

## Pillars of the Master Adaptive Learner Framework: Curiosity, Motivation, Mindset, and Resilience



William B. Cutrer, MD MEd

Associate Dean for Undergraduate Medical Education

Associate Professor of Pediatrics, Critical Care Medicine

Vanderbilt University School of Medicine



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## Disclosures

- I have no conflicts of interest to disclose
- *This presentation was prepared with financial support from the American Medical Association (AMA) as part of the Accelerating Change in Medical Education Initiative. The content reflects my views and does not necessarily represent the views of VUSM, the AMA or other participants in this Initiative.*

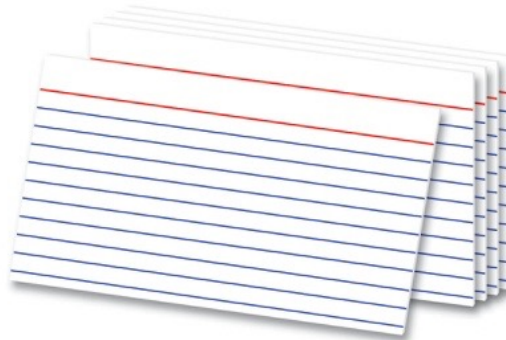


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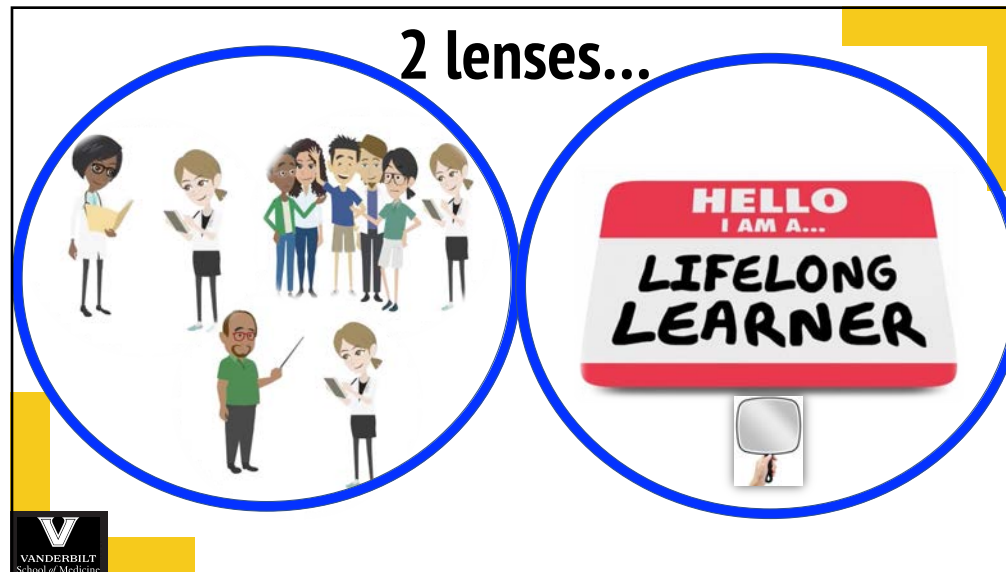
## One More Disclosure...



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**Help Needed...**

**A cowboy rode into town on a Monday.  
He went and rented a room to stay for  
three entire days and nights. When he  
finished his stay, he left on Monday.**

**How did he manage to do that?**

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## Objectives:

1

Discuss the skills and process for learning that foster development of Lifelong Learning in Health Professions Education

2

Appraise the role of Curiosity, Motivation, Mindset, and Resilience in Lifelong Learning

3

Compare strategies to impact Curiosity, Motivation, Mindset, and Resilience



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## Overview:



Why is Lifelong Learning Needed?



What batteries 'power' Lifelong Learning?



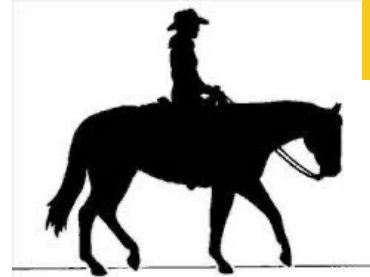
How Do We Charge these Batteries?



8

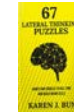
## Help Needed...

A cowboy rode into town on a Monday.  
He went and rented a room to stay for  
three entire days and nights. When he  
finished his stay, he left on Monday.



How did he manage to do that?

His horse was named Monday.



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## Overview:



**Why is Lifelong Learning Needed?**



**What batteries 'power' Lifelong Learning?**



**How Do We Charge these Batteries?**



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# Gap #1

The diagram features the same image of the man on the rock ledge as above. Below the left rock ledge is a yellow rectangular box containing the text "What We Do". Below the right rock ledge is a yellow rectangular box containing the text "What is Known". The gap between the two rock ledges represents the distance between these two concepts. The entire diagram is framed by a black border with yellow L-shaped corner accents in the top-right and bottom-left corners.

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## Practicing Healthcare Providers

“Much of an experienced practitioner’s daily practice has less to do with solving problems than remembering solutions”

Regehr & Mylopoulos (2008) *JCEHP*

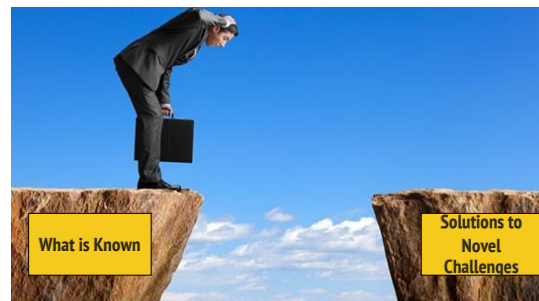
### This is WHY

- Physicians generally practice the way they did when they graduated residency
- Gap between what is known and what we do
- 17 year lag from discovery to practice

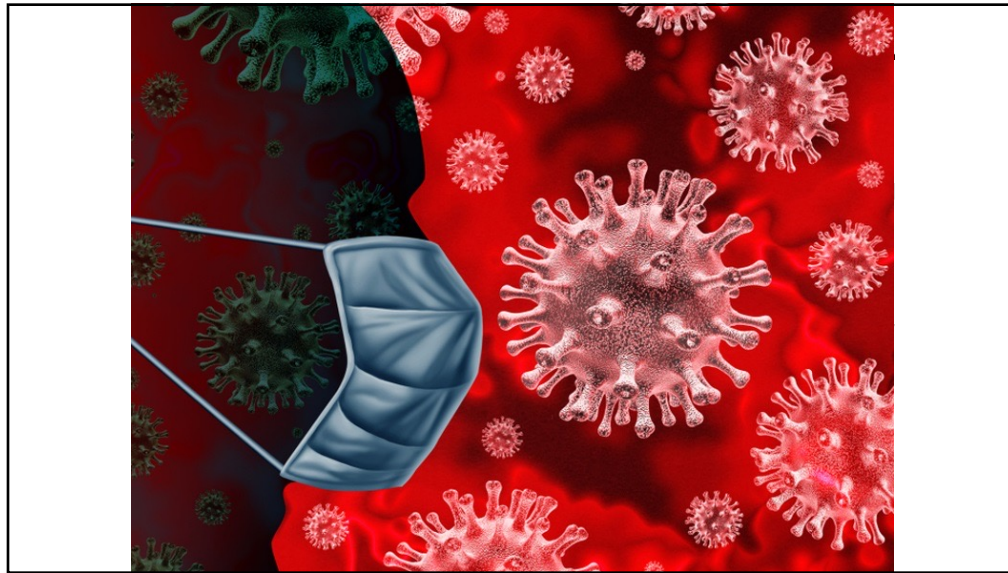


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## Gap #2



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**Does the current system produce clinicians  
who are “Lifelong Learners” able to address  
both gaps?**



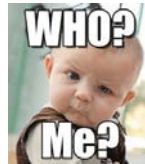
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## 4 Assumptions about Practicing Physicians

### 1) Naturally reflect on their performance for purposes of highlighting own weaknesses/gaps

- Individuals reinterpret evidence of poor performance to better fit their self-concept as competent
- Individuals often ignore or discount feedback inconsistent with their beliefs about their own abilities



Regehr & Mylopoulos (2008) *JCEHP*



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## 4 Assumptions about Practicing Physicians

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

- Ability to self-assess areas of weakness is generally poor
- We all face this flaw, particularly in our own areas of weakness
- “any illusion that we as individuals are good self-assessors is based on a set of distorting cognitive processes applied to ourselves”



Regehr & Mylopoulos (2008) *JCEHP*



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## 4 Assumptions about Practicing Physicians

### 3) Try to address weaknesses when identified through learning

- Learning in areas of weakness is difficult
- Gravitate towards areas where learning is easy and fun (immediately rewarding) → generally focus on areas of strength



Regehr & 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



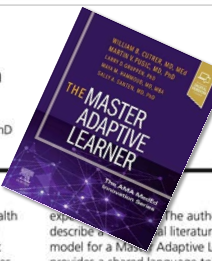
Regehr & Mylopoulos (2008) *JCEHP*

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Article

### 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. The authors describe a shared 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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## Mental Model

Make behaviors meet the usage model imagined by the user.



<https://bit.ly/2tZbNtY>

• SHARED LANGUAGE

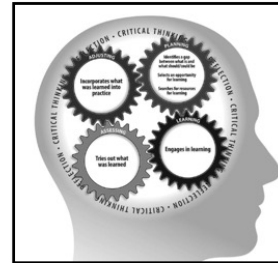


<https://bit.ly/2xv3k9s>

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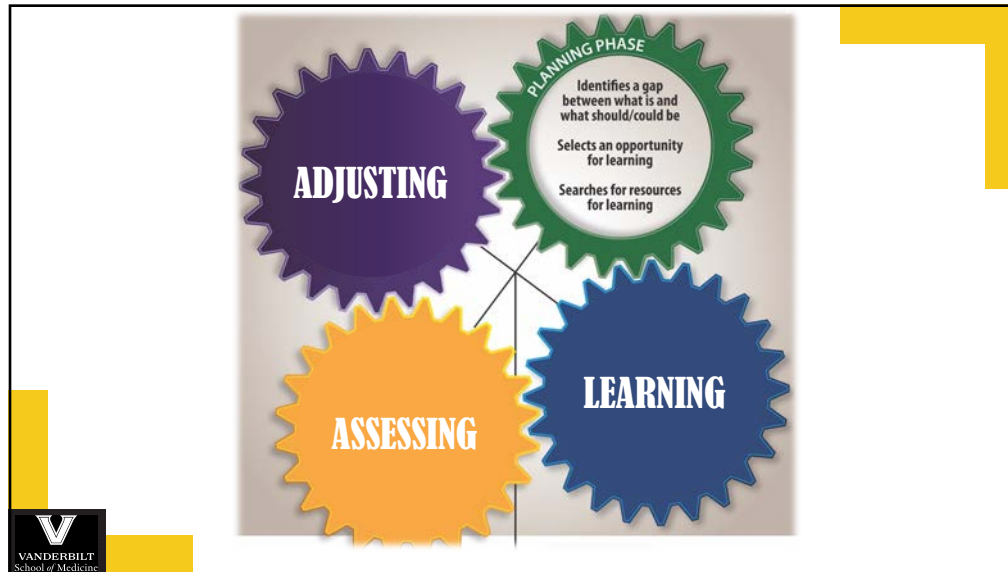
# Master Adaptive Learner

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

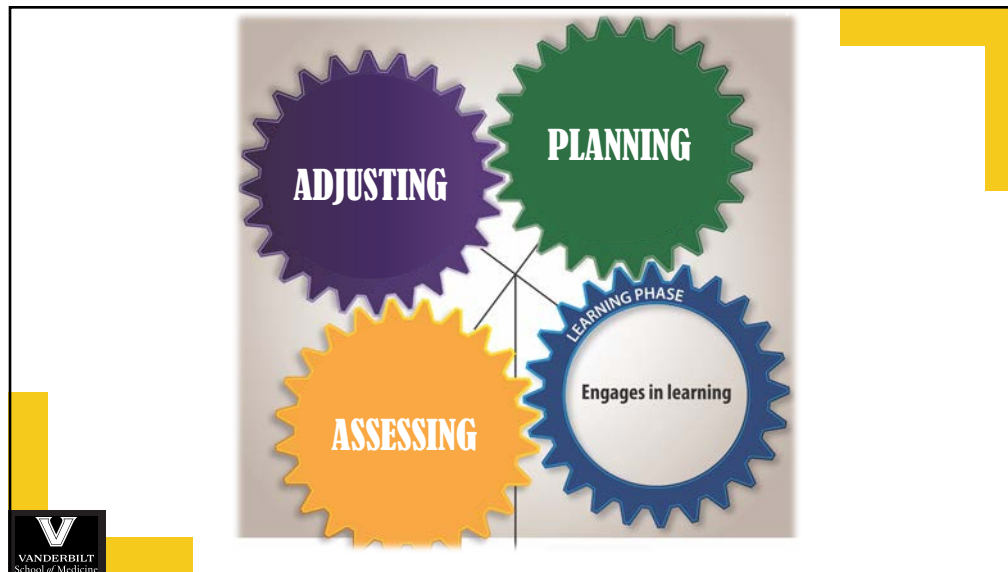


Cutrer et al. (2017) Acad Med  
 Cutrer et al. (2018) Med Teach





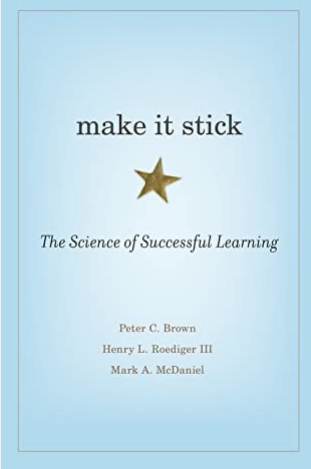
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Learning is deeper and more durable when it's effortful. Learning that's easy is like writing in sand, here today and gone tomorrow.

Make It Stick  
Peter C. Brown



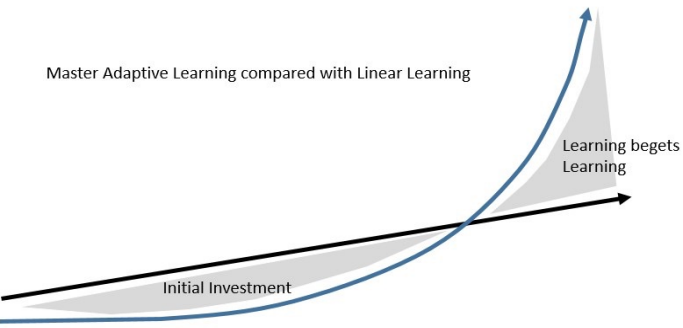
Brow PC, Roediger HL, & McDaniel MA. (2014) *Make It Stick*

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# “But...It’s takes too long”

Master Adaptive Learning compared with Linear Learning



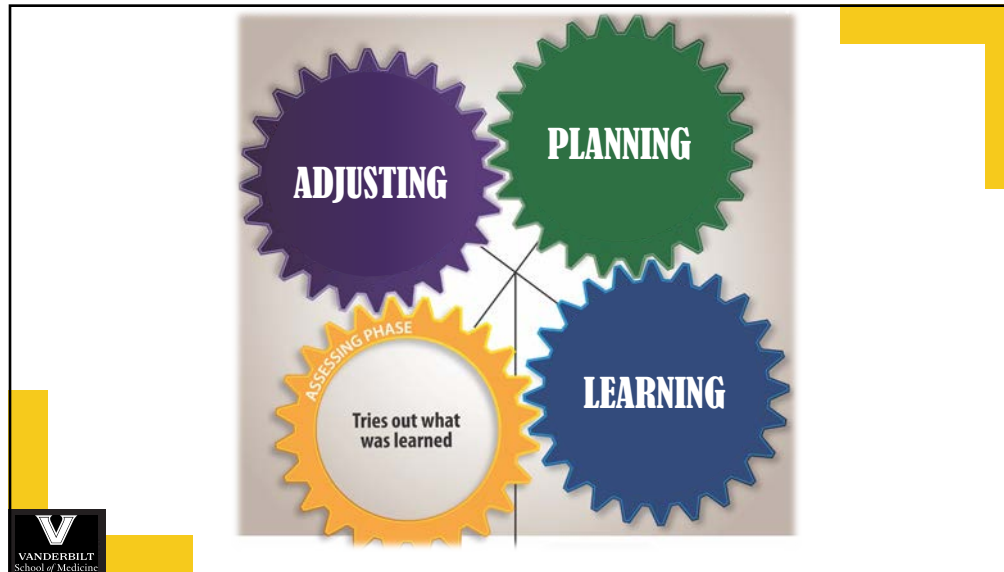
Initial Investment

Learning begets Learning

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

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## Assessing Phase

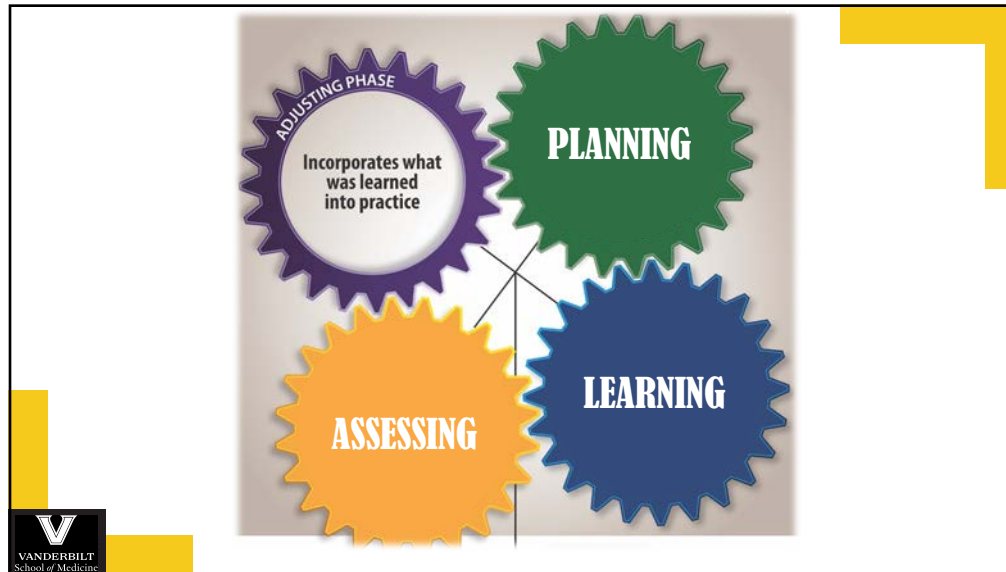
- Compare what you've learned to external standards
  - Informed Self-Assessment
  - External Feedback

The slide includes two comic strips illustrating the concept of feedback:

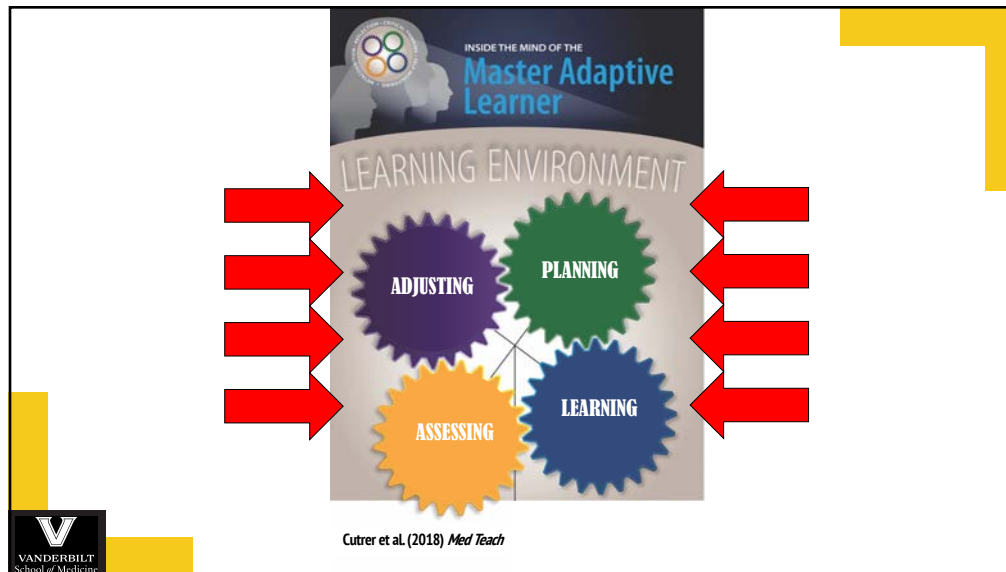
- Comic Strip 1:** A dog says, "I'M GONNA NEED MORE SPECIFIC FEEDBACK ON MY FORMATIVE ASSESSMENTS." A person replies, "BAD DOG."
- Comic Strip 2:** A dog says, "I WAS SHOOTING FOR A 'GREAT DOG.'" A person replies, "Good dog!"

The Vanderbilt School of Medicine logo is visible in the bottom left corner of the slide.

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Cutrer et al. (2018) *Med Teach*

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## LEARNING ENVIRONMENT

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



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## Overview:



**Why is Lifelong Learning Needed?**



**What batteries 'power' Lifelong Learning?**



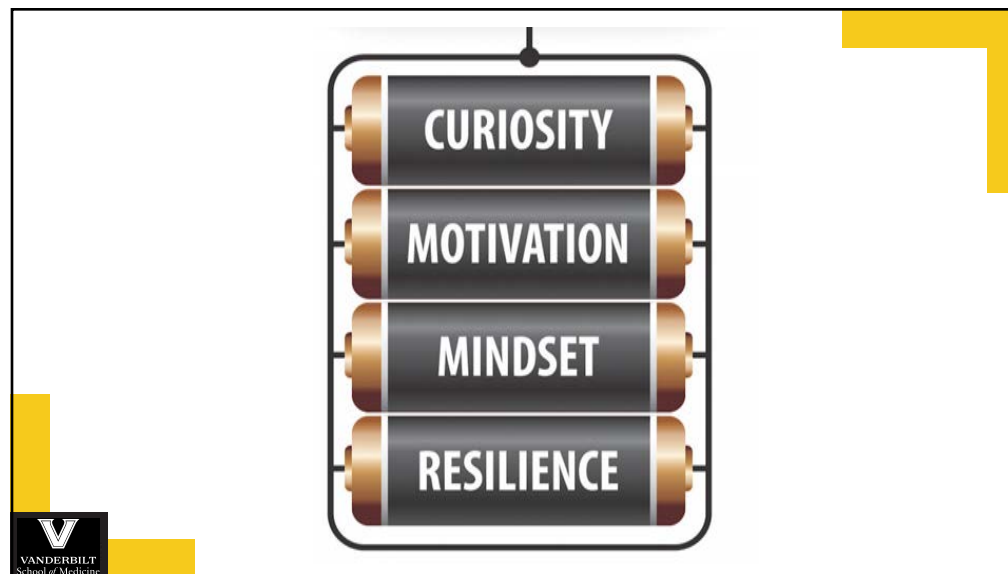
**How Do We Charge these Batteries?**



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## Learner Empathy Map Exercise

### Your Assignment:

Pick one persona and bring their story to life.

**Assigned Persona:** (learner can be a medical student OR resident)

- Learner who is struggling to keep up academically
- Learner who is excelling academically and is identified as having “professionalism concerns”
- Learner who believes they are the best of the group despite assessments that consistently highlight areas of concern



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## Learner Empathy Map Exercise

### PROCESS:

1. **BRING THIS PERSON TO LIFE:** Sketch a picture of your persona, given them a name, gender, race, and a bit of description about who they are and what they do.



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## Learner Empathy Map Exercise

### 2. BUILD AN EMPATHY MAP:

**SAY:** what are some quotes or defining words that this person says?

**THINK:** What might this person be thinking? What does this tell you about their beliefs?

**DO:** What actions and behaviors does this person perform?

**FEEL:** What emotions might this person be feeling?



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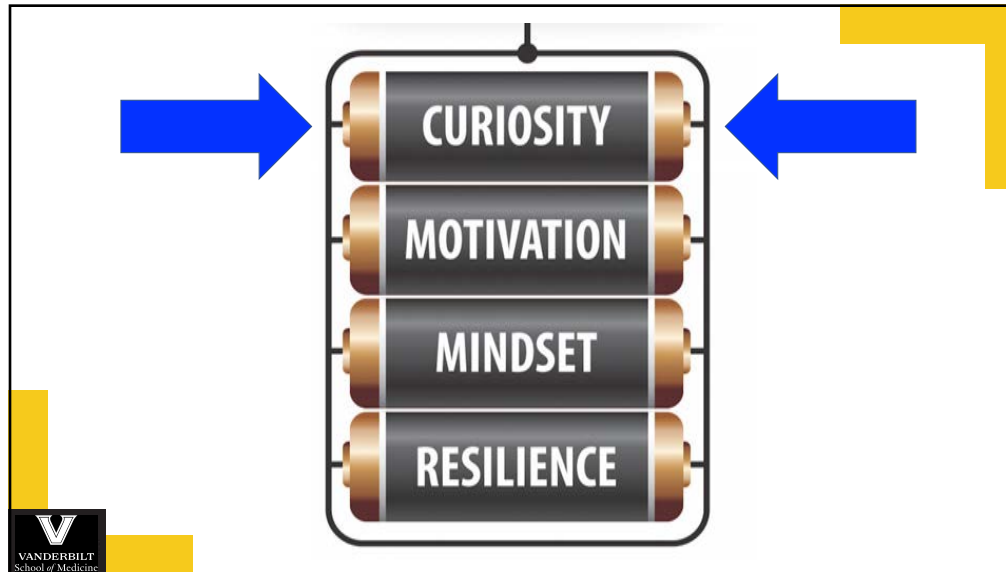
## Learner Empathy Map Exercise

### 3. GO DEEPER:

- How might this learner's curiosity, motivation, mindset and/or resilience influence their daily activities?
- What are the key messages this person needs to receive and understand about curiosity, motivation, mindset and/or resilience?
- What are the top 3-5 questions YOU have about curiosity, motivation, mindset and/or resilience based on considering this learner?



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The slide displays the cover of the book "The Master Adaptive Learner" by William B. Cutrer, MD, Med; Martin V. Pusic, MD, PhD; Larry D. Gruppen, PhD; Maya M. Hammoud, MD, MBA; and Sally A. Santen, MD, PhD. The book is part of "The AMA MedEd Innovation Series". The slide title is "4 What Are the Four Critical Personal Characteristics That Support the Master Adaptive Learning Process?" by Erica Friedman, MD, and Holly G. Atkinson, MD. Below the title are the following learning objectives:

**LEARNING OBJECTIVES**

1. Describe the key internal characteristics of the master adaptive learner and understand how they function in supporting the master adaptive learning process.
2. Analyze a given learner's strengths and weaknesses in becoming a master adaptive learner.
3. Define interventions to enhance an individual learner's master adaptive learner characteristics.
4. Describe interventions to enrich the learning environment to foster the development of the master adaptive learner.

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CURIOSITY

I'm Curious

Are you curious?

REMAIN CURIOUS AND KEEP LEARNING

Curious. Very curious.

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CURIOSITY

The DESIRE to KNOW and WHY YOUR FUTURE DEPENDS ON IT

Curious

IAN LESLIE


“Curiosity starts with the itch to explore”

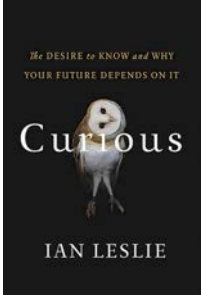
Why do babies put everything in their mouths?

<https://images.app.goo.gl/K1PicFwNlucKq5K>

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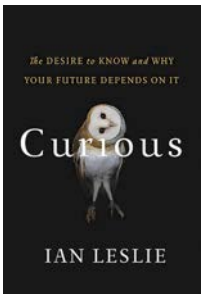
## Diversive Curiosity

- Attraction to “everything novel”
- Restless drive for the new and next
- Essential to an exploring mind
- “Opens our eyes to the new and undiscovered, encouraging us to seek out new experiences and meet new people. But unless it’s allowed to deepen and mature, it can become a futile waste of energy and time, dragging us from one object of attention to another without reaping insight from any.”




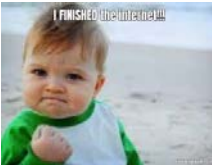
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## Diversive Curiosity

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

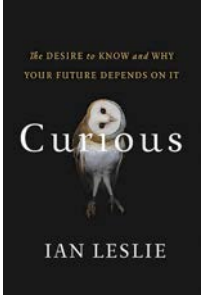



<https://images.app.goo.gl/6w1e0BdqWq0NKL64A>



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**CURIOSITY**



## Diversive Curiosity

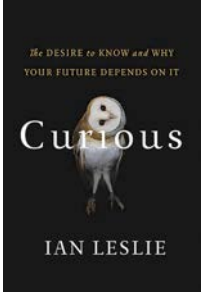
“When diversive curiosity is entrained—when it is transformed into a quest for knowledge and understanding—it nourishes us. This deeper, more disciplined, and effortful type of curiosity is called epistemic curiosity.”

## Epistemic Curiosity



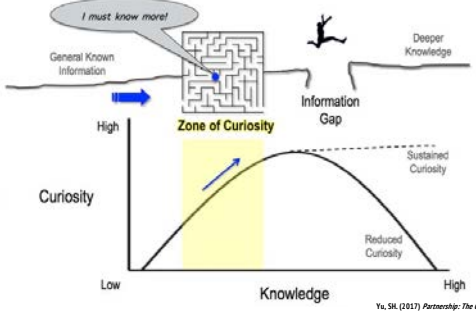
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**CURIOSITY**




## Epistemic Curiosity

- Builds on Loewenstein's Information Gap Theory




Yu, SH. (2017). Partnership. *The Canadian Journal of Library and Information Practice and Research*



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**CURIOSITY**

## Epistemic Curiosity

- “the desire for knowledge that motivates individuals to learn new ideas, eliminate information gaps, and solve intellectual problems.”

Litman JA. (2008) *Personality and Individual Differences*

when i say

When I say ... epistemic curiosity


Rachel H. Ellaway

- “The development of deliberate, focused, and sustained epistemic curiosity should ... be a core part of learning and teaching in medical education.”

Ellaway RH. (2014) *Medical Education*

- “Hidden tenet of professionalism”

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**CURIOSITY**

## the cross-cutting edge

### Curiosity and medical education

Lawrence Dyche<sup>1</sup> & Ronald M Epstein<sup>2</sup>

**Curiosity is fundamental to:**

- Understanding each patient’s unique experience of illness
- Building respectful relationships with patients
- Deepening self-awareness
- Supporting Clinical Reasoning
- Avoiding premature closure
- Encouraging Lifelong Learning

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

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### THE OVERCONFIDENCE CYCLE

```

graph TD
    Validation --> Confirmation[Confirmation & Desirability Biases]
    Confirmation --> Conviction
    Conviction --> Pride
    Pride --> Validation
            
```

### THE RETHINKING CYCLE

```

graph TD
    Humility --> Doubt
    Doubt --> Curiosity
    Curiosity --> Discovery
    Discovery --> Humility
            
```

**"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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Common Barriers to Curiosity	Common Facilitators of Curiosity
Haste	Reflection and "Slowing down when you should"
Suppression of negative emotions	Acknowledge the presence of emotions
Overconfidence	Humility to address overconfidence, uncertainty, and complexity
Emphasis on Protocols	Formulating and asking questions
Passive Learning	Harnessing social nature of curiosity via interacting with the view of others

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


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**CURIOSITY**


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

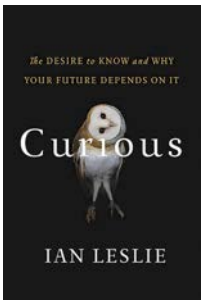


Dyche L & Epstein RM. (2011) *Medical Education*

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**CURIOSITY**



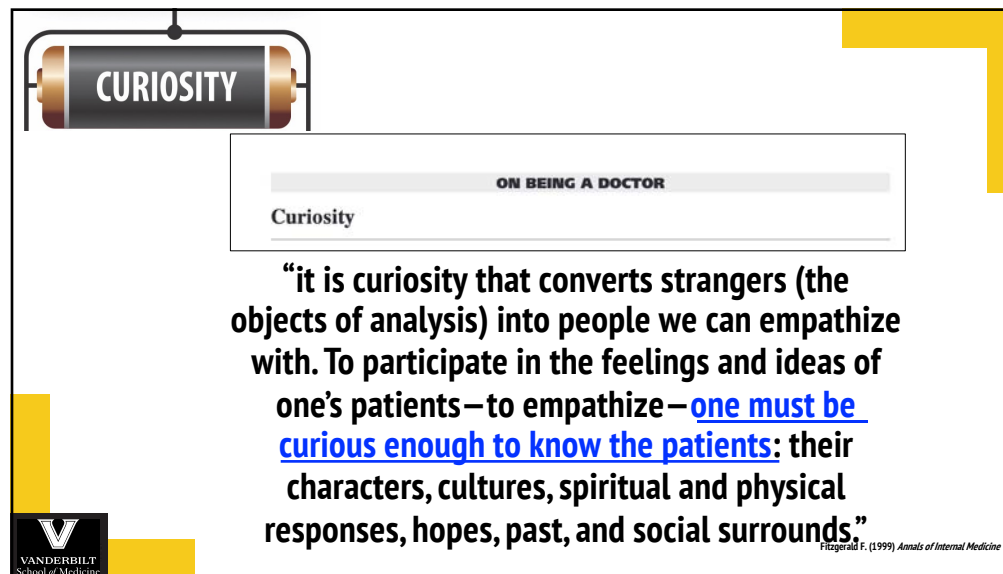
**Empathic Curiosity**

- 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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**CURIOSITY**

**ON BEING A DOCTOR**

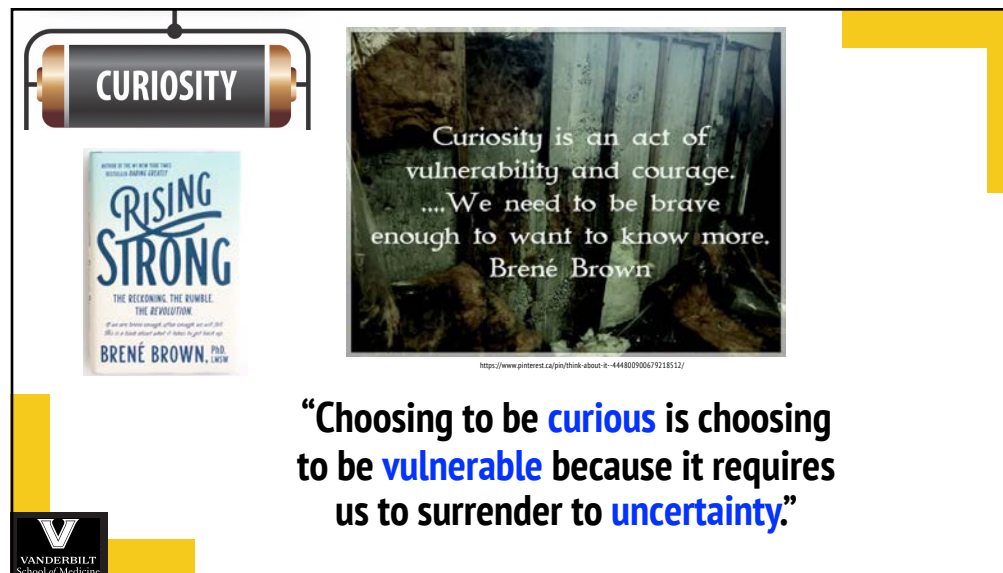
Curiosity

**“it is curiosity that converts strangers (the objects of analysis) into people we can empathize with. To participate in the feelings and ideas of one’s patients—to empathize—one must be curious enough to know the patients: their characters, cultures, spiritual and physical responses, hopes, past, and social surrounds.”**

Fitzgerald F. (1999) *Annals of Internal Medicine*

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**CURIOSITY**

**RISING STRONG**  
THE RECKONING, THE RUMBLE, THE REVOLUTION.  
If you are brave enough, if you are not afraid, if you are kind enough, if you are brave enough.

**BRENÉ BROWN, Ph.D.**

Curiosity is an act of vulnerability and courage. .... We need to be brave enough to want to know more.  
Brené Brown

<https://www.pinterest.ca/pin/think-about-it-444802900479218512/>

**“Choosing to be **curious** is choosing to be **vulnerable** because it requires us to surrender to **uncertainty**.”**

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## GROUP DISCUSSION


Think back to the Empathy Map for your learner: How does your understanding of the learner change based on what we just discussed about CURIOSITY?



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MOTIVATION


the cross-cutting edge

Motivation to learn: an overview of contemporary theories  
David A Cook<sup>1,2</sup> & Anthony R Artino Jr<sup>3</sup>


**“Motivation...defined as the process whereby goal-directed activities are initiated and sustained.”**

**5 Theories**

- 1) Expectancy-Value Theory
- 2) Attribution Theory
- 3) Social–Cognitive Theory
- 4) Goal Orientation Theory
- 5) Self-Determination Theory


 Cook DA & Artino AR. (2016) Medical Education

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MOTIVATION

- **Higher Intrinsic Motivation (e.g. learning out of interest, curiosity or enjoyment, and autonomous forms of self-regulation) is associated with:**
  - **Better learning**
  - **Better conceptual understanding**
  - **Better academic performance and achievement**
  - **Higher levels of well-being**


 ten Cate et al. (2011) Medical Teacher

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**• Higher Intrinsic Motivation in Medical Students is associated with:**

- Increased persistence and effort in studies
- Academic achievement
- Reflective learning
- Meaning orientation




Sobral DT. (2004) Medical Education

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**Would anyone like a cohort of learners like this?**



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**MOTIVATION**

**Would anyone like a cohort of learners like this?**



**SIGN ME UP**

**SIGN ME UP**



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**MOTIVATION**

2011; 33: e242-e262 **MEDICAL TEACHER**

WEB PAPER

**Motivation as an independent and a dependent variable in medical education: A review of the literature**

R. A. KUSURKAR<sup>1,2</sup>, TH. J. TEN CATE<sup>1</sup>, M. VAN ASPEREN<sup>1</sup> & G. CROISET<sup>2</sup>  
<sup>1</sup>University Medical Center Utrecht, The Netherlands, <sup>2</sup>VU University Medical Center, The Netherlands

**Practice points**

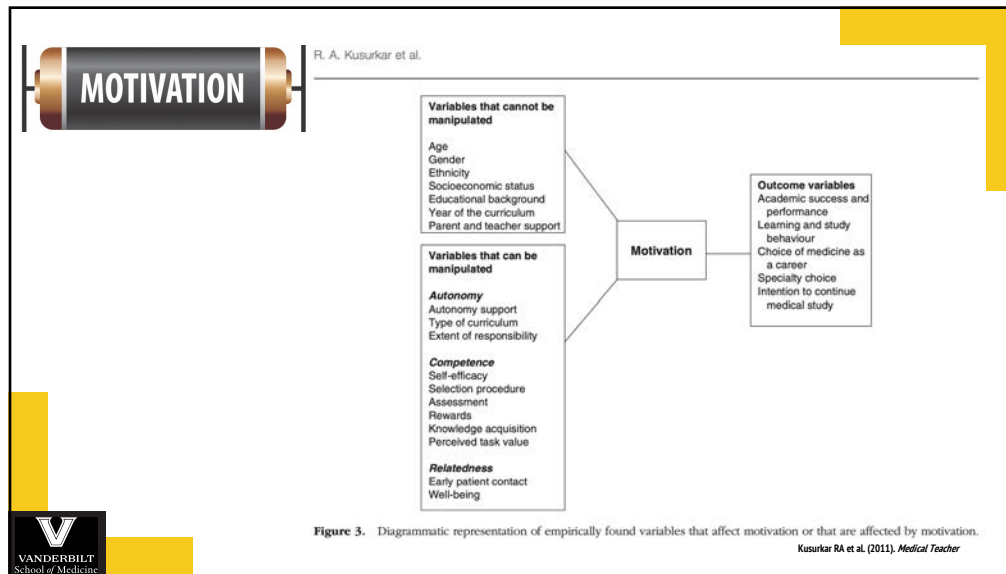
- Motivation can be viewed as both, an independent and a dependent variable in medical education.
- Motivation as an independent variable influences learning and study behaviour, academic performance, choice of medicine as a career, choice of specialty and the intention to continue medical study.
- Research on motivation as a dependent variable in medical education is scarce, though the existing research seems to suggest that the learning environment plays an important role in enhancing motivation. A need for more research in this area is identified.



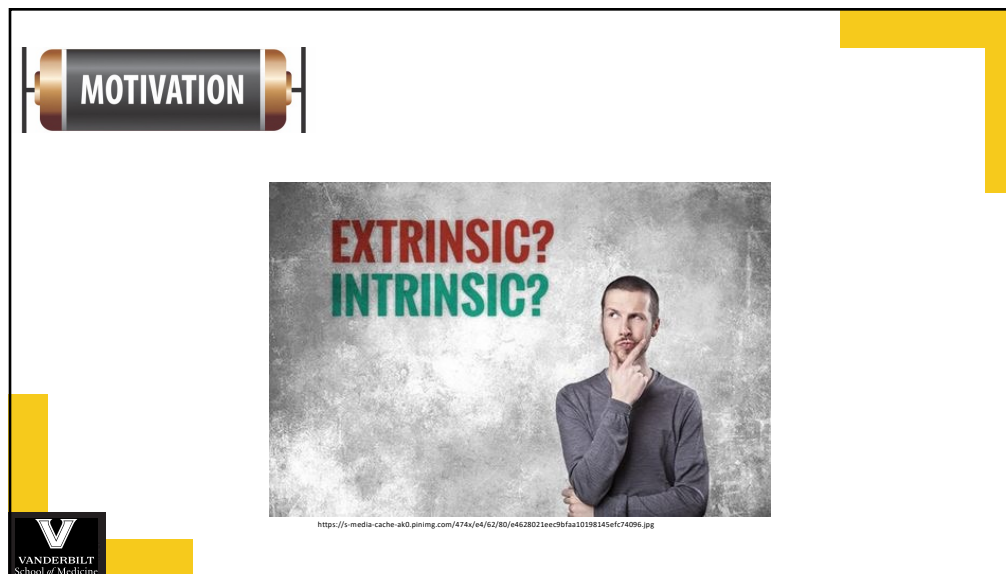
Kusurkar RA et al. (2011). *Medical Teacher*

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MOTIVATION

Self-Determination Theory and the  
Facilitation of Intrinsic Motivation,  
Social Development, and Well-Being

Richard M. Ryan and Edward L. Deci  
University of Rochester

Ryan RM & Deci EL. (2000). *American Psychologist*

2011; 33: 961-973 MEDICAL  
TEACHER

AMEE GUIDE

**How self-determination theory can assist our understanding of the teaching and learning processes in medical education. AMEE Guide No. 59**

OLLE TH.J., TEN CATE, RASHMI A., KUSURKAR & GEOFFREY C. WILLIAMS  
University Medical Center Utrecht, The Netherlands

ten Cate O, Dussurkar RA, Williams GC. (2011) *Medical Teacher*

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MOTIVATION

Behavior	Non-Self-Determined	Self-Determined
Motivation	<b>Amotivation</b>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; background-color: #FFD700; font-weight: bold;">Extrinsic Motivation</div> <div style="border: 1px solid black; padding: 5px; background-color: #FFD700; font-weight: bold;">Intrinsic Motivation</div> </div>

Ryan RM & Deci EL. (2000). *American Psychologist*

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## MOTIVATION

<https://medium.com/@therthgen/the-most-important-life-lesson-from-tom-sawyer-e92f866af6b3>

<http://www.its.com/3316-w/3f6d/w00-give-your-backyard-fence-the-tom-sawyer-3161>

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## MOTIVATION

**SDT holds that three basic psychological needs must be fulfilled to stimulate and sustain intrinsic motivation:<sup>1</sup>**

**Autonomy**  
The perception of having choice in learning tasks.

**Competence**  
The feeling of being capable of mastering the material and being good at knowledge or skills tasks.

**Intrinsic Motivation**

**Relatedness**  
The feeling of belonging to a learning group or a professional learning community and feeling valued by significant others like parents, teachers, peers, and patients.

Kusurkar RA & ten Cate. (2013) Academic Medicine

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MOTIVATION

→

AUTONOMY

**Table 1.** Controlling and autonomy-supportive teaching behaviour.

Controlling teaching behaviour	Autonomy-supportive teaching behaviour
<ul style="list-style-type: none"> <li>Following instructional materials</li> <li>Giving directives and commands</li> <li>Using statements to take control over situations (including praise and criticism about students)</li> <li>Providing solutions for problems</li> </ul>	<ul style="list-style-type: none"> <li>Listening to and acknowledging students' perspectives</li> <li>Giving time and opportunity for autonomous work</li> <li>Praising quality of performance and providing constructive effectiveness feedback</li> <li>Enquiring what students want</li> <li>Being empathic with students</li> </ul>



ten Cate et al. (2011) *Medical Teacher*

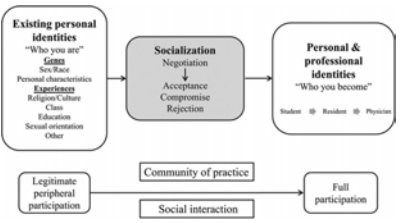
71

MOTIVATION

→


RELATEDNESS

**“The educational environment forms their outer world that shapes the development of their identity and values and that can foster or undermine self-determination.”**




```

graph TD
    A["Existing personal identities  
'Who you are'  
Gender  
Sex/Race  
Personal characteristics  
Experiences  
Religion/Culture  
Class  
Education  
Sexual orientation  
Other"] --> B["Socialization  
Negotiation  
↓  
Acceptance  
Compromise  
Rejection"]
    B --> C["Personal & professional identities  
'Who you become'  
Student ◊ Resident ◊ Physician"]
    D["Legitimate peripheral participation"] --> E["Community of practice"]
    E --> F["Full participation"]
    G["Social interaction"] --> F
    
```



ten Cate et al. (2011) *Medical Teacher*



Gross RL & Gross SR. (2015) *Academic Medicine*

72

**MOTIVATION** → **RELATEDNESS**

“The educational environment forms their outer world that shapes the development of their identity and values and that can foster or undermine self-determination.”  
ten Cate et al. (2011) *Medical Teacher*

**PROBLEM - BASED LEARNING**

http://learning.com/333407-Q840368460.html

**MOTIVATION**

2011, 33(9):486


**TWELVE TIPS**

Twelve tips to stimulate intrinsic motivation in students through autonomy-supportive classroom teaching derived from Self-Determination Theory

R. A. KUSURKAR\*, G. GROBEFF & OLLE TH. J. TEN CATE\*  
\*MRC, Liverpool, The Netherlands; \*\*CU University Medical Center, The Netherlands

- 1) Identify and nurture what students need and want
- 2) Have students’ internal states guide their behavior
- 3) Encourage active participation
- 4) Encourage students to accept more responsibility for their learning
- 5) Provide structured guidance
- 6) Provide optimal challenges
- 7) Give positive and constructive feedback
- 8) Give emotional support
- 9) Acknowledge students’ expressions of negative effect
- 10) Communicate value in uninteresting activities
- 11) Give choices
- 12) Direct with “can, may, could” instead of “must, need, should”

Kusurkar et al. (2011). *Medical Teacher*




2011, 2009-2010

TWELVE TIPS

Twelve tips to stimulate intrinsic motivation in students through autonomy-supportive classroom teaching derived from Self-Determination Theory


P. A. KUSURKAR<sup>1,2</sup>, G. CROSBET<sup>1</sup> & D. L. TEN CATE<sup>1</sup>  
<sup>1</sup>SUMC-Utrecht, The Netherlands, <sup>2</sup>Utrecht University Medical Center, The Netherlands

- 1) Identify and nurture what students need and want
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- 7) [Give positive and constructive feedback](#)
- 8) Give emotional support
- 9) Acknowledge students' expressions of negative effect
- 10) Communicate value in uninteresting activities
- 11) Give choices
- 12) Direct with "can, may, could" instead of "must, need, should"




Kusurkar et al. (2011). *Medical Teacher*

75



→ Using SDT to frame feedback

Strategy	Example
Shifting the focus from the individual to the context	<p style="font-size: small; margin: 0;">Not <i>"You fail to do what we are good at;"</i> BUT  <i>"This case/skill/procedure is quite difficult to master; let's see how to get there".</i></p> <p style="font-size: x-small; margin: 0;">In the latter, failure of competence is not primarily at stake as it normalizes early failures and supports student initiation of the new behavior</p>
Shifting from instructional messages to self-regulation & Shifting the focus from the perspective of provider to receiver of the feedback	<p style="font-size: small; margin: 0;">Not <i>"I will tell you exactly what you must do"</i> BUT  <i>"How do you think you would handle this next time? Ask me for help if you need me"</i></p> <p style="font-size: x-small; margin: 0;">The latter can stimulate feelings of autonomy and relatedness</p>
Pulling the trainees into the professional group	<p style="font-size: small; margin: 0;">Not <i>"you trainees must learn to eventually be like us"</i> BUT  <i>"this is what we all went through; we all must practice to attain such new skills"</i></p> <p style="font-size: x-small; margin: 0;">The latter will enhance the feeling to be related and understood by future colleagues</p>



ten Cate et al. (2011). *Medical Teacher*

76



**MOTIVATION**

**Extrinsic Rewards generally undermine Intrinsic Motivation**




ten Cate O, Dusurkar RA, Williams GC. (2011) *Medical Teacher*



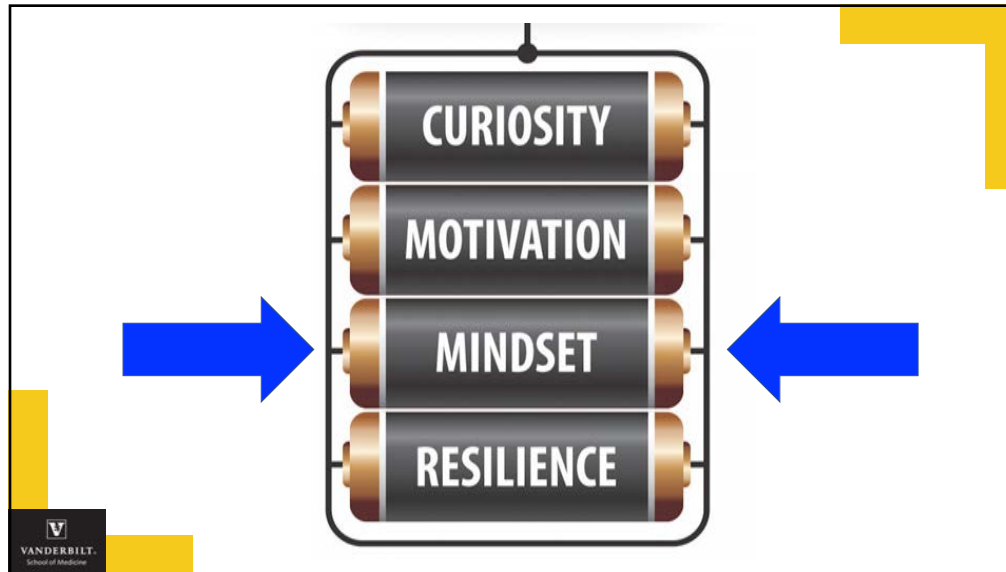
77

**GROUP DISCUSSION**

**Think back to the Empathy Map for your learner: How does your understanding of the learner change based on what we just discussed about MOTIVATION?**



78




79

A graphic of a battery with one cell labeled MINDSET. To the right of the battery, the text "FIXED OR GROWTH MINDSET?" is written in large, colorful, stylized letters. The Vanderbilt School of Medicine logo is in the bottom left corner.


80






- **Implicit theories of intelligence**  
 “core assumptions individuals hold about the malleability of their personal traits, such as their intelligence or ability to learn”

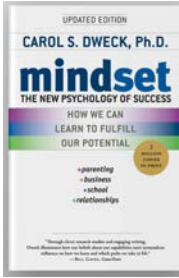
Entity self theory (FIXED MINDSET)	Incremental self theory (GROWTH MINDSET)
Believe basic qualities (intelligence or talents) are fixed traits	Believe they can develop their most basic abilities, including intelligence through dedication and hard work
Believe talent alone creates success (without much effort)	Believe brains and talent are just the starting point, abilities can be developed through dedication and hard work
Hesitant to take on challenges or obstacles for fear of not looking smart or for fear of failure	Embrace challenges, accept critical feedback, and invest in learning

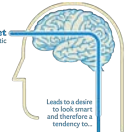


Dweck C. (2008). *Mindset: the new psychology of success*  
 Friedman E & Atkinson HG. (2019). Chapter 4—*The Master Adaptive Learner*

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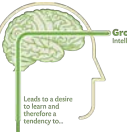






**Fixed Mind-set**  
Intelligence is static

Leads to a desire to look smart and therefore a tendency to...



**Growth Mind-set**  
Intelligence can be developed

Leads to a desire to learn and therefore a tendency to...

<p><b>CHALLENGES</b></p> <p>→ avoid challenges</p>	<p>→ embrace challenges</p>
<p><b>OBSTACLES</b></p> <p>→ give up easily</p>	<p>→ persist in the face of setbacks</p>
<p><b>EFFORT</b></p> <p>→ see effort as fruitless or worse</p>	<p>→ see effort as the path to mastery</p>
<p><b>CRITICISM</b></p> <p>→ ignore useful negative feedback</p>	<p>→ learn from criticism</p>
<p><b>SUCCESS OF OTHERS</b></p> <p>→ feel threatened by the success of others</p>	<p>→ feel inspired and sought after in the success of others</p>

As a result, they may opt out early and achieve less than their full potential.

All this confirms a deterministic view of the world.


As a result, they reach even higher levels of achievement.

All this gives them a greater sense of free will.

Carol S. Dweck, Ph.D. - Graphic by Nigel Holmes  
<https://www.mindsetworks.com/science/impact>

82

I AM NOT HERE TO BE RIGHT.  
I AM NOT HERE TO BE RIGHT.  
I AM NOT HERE TO BE RIGHT.  
I AM NOT HERE TO BE RIGHT.  
**I AM HERE TO GET IT RIGHT.**  
Brené Brown




<https://www.facebook.com/brenebrown/photos/when-i-find-myself-in-tough-conversations-when-i-am-being-held-accountable-when-i-/560517031949805/>

83


*dare to lead*  
with BRENE BROWN

**Adam Grant**  
on the Power of Knowing What You Don't Know



Listen Free | Spotify

**I'm not here to PROVE myself,  
I'm here to IMPROVE myself**






84




- **Growth mindset**
  - Predicts academic performance over time, especially when challenged in their work and struggle to achieve their goals
  - Promotes resilience
  - May have different mindsets towards different domains (professional vs personal, etc)
  - Dweck—"Everyone is a mixture of fixed and growth mindsets."
  - Beliefs matter—"they influence motivation, goal-setting, self-regulatory behavior, and response to adversity in a number of facets of life"



85

MEDICAL TEACHER  
2021, VOL. 43, NO. 3, 751-757  
<https://doi.org/10.1080/0141198X.2021.1928036>


[Check for updates](#)

**Growth mindset in competency-based medical education**

Denise Richardson<sup>1</sup>, Benjamin Kinnear<sup>2</sup>, Karen E. Hauert<sup>3</sup>, Teri L. Turner<sup>4</sup>, Eric J. Warmi<sup>5</sup>, Andrew K. Hall<sup>6</sup>, Shelley Ross<sup>7</sup>, Brent Thoma<sup>8</sup> and Elaine Van Melle<sup>9</sup>, on behalf of the ICBME Collaborators

<sup>1</sup>Department of Medicine, Division of Psychiatry, University of Toronto, Ontario, Canada; <sup>2</sup>Royal College of Physicians and Surgeons of Canada, Ottawa, Canada; <sup>3</sup>Internal Medicine and Pediatrics, University of Cincinnati College of Medicine, Cincinnati, OH, USA; <sup>4</sup>University of California, San Francisco, San Francisco, CA, USA; <sup>5</sup>Pediatrics, Baylor College of Medicine, Houston, TX, USA; <sup>6</sup>Department of Emergency Medicine, Queen's University, Kingston, Canada; <sup>7</sup>Department of Family Medicine, University of Alberta, Edmonton, Canada; <sup>8</sup>Department of Emergency Medicine, University of Saskatchewan, Saskatoon, Canada; <sup>9</sup>Department of Family Medicine, Queen's University, Kingston, Canada

- Growth mindset, which entails the implicit belief that one can improve with focused effort, persistence, and coaching, aligns with the tenets of competency-based medical education (CBME)
- "A CBME program founded on mastery learning and deliberate practice naturally situates the expectation for growth as central to learning. All students, residents, and practicing physicians must continue to learn and improve"



Richardson et al. (2021) Medical Teacher

86



MEDICAL TEACHER  
2021, VOL. 43, NO. 7, 751-757  
<https://doi.org/10.1080/1443189X.2021.1930366>

MEDICAL TEACHER Taylor & Francis  
Check for updates

### Growth mindset in competency-based medical education

Deryse Richardson<sup>1,2</sup>, Benjamin Kinneer<sup>3</sup>, Karen E. Hauser<sup>4</sup>, Teri L. Turner<sup>5</sup>, Eric J. Warm<sup>6</sup>, Andrew K. Hall<sup>7,8</sup>, Shelley Ross<sup>9</sup>, Brent Thoma<sup>10</sup> and Elaine Van Melle<sup>11</sup>; on behalf of the ICME Collaborators

<sup>1</sup>Department of Medicine, Division of Psychiatry, University of Toronto, Ontario, Canada; <sup>2</sup>Royal College of Physicians and Surgeons of Canada, Ottawa, Canada; <sup>3</sup>Internal Medicine and Pediatrics, University of Cincinnati College of Medicine, Cincinnati, OH, USA; <sup>4</sup>University of California, San Francisco, San Francisco, CA, USA; <sup>5</sup>Pediatrics, Baylor College of Medicine, Houston, TX, USA; <sup>6</sup>Department of Emergency Medicine, Queen's University, Kingston, Canada; <sup>7</sup>Department of Family Medicine, University of Alberta, Edmonton, Canada; <sup>8</sup>Department of Emergency Medicine, University of Saskatchewan, Saskatoon, Canada; <sup>9</sup>Department of Family Medicine, Queen's University, Kingston, Canada




Richardson et al. (2021) *Medical Teacher*

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MEDICAL TEACHER  
2021, VOL. 43, NO. 7, 751-757  
<https://doi.org/10.1080/14439882.2021.1930366>

**MEDICAL TEACHER** Taylor & Francis  
Taylor & Francis Group

**Implications for implementing CBME with a growth mindset**

- 1) Fostering GM early in medical education
- 2) GM in the transition from UME-GME
- 3) Institutional GM

**Growth mindset in competency-based medical education**



Denise Richardson<sup>1,2</sup>, Benjamin Kinneer<sup>3</sup>, Karen E. Hauser<sup>4</sup>, Teri L. Turner<sup>5</sup>, Eric J. Warmi<sup>6</sup>, Andrew K. Hall<sup>7,8</sup>, Shelley Ross<sup>9</sup>, Brent Thoma<sup>10</sup> and Elaine Van Melle<sup>11</sup>; on behalf of the ICBME Collaborators

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**VANDERBILT**  
School of Medicine

Richardson et al. (2021) *Medical Teacher*

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**27** Targeted coaching by qualified educators should begin in UME and continue during GME, focused on professional identity formation and moving from a performance to a growth mindset for effective lifelong learning as a physician. Educators should be astute to the needs of the learner and be equipped to provide assistance to all backgrounds.


**NARRATIVE DESCRIPTION OF RECOMMENDATION:**  
Coaching can benefit a student's transition to become a master adaptive learner with a growth mindset. While this transition should begin early in medical school, it should be complete by the time that the student moves from UME to GME. If a learner does not transition to a growth mindset, their wellness and success will be compromised. The addition of specific validated mentoring programs (e.g., Culturally Aware Mentoring) and formation of affinity groups to improve sense of belonging should be considered.


**VANDERBILT**  
School of Medicine

<https://physicianaccountability.org/wp-content/uploads/2021/08/UGRC-Coalition-Report-FINAL.pdf>

90









<https://www.nytimes.com/2012/01/05/learning/word-of-the-day-caveat.html>

**caveat**  
(kā-ve-āt) *NOUN*  
A CAUTION;  
WARNING.

<https://images.app.goo.gl/1Ysk7cwpWZNT6>



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Received: 9 May 2020 | Revised: 31 July 2020 | Accepted: 11 September 2020  
DOI: 10.1111/medu.14381

**MEDICAL EDUCATION IN REVIEW**

## A review to characterise and map the growth mindset theory in health professions education


Michael D. Wolcott<sup>1,2</sup> | Jacqueline E. McLaughlin<sup>1,3</sup> | Alice Hann<sup>3</sup> |  
Amelia Miklavc<sup>3</sup> | Gary L. Beck Dallaghan<sup>4</sup> | Denise H. Rhoney<sup>1</sup> | Meg Zomorodi<sup>5</sup>

<sup>1</sup>University of North Carolina Eshelman School of Pharmacy, Chapel Hill, NC, USA  
<sup>2</sup>University of North Carolina Adams School of Dentistry, Chapel Hill, NC, USA  
<sup>3</sup>Monash University, Clayton, VIC, Australia  
<sup>4</sup>University of North Carolina School of Medicine, Chapel Hill, NC, USA  
<sup>5</sup>Office of the Provost, Interprofessional Education and Practice, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

**Correspondence**  
Michael D. Wolcott, UNC Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, 321 Beard Hall, Chapel Hill, NC 27599, USA.  
Email: wolcottm@email.unc.edu

**Abstract**  
**Introduction:** Growth mindset is a motivation theory proposed by Carol Dweck that posits our beliefs about intelligence, and the ability to change mindsets can have impacts on how we approach challenges, respond to criticism challenges and orient our goals. This study characterised articles on growth mindset theory in health professions education to: summarise the aspects of growth mindset being researched, describe the discussed benefits of growth mindset theory and outline strategies discussed that may promote a growth mindset.  
**Methods:** A systematic review of the literature yielded 4927 articles—articles were reviewed and excluded if they were outside of health professions education and did not discuss Dweck's growth mindset theory. The final review yielded 14 research articles and 13 commentaries, which were characterised and analysed using content analysis.

Wolcott et al. (2021), *Medical Education*



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Received: 9 May 2020 | Revised: 31 July 2020 | Accepted: 11 September 2020  
DOI: 10.1111/medu.14381

MEDICAL EDUCATION IN REVIEW

**A review to characterise and map the growth mindset theory in health professions education**

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**Most common learner benefits:**

- Help being more receptive to feedback
- Increased Resiliency and Perseverance


**Most common educator benefits:**

- Supporting collaborative relationships and safe environments


**Most prevalent strategies used:**

- Teaching learners about growth mindset
- Shifting faculty feedback to emphasize effort
- Prioritize feedback across the organization

Wolcott et al. (2021). *Medical Education*




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An important observation was the scarcity of research that extended beyond measuring mindsets and the assumption that growth mindset theory can have benefits for health professions education. Most of the research conducted in health professions education evaluated learner, practitioner and faculty mindsets and often correlated these values with other variables. Every publication identified at least one strategy to promote a growth mindset that could be implemented to support learners, educators or organisations; however, only one study evaluated the impact of a growth mindset intervention in a small group of nursing students.<sup>36</sup> This should give pause as to whether we can confidently argue that growth mindset theory can benefit health professions without additional research; the current support and documented references rely on research conducted in other disciplines, which may have contextual factors that influence the impact. In addition, future research needs to investigate more nuanced approaches to motivation that account for the complex interaction of goal orientation, mindset and behaviours to better understand these phenomena.


Wolcott et al. (2021). *Medical Education*



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**A learner's mindset about their own intelligence is central to resilience**




Ricotta et al. (2019) *The Clinical Teacher*

95

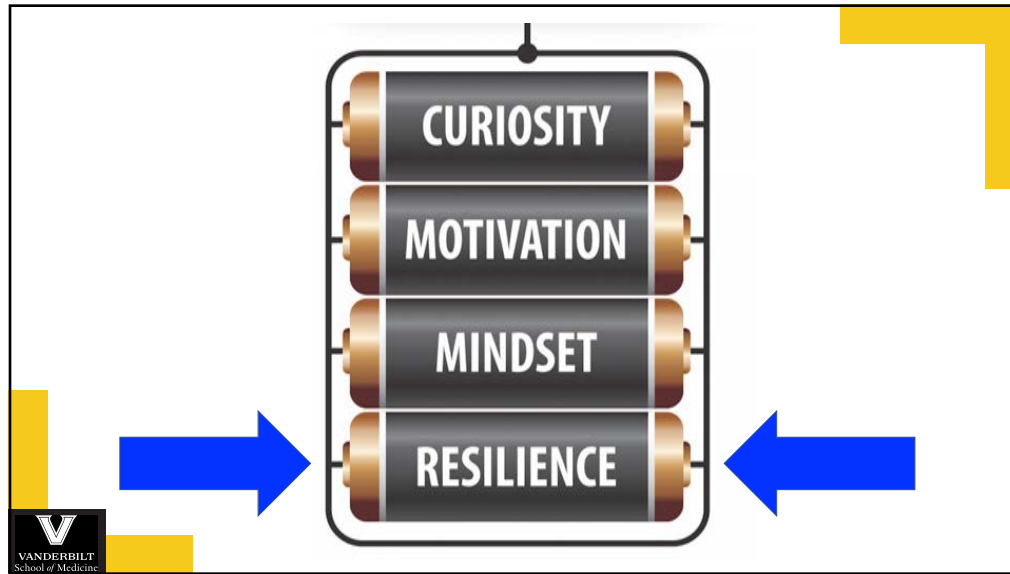
**GROUP DISCUSSION**

**Think back to the Empathy Map for your learner: How does your understanding of the learner change based on what we just discussed about MINDSET?**



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97



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**RESILIENCE**



https://images.app.goo.gl/rwskjwr8haMNAZA



**LEARNING**

https://images.app.goo.gl/3hGkwxqQwenC9y5

Generally, definitions of Resilience capture three phases:


- 1) An adverse or traumatic event
- 2) A process of problem-solving or learning
- 3) The individual's return to their previous state or to an altered state

Sanderson B & Brewer M. (2017). *Nursing Education Today*

Resilience is an ability to cope with, learn from, and thrive in the face of adversity. Wood DF. (2016). *Medical Education*



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**RESILIENCE**


the cross-cutting edge

Towards an understanding of resilience and its relevance to medical training


Amanda Howe, Anna Smajdor & Andrea Stöckl

- Resilience described in many ways in the literature:
  - “it can be construed as ‘a trajectory, a continuum, a system, a trait, a process, a cycle, and a qualitative category”
- Resilience is a dynamic capability which can allow people to thrive on challenges given appropriate social and personal contexts.
- Dimensions of resilience include:
  - Self-efficacy
  - Self-control
  - Ability to engage support and help
  - Learning from difficulties
  - Persistence despite blocks to progress

Howe A, Smajdor A, & Stöckl A. (2012). *Medical Education*



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RESILIENCE

the cross-cutting edge


Towards an understanding of resilience and its relevance to medical training  
Amanda Howe, Anna Smajdor & Andrea Stöckl

**“...resilient students believe that what they do can have a positive impact on a situation, that some components of the ‘system’ can be controlled or influenced by one’s own actions, that persistent effort is worthwhile, and that setbacks or potentially threatening events are inevitable and surmountable, but do not need to cause excessive anxiety or withdrawal.”**

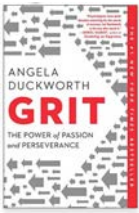


Howe A, Smajdor A, & Stöckl A. (2017). *Medical Education*

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RESILIENCE → GRIT




ANGELA DUCKWORTH  
**GRIT**  
THE POWER OF PASSION AND PERSEVERANCE

**Passion**  
Not an intensity of feelings or emotions, but rather performing consistently and holding steadily to a goal overtime


**Perseverance**  
Hard work and determination to achieve or complete a goal

**GRIT**



Duckworth A. (2016). *GRIT: The power of passion and perseverance*  
Lee DH, Reissner K, & Lee D. (2021). *Postgraduate Medical Journal*

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- Grit and Resilience are two related terms often used interchangeably, but in actuality are completely different constructs.
- Grit is... “perseverance and passion toward long-term goals and describes sustained commitment toward completing a specific endeavor despite episodes of failure, setbacks, and adversity.”
- Resilience... “generally refers to one’s ability to maintain or regain mental health after experiencing adversity.”
- “By definition, resilience is an inherent attribute of grit.”


*American Journal of Pharmaceutical Education* 2018; 82 (2) Article 6150.




**REVIEW**  
**Review of Grit and Resilience Literature within Health Professions Education**  
 Jaclyn M. Stoffel, PharmD,<sup>a</sup> Jeff Cain, EdD, MS<sup>b</sup>  
<sup>a</sup> Methodist University Hospital – Methodist Le Bonheur Healthcare, Memphis, Tennessee  
<sup>b</sup> University of Kentucky College of Pharmacy, Lexington, Kentucky

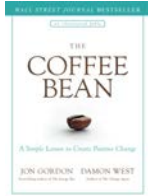
Stoffel JM & Cain J, (2018). *American Journal of Pharmaceutical Education*



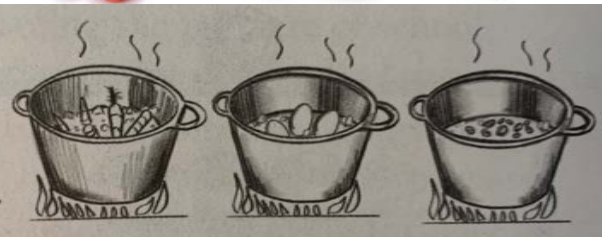
103






Gordon J & West D. (2019). *The Coffee Bean*



The carrot is **softened** and **weakened** by its environment

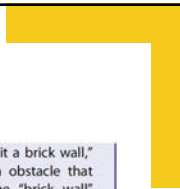
The egg is **hardened** by its environment

The coffee bean **transforms** its environment



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RESILIENCE



MEDICAL TEACHER  
2019, VOL. 41, NO. 11, 1252-1262  
<https://doi.org/10.1080/01442199.2019.1630729>


**Learning to learn: A qualitative study to uncover strategies used by Master Adaptive Learners in the planning of learning**

Linda Regan<sup>1</sup>, Laura R. Hopson<sup>2</sup>, Michael A. Gisondi<sup>3</sup> and Jeremy Branzetti<sup>4</sup>

<sup>1</sup>Department of Emergency Medicine, Johns Hopkins University School of Medicine, Baltimore, MD, USA; <sup>2</sup>Department of Emergency Medicine, University of Michigan Medical School, Ann Arbor, MI, USA; <sup>3</sup>Department of Emergency Medicine, Stanford University School of Medicine, Stanford, CA, USA; <sup>4</sup>Department of Emergency Medicine, New York University School of Medicine, New York City, NY, USA

**“Brick Wall” Concept:** The common idiom, “to hit a brick wall,” has been used to describe an encountering an obstacle that stops ones’ progress. In medical education, the “brick wall” concept describes the process whereby a trainee works independently to create differential diagnoses, implement plans, or attempt procedures until they come to the conscious realization that they have hit a “brick wall” – they do not know what the correct next step should be. This conscious realization prompts self-reflection, facilitates the identification of a gap that needs to be addressed, and prompts a next step, such as, discussion with a supervisor, in order to move forward. The “brick wall” represents a teachable moment for learners, and should be considered a key way for learners to receive formative feedback, as a part of the productive struggle of learning.


The Brick Wall is the self-identified learning gap and requires practice-based learning or teaching from a supervisor in order to complete the clinical task in progress <https://grammarist.com/idiom/hit-a-brick-wall-vs-hit-the-wall/>

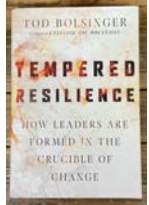



Regan et al. (2019). *Medical Teacher*

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RESILIENCE






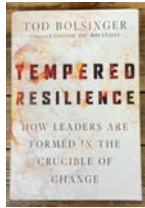



<https://www.ferrisironworks.com>

“Tempering a leader is a process of reflection, relationships, and practices during the act of leading that form resilience to continue leading when the resistance is highest.”




106




<https://www.ferrietworks.com>


**“Tempering a learner is a process of reflection, relationships, and practices during the act of learning that form resilience to continue learning when the resistance is highest.”**



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## Overview:

-  Why is Lifelong Learning Needed?
-  What batteries ‘power’ Lifelong Learning?
-  **How Do We Charge these Batteries?**



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## 1) Provide Feedback geared towards Batteries

Curiosity	Motivation
<ul style="list-style-type: none"> <li>Highlight episodes when learner explored based on curiosity</li> <li>Foster reflection – “slowing down when you should”</li> <li>Help learner see episodes of humility in dealing with uncertainty and complexity</li> </ul>	<ul style="list-style-type: none"> <li>Shifting the focus from the individual to the context</li> <li>Shifting from instructional messages to self-regulation</li> <li>Shifting the focus from the perspective of provider to receiver of the feedback</li> </ul>
Mindset	Resilience
<ul style="list-style-type: none"> <li>Framing feedback on practice-based learning attributes rather than fixed traits may encourage growth mindset               <ul style="list-style-type: none"> <li>Effort/learning investment</li> <li>Reflection</li> <li>Interpretation of data</li> <li>Trialing different strategies</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Help learner see episodes of:               <ul style="list-style-type: none"> <li>Persistence/passion</li> <li>Pushing through adversity to learn and improve</li> <li>Utilize “brick wall” teaching moments</li> </ul> </li> </ul>



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## 2) Address the Learning Environment



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## GROUP PARTICIPATION

-Record key observations, challenges, and ideas on the shared MIRO board

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



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## GROUP DISCUSSION

Which of these attributes are more specific to the Master Adaptive Learner process than “more traditional” learning?



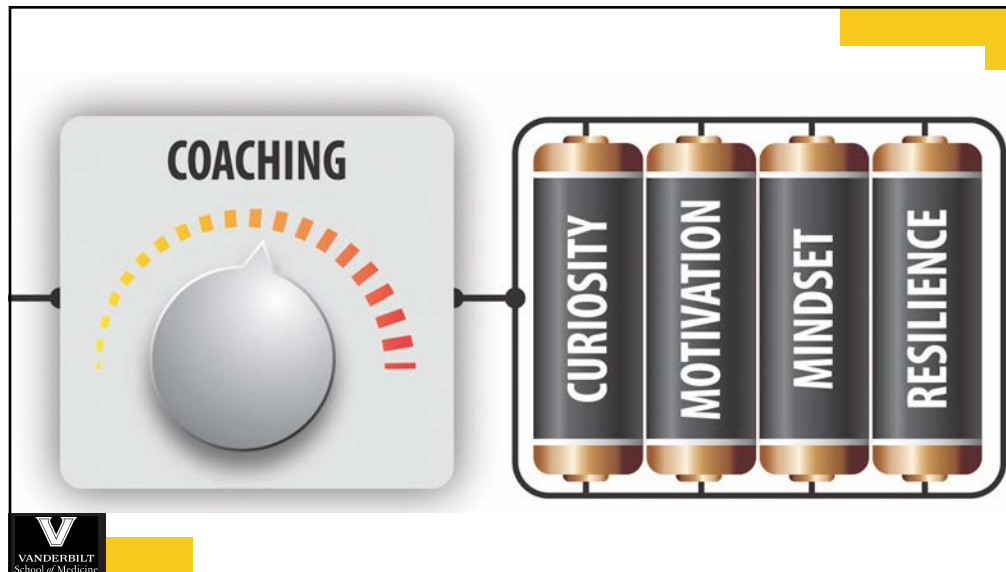
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### 3) Adopt a Coaching Approach



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**COACHING**

**MEDICAL TEACHER**  
Taylor & Francis

SHORT COMMUNICATION  
**Beyond advising and mentoring: Competencies for coaching in medical education**

May Wolff<sup>1</sup>, Nicole M. Desoria<sup>2</sup>, Amy Miller Juvá<sup>3</sup>, Adee Richardson<sup>4</sup>, Gail Gazella<sup>5</sup>, Margaret Moore<sup>6</sup>, Sally A. Santen<sup>7</sup>, and Maya M. Hammoud<sup>8</sup>

<sup>1</sup>Department of Emergency Medicine and Pediatrics, University of Michigan Medical School, Ann Arbor, MI, USA; <sup>2</sup>Department of Emergency Medicine, Virginia Commonwealth University, Richmond, VA, USA; <sup>3</sup>Department of Anesthesiology and Intensive Care Medicine, Oregon Health and Science University, Portland, OR, USA; <sup>4</sup>Medical Education Training Unit, American Medical Association, Chicago, IL, USA; <sup>5</sup>Department of Medicine, Brigham and Women's Hospital, Boston, MA, USA; <sup>6</sup>Institute of Coaching, McLean Hospital, Harvard Medical School Affiliates, Belmont, MA, USA; <sup>7</sup>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: Three 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**  
coaching; medical education; resident

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

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**Coaching skills**

Fostering development of Master Adaptive Learners	<ul style="list-style-type: none"> <li>Help coachee understand their abilities in the MAL cycle (planning, learning, assessing, adjusting)</li> <li>Support and guide coachee in engagement in being a MAL (critical thinking, reflection, self-monitoring, metacognition)</li> </ul>
Support coachee in cultivating well-being and professional fulfillment	<ul style="list-style-type: none"> <li>Use open inquiry to support coachee in defining a vision of ideal self or goals for optimum well-being and professional fulfillment</li> </ul>
Support coachee in improving motivation and self-efficacy	<ul style="list-style-type: none"> <li>Support coachee in cultivating key characteristics to the master adaptive learning process – curiosity about learning, intrinsic motivation, growth mindset, and resilience</li> <li>Explore coachee's personal values and how they are expressed in vision, goals, and action plans</li> <li>Cultivate coachee's internal motivation for change, including meaning, purpose, or calling</li> <li>Explore coachee strengths</li> <li>Explore coachee's resources and psychological capital (hope, optimism, self-efficacy and resilience)</li> </ul>
Help coachee overcome challenges with co-creative collaboration	<ul style="list-style-type: none"> <li>Support coachee in problem-solving and co-creative brainstorming on new perspectives and possibilities</li> <li>Support coachee in processing feedback</li> <li>Continue to elicit MAL characteristics – curiosity about learning, intrinsic motivation, growth mindset, and resilience</li> </ul>

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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.

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

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**RATIO OF ENGAGEMENT** ■ Probing & listening ■ Telling & Answering



**COACH**



<https://images.app.goo.gl/1egYxk6H2GmZv19A>

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## Coaching “the Batteries” Discussion

- Pick 1 of the Batteries (Curiosity, Motivation, Mindset, Resilience)
- Discuss in your group
- 1) How might one of the ideas that I discussed be useful to this battery for your learners in your coaching context?
- 2) What type of questions may be useful in coaching your learners related to this battery?
- 3) What barriers prevent coaching related to this battery?



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## Summary

### 1. WHY is Lifelong Learning Needed?

- Gaps between What We Do and What is Known
  - Routine Expertise – Efficient application of known solutions
- Gaps between What is Known and Solutions to Novel Challenges
  - Adaptive Expertise – New Learning & Innovation to Solve Novel Challenges
- Master Adaptive Learner (MAL) model

### 2. What batteries ‘power’ Lifelong Learning?

- **Curiosity**
  - Foster Epistemic Curiosity – “the desire for knowledge that motivates individuals to learn new ideas, eliminate information gaps, and solve intellectual problems.”
  - “Choosing to be curious is choosing to be vulnerable because it requires us to surrender to uncertainty.”

### 2. What batteries ‘power’ Lifelong Learning?

- **Motivation**
  - Foster intrinsic motivation by considering Autonomy, Competence, and Relatedness
- **Mindset**
  - Foster Growth Mindset
  - “I’m not here to PROVE myself, I’m here to IMPROVE myself”
- **Resilience**
  - Foster Resilience and Grit
  - “Tempering a learner is a process of reflection, relationships, and practices during the act of learning that form resilience to continue learning when the resistance is highest.”

### 3. How Do We Charge these Batteries?


- Providing Impactful Feedback
- Address the Learning Environment
- Adopting a Coaching Approach




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# Take Home

## What was most meaningful for you in the last 90 minutes?




## What is ONE idea or strategy that you WILL try next time you are with a trainee?



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**REMEMBER  
WHY  
YOU STARTED**

CHAPTER 1  
**Always  
Be  
Learning**

# Questions

Email [Bill.Cutrer@Vanderbilt.Edu](mailto:Bill.Cutrer@Vanderbilt.Edu)

