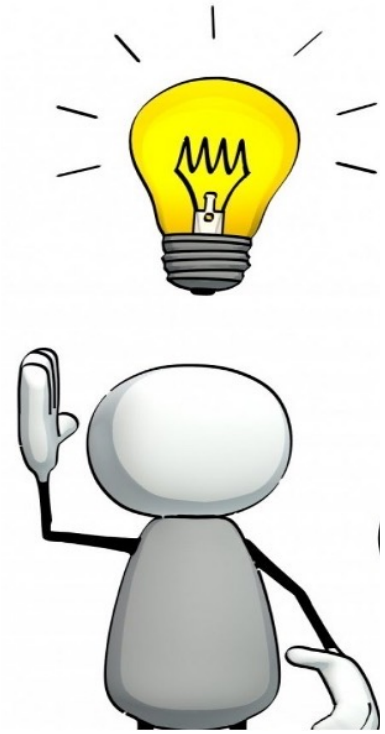
Thank you!



Any questions???