Intentionally Refining Learning Encounters to Foster Trainee Expertise Development

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Disclosures

- I have no conflicts of interest to disclose

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- *I was an editor on the Master Adaptive Learner book. All royalties go to the AMA.*

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One More Disclosure…

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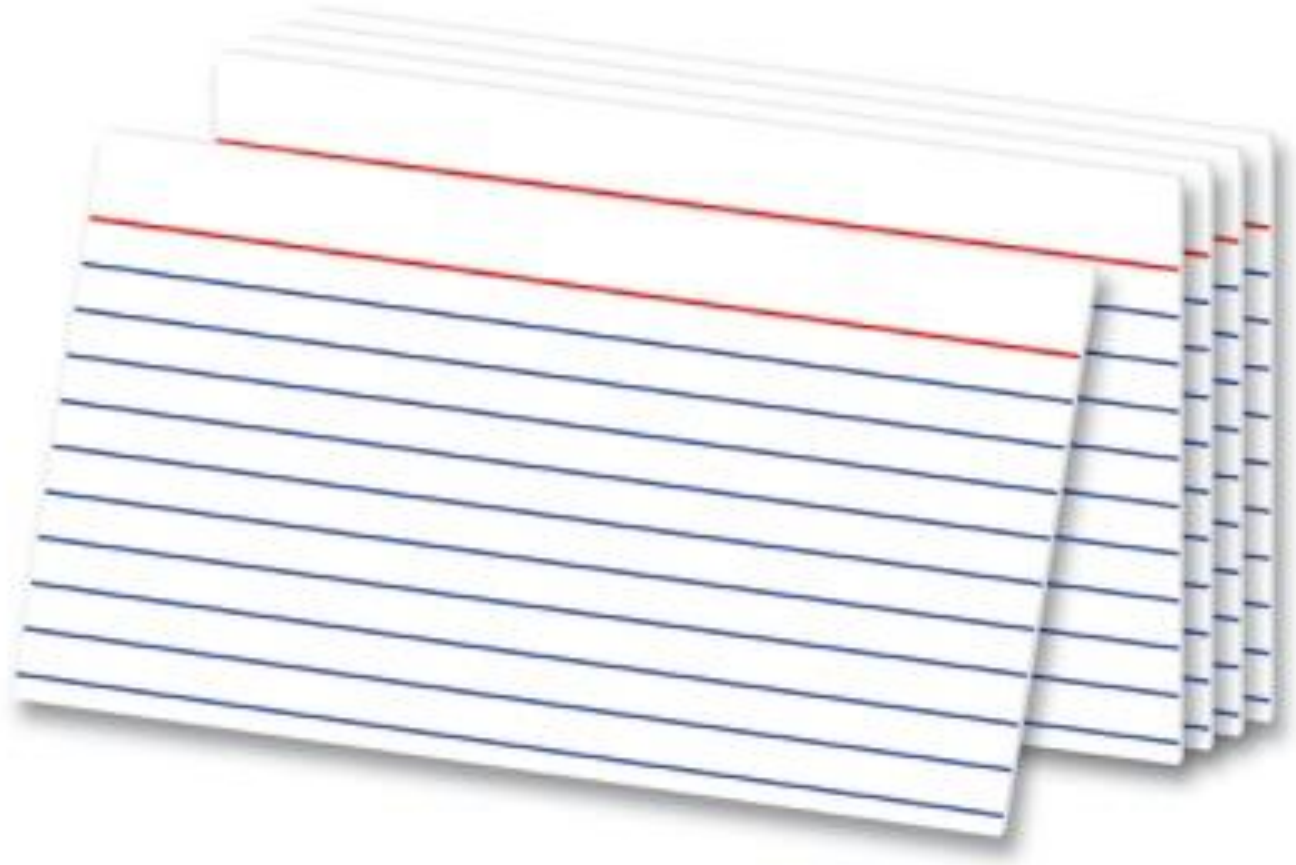

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Objectives:

1. Describe the importance of Adaptive Expertise in Healthcare
2. Discuss the skills and process for learning that foster development of Adaptive Expertise in Health Professions Education
3. Discuss suggestions for improvements and interventions to learning encounters that would foster the development of expertise

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2 lenses…

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Overview:

WHAT is a Master Adaptive Learner and WHY are They Needed?

HOW Does the MAL model Work?

WHAT Practical Strategies Can You Use to Foster Expertise Development?

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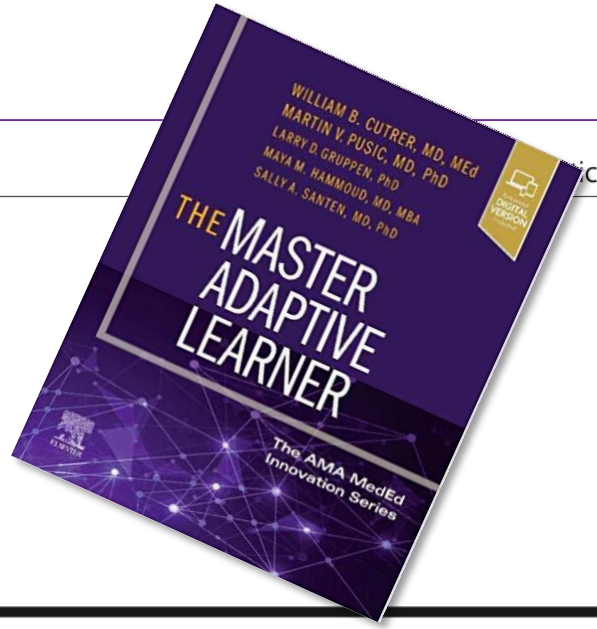

Fostering the Development of Master Adaptive Learners: A Conceptual Model to Guide Skill Acquisition in Medical Education

William B. Cutrer, MD, MEd, Bonnie Miller, MD, Martin V. Pusic, MD, PhD, George Mejicano, MD, MS, Rajesh S. Mangrulkar, MD, Larry D. Gruppen, PhD, Richard E. Hawkins, MD, Susan E. Skochelak, MD, MPH, and Donald E. Moore Jr, PhD

Abstract

Change is ubiquitous in health care, making continuous adaptation necessary for clinicians to provide the best possible care to their patients. The authors propose that developing the capabilities of a Master Adaptive Learner will provide future physicians with strategies for learning in the health care environment and for managing change more effectively. The concept of a Master Adaptive Learner describes a metacognitive approach to learning based on self-regulation that can foster the development and use of adaptive expertise in practice. The authors describe a conceptual literature-based model for a Master Adaptive Learner that provides a shared language to facilitate exploration and conversation about both successes and struggles during the learning process.

Academic Medicine. 2017 Jan;92(1):70-75.

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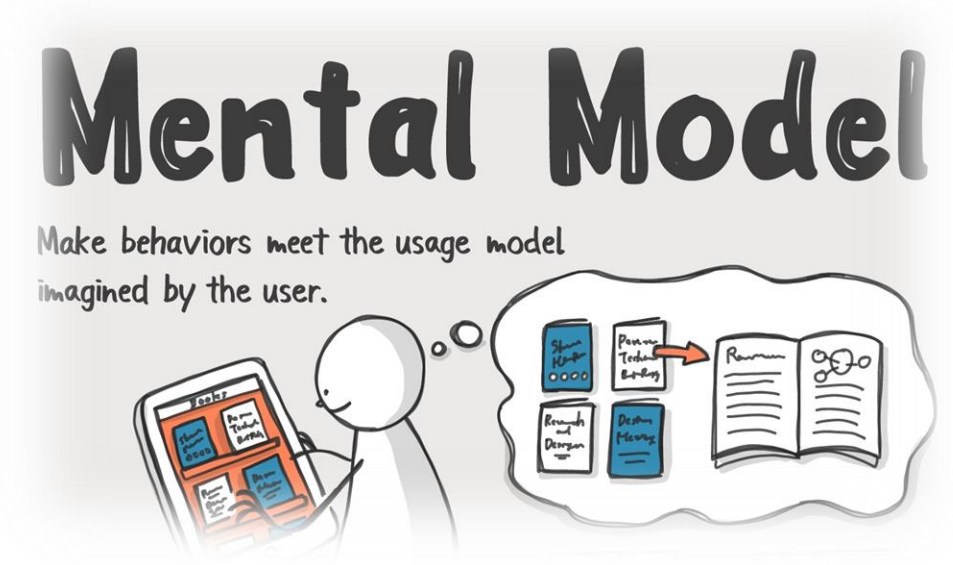

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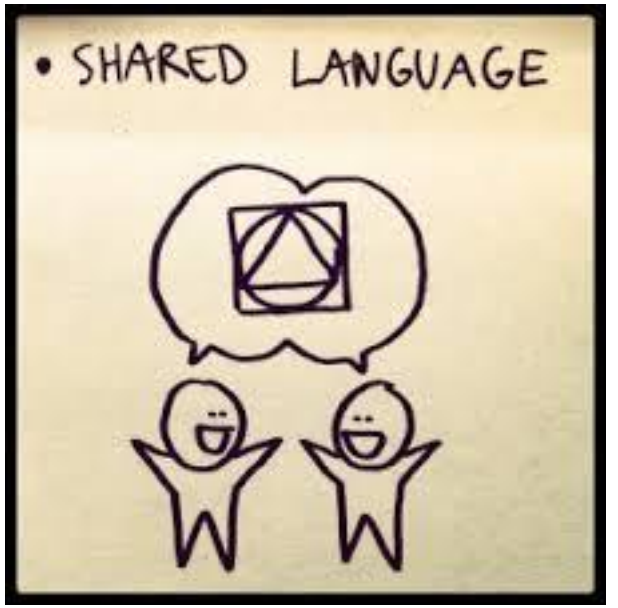

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WHAT is a Master Adaptive Learner?

WHY are they needed?

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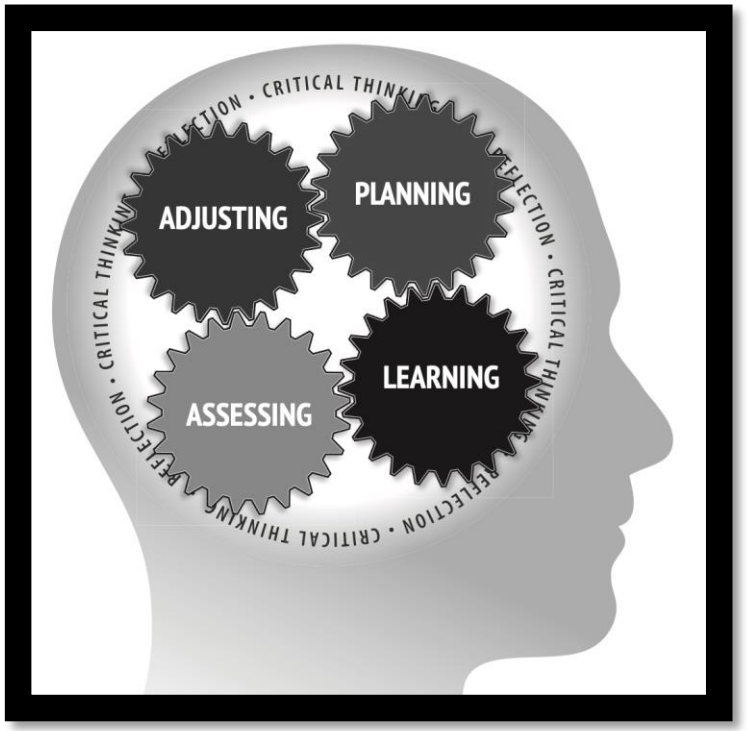
Master Adaptive Learner

"Individual who utilizes the **meta-cognitive approach** to **self-regulated learning** that leads to **adaptive expertise development**"



Cutrer et al. (2017) *Acad Med*
Cutrer et al. (2018) *Med Teach*

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ADAPTIVE Expertise

- Expertise to function efficiently on everyday tasks
- Expertise to create solutions for workplace challenges

Hatano & Inagaki (1986) *Child Development and Education in Japan*
Schwartz & Bransford (1998) *Cogn Instruc*
Mylopoulos & Woods (2009) *Med Ed*
Carbondell et al. (2014) *Educ Res Rev*
Woods & Mylopoulos (2015) *Med Ed*
Mylopoulos & Woods (2017) *Med Ed*

ADAPTIVE Expertise

- Skills of adaptive expertise used when an individual
  - Recognizes that a “routine” approach will not work

Routine Practice

Adaptive Practice

Adaptive Expert

Shifts approach based on problem

Branzetti, Hopson, Gisondi, Regan (2023) *Acad Med*

- Reframes the problem in a way that allows her
  - To explore new concepts (learning)
  - To invent new solutions (innovation)

Hatano & Inagaki (1986) *Child Development and Education in Japan*
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ADAPTIVE Expertise

What is it?

- "product of a learned skill set, characterized by habits of mind that develop over time and with practice"

- Characterized by:
  - Better developed metacognitive skills
  - Flexibility
  - Ability to innovate
  - Continuous learning
  - Seeking out challenges
  - Creativity

Hatano & Inagaki (1986) *Child Development and Education in Japan*
Schwartz & Bransford (1998) *Cogn Instruc*
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Does the current system produce this type of clinicians?

Do Practicing Physicians Learn and Develop this Type of Expertise?

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4 Assumptions about Practicing Physicians

1) **Naturally reflec** **for purposes of highlighting own weaknesse**

- **Individuals reint** **formance to better fit their self-concept as comp**
- **Individuals ofter** **k inconsistent with their beliefs about their own**

Regehr & Mylopoulos (2008) *JCEHP*

4 Assumptions about Practicing Physicians

2) Able to identify their own weaknesses when looking for them

- Ability to s poor
- We all fac of weakness

Regehr & Mylopoulos (2008) *JCEHP*

4 Assumptions cians

3) Try to address v ough learning

- Learning in area
- Gravitate towar un (immediately rewarding)→ ge

Mylopoulos (2008) *JCEHP*

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4 Assumptions about Practicing Physicians

4) **Effectively incorporate knowledge acquired in educational settings into practice**

- New knowledge seldom leads to sustained practice changes

- Faculty Continuing Education event
  - Only 64% planned a change in practice
  - Less than 50% of those made any changes

Regehr & Mylopoulos (2008) *JCEHP*

RELFECTION

What are 1-2 ideas that stand out to you about Lifelong Learning and the need for Master Adaptive Learners?

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SO…

We NEED
Master Adaptive Learners

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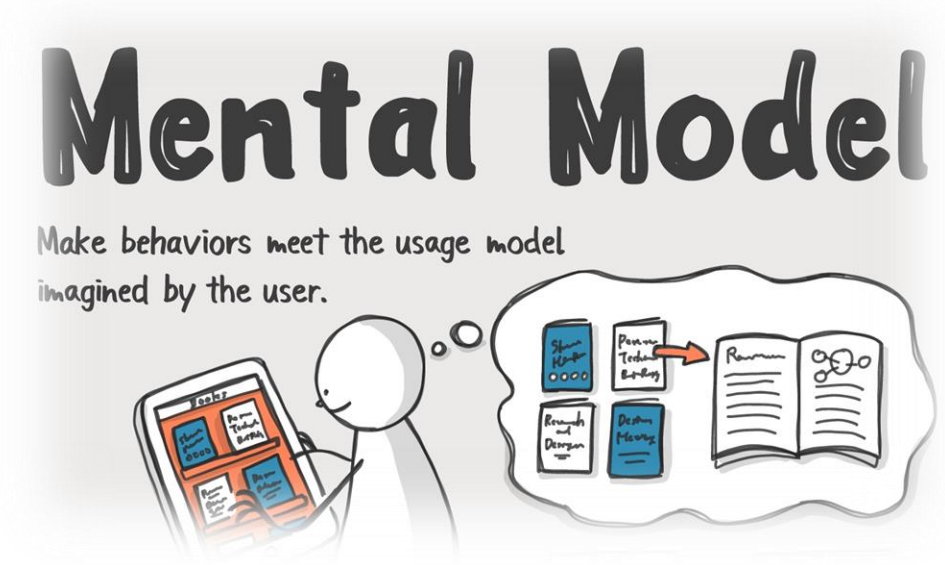

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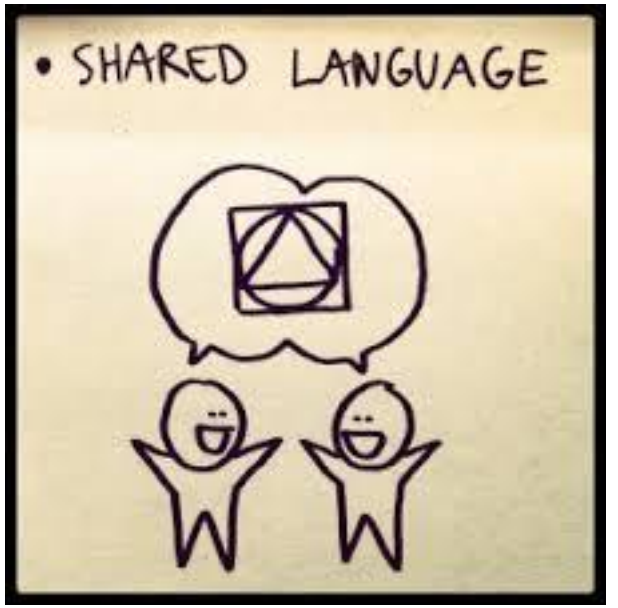

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Adapted from Cutrer et al. (2018)
Med Teach

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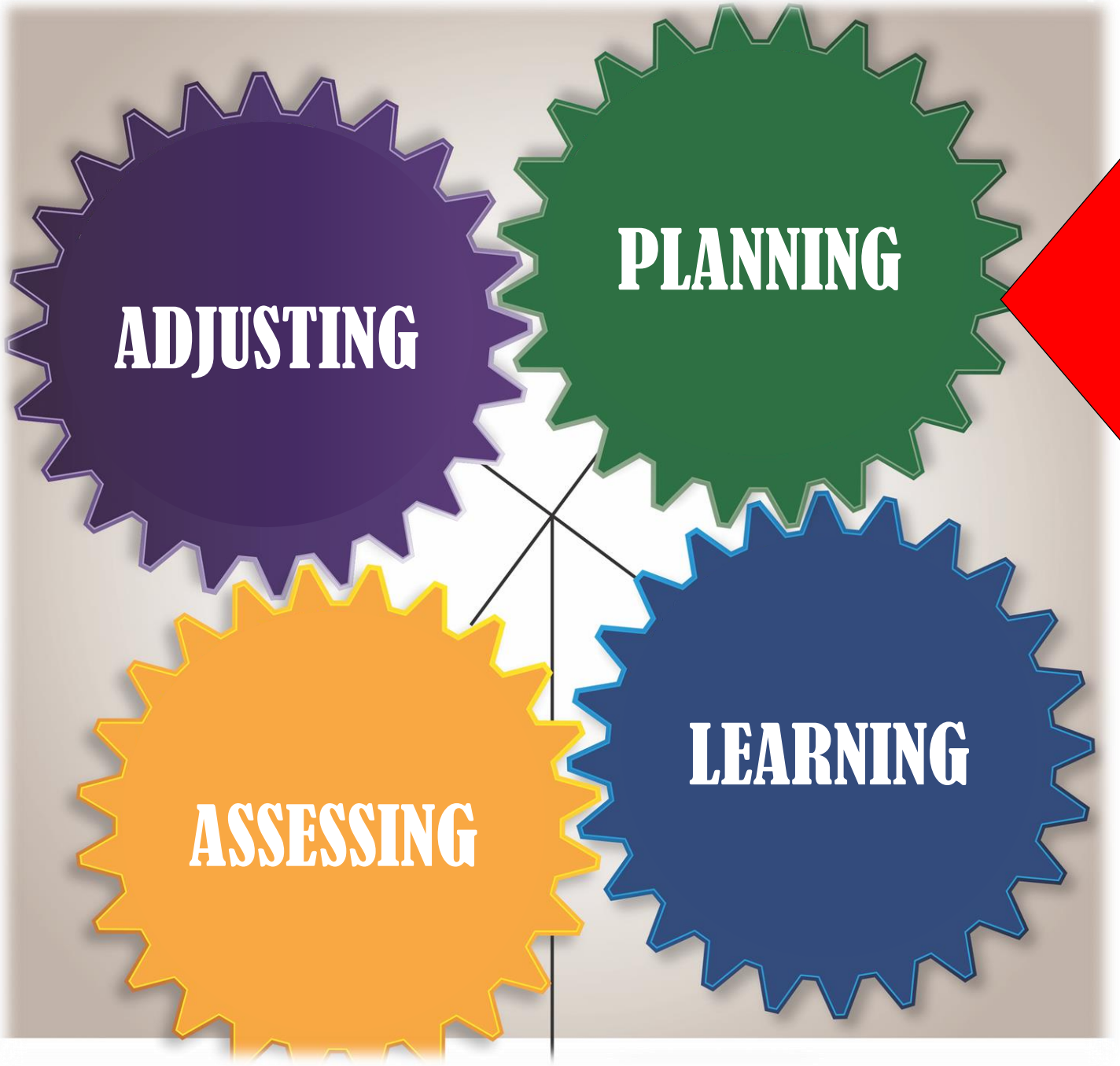

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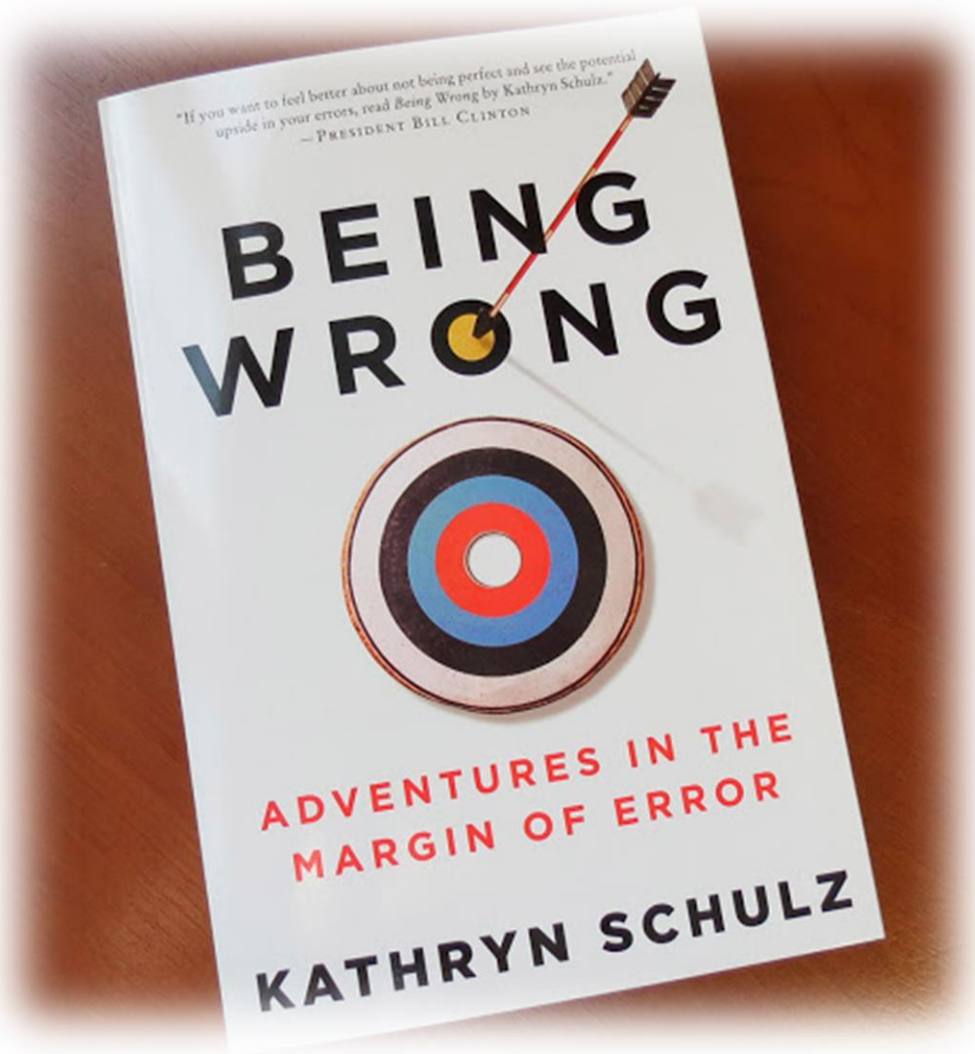
Planning Phase



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Planning Phase Entry Step…

Identifies a gap between what is and what should be/could be

→ **Can be related to different areas:**

- **Knowledge**
- **Skills**
- **Attitudes**

Impact the provider's ability to provide

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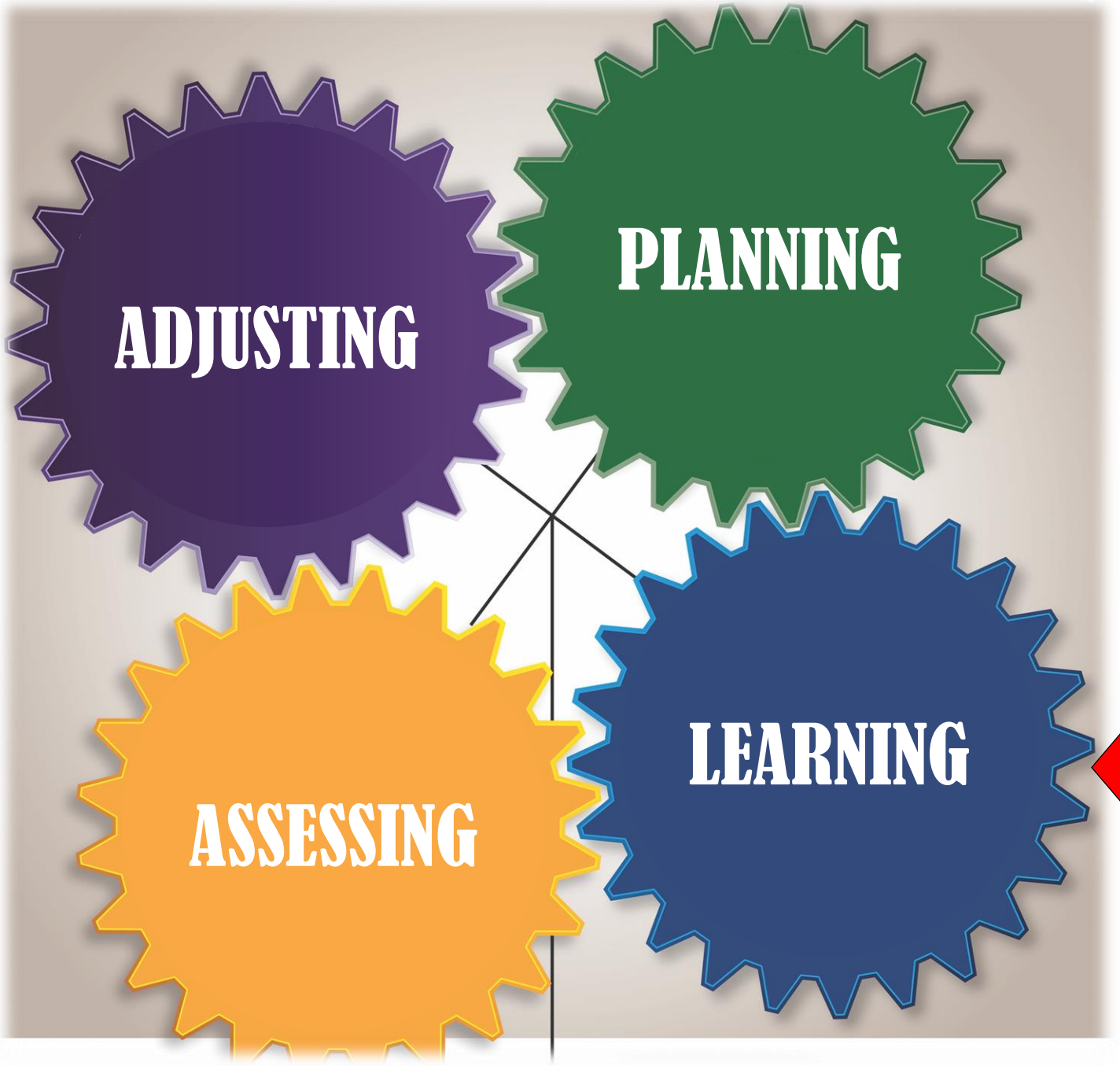

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Learning Strategies

Bad strategies

- Rereading
  - Time consuming
  - No durable memory
  - Self-deception/false sense of familiarity
- Highlighting and underlining
- Cramming

"Learning is deeper and more durable when it is effortful."

Brown et al (2014) *Make it S*

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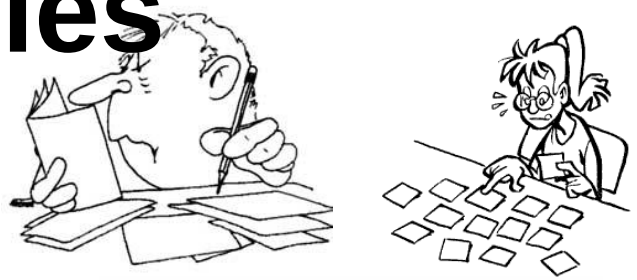
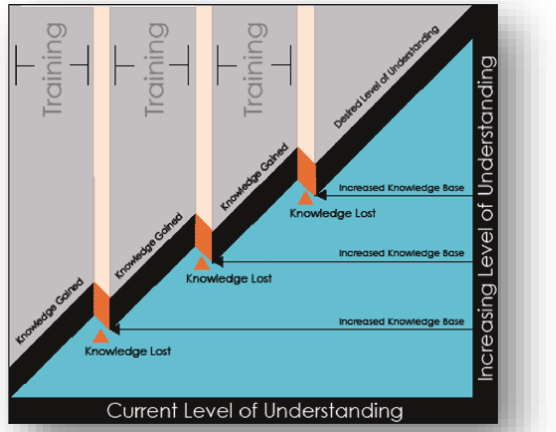
Learning Strategies

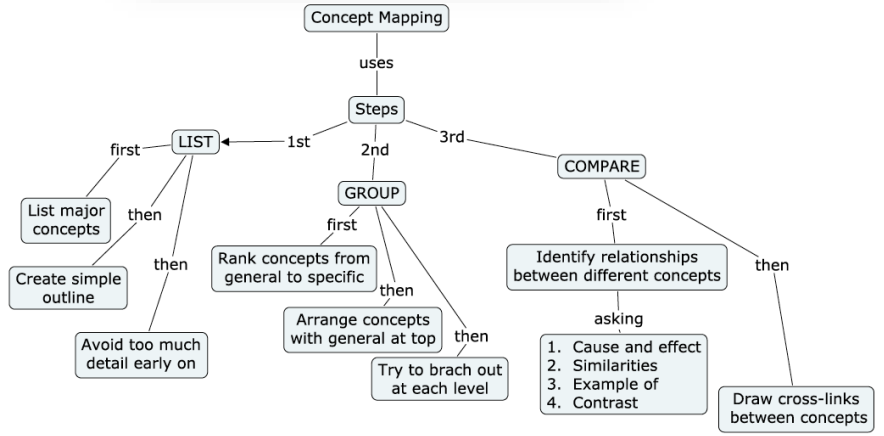


1) Knowledge Retrieval Strategies

2) Spaced Repetitious Learning



3) Concept Mapping



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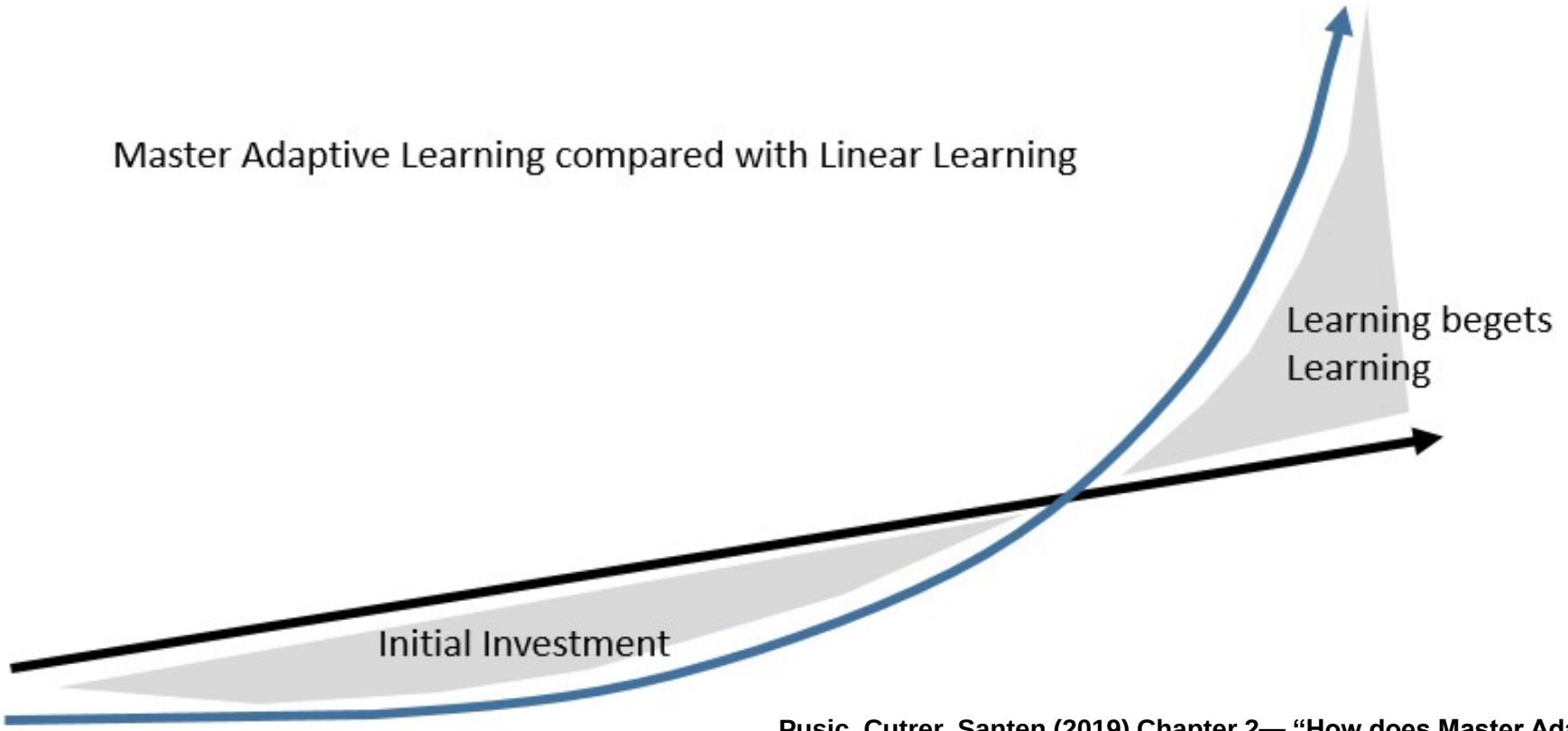
“But…It’s takes too long”
“But…It’s just too difficult”



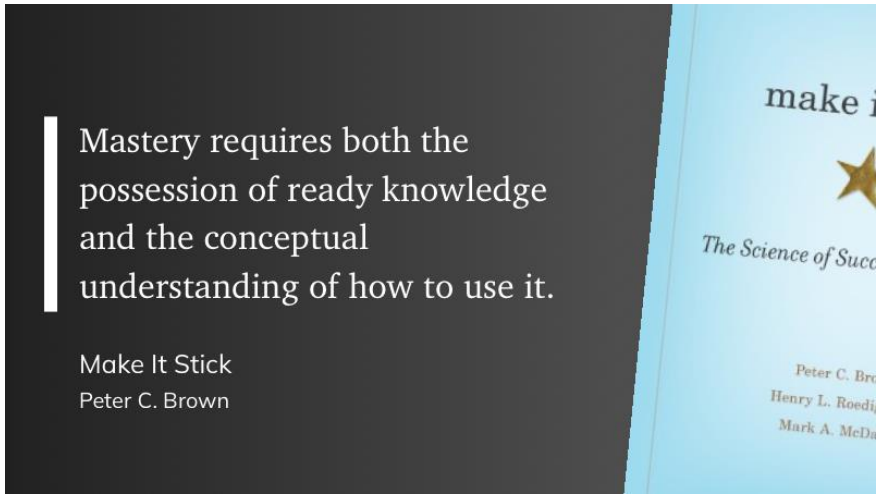
Pusic, Cutrer, Santen (2019) Chapter 2— “How does Master Adaptive Learning Advance Adaptive Expertise Development?”

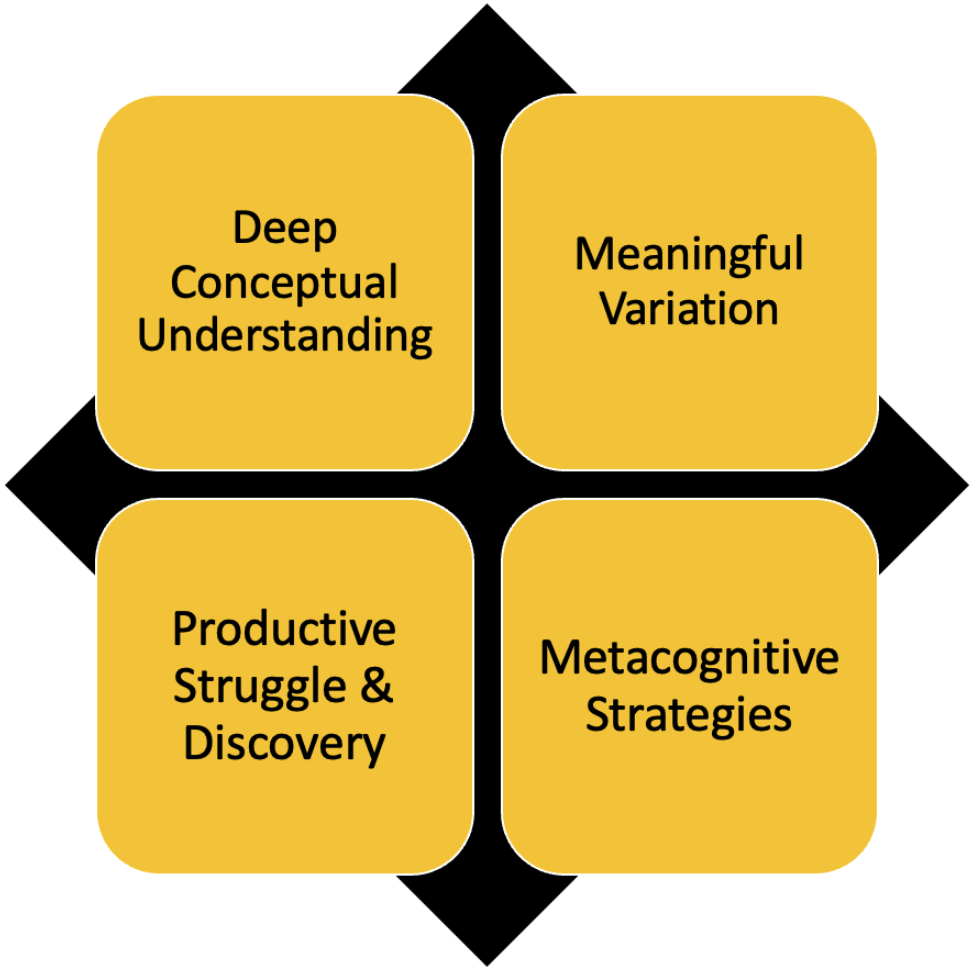
Advances in Health Sciences Education (2022) 27:1383–1400
https://doi.org/10.1007/s10459-022-10165-z

INVITED PAPER

Educating for adaptive expertise: case examples along the medical education continuum

Martin V. Pusic[1] · Elissa Hall[2] · Heather Billings[3] · Jeremy Branzetti[4] · Laura R. Hopson[5] · Linda Regan[6] · Michael A. Gisondi[7] · William B. Cutrer[8]





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Productive Struggle & Discovery

Desirable Difficulty

Desirable difficulties, versus the array of undesirable difficulties, are desirable because they trigger encoding and retrieval processes that support learning, comprehension, and remembering.

Bjork & Bjork (2011) *Psychology and the Real World*

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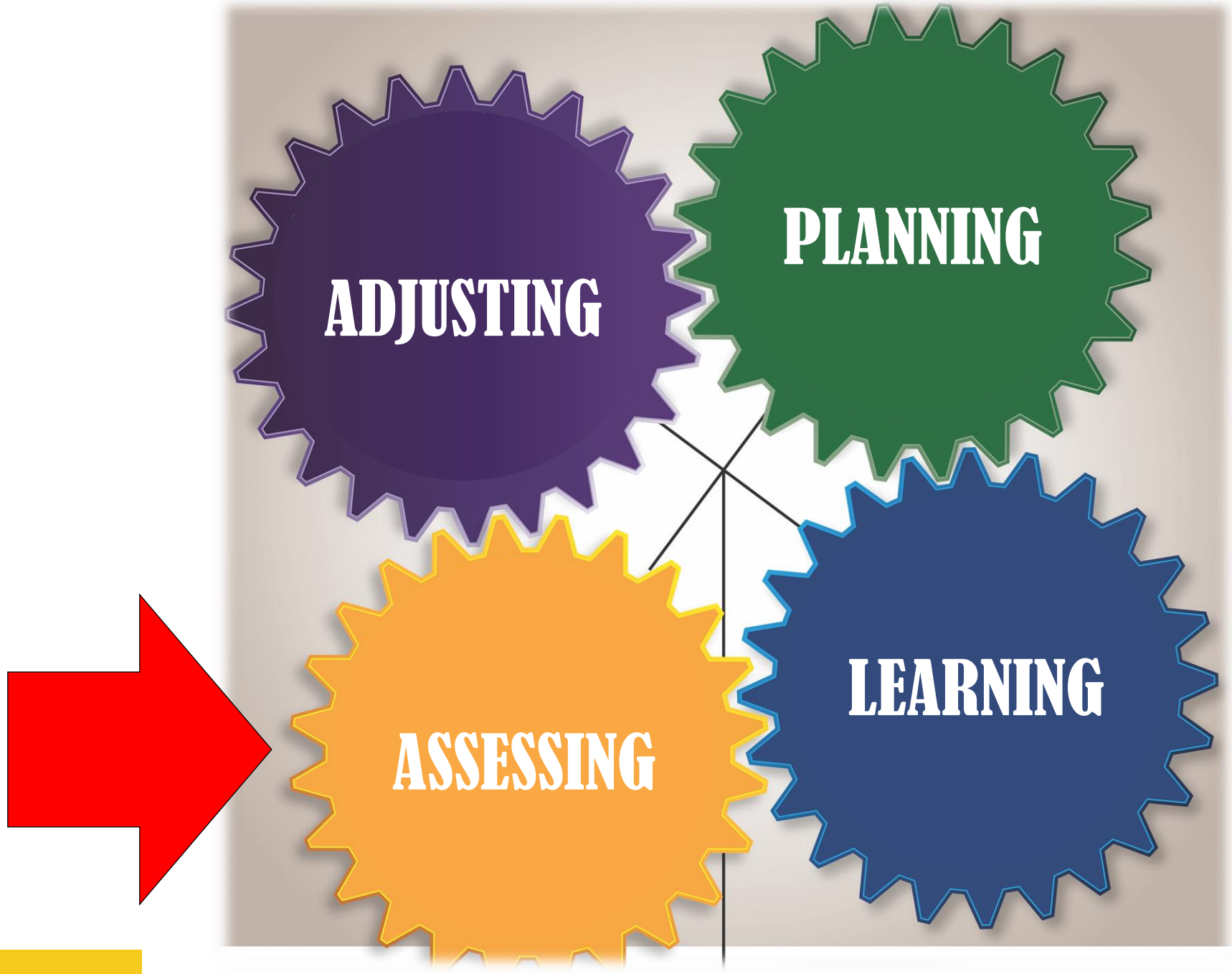

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Assessing Phase

- Compare what you've learned to external standards
  - Informed Self-Assess
  - External Feedback

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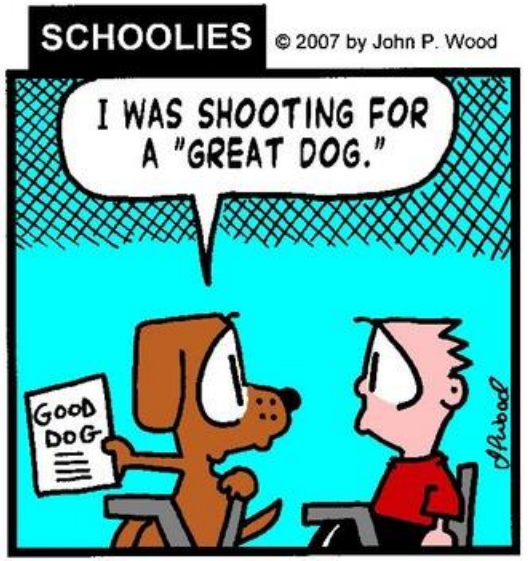

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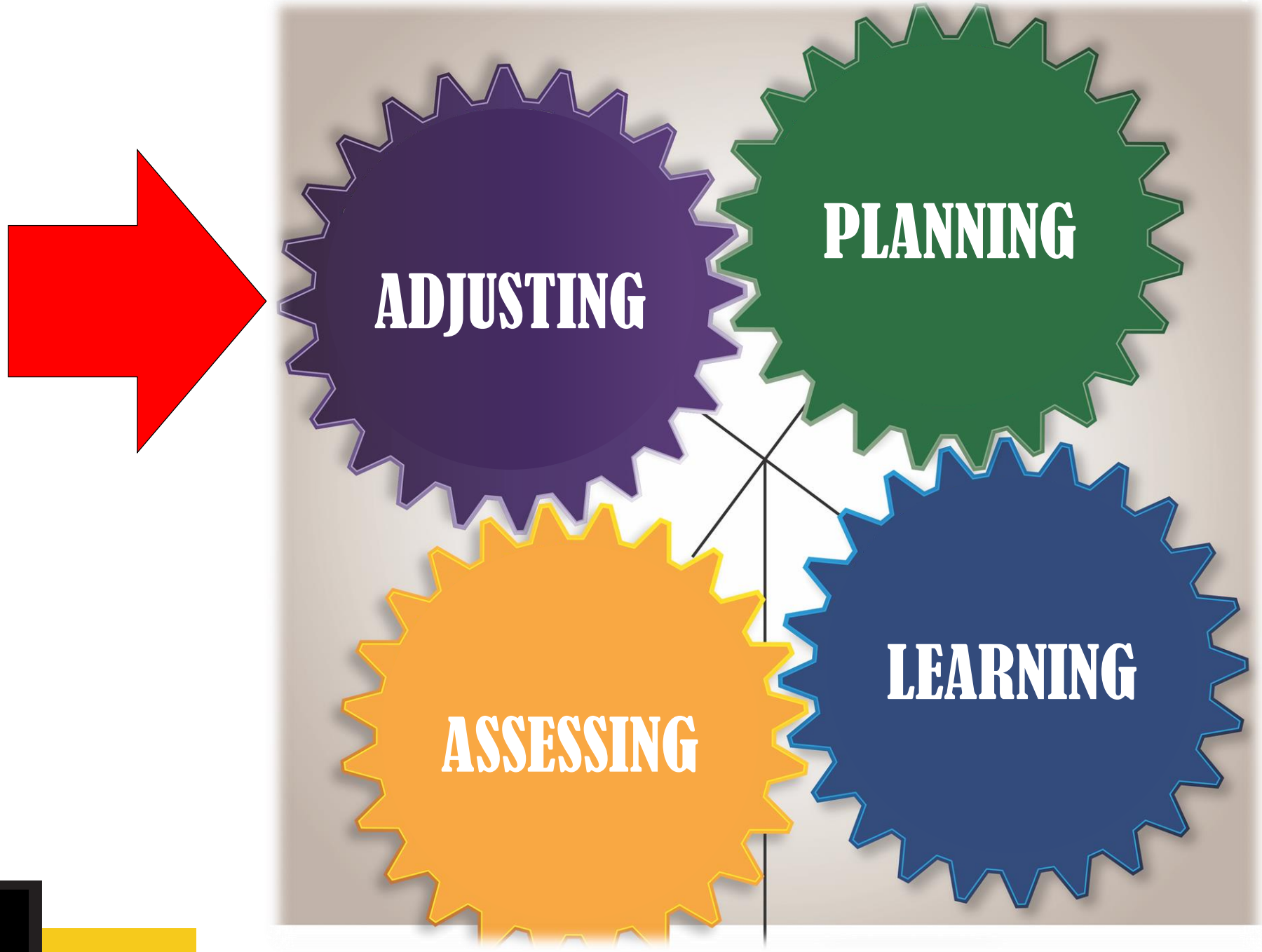

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ADJUSTING PHASE
Incorporates what was learned into practice

Adjusting Phase

- **Change Management**
  - **How big is the required change?**
  - **Are you the only one who will have to change?**
  - **What emotions are involved with the change?**

Fox et al (1989) ***Changing and Learning in the Lives of Physicians***

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Cutrer et al. (2018) *Med Teach*

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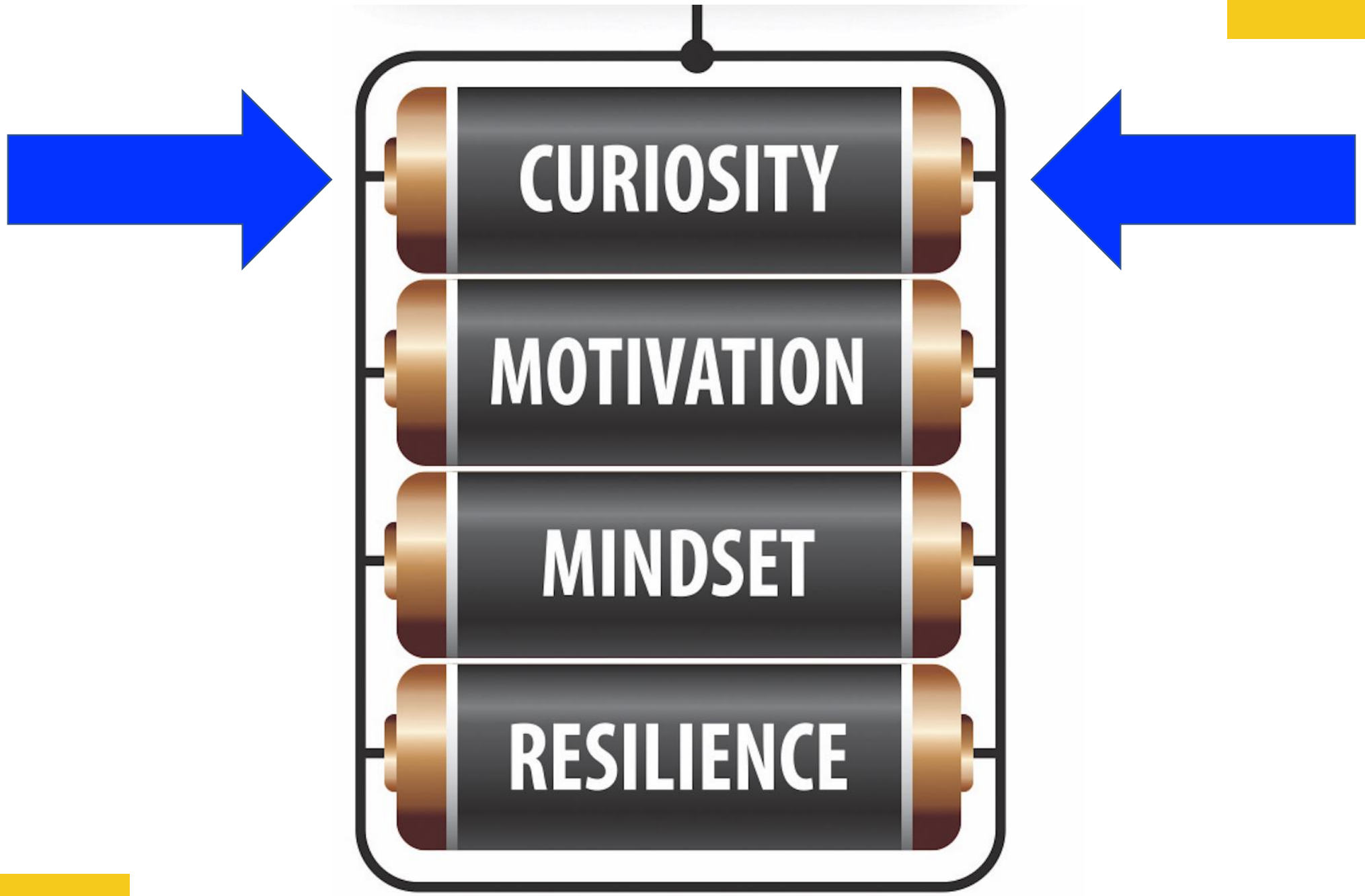
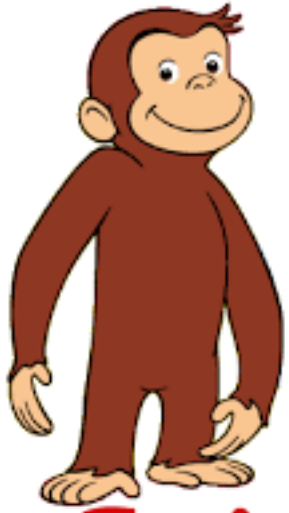
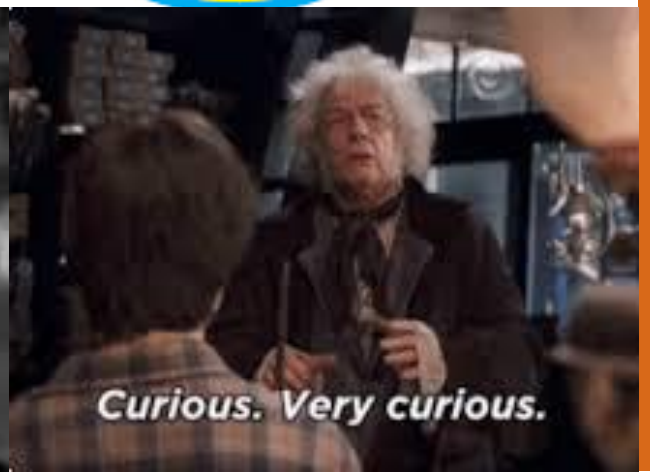

CURIOSITY
MOTIVATION
MINDSET
RESILIENCE



I'm Curious



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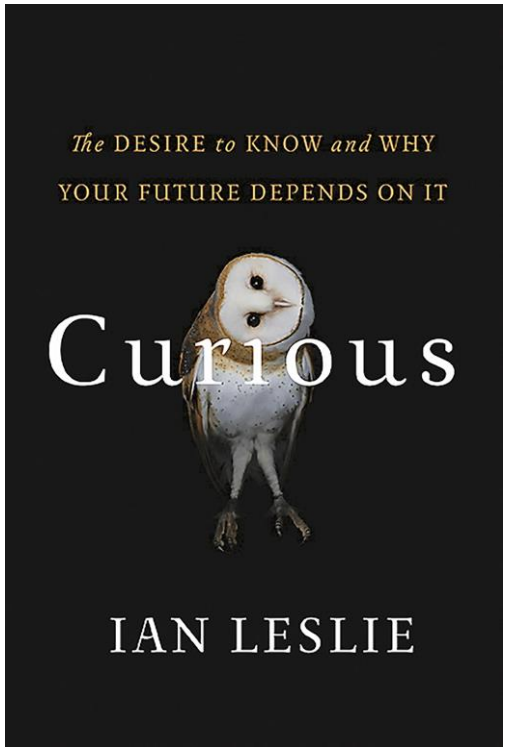
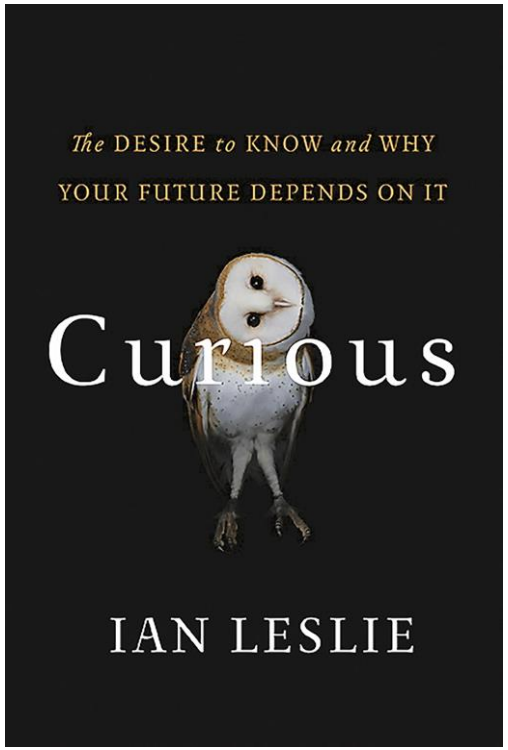


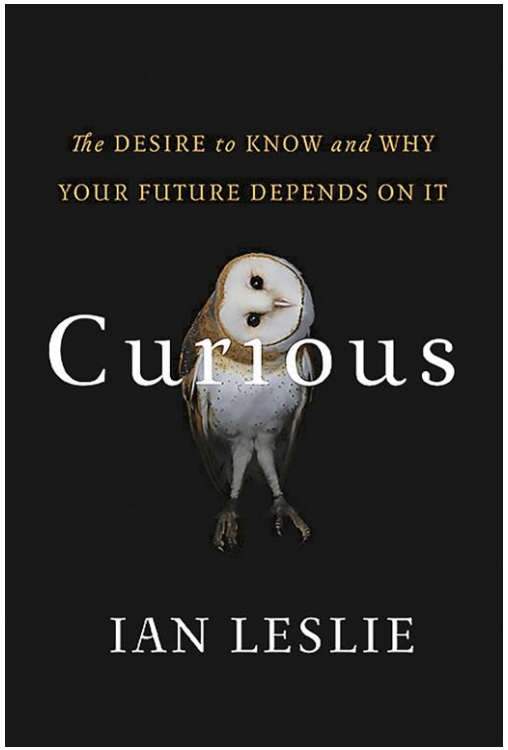
“Curiosity starts with the itch to explore”

https://images.app.goo.gl/k1PioXFwNEueK6pS



Diversive Curiosity

- **Attraction to “everything novel”**
- **Restless drive for the new and next**
- **Essential to an exploring mind**



Diversive Curiosity

"Every tweet, headline, ad, blog post, and app at once promises and denies a satisfaction for which we are ever more impatient."

https://images.app.goo.gl/Gw1oDBdqWQaNKLG4A

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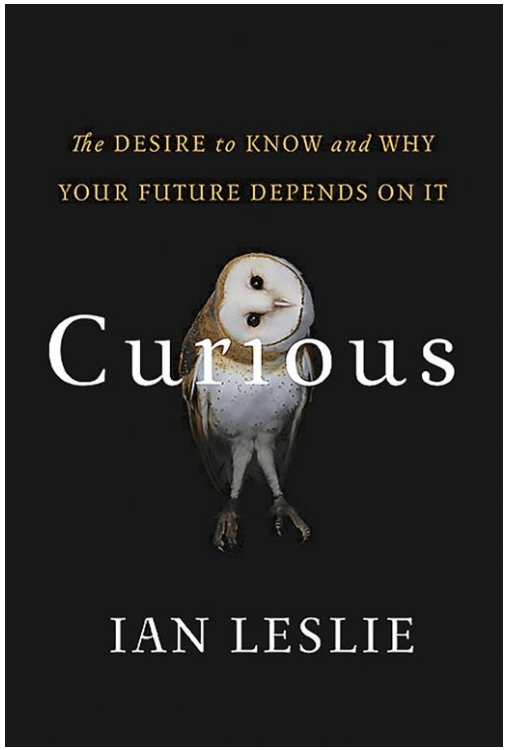

Diversive Curiosity

"When diversive curiosity is entrained—when it is transformed into a quest for knowledge and understanding—it nourishes us. This deeper, more disciplined, and effortful type of curiosity is called epistemic curiosity.

Epistemic Curiosity

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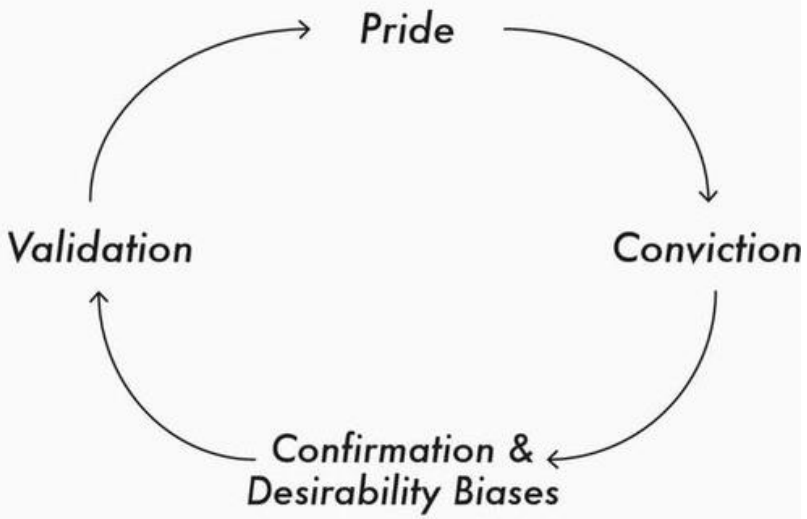
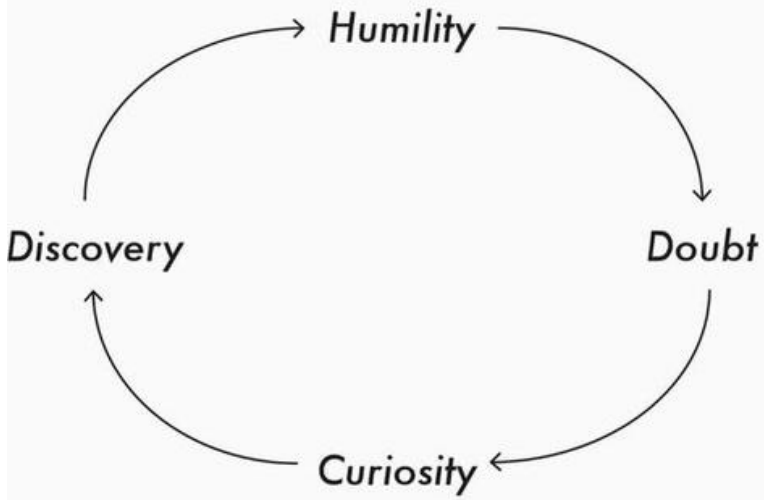
THE OVERCONFIDENCE CYCLE

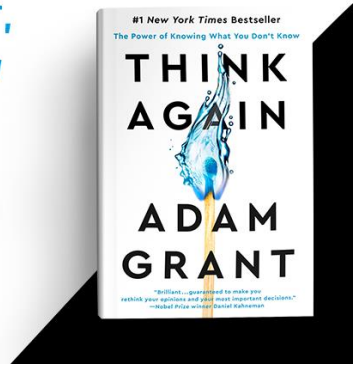


THE RETHINKING CYCLE



"RETHINKING is a skill set, but it's also a mindset. We already have many of the mental tools we need. We just have to remember to get them out of the shed and remove the rust."

—ADAM GRANT, *THINK AGAIN*



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Instructor attributes that contribute to the development of student curiosity:

- **Patience**
- **Habit of Inquiry**
- **Emotional candor**
- **Intellectual Humility**
- **Transparency**
- **Recognition of the benefits to be gained in learning from peers**

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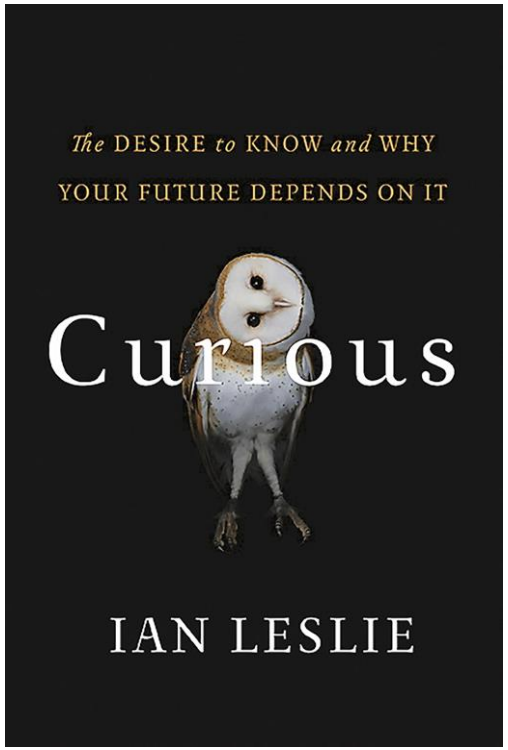
Dyche L & Epstein RM. (2011) *Medical Education*



Empathic Curiosity

- **Curiosity about "the thoughts and feelings of other people"**
- **Genuinely try to "put yourself in the shoes" of another to see things from their perspective.**

"Diversive curiosity might make you wonder *what* a person does for a living;

empathic curiosity makes you wonder *why* they do it."

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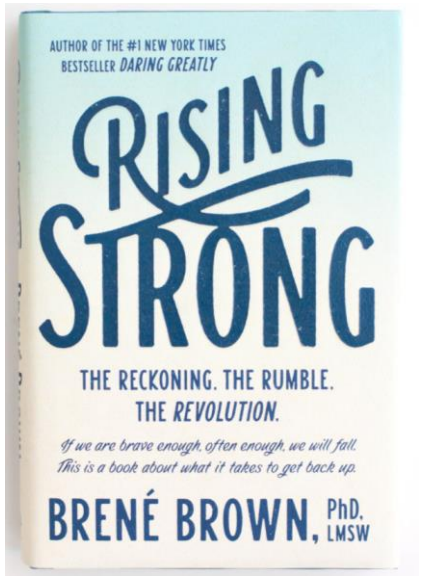

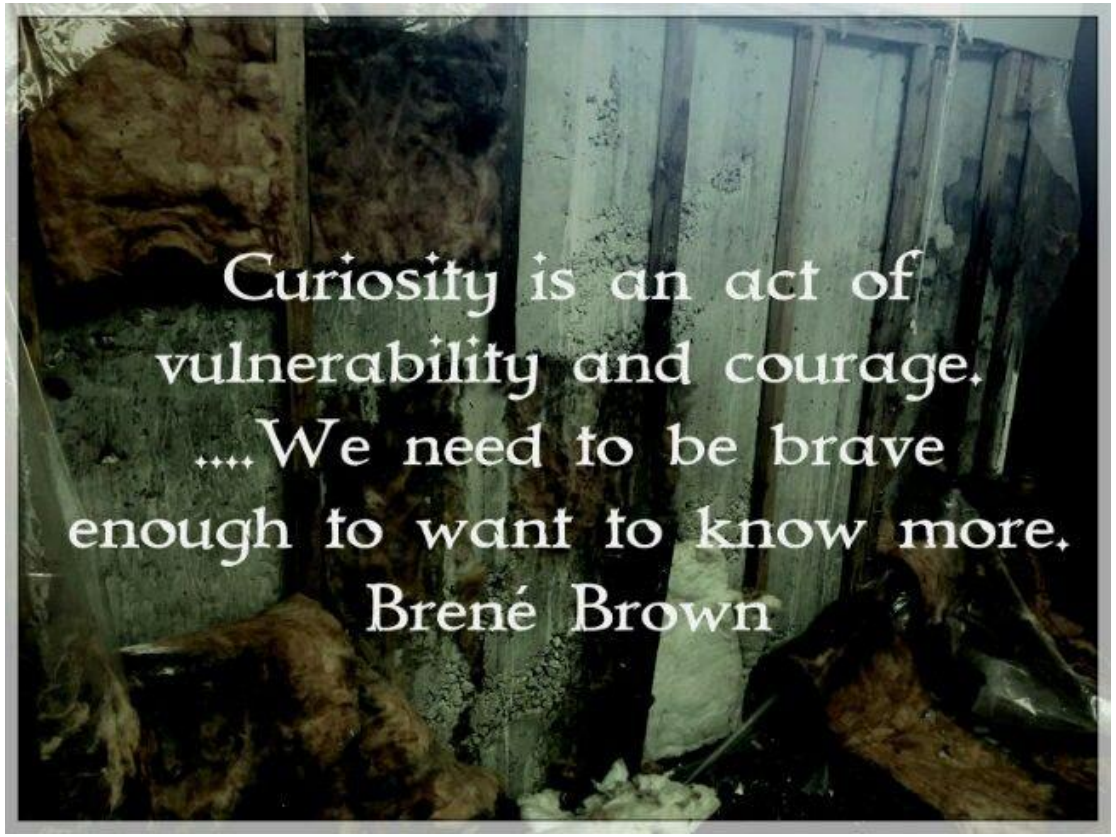

https://www.pinterest.ca/pin/think-about-it--444800900679218512/

"Choosing to be curious is choosing to be vulnerable because it requires us to surrender to uncertainty."

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PARTNER DISCUSSION

What are 2-3 ideas that stand out to you about CURIOSITY?

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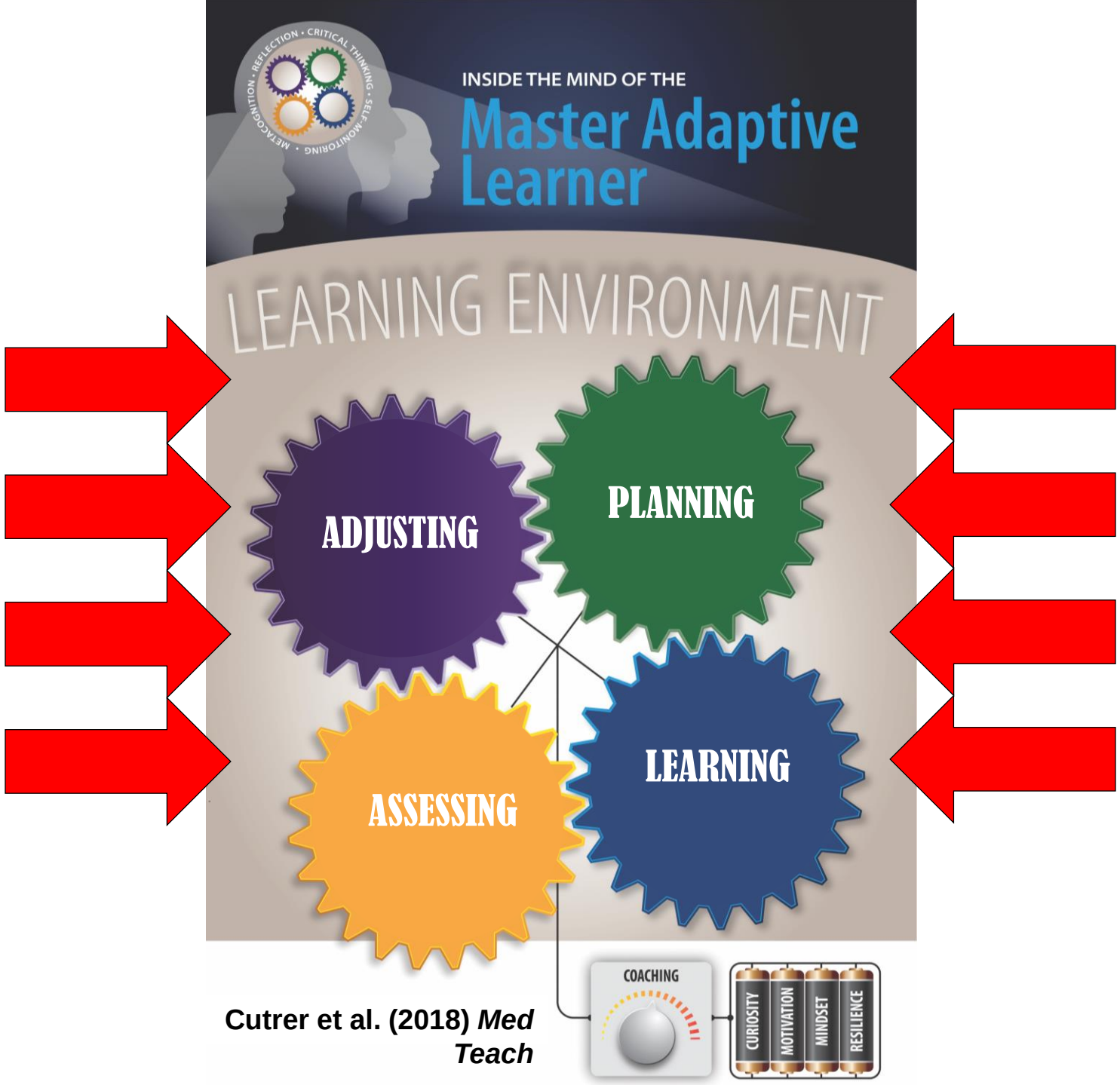

Cutrer et al. (2018) *Med Teach*

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- Rapidly changing
- Lack of Time
- Inter-team dynamics
- Complexity
- Conflicting priorities
- Physical/Space constraints
- Policies and Procedures
- Etc, Etc, Etc

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HOW IS ALL OF THIS USEFUL?

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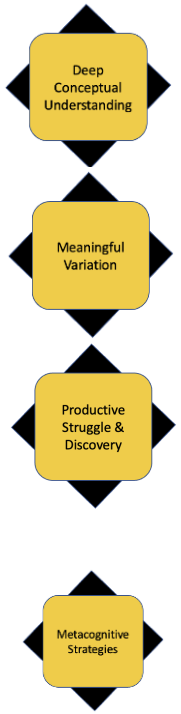
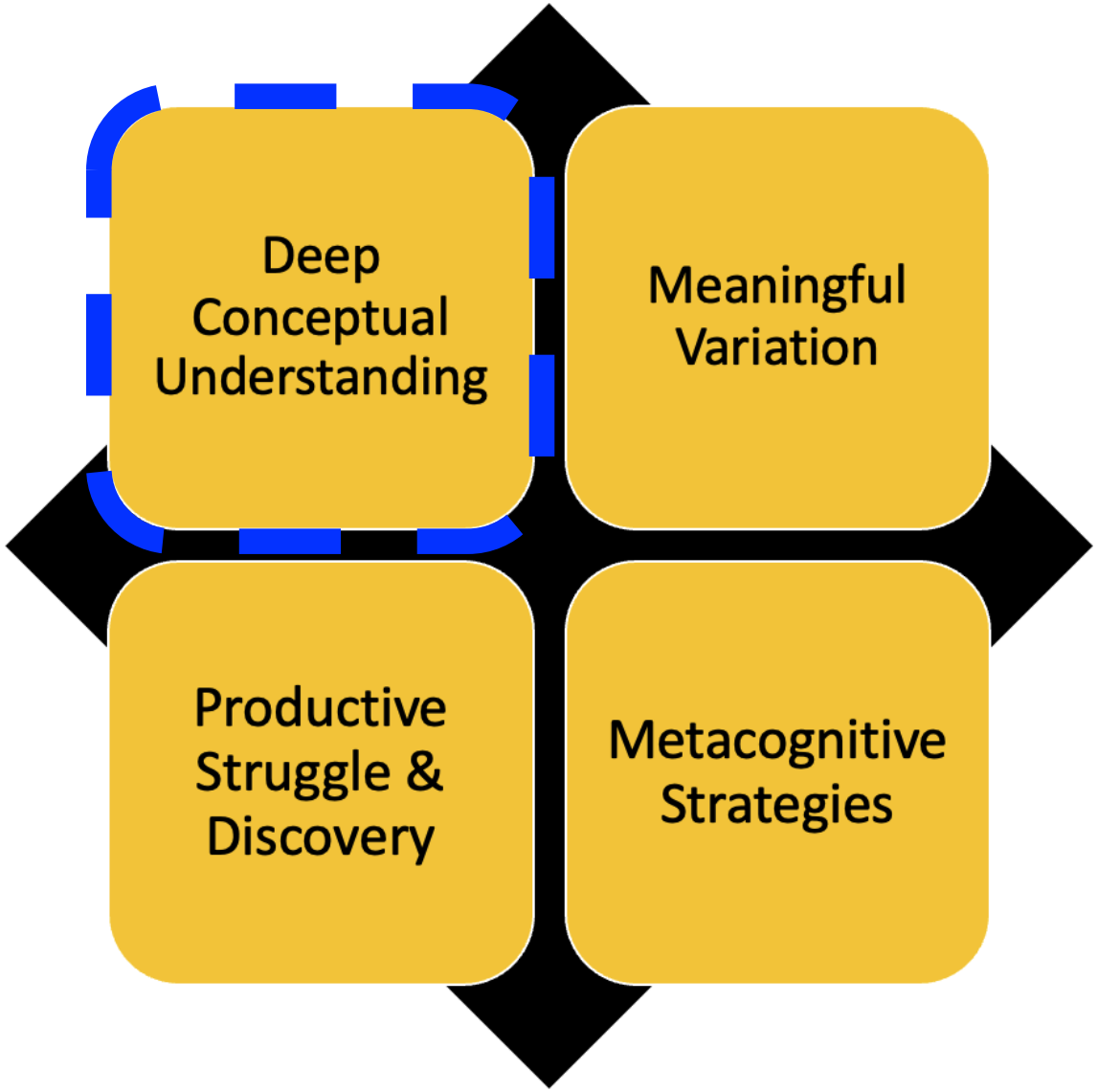
Overview:

WHAT Practical Strategies Can You Use to Foster Expertise Development?

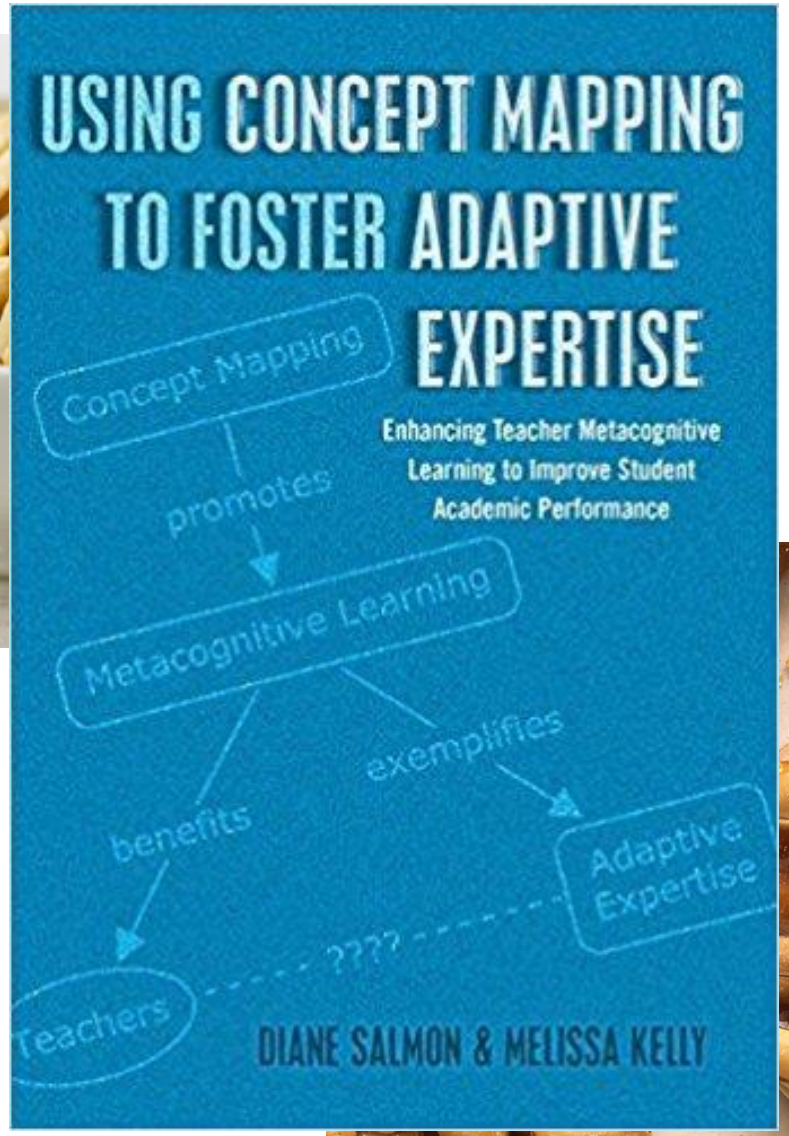


1) Help Trainees Build a Network of Understanding
2) Utilize Diagrams and Analogies
3) Ask Better Questions
4) Play “What If?”
5) Don’t Give Answers Right Away
6) Simulation
7) Adopt a Coaching Approach
8) Engage the Batteries
9) Cultivate the Learning Environment


Deep Conceptual Understanding
Meaningful Variation
Productive Struggle & Discovery
Metacognitive Strategies

Deep Conceptual Understanding

1) Build Networks of Understanding



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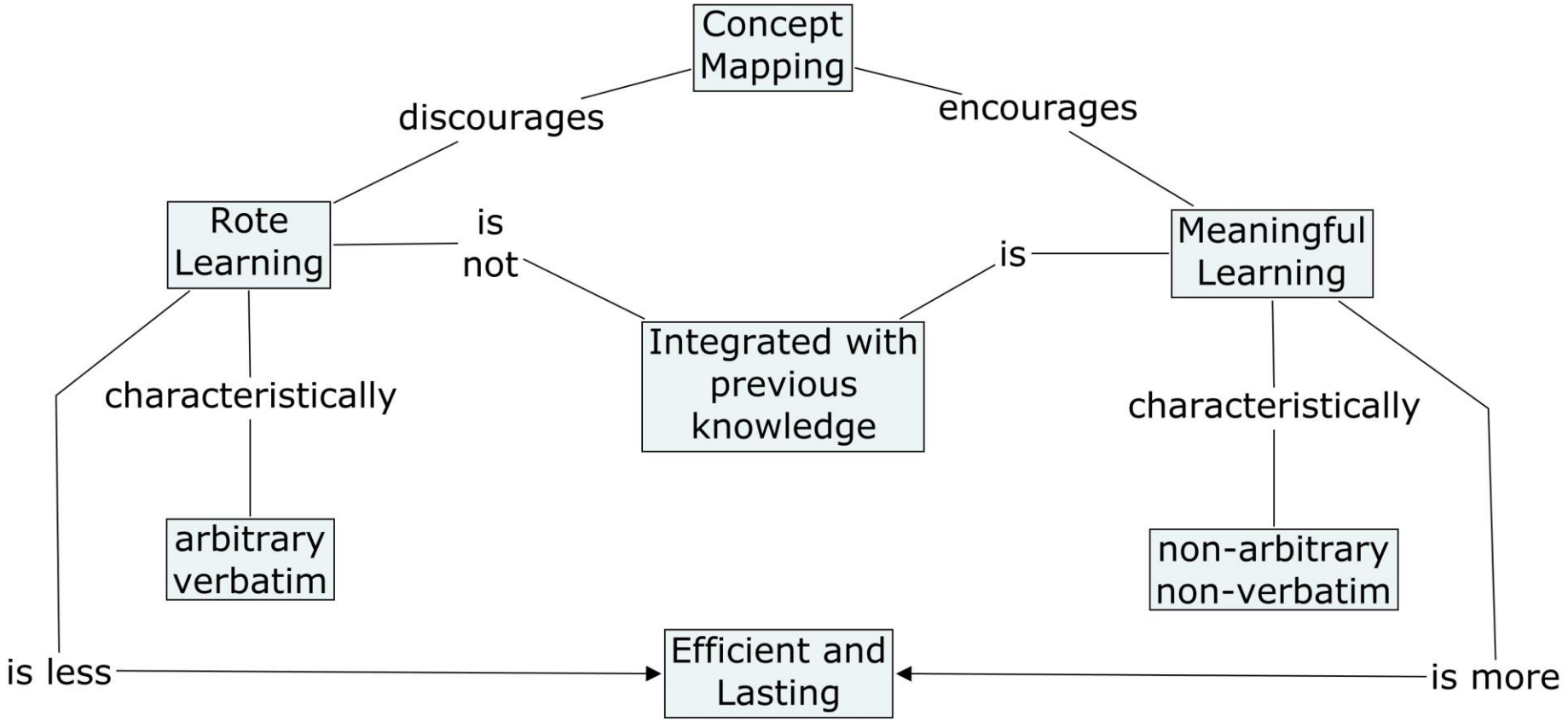
Deep Conceptual Understanding

1) Build Networks of Understanding



(adapted from Pintoi & Zeitz, 1997, *Med Teach,* p. 117)

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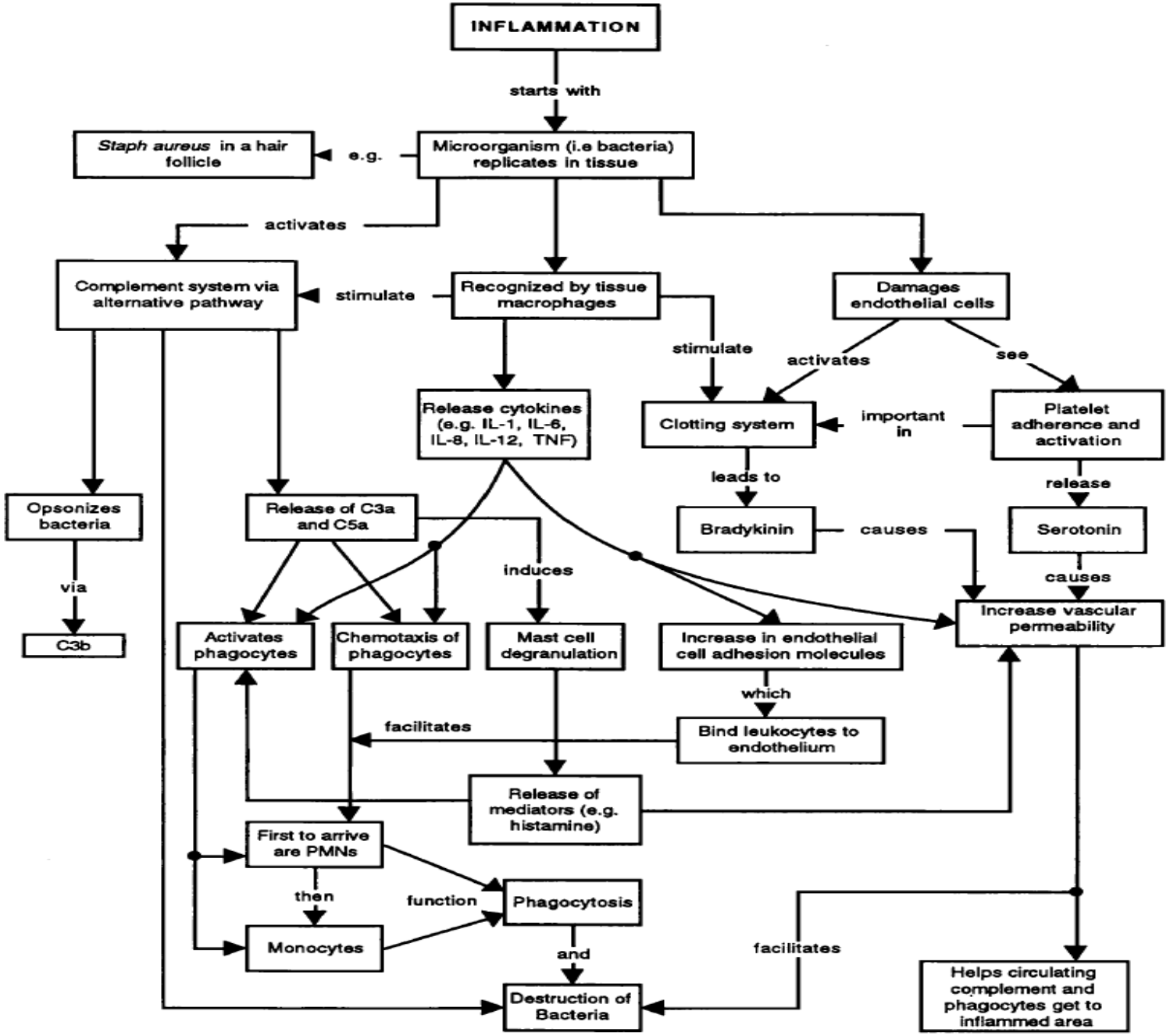
Deep Conceptual Understanding



(Pintoi & Zeitz, 1997, *Med Teach*, p. 119)

Figure 3. A basic science concept map on stimuli that initiate inflammation.

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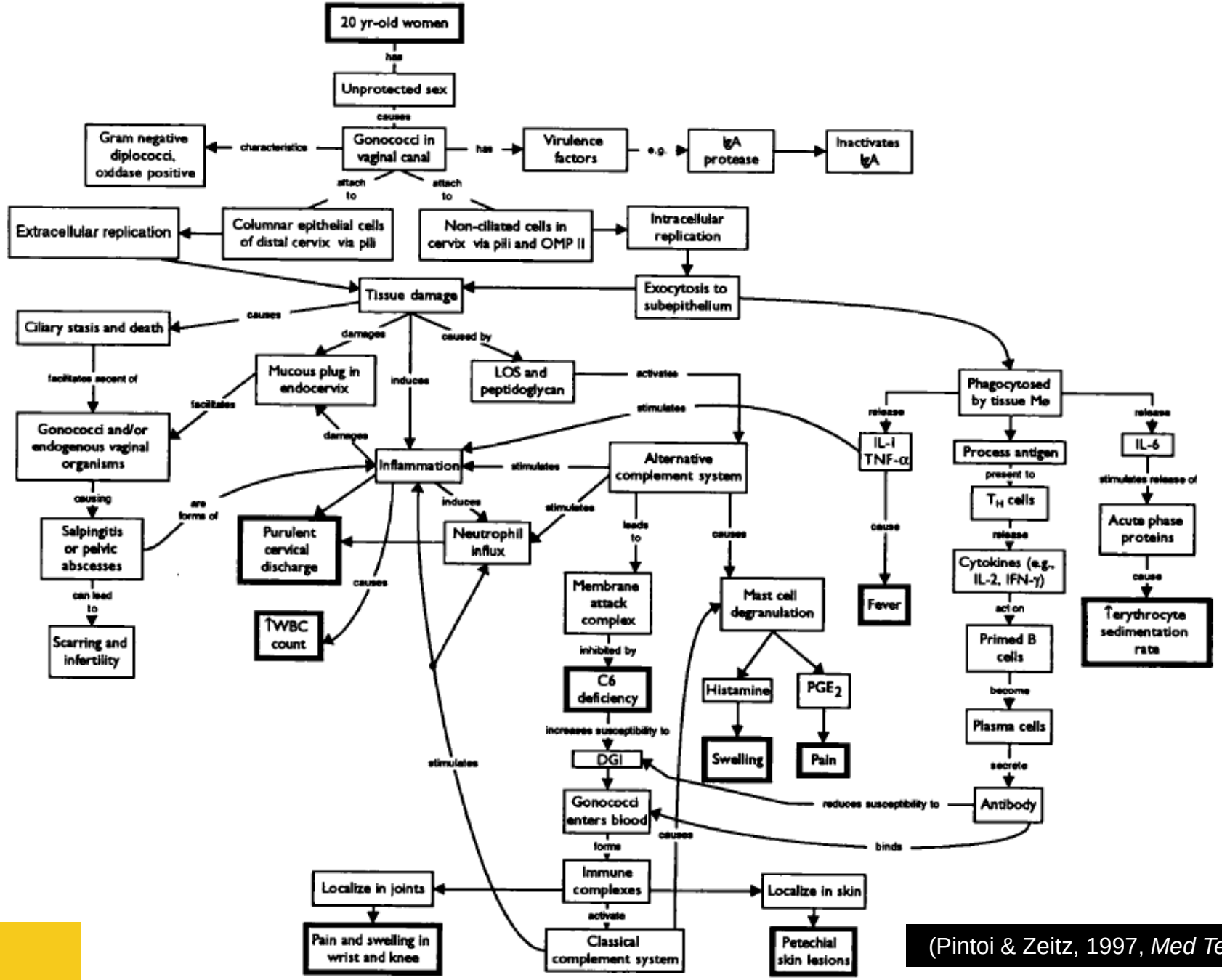
Deep Conceptual Understanding



(Pintoi & Zeitz, 1997, *Med Teach,* p. 119)

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Deep Conceptual Understanding

1) Build Networks of Understanding

- Advantages of CM
  - Active learning—decisions must be made for construction
  - Organizes information by grouping facts and concepts (higher level than just memorization)
  - Illustrates relationships between facts and concepts
  - Easy visualization fosters long-term memory
  - Encourages different types of learners to avoid overlooking details and relationships

(Pelley, 2008, p. 2)

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Deep Conceptual Understanding

2) Use Diagrams or Analogies

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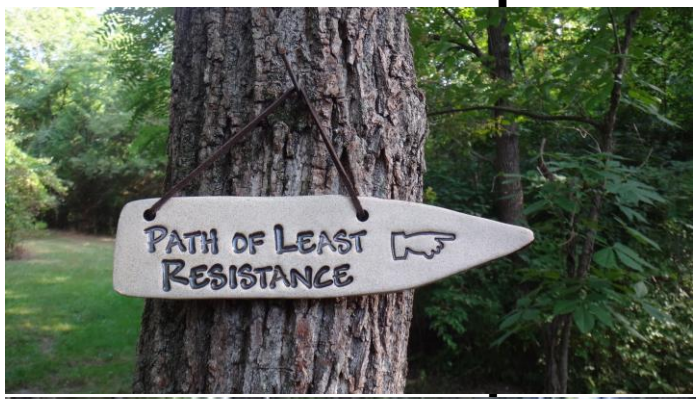
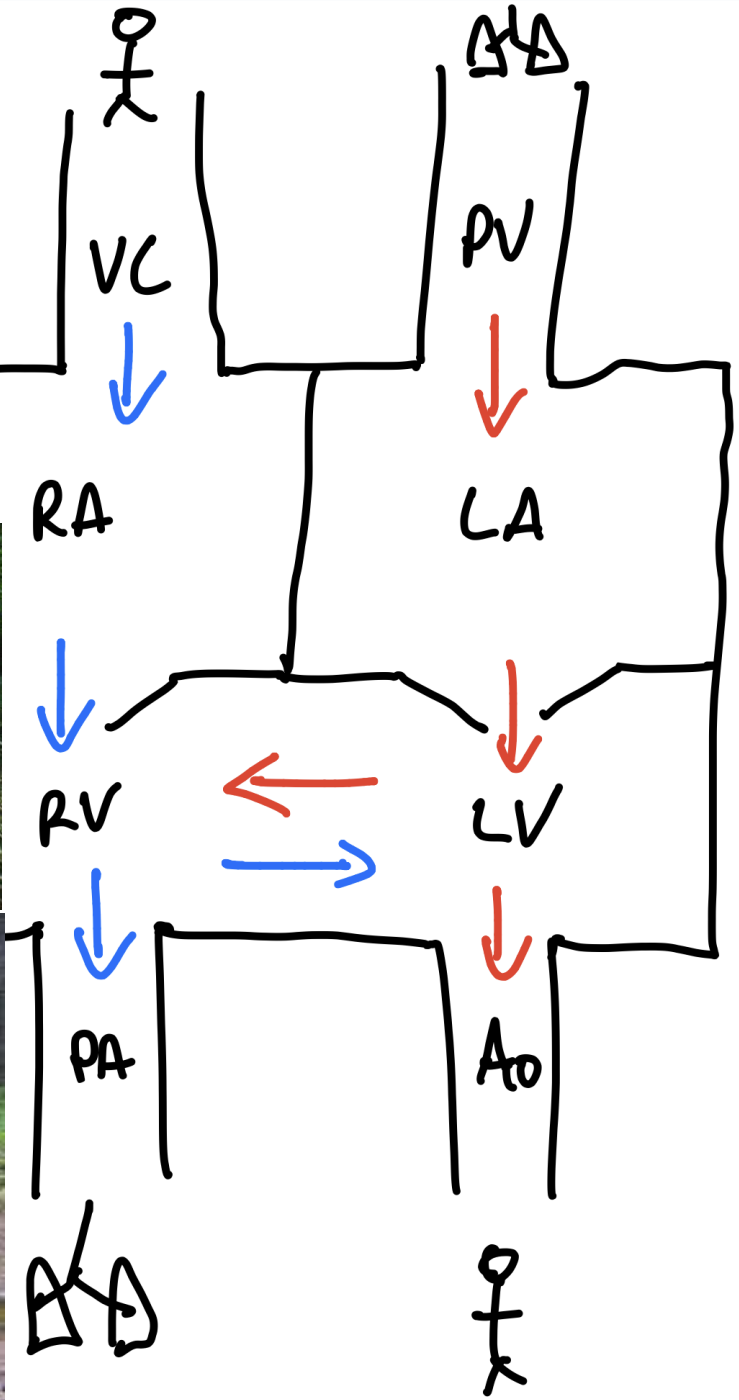
Deep Conceptual Understanding





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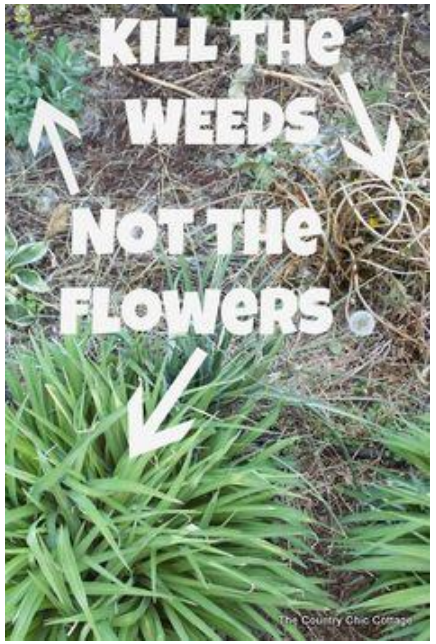
Deep Conceptual Understanding

2) Use Diagrams or Analogies

- Base Domain
  - Must have high-quality knowledge here

- Target Domain
  - Focus of developing deeper knowledge/understanding



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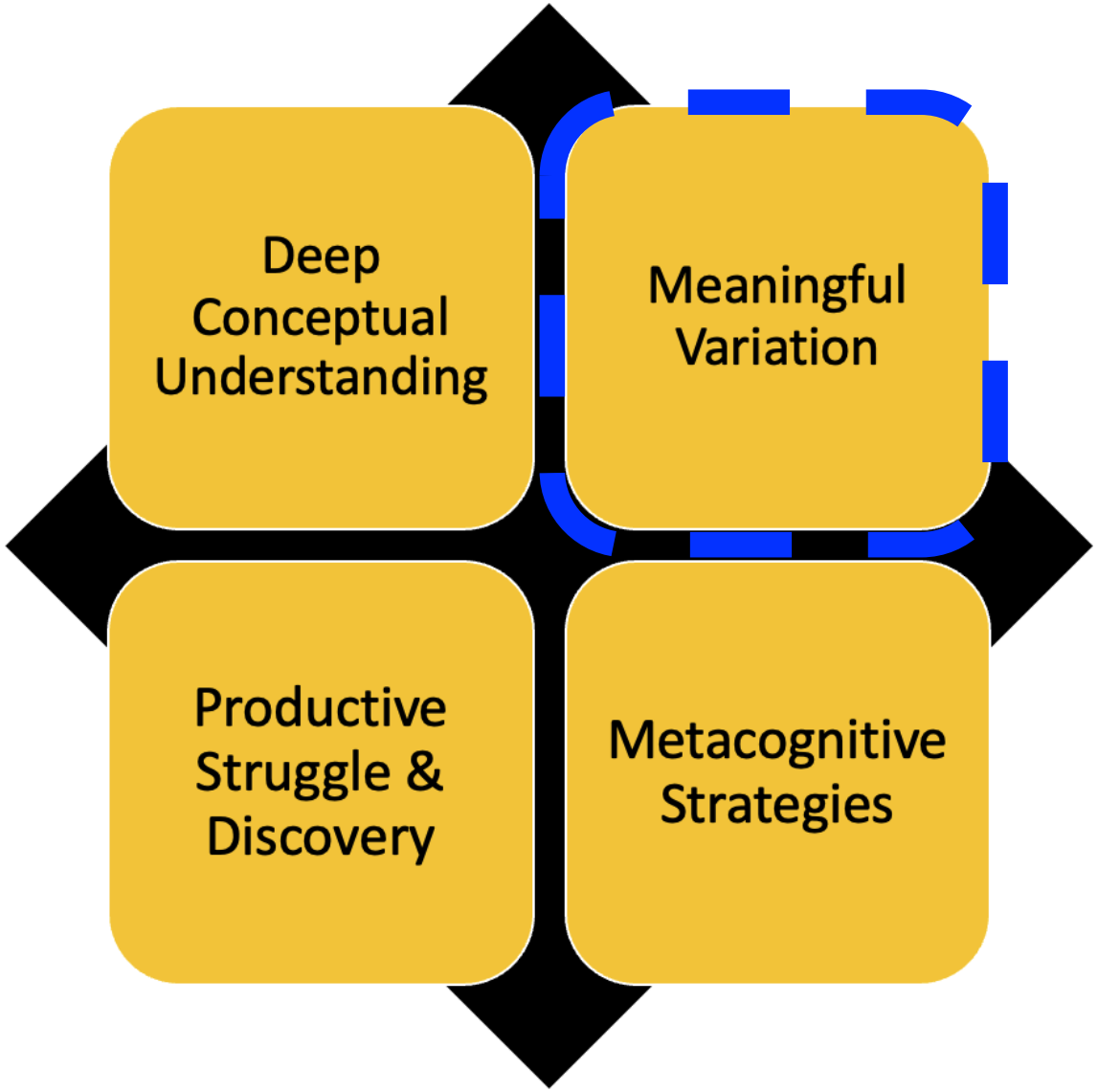
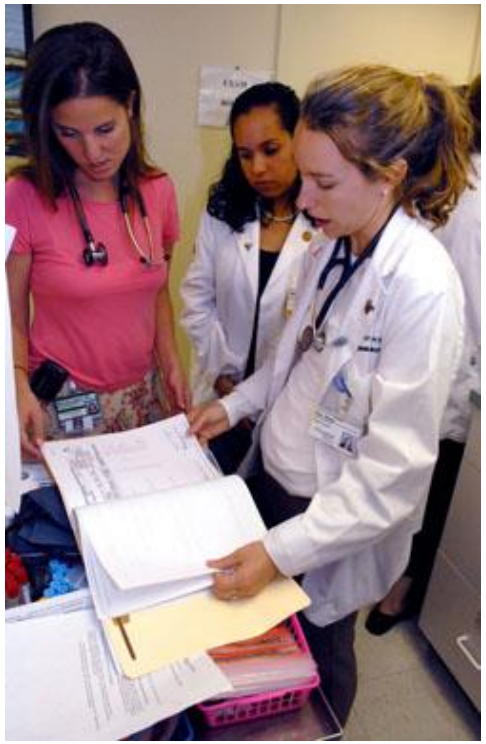

Deep Conceptual Understanding
Meaningful Variation
Productive Struggle & Discovery
Metacognitive Strategies

Meaningful Variation

3) Ask Better Questions

- Pimping
- "Better Questions"
  - Investigate Causal Explanations
  - Serial Whys



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Meaningful Variation

3) Ask Better Questions

~~Clinician: "Sally, what is this patient's sodium?"~~

Clinician: "Sally, can you tell us WHY this patient's sodium is low?

Sally: "I think it is because she is retaining water."

Clinician: "Great! WHY do you think she is retaining water?"

Sally: "Her heart failure?"

Clinician : "You are absolutely right. WHY do you think heart failure causes fluid retention?"

…

https://wp-files.dealerrefresh.com/wp-content/uploads/2013/04/girl_why_600.jpg

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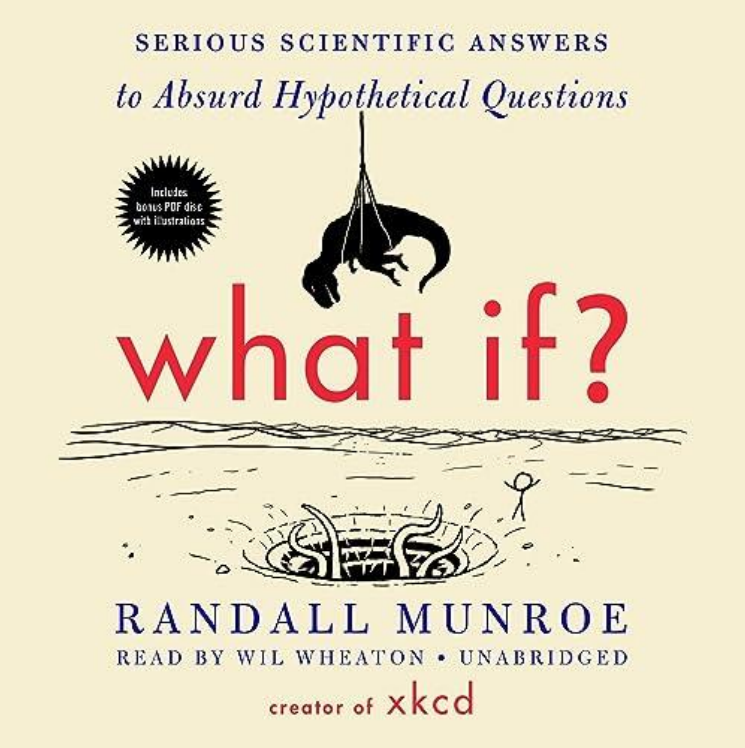
Meaningful Variation

4) Play “What If?”



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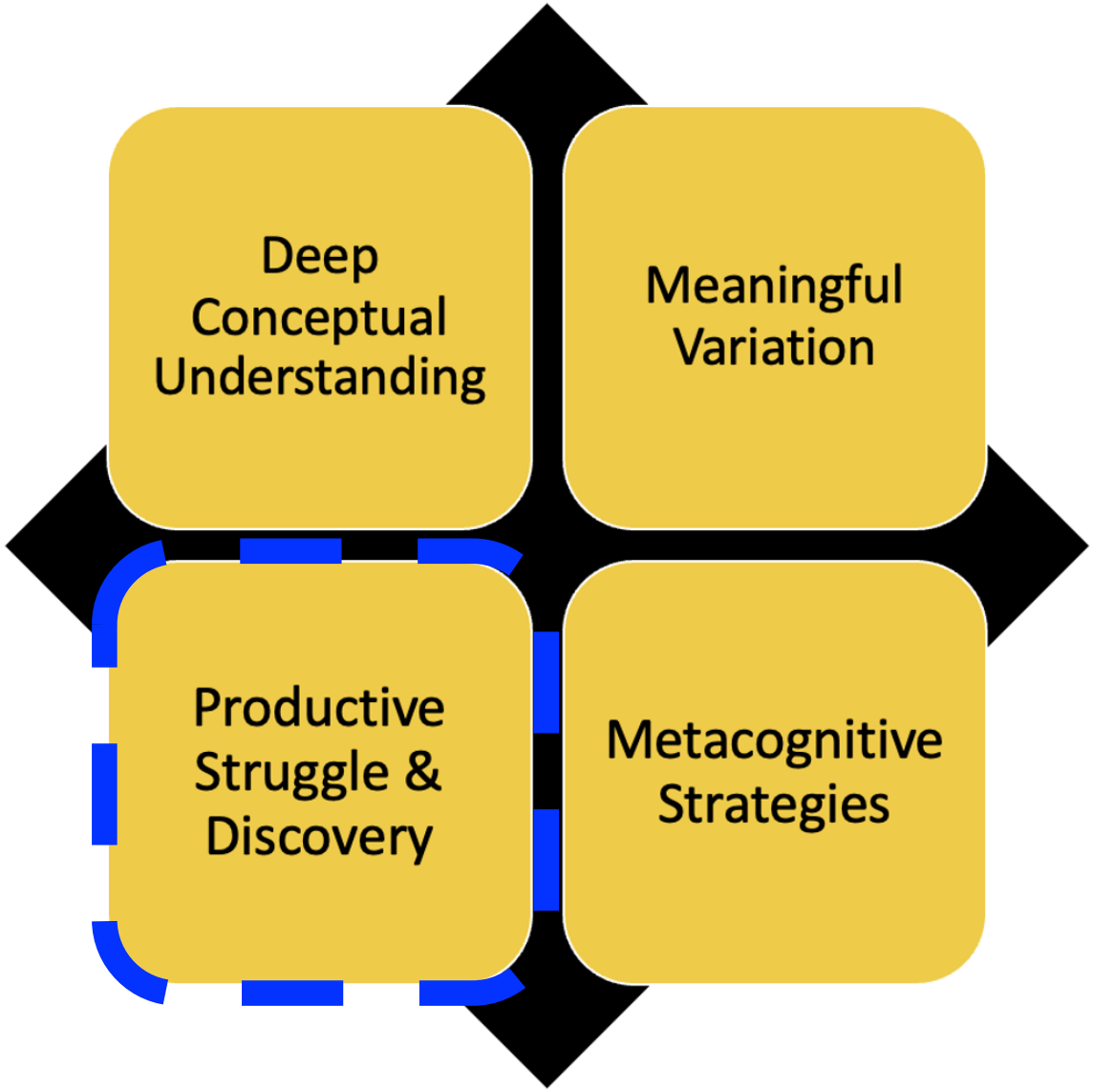
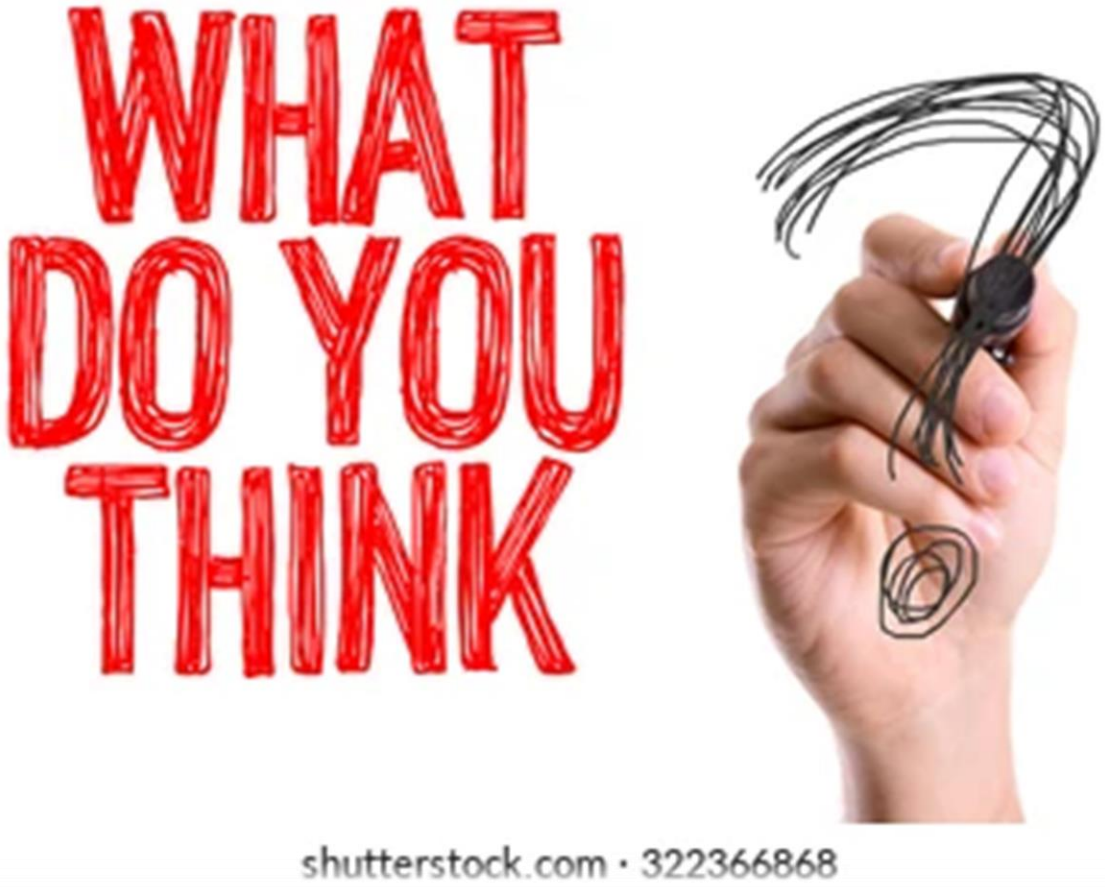

Deep Conceptual Understanding
Meaningful Variation
Productive Struggle & Discovery
Metacognitive Strategies

Productive Struggle & Discovery

5) Don’t Give Answers Right Away



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Productive Struggle & Discovery

6) Simulation

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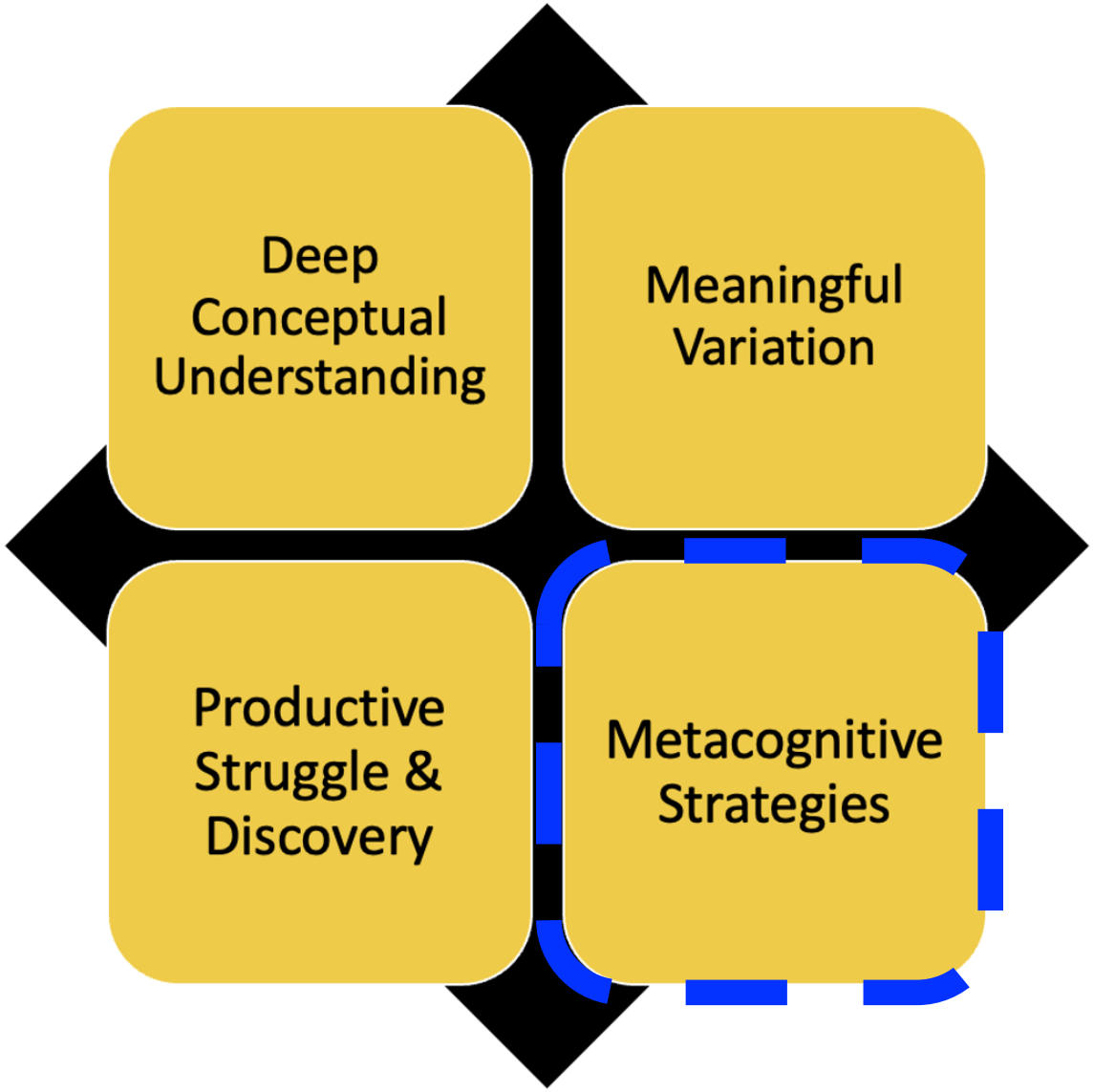
Deep Conceptual Understanding
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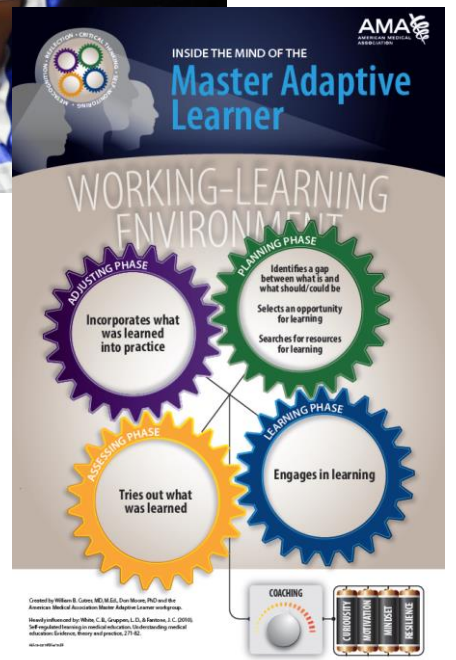
Metacognitive Strategies

7) Coaching Using MAL Framework

https://www.counselingphoenixscottsdale.com/wp-content/uploads/2016/12/shutterstock_236067196.jpg

Photo by @abbeycutrer @Cutrerphoto



Metacognitive Strategies

7) Coaching Using MAL Framework

MEDICAL TEACHER
https://doi.org/10.1080/0142159X.2021.1947479

MEDICAL TEACHER

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SHORT COMMUNICATION

Check for updates

Beyond advising and mentoring: Competencies for coaching in medical education

Meg Wolff[a], Nicole M. Deiorio[b], Amy Miller Juve[c], Judee Richardson[d], Gail Gazelle[e], Margaret Moore[f], Sally A. Santen[b] and Maya M. Hammoud[g]

[a]Departments of Emergency Medicine and Pediatrics, University of Michigan Medical School, Ann Arbor, MI, USA; [b]Department of Emergency Medicine, Virginia Commonwealth University, Richmond, VA, USA; [c]Department of Anesthesiology and Perioperative Medicine, Oregon Health and Science University, Portland, OR, USA; [d]Medical Education Strategy Unit, American Medical Association, Chicago, IL, USA; [e]Department of Medicine, Brigham and Women's Hospital, Boston, MA, USA; [f]Institute of Coaching, McLean Hospital, Harvard Medical School Affiliate, Belmont, TN, USA; [g]Department of Obstetrics and Gynecology, University of Michigan Medical School, Ann Arbor, MI, USA

ABSTRACT

Background: Coaching supports academic goals, professional development and wellbeing in medical education. Scant literature exists on training and assessing coaches and evaluating coaching programs. To begin filling this gap, we created a set of coach competencies for medical education using a modified Delphi approach.
Methods: An expert team assembled, comprised of seven experts in the field of coaching. A modified Delphi approach was utilized to develop competencies.
Results: Fifteen competencies in five domains resulted: coaching process and structure, relational skills, coaching skills, coaching theories and models, and coach development.
Conclusion: These competencies delineate essential features of a coach in medical education. Next steps include creating faculty development and assessment tools for coaching.

KEYWORDS
Mentoring; medical education research; medicine

1) Coaching Structure and Process
2) Relational Skills
3) Coaching Skills
4) Coaching Theories and Models
5) Coach Development

Wolff et al. (2021). *Med Teach*

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Metacognitive Strategies

7) Coaching Using MAL Framework

Coaching skills	
Fostering development of Master Adaptive Learners	• Help coachee understand their abilities in the MAL cycle (planning, learning, assessing, adjusting) • Support and guide coachee in engagement in being a MAL (critical thinking, reflection, self-monitoring, metacognition)
Support coachee in cultivating well-being and professional fulfillment	• Use open inquiry to support coachee in defining a vision of ideal self or goals for optimum well-being and professional fulfilment
Support coachee in improving motivation and self-efficacy	• Support coachee in cultivating key characteristics to the master adaptive learning process – curiosity about learning, intrinsic motivation, growth mindset, and resilience • Explore coachee's personal values and how they are expressed in vision, goals, and action plans • Cultivate coachee's internal motivation for change, including meaning, purpose, or calling • Explore coachee strengths • Explore coachee's resources and psychological capital (hope, optimism, self-efficacy and resilience)
Help coachee overcome challenges with co-creative collaboration	• Support coachee in problem-solving and co-creative brainstorming on new perspectives and possibilities • Support coachee in processing feedback • Continue to elicit MAL characteristics – curiosity about learning, intrinsic motivation, growth mindset, and resilience

Wolff et al. (2021) *Med Teach*

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RATIO OF ENGAGEMENT

Probing & listening Telling & Answering

ADVISOR

Episodic, issue-focused relationship depending on what the learner needs to know or asks. Based on advisor expertise.

MENTOR

Longitudinal, personal relationship focusing on the learner's longer-term development. Based on mentor experience.

Deiorio NM, Foster KW, & Santen SA. (2021).
Academic Medicine

RATIO OF ENGAGEMENT

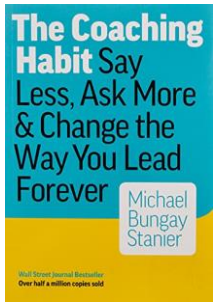
Probing & listening Telling & Answering

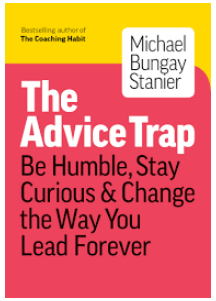
COACH

https://images.app.goo.gl/3egYxK6HtZGmZV19A

Deiorio NM, Foster KW, & Santen SA. (2021).
Academic Medicine

Asking Great Coaching tions





Tips for Using Questions

1) Ask 1 question at a time
2) Accept Silence
3) Listen fully
4) Ask “what” questions

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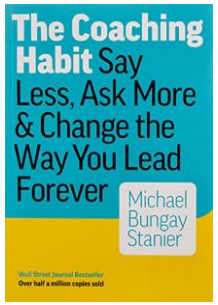
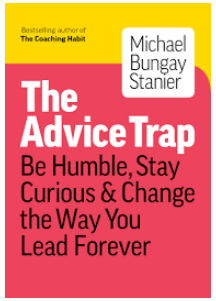
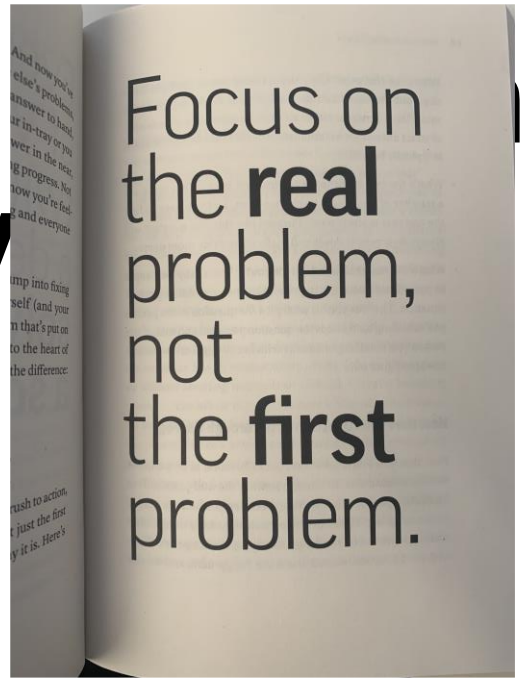
Asking Great Coaching tions





Q3—The Focus Question—

What's th allenge here for y



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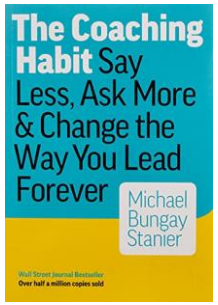
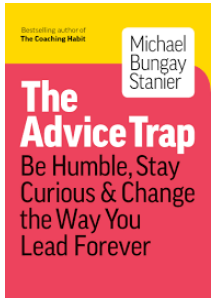
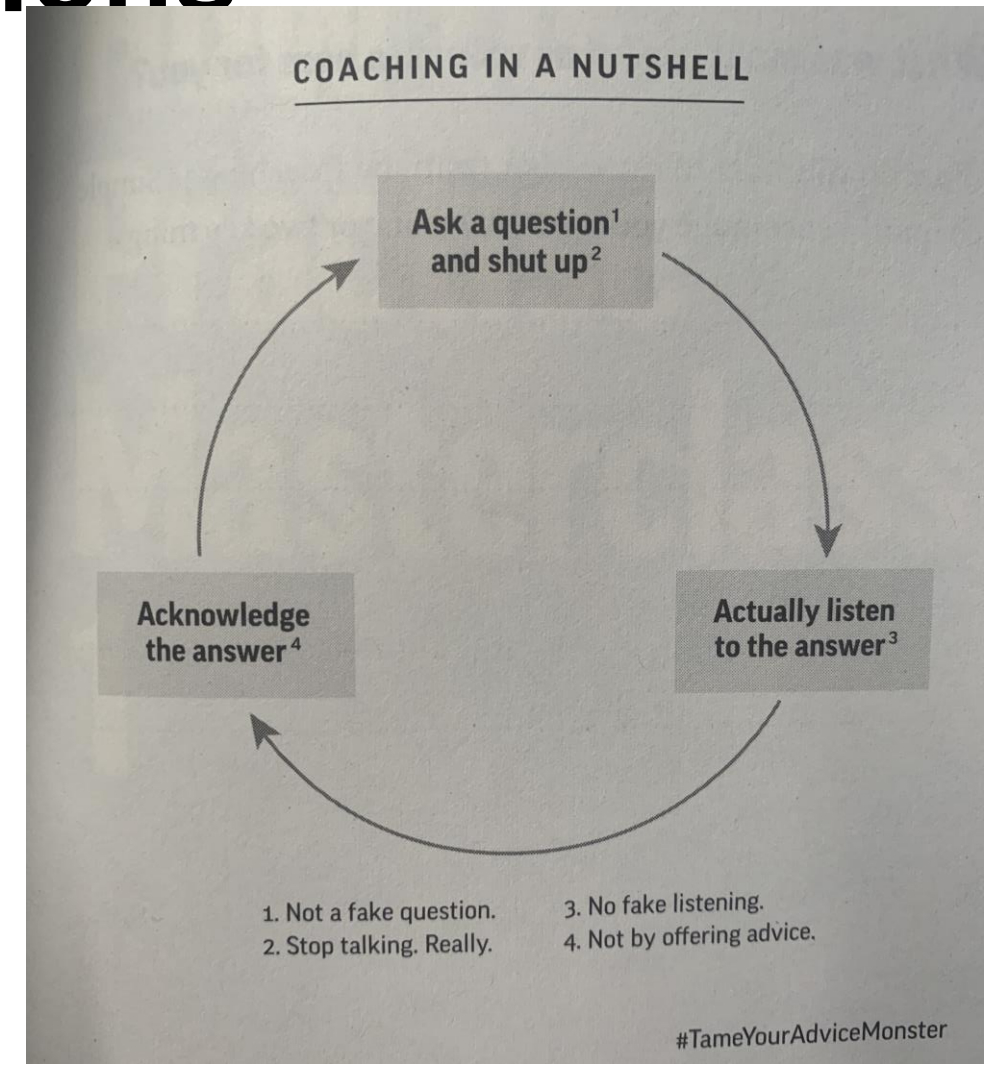
Asking Great Coaching tions







Stay curious a little bit longer

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Metacognitive Strategies

7) Coaching Using MAL Framework

Case 1: Struggling clinical student

- Suzie is an clinical student in your program. She is overwhelmed at the end of each day with all of the things she didn't know. She dutifully keeps a list of unanswered questions in her notebook, but can't seem to ever find the time to investigate answers to her questions.

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Metacognitive Strategies

7) Coach

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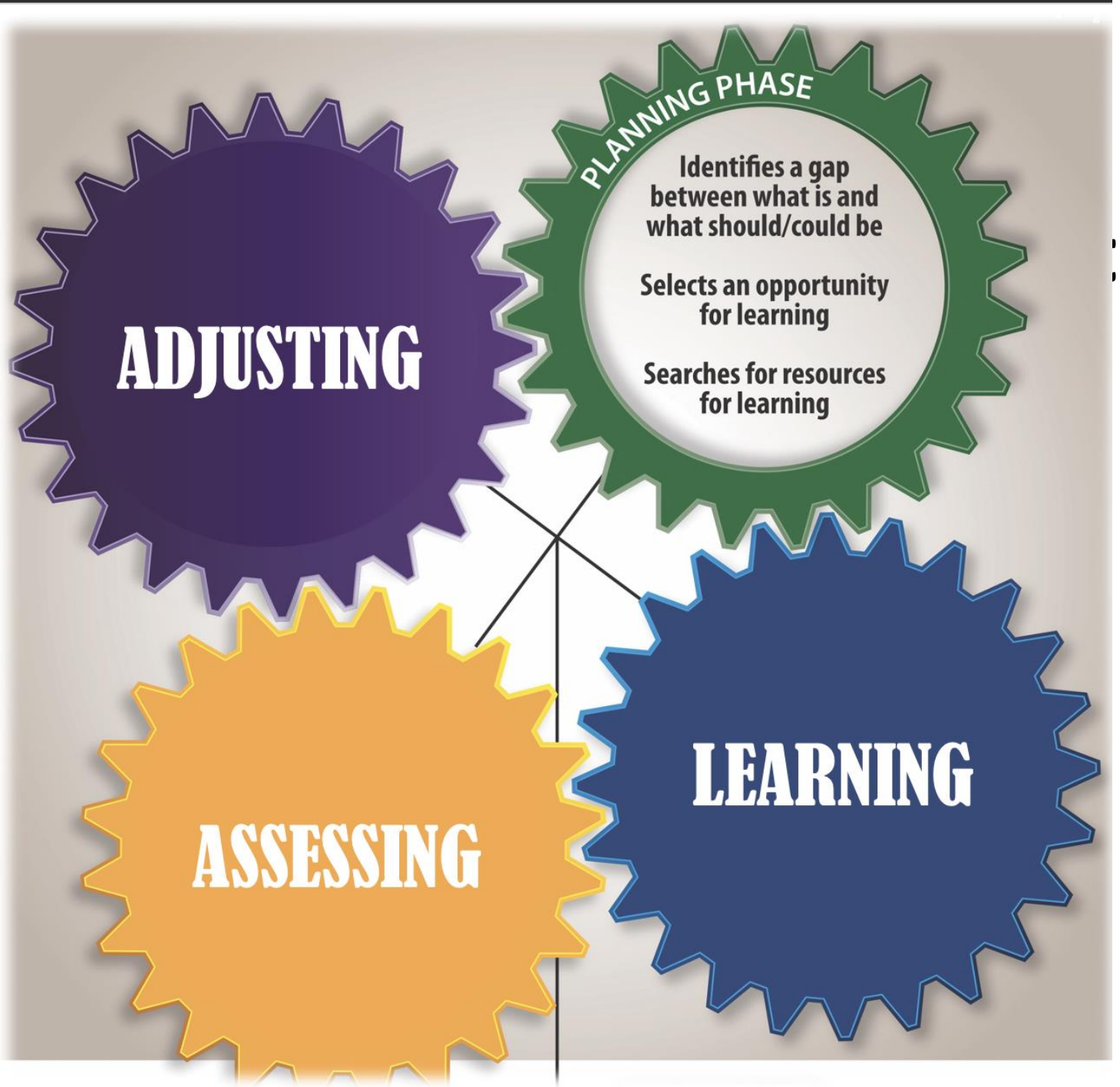

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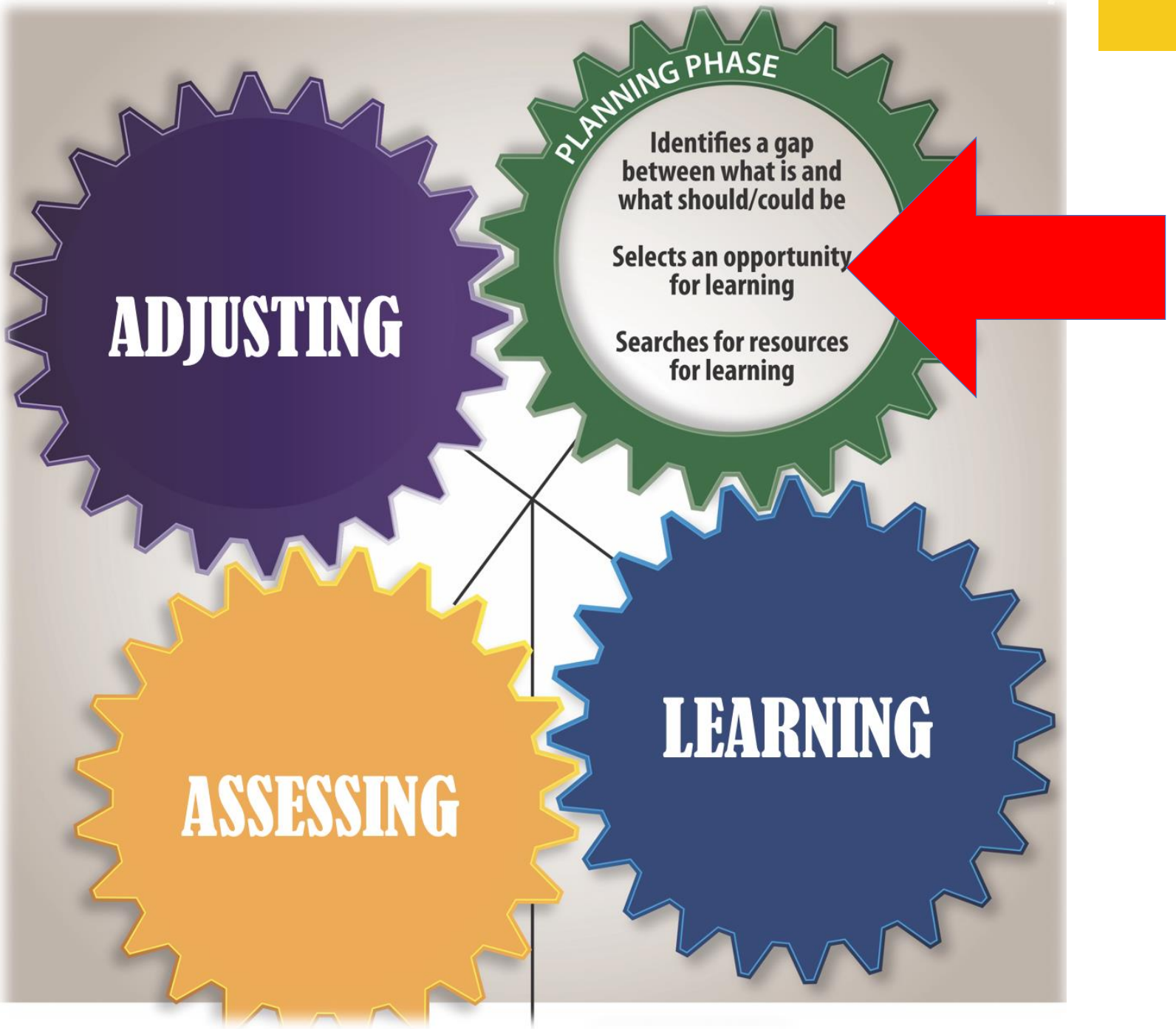

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7) Coaching Using MAL Framework

Case 2: Struggling Trainee

- Tommy is a trainee in your program who really wants to do well. He tries to spend time each night reading and re-reading systematically through his textbook. He underlines and highlights as he goes, but never seems to remember what he has read.

Metacognitive Strategies

7) Coaching Using MAL Framework

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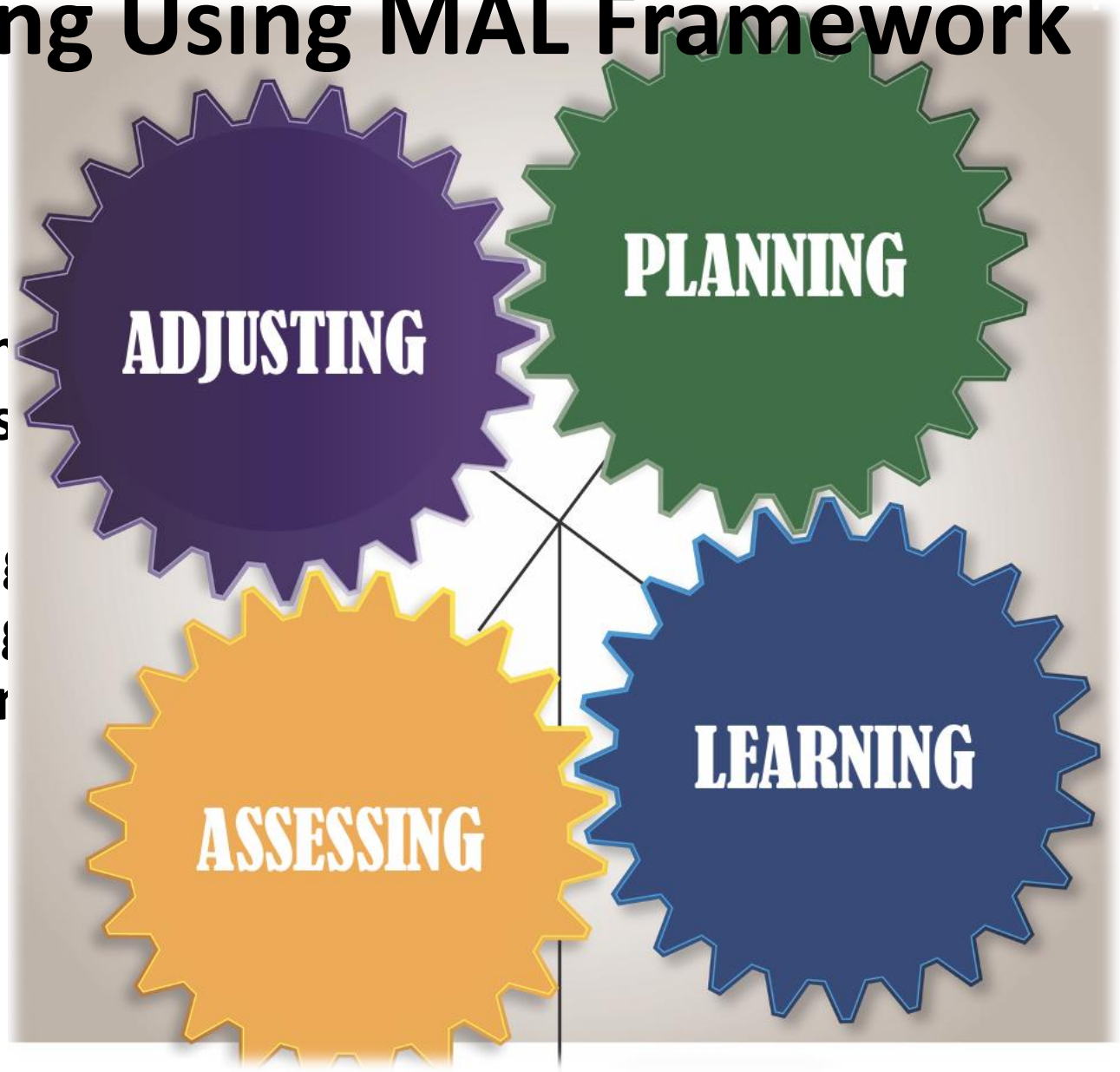

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Metacognitive Strategies

7) Coaching Using MAL Framework

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Metacognitive Strategies

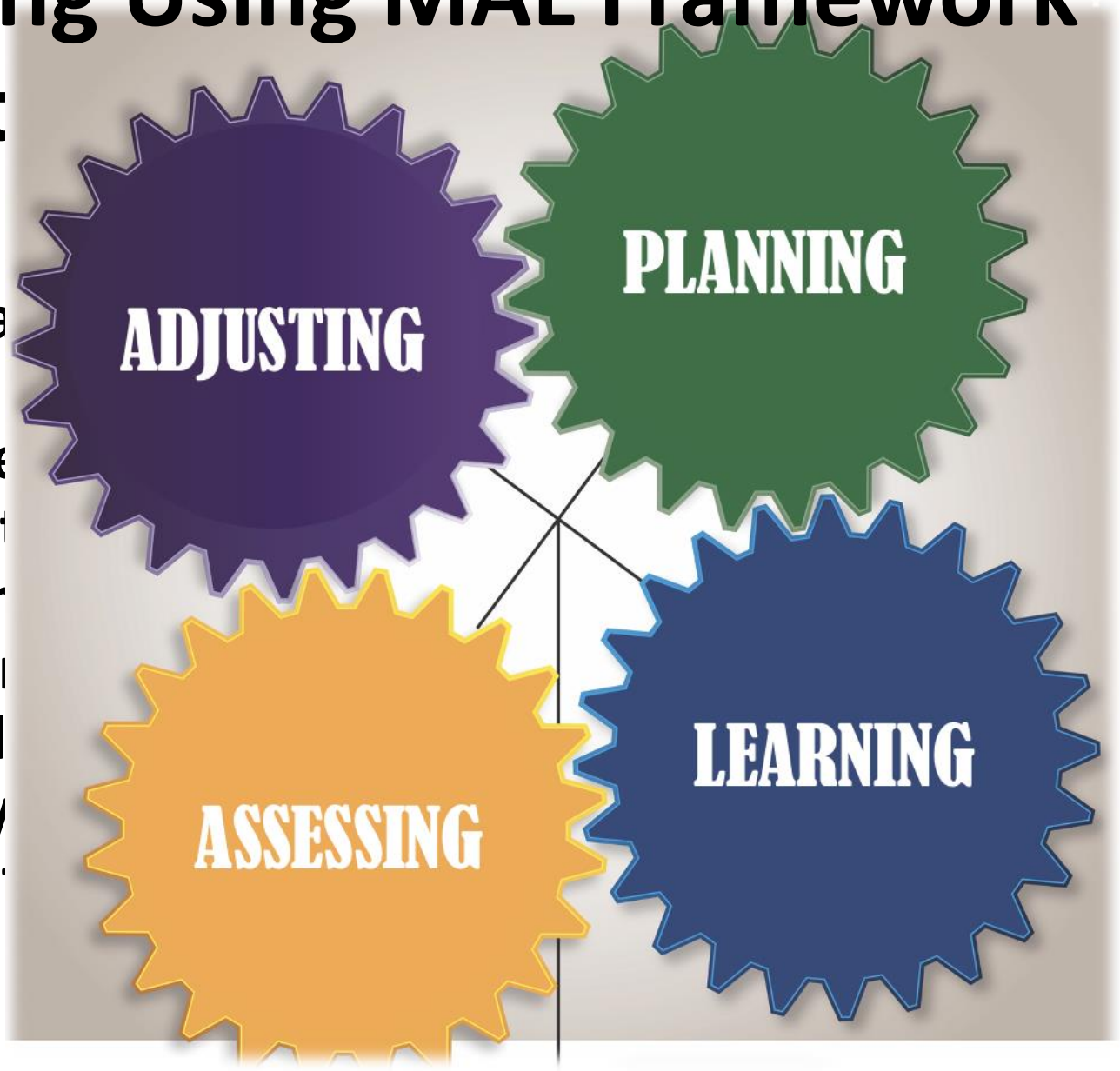
7) Coaching Using MAL Framework Case 3: Struggling Advanced Trainee

- Sandra is an advanced trainee planning to enter the a highly competitive specialty. She is growing frustrated that her clinical assessments rate her at lower than a perfect score. She believes that she is consistently demonstrating top-level performance, despite what the assessments show. She makes comments like “that attending just doesn’t like me” and “I’d like to see that faculty member develop rapport with that rude patient” to describe her lower scores.

Metacognitive Strategies

7) Coaching Using MAL Framework

Case 3: St



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Metacognitive Strategies

7) Coaching Using MAL Framework Case 3: St

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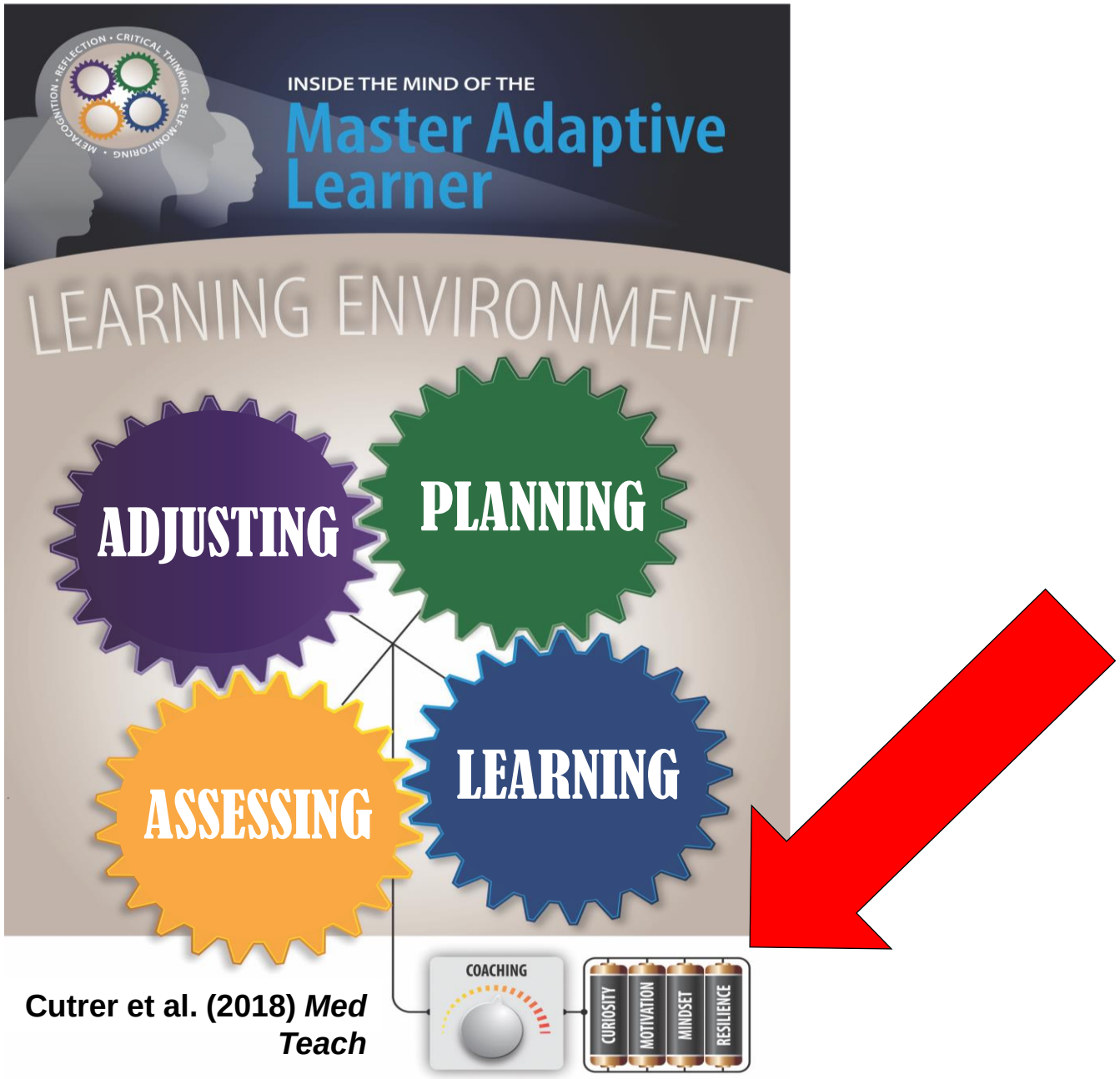
Metacognitive Strategies

8) Engage the Batteries



Cutrer et al. (2018) *Med Teach*

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Metacognitive Strategies

8) Engage the Batteries

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Metacognitive Strategies

8) Engage the Batteries—Targeted Feedback

Curiosity	Motivation
• Highlight episodes when learner explored based on curiosity • Foster reflection– “slowing down when you should” • Help learner see episodes of humility in dealing with uncertainty and complexity	
Mindset	**Resilience**

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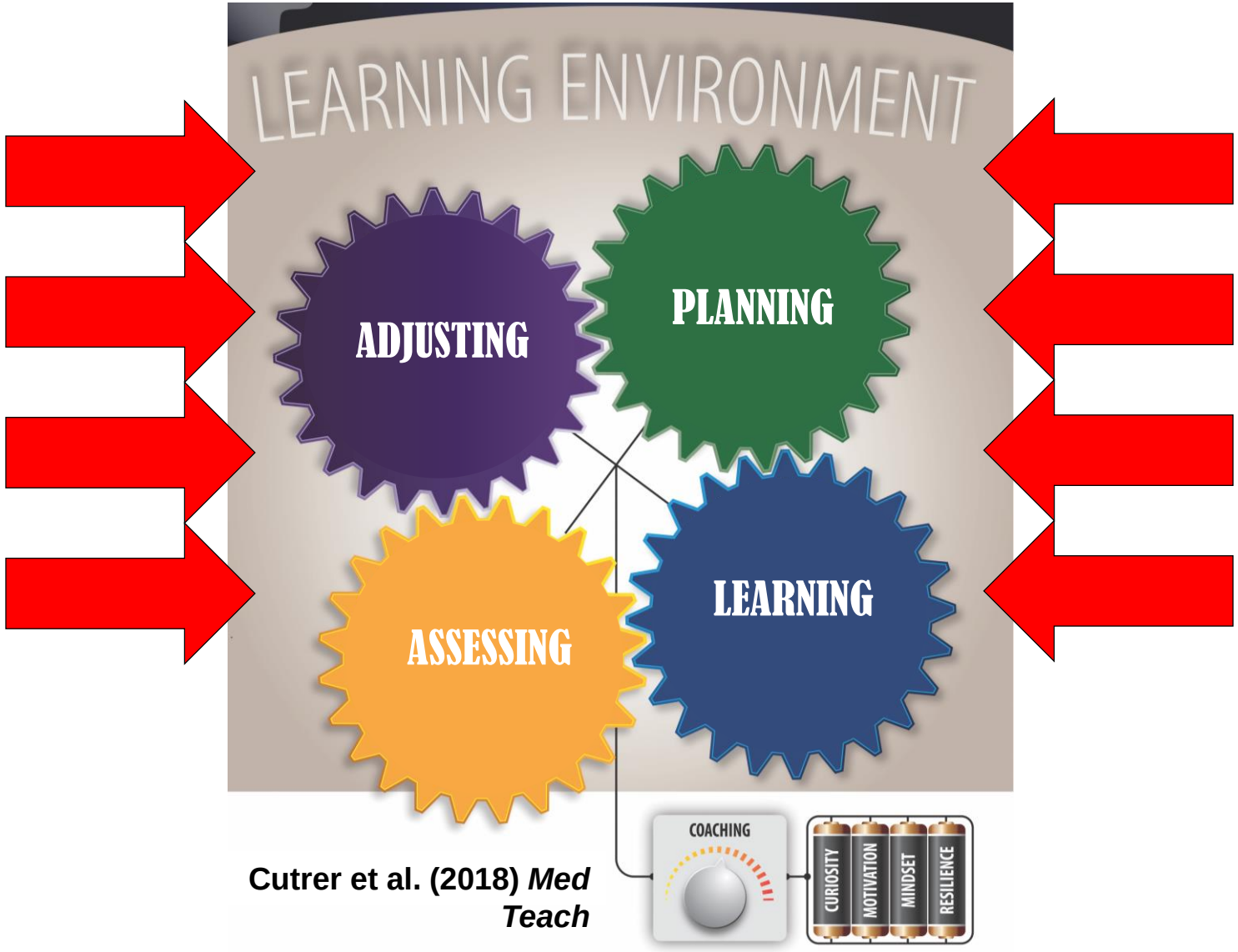
Metacognitive Strategies

9) Cultivate the Learning Environment



Cutrer et al. (2018) *Med Teach*

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Metacognitive Strategies

9) Cultivate the Learning Environment

REFLECTION

What are the Learning Environment factors that POSITIVELY and NEGATIVELY impact the learning process?

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MEDICAL TEACHER
2020, VOL. 42, NO. 11, 1270–1274
https://doi.org/10.1080/0142159X.2020.1801998

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The educators' experience: Learning environments that support the master adaptive learner

Lisa Auerbach[a], Sally A. Santen[b,c], William B. Cutrer[d], Michelle Daniel[e], Amy L. Wilson-Delfosse[f] and Nicole K. Roberts[a]

[a]The City University of New York School of Medicine, New York, NY, USA; [b]Virginia Commonwealth University School of Medicine, Richmond, VA, USA; [c]Accelerating Change in Medical Education, American Medical Association, Chicago, IL, USA; [d]Pediatrics, Vanderbilt University School of Medicine, Nashville, TN, USA; [e]Office of Medical Student Education, University of Michigan Medical School, Ann Arbor, MI, USA; [f]Pharmacology, School of Medicine, Case Western Reserve University School of Medicine, Cleveland, OH, USA

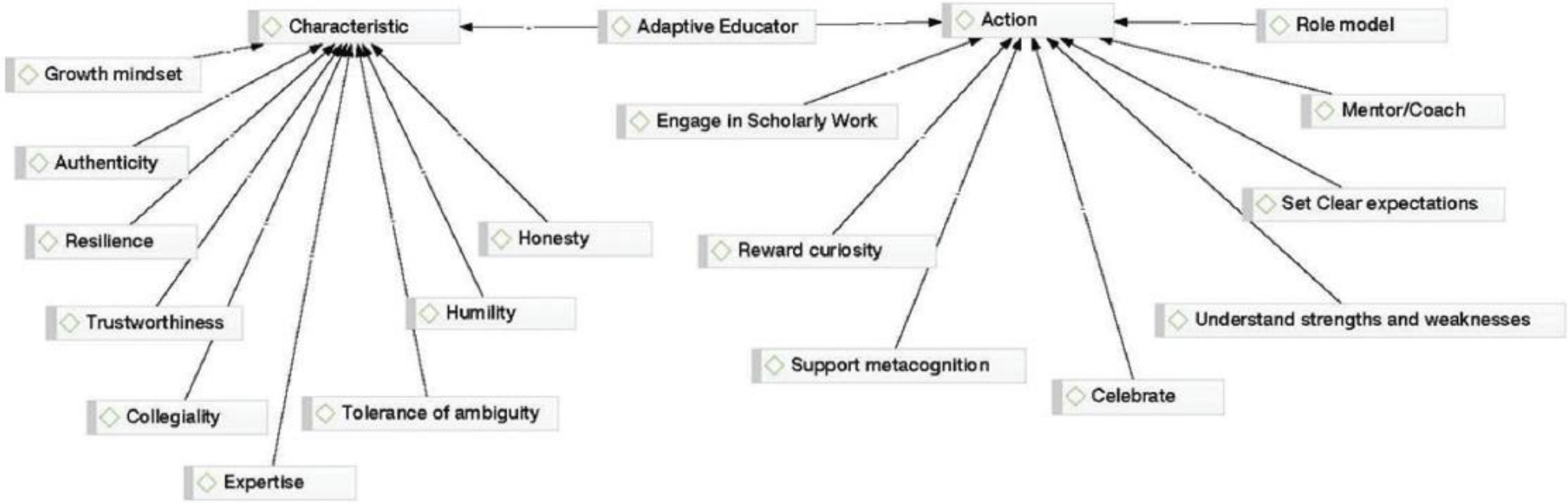

Figure 1. Adaptive Educator about here.

MEDICAL TEACHER
2020, VOL. 42, NO. 11, 1270–1274
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The educators' experience: Learning environments that support the master adaptive learner

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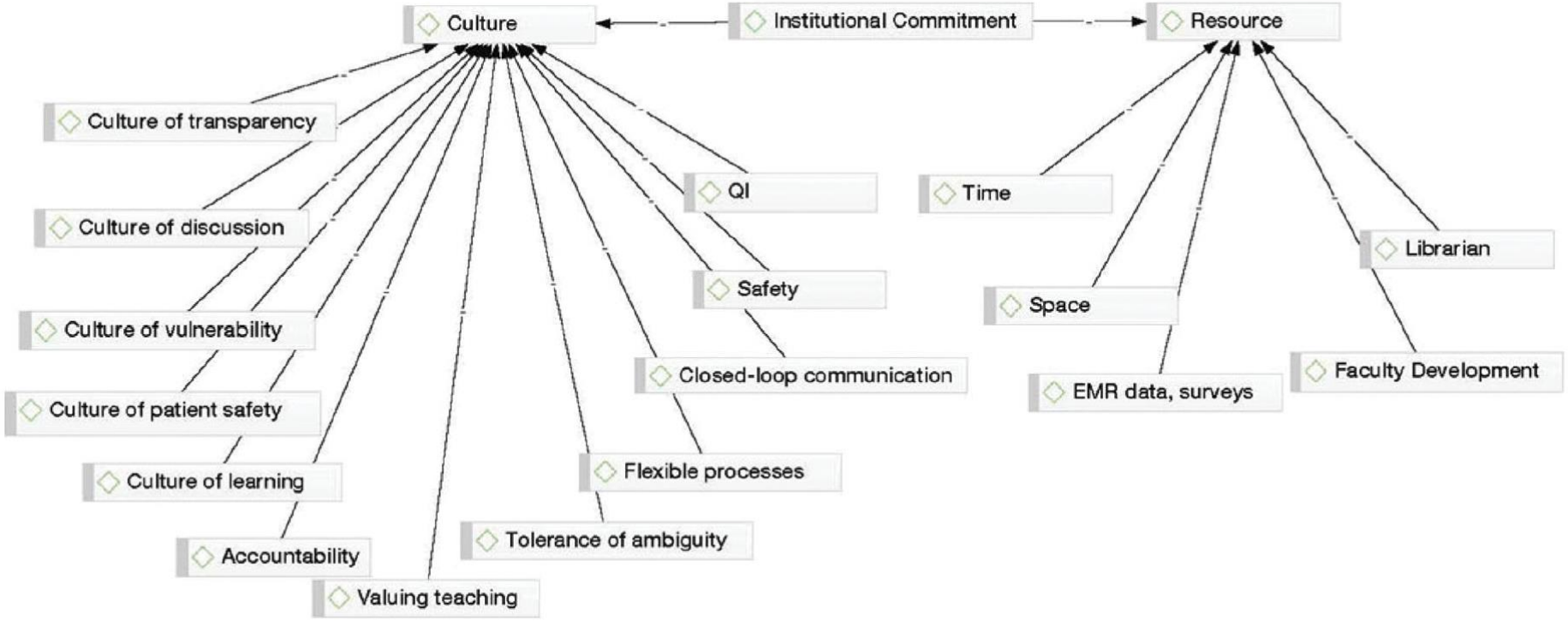

Figure 3. Institutional Commitment about here.

Overview:

WHAT is a Master Adaptive Learner and WHY are They Needed?

HOW Does the MAL model Work?

WHAT Practical Strategies Can You Use to Foster Expertise Development?

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Summary

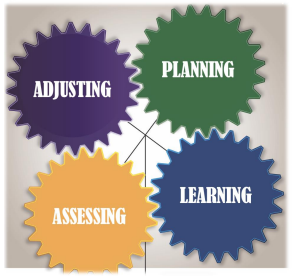
1. WHAT is a Master Adaptive Learner and WHY are They Needed?

- Routine Expertise—Efficient application of known solutions

- Adaptive Expertise—New Learning & Innovation to Solve Novel Challenges

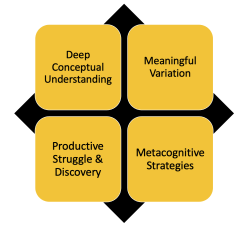
2. How Does the MAL model Work?

- Master Adaptive Learner (MAL) model
  - Planning
  - Learning
  - Assessing
  - Adjusting



3. WHAT Practical Strategies Can YOU Use to Foster Expertise Development?

- Deep Conceptual Understanding
  1) Help Build Network of Understanding
  2) Utilize Diagrams and Analogies
- Meaningful Variation
  3) Ask Better Questions
  4) Play "What If?"
- Productive Struggle & Discovery
  5) Don't Give Answers Right Away
  6) Simulation
- Metacognitive Strategies
  7) Adopt a Coaching Approach
  8) Engage the Batteries
  9) Cultivate the Learning Environment



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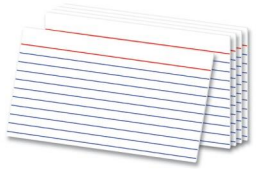
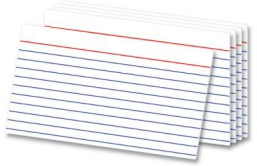
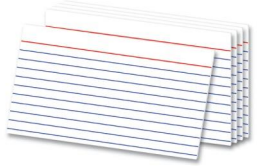
Take Home

What was most meaningful for you in the last hour?

What is ONE idea or strategy that you WILL learn more about in the next 2 weeks?

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Questions

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