

Finding Joy in Learning: Creating Environments that promote curiosity

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LEADERSHIP AND LEARNING

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Disclosure

- I have no conflicts to declare

HEALL Grand Rounds Series 2025-26

- Finding Joy in Learning: Creating Environments that promote curiosity-David Hatem MD 9/18/25 430-545 PM
- Assessing Progress and Pathways: Demonstrating readiness for the next step. Patricia Seymour MD, GSBS speaker TBA 11/20/25 430-545 PM
- Assessing teaching beyond student evaluation: Getting to joy-Nancy Morris PhD 2/12/26 430-545 PM
- Growth Mindset in Action: Learning from Challenging Feedback-- Lisa Gussak MD, Funmi Ayobami PhD 4/16/26 430-545 PM



What does this image have to do with curiosity?

Objectives/Road Map

- Discuss how to foster curiosity in learners within biomedical education
- Apply the principles of fostering curiosity to learning environments in biomedical education
- Demonstrate understanding of the role of learners' psychological safety in promoting curiosity in our learners



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What you missed that day you were absent from fourth grade-Brad Aaron Modlin



Mrs. Nelson explained how to stand still and listen to the wind, how to find meaning in pumping gas,

how peeling potatoes can be a form of prayer. She took questions on how not to feel lost in the dark.

After lunch she distributed worksheets that covered ways to remember your grandfather's

voice. Then the class discussed falling asleep without feeling you had forgotten to do something else—

something important—and how to believe the house you wake in is your home. This prompted

Mrs. Nelson to draw a chalkboard diagram detailing how to chant the Psalms during cigarette breaks,

and how not to squirm for sound when your own thoughts are all you hear; also, that you have enough.

The English lesson was that *I am* is a complete sentence.

And just before the afternoon bell, she made the math equation look easy. The one that proves that hundreds of questions,

and feeling cold, and all those nights spent looking for whatever it was you lost, and one person add up to something.

Curiosity defined

- desire to know: inquisitive interest in others' concerns : [nosiness](#):
- interest leading to inquiry, leads to exploratory behavior
- **Thought to consist of an inherent and stable baseline trait (*i.e. trait curiosity OR a curious person*) and a variable context-dependent state (*i.e. state curiosity OR curious in this context*) ***

*Berlyne DE. 1954. A theory of human curiosity. Br J Psychol. 45(3):180–191. doi: 10.1111/j.2044-8295.1954.tb01243.x.

Berlyne DE. 1960. Conflict, arousal, and curiosity. New York (NY): McGraw-Hill Book Company. doi: 10.1037/11164-000.

Naylor FD. 1981. A state-trait curiosity inventory. Aust Psychol. 16(2): 172–183. doi: 10.1080/00050068108255893.



Attempts to measure curiosity have been limited

State (context dependent) and trait (a feature of the person) curiosity discussed and can be measured (Melbourne curiosity index)¹

Canadian study suggested self reported trait curiosity > state curiosity²

*2023 study to develop validated instrument to measure curiosity identified **intellectual** and **social** medical curiosity³*

¹ Naylor. "A State-Trait Curiosity Inventory." *Australian Psychologist* 16.2 (2007): 172–183.

² Sternszus et al, Describing medical student curiosity across a four-year curriculum. *MEDICAL TEACHER*, 2017, 39:4, 377–382, <http://dx.doi.org/10.1080/0142159X.2017.1290793>

³ Bugaj et al. (2023) Measuring an understudied factor in medical education – development and validation of the medical curiosity scale, *Medical Education Online*, 28:1, 2198117, DOI: 10.1080/10872981.2023.2198117

Curiosity promotes more humane and disciplined care

Social curiosity is fundamental to understanding

- *Each patient's unique experience of illness*
- *Building respectful relationships with patients*
- *Deepening self-awareness*

Intellectual curiosity functions in

- *Supporting clinical reasoning*
- *Avoiding premature closure*
- *Encouraging lifelong learning.*

There are limits to current curiosity studies

- Lack of studies investigating curiosity as a psychological **state** that fluctuates over time and with changing contexts rather than only as a **trait**
- Concern that current healthcare education models may instead be suppressing curiosity by
 - not engaging trainees in active learning
 - over-emphasizing efficiency in care
 - Failing to acknowledge uncertainty

Kashdan et al. 2004; Dyche & Epstein 2011; Nanda 2012; Norman 2012



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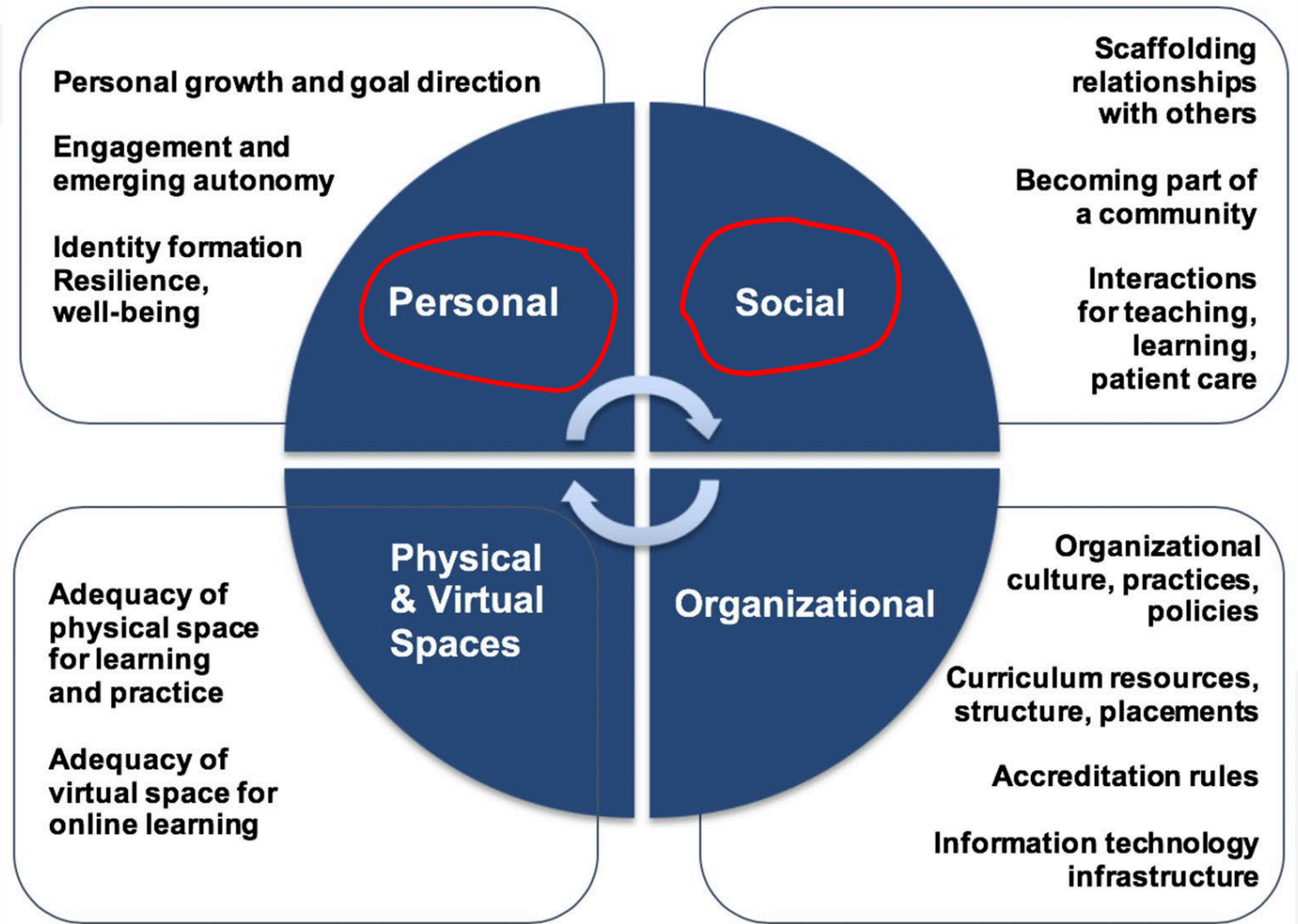
Curiosity is formed in a context

You are on your way across campus, going to teach a class about "The Good Samaritan"...



What is the current context of healthcare and biomedical education?

There are multiple Components of the Learning Environment



Specific **interventions** have been shown to enhance perception of learning environment

| Intervention | Population | Intervention | Outcomes |
|-----------------------------|-------------------------------|--------------------------|---|
| Formative Assessment Tools | Nursing students | Mid and end of rotation | Learning, structured conversations, LE |
| Faculty consistency | Nursing | Compare Preceptor of day | Better relationship, atmosphere |
| Student Prep course | UK-Medicine | | Better team integration, less effect of lack of structure |
| Faculty development | Dentistry, faculty, residents | | improved LE, increased collaboration |
| Dedicated Educational Units | Nursing | | clinical learning and mentoring relationships |

Comparative studies of the Learning environment

Better perception of the Learning Environment with

- Rural preceptor sites v metropolitan sites; community v tertiary care settings
- Problem-based learning curriculum v disciplined based curriculum
- Primary care curriculum v traditional curriculum
- Teaching sites without residents v those with residents
- Schools with Learning communities v those without
- Clinical departments with high teaching evaluations/higher percentage of time spent teaching predicted LE performance



Limitations of studies of the Learning Environment

- Overreliance on learner self report
- Incomplete data in reviews--*LE context may not be identified in many studies that affect the LE—duty hour studies*
- Physical and virtual spaces as settings for learning are also under-represented in the literature.

Experts point out a need for:

- exploring the patient's impact on the LE
- investigating how interprofessional and intra-professional teams influence the LE
- design and testing of interventions that are inclusive of multiple components from Gruppen's model.

There are suggested targets for intervention to improve learning environments

| Area of influence | Possible intervention | Additional intervention | Additional intervention |
|--|--|--|--|
| Accreditation | Structure of work hours | Focus on well being | |
| Curricular | Preparation for transitions | Content on well being, adaptability | Clarity of expectation, continuity of experience |
| Faculty/Staff Development | Learning climate, setting expectations | Providing feedback, promoting well being | Role modeling, teamwork skills |
| Grading | Pass/fail | | |
| Instructional interventions | Create community of peers/peer coaching and teaching | Adequate supervision & feedback | Support during transition, progressive autonomy |
| Placements/Physical and virtual space | Longitudinal placements | Consider rural placements | Adequate online and virtual resources |

Beginning Learners reinforce challenges of LE ...

The third year of medical school is like being thrown head first into water. Although the impact is jarring, eventually the experience becomes natural. We become comfortable — legs-crossed, slouched-in-a-chair, coffee-in-hand kind of comfortable. Occasional moments, however, remind us that we are immersed in water. If we focus on them closely, we see that our lives are filled with these moments. The challenge is to collect them in a meaningful way — to spend time with them, wrestle with them, allow the discomfort they generate to sit inside us.



UMass Chan

Into the Water, Treadway and Chatterjee
MEDICAL SCHOOL NEJM 2001;364:1190-93



Encountering unexpected and powerful events can be unsettling for beginning students

- There is a “hidden curriculum” during the clinical years that is powerful for three reasons.
 - Foreign world; difficult, often overwhelming experiences.
 - Rules governing responses to these experiences are unclear.
 - Do beliefs and values with which they entered school still apply?
 - Take cues from behaviors they observe.
 - Events rarely discussed; students ascribe detachment and lack of caring to house staff and senior physicians.
 - Experiences frequently unacknowledged and unexplored.



How do we preserve or promote curiosity when a learner feels like they are drowning?



Curiosity has specific associations but causation is uncertain

- Curiosity positively associated with mental and physical health.
- 97 college students completed daily diary reports, higher curiosity levels associated with:
 - more deliberate search for meaning and a greater sense of purpose in life.
 - greater life satisfaction¹

Other studies linking higher levels of curiosity to:

- greater life satisfaction²⁻⁵ well-being⁶ self-efficacy, problem-solving skills, and positive outlook⁷

Schwarz et al. An untapped potential: curiosity in medical education.
MEDICAL TEACHER 2024, VOL. 46, NO. 7, 939–947
<https://doi.org/10.1080/0142159X.2023.2288546>



Epistemic emotions can be seen as precursors of curiosity

Epistemic emotions

- emotions associated with **knowledge acquisition** (curiosity primes exploratory behavior) or **knowledge states** (e.g., surprise primes awareness of unexpected discrepancy between cognitive schemas, Mandler, 1975)
- Epistemic emotions studied *novelty, surprise, uncertainty, and anxiety based on the existing body of literature that demonstrates their connection with curiosity*
- **Positive associations** between novelty, surprise, uncertainty, and curiosity and **negative relationships** between anxiety and curiosity.
- *Educators should aim to reduce anxiety, introduce novelty and surprise, and capitalize on uncertainty.*

Helping learners become fearless



the fearless organization

Creating Psychological Safety in the Workplace for Learning, Innovation, and Growth

Amy C. Edmondson

FORWARD THINKING LEADER

WILEY

Psychological Safety can be defined

The perception that an environment is:

- *safe for interpersonal risk taking, exposing vulnerability, and contributing perspectives*
- *without fear of being shamed, blamed, or ignored.*

Psychological safety has been associated with:

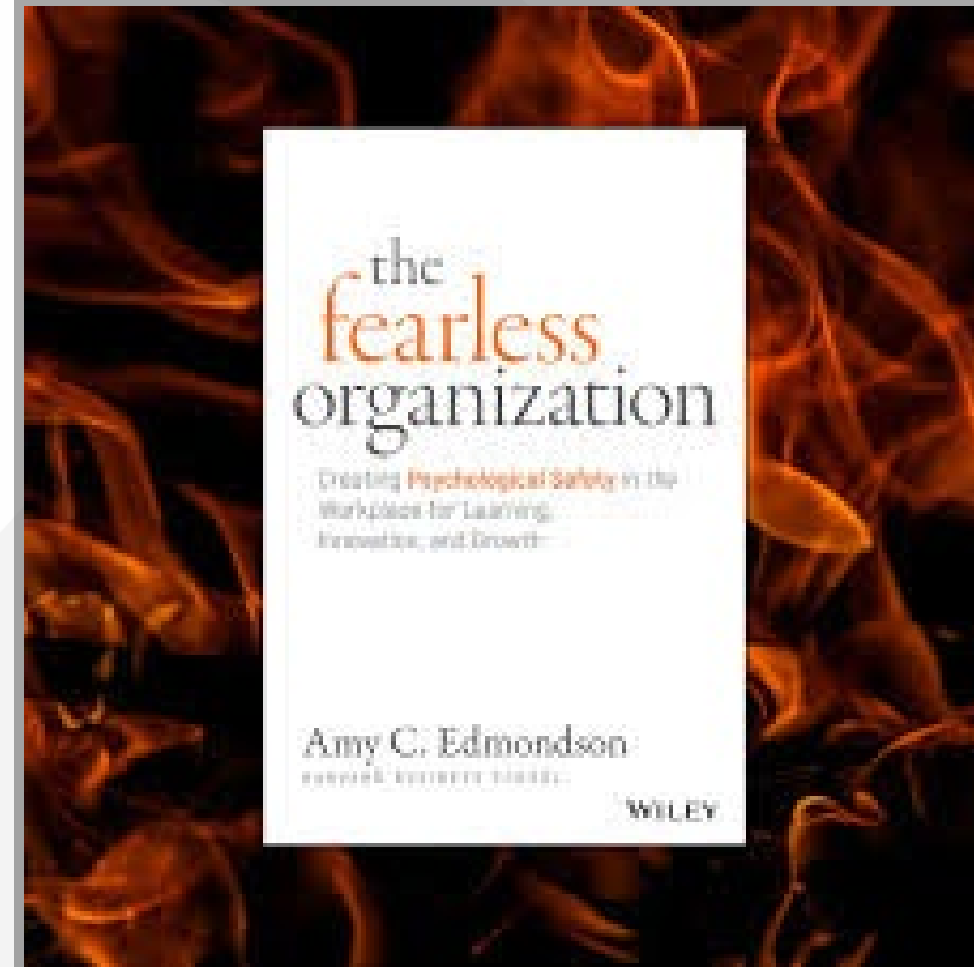
- *improved team learning and innovation*
- *leader inclusivity, team members' sense of belonging.*

There are consequences to the absence of Psych safety...

- *learners fear judgment, reprisal, humiliation, feelings of incompetence, and being unworthy.*
- *May begin to avoid and withdraw from the learning process (Bynum and Haque 2016), at times exhibiting complete social withdrawal.*
- *Over prolonged periods, this withdrawal also can contribute to burnout and depression (Bynum and Haque 2016).*

Bynum WE, Haque TM. 2016. Risky business: psychological safety and the risks of learning medicine. J Grad Med Educ. 8:780–782.

Psychological Safety and teamwork had its origins in studies of medical error



Overview of Edmondson's Work Zones Framework

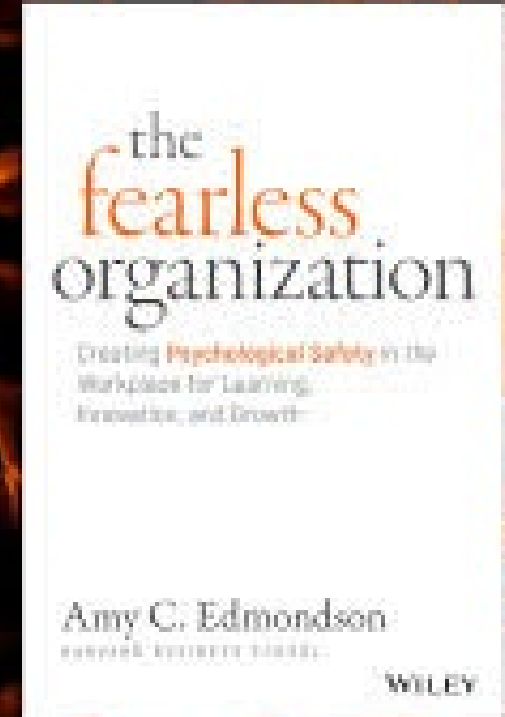
| ZONE | PSYCHOLOGICAL SAFETY | TASK DIFFICULTY | DESCRIPTION | TYPICAL OUTCOMES |
|---------------|----------------------|-----------------|---|-------------------------------|
| Comfort Zone | High | Low | Safe environment with minimal challenge | Low learning, low performance |
| Anxiety Zone | Low | High | Challenging tasks without support | Stress, disengagement |
| Apathy Zone | Low | Low | Unchallenging and unsupportive | Disinterest, stagnation |
| Learning Zone | High | High | Supportive and challenging environment | High engagement, growth |

Psychological Safety sets the stage for learning

Not about making learners comfortable, but making them willing to be uncomfortable

Giving learners space to be curious

Challenge learners to meet novelty, surprise, uncertainty, with curiosity and purposefully deal with their anxiety and any feeling of being overwhelmed



Psychology and learning: The role of the clinical learning environment Kelly J. Caverzagiea, Mitchell G. Goldenbergb and Jena M. Hallc

Reducing student anxiety with novelty taught me something...

- *Blended learning, (students prepare some of the lessons online at home) can reduce pressure and anxiety in the classroom.*
- *Absence of access to all medical settings, **such as the operating or emergency room**, can lead to **use of modern technologies**, such as video materials, virtual reality, and phantoms (simulation), medical educators can create learning environments that spark students' curiosity and encourage their drive to explore these novel and exciting aspects in learning and medicine.*

12 tips for mindful teaching

1. Prepare a transition
2. Create mindful LE based on trust and support
3. Promote perspective taking
4. Use language that indicates uncertainty
5. Use questions to promote curiosity and reflection
6. Approach teaching and learning with a beginner's mind
7. Maintain process orientation
8. Provide mindful feedback
9. Become a mindful role model
10. Maintain scholarly approach
11. Build a community of practice and engage in FD
12. Practice

Anxiety

- How are you feeling in this situation?
- What is the significance of that anxiety (if identified)?
- You look a little anxious to me, is that how you are feeling?

Surprise

- What do you make of this finding? What is its significance?
- What did you expect to find?
- What would that have meant?

Uncertainty

- Don't give answer
- What questions do you have
- Using conditional statements—what could this be? What else
- Modeling own uncertainty, modeling a process to deal with it

Promoters of curiosity

- *Curiosity and inquisitiveness flourish in an educational context that:*
 - *gives students responsibility for their own learning*
 - *promotes multiple perspectives*
 - *allows for mindful reflection on both the subject and the learning process itself*
 - *encourages inquiry rather than simply supplying information*
 - *creates a feeling of safety for the exploration of new cognitive and affective domains*
 - *permits openness about uncertainty*
 - *encourages students to work together with peers.*

Mindful teaching and learning

The principles of mindfulness that we highlight as most closely linked to mindful teaching include an intentional focus on present moment awareness, openness, curiosity, and reflection. Reflection can occur during the act (reflection-in-action) or after the act (reflection-on-action) (Schon 1987).

This translates to

Bring focus to your topic of teaching

Present moment awareness to engagement and explore reasons for lack of engagement

Curiosity about learner's understanding and evidence of understanding

Reflection on process of teaching, understanding of content/take home lessons

Promoting focus and attention in our teaching

- Restrict initial focus and gradually increase complexity of content
- Myths
 - Don't worry if you don't get it, we will repeat it
 - The example of JVD
- Think about the competition for teachers-- *clinical pressures on learners and faculty (e.g. productivity, throughput, data entry demands for electronic health records), which may create unintended barriers to learning.*

PLEASE EXPEDITE ALL DISCHARGES TODAY!



Group Task

- Pick a partner and spend 5 minutes telling them about a time when you either
 - Encouraged a learner to be curious OR
 - Were encouraged by someone else to be curious
- AND significant learning occurred
- After 5 minutes you will switch roles.
- When we get back together, we will share a few stories from those who are willing and consider what it takes to foster curiosity

Fostering Scientific Curiosity and Professional Behaviors in a Basic Science Curriculum

- how to **improve the learning of science** and how to **foster professional behaviors within a pre-clinical curriculum**.
- These seemingly disparate aspects are related, because they address a key facet: **student-faculty interactions**. Appropriate climate must be created that encourages inquiry.
- **Students must feel safe to put forth ideas or suggestions in class discussions that may turn out to be wrong**, because the emphasis should be on hypothesis testing and discerning thought processes.
- Advocate a new role for faculty who teach science , which is to participate in the professional development of students through educational interventions that improve professional behaviors by **fostering self-awareness and mutual respect**.

Fostering Connections, Psychological Safety and Meaningful Relationships: The Role of Preclerkship Learning Communities in Professional Identity Formation

- LCs offer opportunities for connection and motivation
- LC's provide psychologically safe environments to foster professional growth
- LC's offer multiple opportunities to develop relationships that foster PI

Yakes et al. Fostering Connections, Psychological Safety and Meaningful Relationships: The Role of Preclerkship Learning Communities in Professional Identity Formation, under review



Professional Growth & Development

Meaningful Relationships

Connections with LC Mentors

Connections with Peers

Connections with LC
Small Group

Connections with Faculty

Connections with Community

Psychological Safety

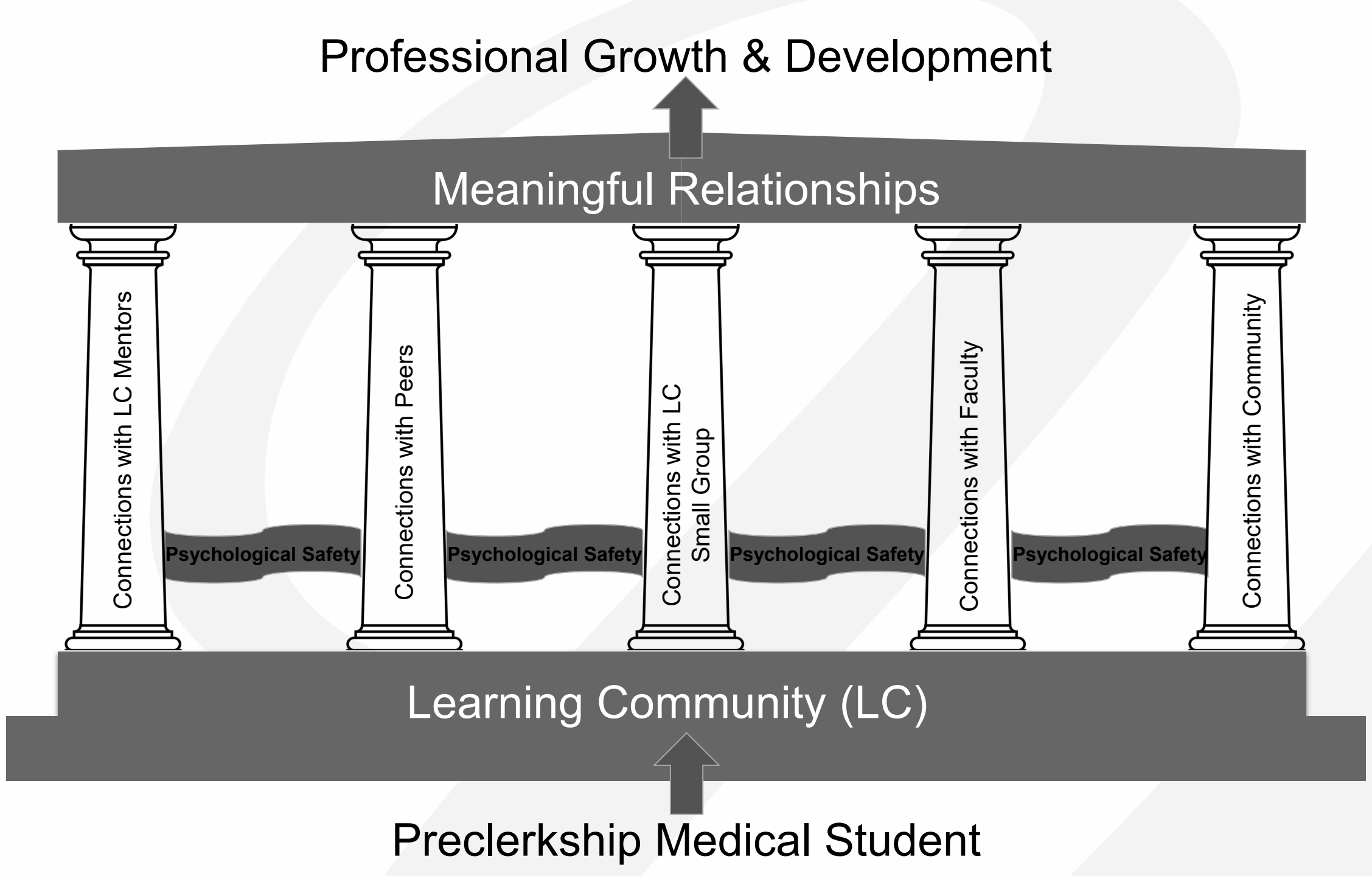
Psychological Safety

Psychological Safety

Psychological Safety

Learning Community (LC)

Preclerkship Medical Student



Improving Psych safety in Education

Short Term

- *Establish programs for support and to enhance resilience in trainees and their teachers*
- *Develop formal structures and routines to engage learners and faculty in a safe place (e.g. critical incident debriefing)*
- *Acknowledge the hard work of others*
- *Explicitly call out informal curriculum as being critical to learning*
- *Identify common goals between clinical and educational systems*
- *Open up the “black box” between teachers and trainees, and between physicians and other professionals*
- *Embrace a common mission and understand common goals*

Long-term

- *Promote tighter alignment between clinical systems and educational*
- *systems (e.g. financial, operational)*
- *Integrate educational programs within clinical systems (e.g. quality*
- *and patient safety)*
- *Establish communities of practice*
- *Facilitate skills development for learners and their teachers (e.g. feedback, coaching, role modeling, empowerment, “Just Culture”)*
- *Establish “bridging leaders” to reinforce common educational and clinical system goals--QI*
- *Foster regulatory changes to incentivize education in the clinical environment*
- *Promote a “Just Culture” and remove intolerance and a culture of shame*
- *Operationalize a psychologically safe workforce (e.g. link quality improvement/patient safety and patient-reported outcomes to that of a healthy workforce)*

Competence, mattering and belonging: *An evidence-based and practical approach to understanding and fostering medical student professional identity formation*

As students become physicians they receive socio-contextual clues about their

- Competence
- Mattering
- Belonging

As they seek to join the physician, scientist or nursing community

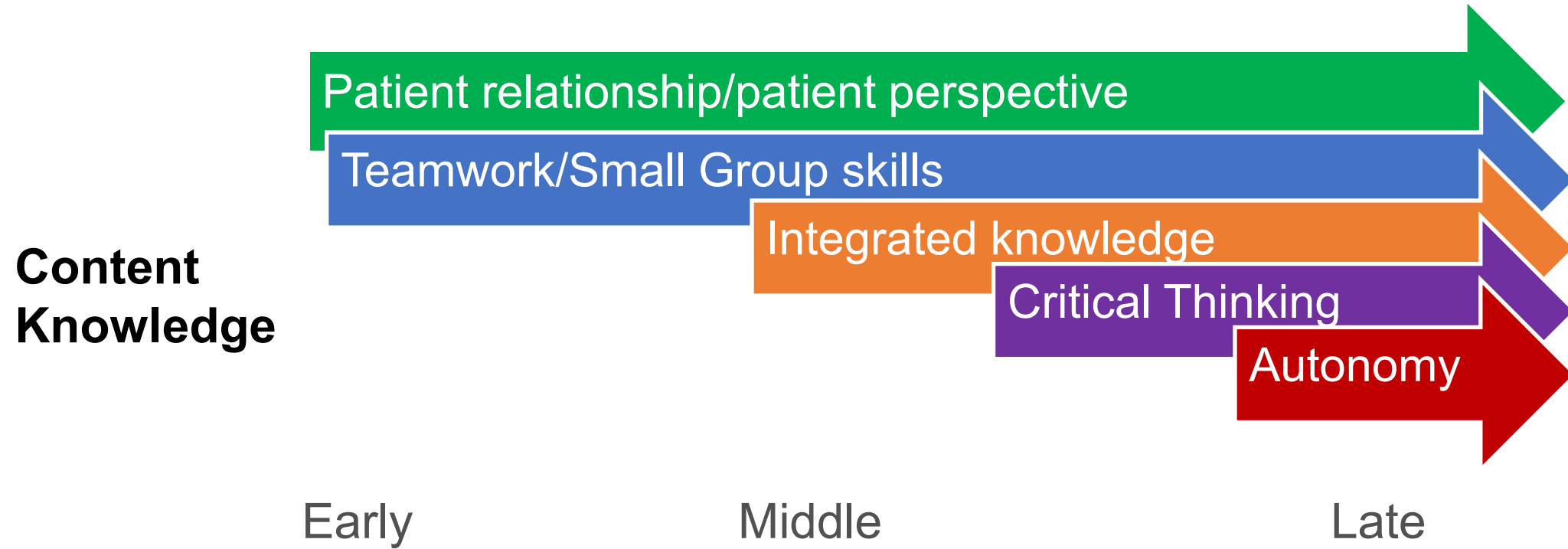
the fearless organization

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SENIOR VICE PRESIDENT

WILEY

A model for persistent curiosity



Take homes and thank you