Outline

• Teaching Metacognition
• Evaluating Metacognition
• Stress & Emotions Awareness
• What Matters to Students
• Interventions
• Reflective Teaching
Metacognition

“Awareness and understanding of one’s own thought processes.”
Metacognition Yields Sophisticated Learners
Teaching Metacognition

 ✓ Model it in class and online:
   ✓ Get inside my head: why did I ask you this?
   ✓ Sit with it.
   ✓ As you listen to this, think about that.
   ✓ My reflection on the lesson before and/or after.
Tonight’s Lecture Highlights

In class tonight, we talked about adaptation. On the one hand, adaptation is a normal physiological response a cell employs when it encounters stress. On the other hand, adaptation is not meant to be forever and can, therefore, lead to a disease. On my drive home, I was thinking of the nature of relationships.

When you’re in a relationship, sometimes, you can tolerate some behavior of your partner in order to make the relationship work. For example, if he or she leaves their dirty socks in the living room, you modify your behavior and decide to pick them up instead of picking a fight. Now, this moral high ground behavior of yours will likely not last forever. Why? Because you have limited energy yourself and there is only so much you can tolerate before you snap!
Teaching Metacognition

✓ Teach it to your grandparents:
  ✓ How does it feel?
  ✓ How can I teach it better?

✓ Learning journals: what’s going on in your head?
Process of Reflective Learning

What do I think about this issue/topic/experience?

↓

Explore my understanding, perceptions and ideas

Identify anything confusing or difficult to understand

What more do I need to know to help my understanding

↓

Develop and refine my ideas and beliefs

Identify, locate and interpret relevant information & resources

How can I use this experience to improve my learning, thinking and working?

e.g. What would I do differently next time?
I'm really beginning to see how the lectures are building on each other. The first part of lecture was a continuation of the pain lecture. Since I suffer from anxiety and flashbacks, the sleep lecture was very interesting to me. A lot of the feelings I have/things I suffer from make a bit more sense now. I'm having a hard time with the hormones from all of the lectures and their roles/where they are...
“Do You Think Metacognition is Beneficial to Your Education?”
“It benefits me for a number of reasons. I am able to control my social anxiety, and know when I should say something, and when I should refrain.”

“I think it is beneficial to practice metacognition because you are more likely to recognize weak thinking patterns.”
Is Metacognition Effective?
✓ Increases students performance by < 2.6%

✓ Low correlation with GPA.

✓ Compared with literature, effect ≈ significant.

Metacognitive Awareness Inventory (MAI)
Why Not?

What Factors Might Be Short-Circuiting Metacognition?
Is Stress High, Low, or Average Among PCC Students?

**Perceived Stress Scale**

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought in a certain way.

Name ___________________________ Date ________________

Age _____ Gender (Circle): M F Other ___________________________

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly? 0 1 2 3 4

2. In the last month, how often have you felt that you were unable to control the important things in your life? 0 1 2 3 4

**Stress Level**

- Low
  - 0-13
- Moderate
  - 14-26
- High
  - 27-40

Mean = 20.41

N = 68
What other factors affect Metacognition?

✓ Hardiness: Personality structure that functions as a resistance resource in encounters with stressful conditions.
Is the Perceived Stress Scale Reliable?
Salivary Cortisol Remains Elevated During the Evening
Metacognition = A Luxury
Why were the Perceived Stress Findings Incongruent with Journal Entries and the Cortisol Data?
1. Are you aware when you are stressed out?
   Most of the time I am actually not aware I was stressed until it has passed. The only time I am aware is if it’s extreme stress and I can’t think straight.

2. Are you aware of triggers that cause you to become stressed?
   The only trigger I am aware of, because it happens so often, is dealing with rude customers at work because no matter what I need to continue to be nice to them.

3. Why do you think I asked the 2 questions above?
   To make us realize/be aware if we didn’t know
   how to handle a situation.
Emotional & Social Competency Inventory Reveals a Lower Self-Awareness Score


Mean = 3.62
N = 24

ESCI-U Self-Awareness
Average 3.80
Conclusions

✓ Perceived stress scale under-estimates actual stress;

✓ Cortisol level indicates elevation in stress throughout the day;

✓ A complex interplay between stress, self-awareness, hardiness, metacognition, and academic performance;

✓ Emotional competency may serve as the gateway to unlocking the benefits of metacognition.
How to Cultivate Emotional Awareness?
Emotion Regulation and Stress
In this session, we will examine the concept of physiological and emotional homeostasis. We will look at emotional regulation and its relevance to learning. We will also discuss the reciprocal relationships of physiological and psychological stress and emotion regulation.

Mindfulness, Meditation, and Emotion Regulation
In this session, we will look into the science of mindfulness focusing attention on bodily experiences of emotional arousal.

The Cultivation of Compassion in Your Life
In this session, we will discuss the relationship of developing compassionate response to hardship to your learning aptitude. We will also introduce a contemplative practice known as “loving-kindness meditation.”

The Discovery of Mirror Neurons
In this session, we will begin with a brief period of mindful breath attention, and then discuss the discovery and interpretation of mirror neurons in primate brain. We will discuss the implication for learning and memory.

Attitudes and the Brain: Implications for Hindrances to Kindness & Compassion
In this session, we will examine recent neuroscientific research on attitudes as it relates to learning.

Aptitude for Learning
In this session, we will examine the neurobiology of how we learn. We will examine cognition and metacognition and how cultivating met-awareness can enhance the power of metacognition on facilitating meaningful learning.
Similar to metacognition, mindfulness can be a luxury.

To train students to be able to regulate their emotions, necessitates what?

With everything else I’ve got on my mind, now you’re telling me I have to think about breathing?
Back to the journals ...
“I feel I'm attending a school for robotic education. It feels suffocating and so far removed from the real world. There is no spontaneity nor .... beauty.”
What Matters to Students?

How aligned is my perspective on the purpose of education compared to my students?
What Matters to Students

- Survey Designed by Students for Students;
- 20 items;
- Likert Scale;
- 202 Student Participants;
- Face-to-Face and Online;
- 16 Instructors,
- Multivariate Factor Analysis
Q3: At school, I feel that I matter.

Q10: Teaching using poetry & storytelling is effective.

Q13: Social justice & democracy are intertwined with teaching & learning.

Q19: At school, I feel I belong to a community.
Describe an Optimal Learning Environment
I believe an optimal learning environment for me would be an area I feel comfortable at. This being my first semester of college I have learned that a lot of the classrooms are somewhat cold and unfriendly. I don't expect the classrooms to look like an elementary classroom, but I do find that a warm friendly environment helps me relax and learn more. Another reason I feel as therefore grades go down. One of the things teachers don't usually do is talk about there personal life and be involved with the students. I think it makes it better for the class if the teacher talks about their personal life and listens about others students lives and stories because it really bring the class together and it’s more of a relaxed environment. When the students have a better relationships with each other in class, then more people will be involved with activities and again feel more comfortable in class. All these factors help me and honestly many others succeed in
Another factor that I would find helpful in creating an optimal learning environment would be helping the students get to know each other for a few minutes when class starts for the semester. I do understand that it can be difficult for teachers to find a way for students to open up to a whole classroom and that it can be awkward for students as well, but I truly believe that when a student is comfortable in their learning environment they will learn more. Since students

How I think can be achieved is with the professor along with the help of students. An optimal learning environment is a place where a student should feel safe and comfortable to say how the feel about certain topics and being able to ask for help. A professor can do this by
and a dest in order to learn and progress. Also the state of mind “environment” is one of structure to what I need to succeed both in school and in life. But the one missing part of this all is a support system. This seems to be a little out in left field, but you have to ask why do we do anything in life? None of us were asking to be born. But now that we are grown and aware of who raised us and who really mattes in life, we can live for them and to be there for them. This can be seen in a monitory sense or a time spent sense.

of individual attention when there are issues with understanding the material. Three factors that are without a doubt critical to academic success are one having support. If you don’t have a place to live it can be hard to study for a math test. The second factor is having a goal.
Teachers can create an optimal learning environment by building relationships with students and making themselves available to those who need help. Feedback is also very

One time I'd like to hear the teacher talk about their stupid mistakes and if they experienced the Friday night frat party that I deprived myself of by being in prison instead of free. I won’t talk to my classmates about being in prison because they will be scared. I would like to know more people I can related to in the class. If the teacher helped facilitate that, it would help me. I can join study groups then.
Conclusions

✓ In addition to the need to cultivate self-awareness, survey identified four factors students consider integral to an optimal learning environment:

1. Sense of Empowerment
2. Sense of Belonging
3. Meaning-Centered Education
4. Support System
How To Cultivate A Sense Of Self-Awareness?
<table>
<thead>
<tr>
<th>Guided Journaling</th>
<th>Student 1</th>
<th>Student 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check in with yourself and name how you are feeling in that moment.</td>
<td>I am feeling anxious</td>
<td>I am excited to learn about the heart</td>
</tr>
<tr>
<td>Identify what the source of the feeling is – what is triggering it?</td>
<td>My previous exam was terrible but I studied,</td>
<td>Today’s lecture was super exciting. The exercise where we imagine the</td>
</tr>
<tr>
<td></td>
<td>and I am worried the same will happen with</td>
<td>heart is a person and we describe it helped me connect to my own heart</td>
</tr>
<tr>
<td></td>
<td>this exam</td>
<td></td>
</tr>
<tr>
<td>Ask yourself: “Is this feeling serving me well at this time”? “Will it help me</td>
<td>No</td>
<td>I believe my excitement will help with my learning</td>
</tr>
<tr>
<td>learn”?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ask yourself: “At this moment, what can I do about it”?</td>
<td>I honestly don’t know</td>
<td>I know this chapter is going to be very difficult so I told my study</td>
</tr>
<tr>
<td></td>
<td></td>
<td>partner to remind me of my excitement when I start complaining how</td>
</tr>
<tr>
<td></td>
<td></td>
<td>difficult the material is!</td>
</tr>
</tbody>
</table>
How To Cultivate A Sense Of Empowerment?
### Student Empowerment

<table>
<thead>
<tr>
<th>Situation</th>
<th>Instructor Awareness</th>
<th>Student Awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Student extremely afraid to initiate and contribute to class discussions after having been an active participant.</td>
<td>1. Recognition of student’s struggle</td>
<td>1. Has social anxiety</td>
</tr>
<tr>
<td></td>
<td>2. Proactive contact with student</td>
<td>2. He is not alone</td>
</tr>
<tr>
<td></td>
<td>3. Reinforcement of student’s strengths</td>
<td>3. His contributions are valid and valuable</td>
</tr>
<tr>
<td></td>
<td>4. Support and encouragement via email when student contributes in class</td>
<td>4. With support and feedback, inspired to continue and contribute</td>
</tr>
<tr>
<td></td>
<td>Mild initial awareness – with guidance became an enthusiastic class contributor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Student failed all components of one physiology topic after having received a &gt; 90% on all previous assessments.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Recognition of an issue with the topic</td>
<td>1. Has PTSD-like symptoms</td>
</tr>
<tr>
<td></td>
<td>2. Proactive contact with student</td>
<td>2. Unwilling to seek help because unaware of the situation</td>
</tr>
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<td></td>
<td></td>
<td>3. Initially resisted help when approached by the instructor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Later, sought help to find a counselor to discuss issues</td>
</tr>
<tr>
<td></td>
<td>Low initial awareness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Student felt shut down in class, communicated via email.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Instructor awareness of non-verbal cue interpretation by student</td>
<td>1. Proactive contact by student</td>
</tr>
<tr>
<td></td>
<td>2. Student initiated self-advocacy enhanced instructor-student communication and student learning</td>
<td>2. Rational assessment of the situation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Seeking validation and support through self-advocacy</td>
</tr>
<tr>
<td></td>
<td>High initial awareness</td>
<td></td>
</tr>
</tbody>
</table>

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Dr. Imad,

You asked an extra credit question today, I tried to answer it in class, you looked annoyed. Were you? If so, was it because I answered it wrong or too quickly?

A lot of people react this way to my enthusiasm and intensity. Please just try and understand that I give everything I do my all and I have a natural curiosity about Biology, it enthralls me. I am passionate and committed and in no way is it meant to marginalize my classmates or detract from what you’re trying to accomplish.

So I checked out and couldn't pay attention after that. I started thinking that you and my classmates were making fun of my aptitude or the intensity to which I apply myself and I know that it seems counterproductive but I couldn't help it.

Do you want me to be less engaged? I am in class to learn, to assist and to be of service. It’s important for me to be able to feel safe so I can learn. You might be one of the better instructors that I’ve had. I trust that this email won’t be used against me in the future or hurt my grade.

Thank you
“Classroom Student Advocate”

• “I do not like to fail and I don’t like when the people above me see me fail, it’s kind of embarrassing and degrading. I am fully aware that my professors are always happy to help me whenever needed and they will not judge me for it. Sometimes, it is easier to go to the student advocate."

• “I have been somewhat intimidated by a few of my past professors. I feel that it would have been useful to have a student advocate in cases like this."

• “I have been in the position where I have been afraid to talk to a professor about the difficulty in the class. Even having a professor’s assistant or student advocate for students to talk to could potentially help many students that feel that the material is moving too fast.”
How To Cultivate A Sense of Belonging?
2. Tell me the name of one of your classmates who does not sit next to you and tell me why I should give him/her 3-point extra credit. Advocate for that person. Up to 3 points

She is always intuitively paying attention and is always asking important questions that others might want to ask but they're too shy. She is actively involved in the class, even though she may just be reviewing. She pays close attention during class because she wants to be an exceptional nurse.
Has a wife & lives out in San Manuel. He's really smart in BIO but doesn't know stats.

6) Extra Credit – Tell me the name of two classmates who do not share a table with you. Tell me why I should give them extra credit on the next exam.

She works at Dave and Busters & asks really good questions during lecture. She is from Cuba and speaks Spanish. She also asks really good questions for understanding new topics.
How To Cultivate A Sense Of Meaning In Education?
“Meaning is primarily a matter of relationship. If something is connected to absolutely nothing - symbolically, linguistically, physically, psychologically - it is literally meaningless. And in the same way, if something is connected to everyone and everything, it would be supremely meaning-full.”

-Lawrence Kushner
Teachers can foster an environment where a free flow of meaningful information can take place to allow students to engage and reshape their minds. Teachers should reflect every day why they do what they do. I also believe students should reflect every now and then about what previous educators have brought to the forefront of education. If people weren't devoted to teaching or students having a passion to learn, we would be where we are now. The United States and other leading countries would be way behind in advancements or helping third world country men and women.

Classrooms should foster simulation to keep the students mentally engaged in the subject matter and that they are capable of owning it.
Teaching

Art by Skylar Harris
Excellent Teaching
≈
Rocket Science

Art by Skylar Harris
Reflective Teaching

Art by Skylar Harris
Art by Chris Hauser
Academic Inadequacy

Academic Excellence
Academic Inadequacy — Academic Excellence
Integrative, Personalized

Dis-integrative, One-Size-Fits-All
Integrative, Personalized

Dis-integrative, One-Size-Fits-All
Academic Excellence

Integrative, Personalized

Academic Inadequacy

Dis-integrative, One-Size-Fits-All
Creating Learning Sanctuary

Isolated Learning
“Out beyond ideas of wrongdoing and right doing, there is a field. I’ll meet you there.”

-Rumi
“Come, come, whoever you are. Wanderer, worshiper, lover of leaving. It doesn't matter. Ours is not a caravan of despair. come, even if you have broken your vows a thousand times. Come, yet again, come, come.”

-Rumi
How To Address Stress Before an Exam?
Thank you for your commitment to learning about human pathophysiology and for being here today. I know you are worried and stressed out about the exam you are about to take. I want you to know that I am on your side and want you to succeed. As such, I have decided that you will all receive an A on the exam. Of course, I am kidding; you have to earn it and you can surely do so. After you turn in your exam, you will have the option to retake it. I will place a second version of the exam at the testing center starting Monday, October 1st. You will have a week after that to retake exam 1. Should you decide to do so, I will count the highest of the two grade.

When you're stressed you eat ice cream, cake, chocolate & sweets. Why?

Because stressed spelled backwards is desserts. Mind = blown.
5) Extra Credit - Exam one had a class average of 82% which is a lot higher than any of my previous class. Other than the fact that you are all awesome, why do you think you did so well?

I think that your funny examples help us remember stuff. Food = motivation.

I also think the silent centering minute helps me get ready to learn.

Today, we had food! It made it so much easier to focus having something in my stomach.

The lecture was focused around inflammation today. Inflammation is a protective, non-specific response to tissue injury. The inflammatory reaction is almost immediate followed by the immune response and concluded with
1. (1 point) Welcome to your second exam. You are choosing to pursue a career in a service field that is meant to help others live a better life. I want to commend you for your choice and dedication to helping others. Thank you for your hard work and ethics. Speaking of hard work, I have no doubt that you worked really hard to prepare for the exam and you must be nervous. So, I want to take a moment to wish you well.

I think Jellyfish are beautiful; their luminosity is hypnotic. They are also the quintessential mindless, spineless consumers. Unlike jellyfish, you have a human heart capable of unconditional love; your mind has the ability to know infinity and an infinite capacity to learn. Your humanity transcends beauty. You are something amazing and I want to remind you of that as you embark on your second exam in Bio 218. Take a moment to reflect on the following:

YOU ROCK!

a. True  b. False
THANK YOU