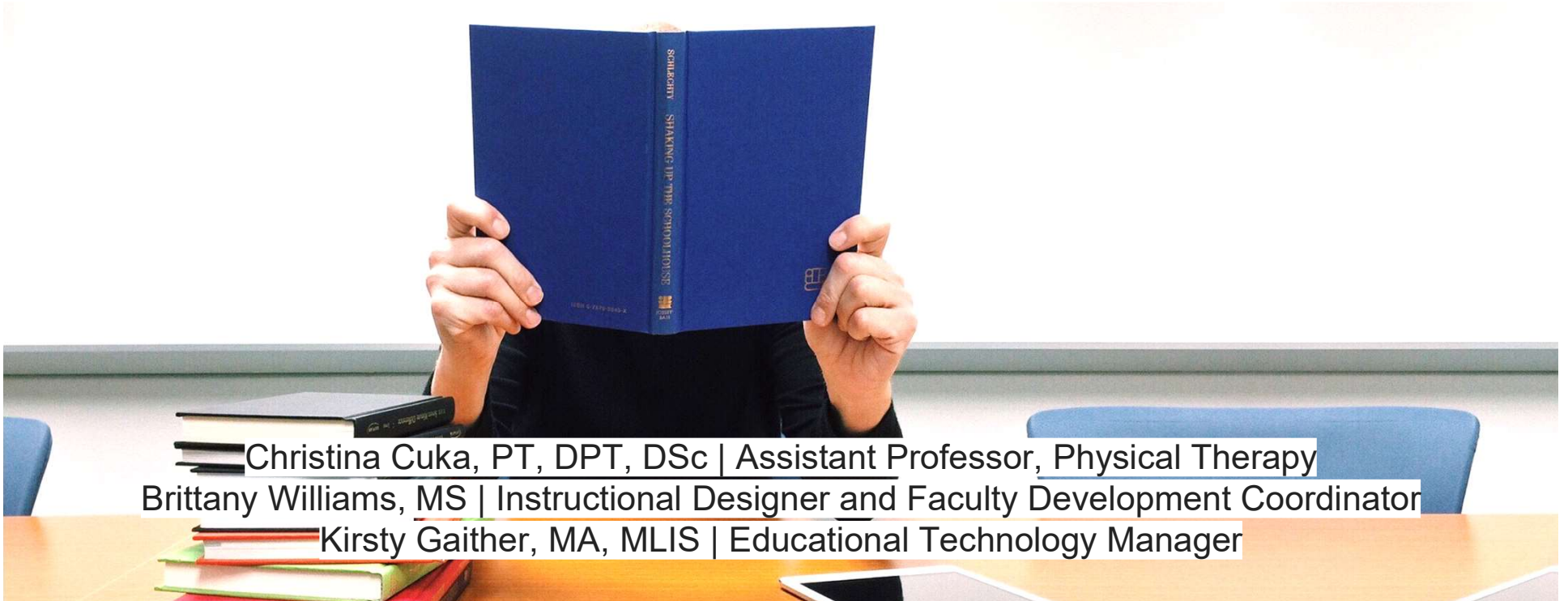


Help students be better learners: using systematic assessments to promote learning and comprehension



Christina Cuka, PT, DPT, DSc | Assistant Professor, Physical Therapy
Brittany Williams, MS | Instructional Designer and Faculty Development Coordinator
Kirsty Gaither, MA, MLIS | Educational Technology Manager



**What we will
discuss during
this
presentation...**

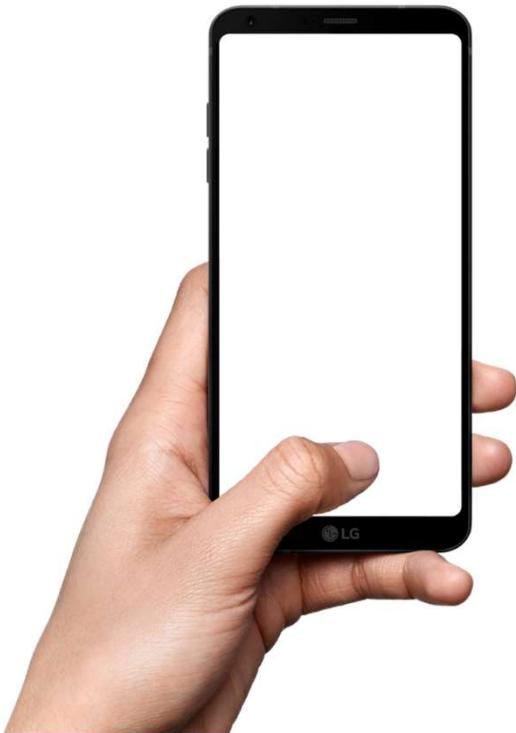




- Discuss lessons learned from our graduate health education example
- Explore the value of purposefully weaving repeating assessment questions throughout a course designed to develop students' self-awareness related to their own content knowledge
- Review our results and discuss whether based on this example and the research we reviewed whether we agree if confidence correlates to performance
- Explain how this process can help you to seamlessly measure assessment data over time while informing and analyzing which teaching strategies are most effective
- Discuss how to best adapt course content and resources based on the knowledge learned from this strategy and course experience, while also considering next steps

Respond at **Pollev.com/atsu**

Text **ATSU** to **22333** once to join, then **A, B, C, or D**



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The Questions Behind our Research



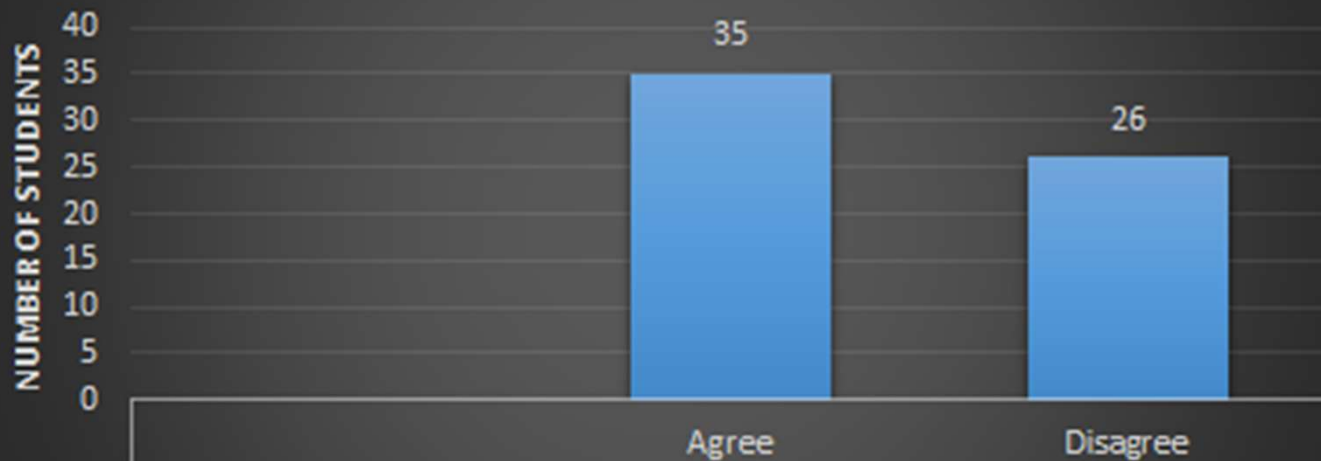


Common General Challenges





Student Self-Reported Preparation



Q5 - I consistently prepared for class so the polling questions confirmed my knowledge My class prep was confirmed by the polling questions -whatever that looked like ...it was affirmed by doing the polling questions



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Role Play:

Scenario #1: Consider the Faculty's Perspective.



Dr. Cuka: Faculty member

Brittany & Kirsty: students in Dr.
Cuka's class

What are your observations?

CLASSIFICATION CATEGORIES FOR NECK IMPAIRMENT – RECOMMENDED ASSESSMENTS

Child's Classification Categories of Neck Pain	
Neck Pain with Mobility Deficits	<ul style="list-style-type: none">• Cervical AROM• Cervical/Thoracic Segmental Mobility
Neck Pain with Headache	<ul style="list-style-type: none">• Cervical AROM• Cervical/Thoracic Segmental Mobility• Cranio-cervical Flexion Test
Neck Pain with Movement Coordination Impairments	<ul style="list-style-type: none">• Cranio-cervical Flexion Test• Deep Neck Flexor Endurance Test• Flexibility Deficits of Upper Quarter Muscles
Neck Pain with Radiating Pain	<ul style="list-style-type: none">• Cervical AROM• Spurling's test• Upper Limb Tension Test (ULTT)• Neck Distraction Test

0:30
Stop



Discussion

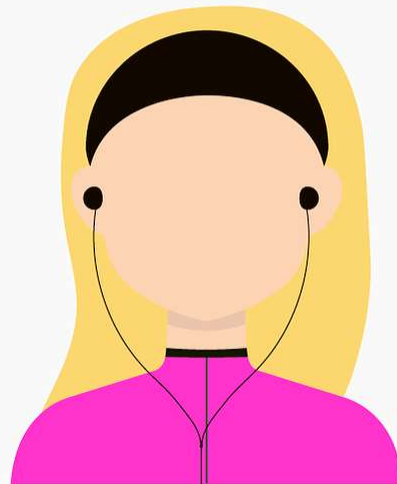
How often do you rely on body language alone to monitor whether your students are comprehending the content?

What barriers are preventing you from checking in with your students?





How often do we consider the student's perspective?



Role Play:

Scenario #2: Consider the Student's Perspective.



Dr. Cuka: Faculty member

Brittany & Kirsty: students in Dr. Cuka's class

During the lecture, one student's inner thoughts are vocalized.

CLASSIFICATION CATEGORIES FOR NECK IMPAIRMENT – RECOMMENDED ASSESSMENTS

Child's Classification Categories of Neck Pain	
Neck Pain with Mobility Deficits	<ul style="list-style-type: none"> • Cervical AROM • Cervical/Thoracic Segmental Mobility
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1:00

Stop

Skeletal muscle relaxants....

- Mostly comprised of centrally acting agents that work by reducing the tone of skeletal muscle causing muscle to relax. There are many classes of drugs that are classified as skeletal muscle relaxants and how they work may differ
- Used to treat conditions associated with hyperexcitable skeletal muscle (spasms or spasticity):
 - Spasm: the increased tension often seen in skeletal muscle after certain musculoskeletal injuries and inflammation, such as muscle strain or nerve root impingements
 - Typically arise from an orthopedic injury to a musculoskeletal structure or peripheral nerve root rather than an injury to the CNS
 - Spasticity: Occurs in many patients following an injury to the central nervous system (CNS), including cord related problems, injuries to the brain
 - Characterized by an exaggerated muscle stretch reflex (velocity dependent)

1:00

Stop



Discussion

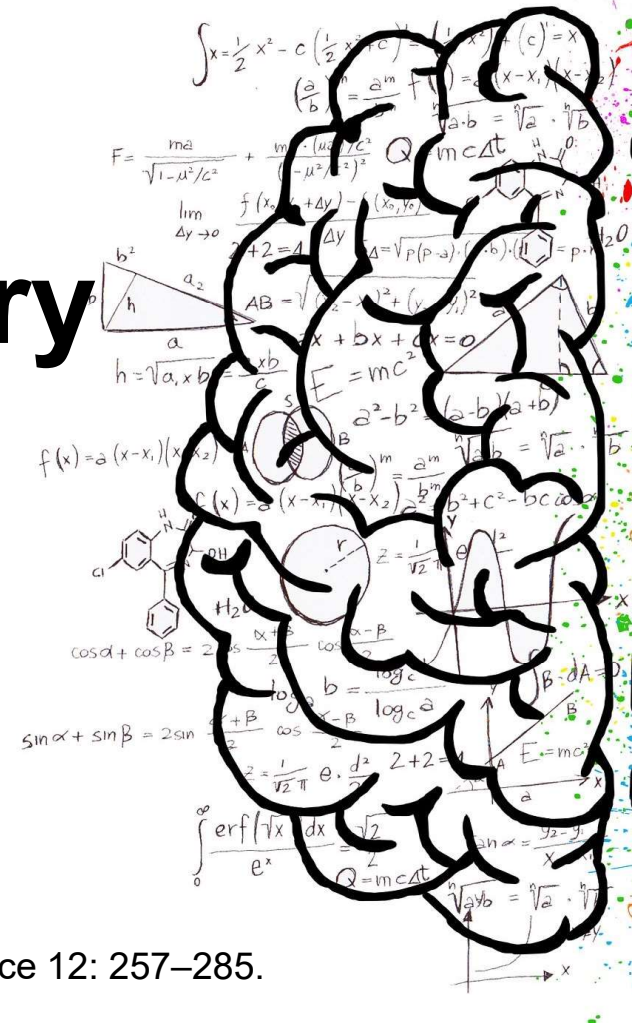
How do you currently determine which students are following along versus those who are lost?

Are you able to pinpoint when your students' confusion starts?





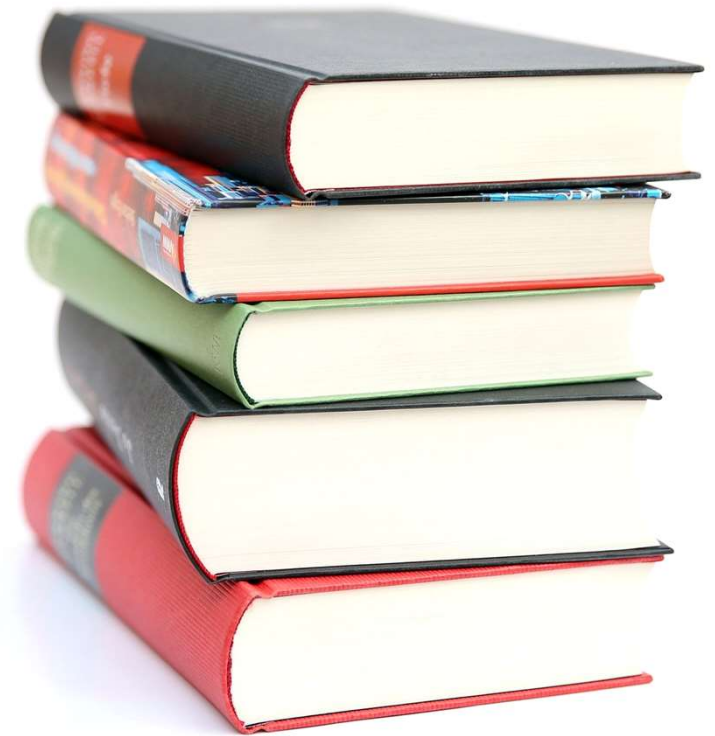
Cognitive Load Theory (CLT)



Sweller, J. (1988) Cognitive load during problem solving, *Cognitive Science* 12: 257–285.



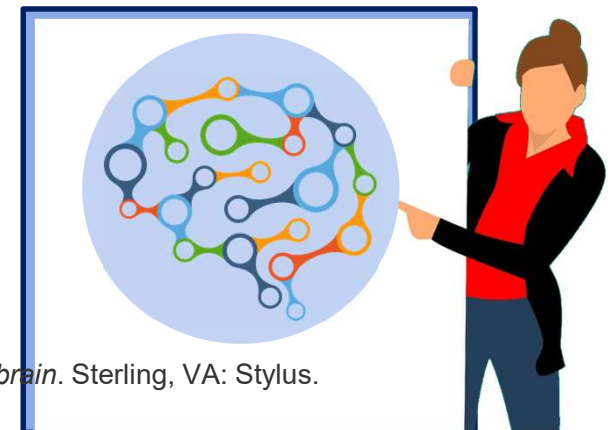
Evidence-Based Best Practices Applied from the Research



Brown, Peter C. (2014). Make it stick : the science of successful learning. Cambridge, Massachusetts :The Belknap Press of Harvard University Press

● Leveraging the Science of Learning When Designing Activities

- Attempt to hold their **Attention**
- Prioritize time in class to self-assess their own **Understanding**
- Highlight the **Value** of the content and assist in creating **Interest**



Doyle, T., & Zakrajsek, T. (2019). *The new science of learning: how to learn in harmony with your brain*. Sterling, VA: Stylus.



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Answer

According to the research discussed, students forget about **70%** of any new information within 24 hours if we do not make an effort to retain it.

Missed this question OR Interested to learn more about this?

Brown, Peter C. (2014). Make it stick : the science of successful learning. Cambridge, Massachusetts :The Belknap Press of Harvard University Press. Pp. 28





Confidence and performance

Connie A. Valdez, David Thompson, Heather Ulrich, Hilda Bi, and Susan Paulsen (2006). A Comparison of Pharmacy Students' Confidence and Test Performance. *American Journal of Pharmaceutical Education*: Volume 70, Issue 4, Article 76.

Michael C. Thomas and Liliairica Z. Macias-Moriarity (2014). Student Knowledge and Confidence in an Elective Clinical Toxicology Course Using Active-Learning Techniques. *American Journal of Pharmaceutical Education*: Volume 78, Issue 5, Article 95.

(Multiple choice exams)

Popovich NG Rogers WJ An assessment of pharmacy student confidence in learning *Am J Pharm Educ.* 1987 51 17 23

(OSCEs, objective structured clinical exam)

Ytterberg SR Harris IB Allen SS et al. Clinical confidence and skills of medical students: Use of an OSCE to enhance confidence in clinical skills *Acad Med.* 1998 73 S103 S105

Found a correlation
Did not find a correlation



Student Self-Assessment and Faculty Assessment of Learning Outcomes

Low stakes, confidence and content checks for understanding

What if any major themes emerge? What trends did we see?

Process during the Course

Pre & post confidence checks posted at the end of (selected) main topics presented

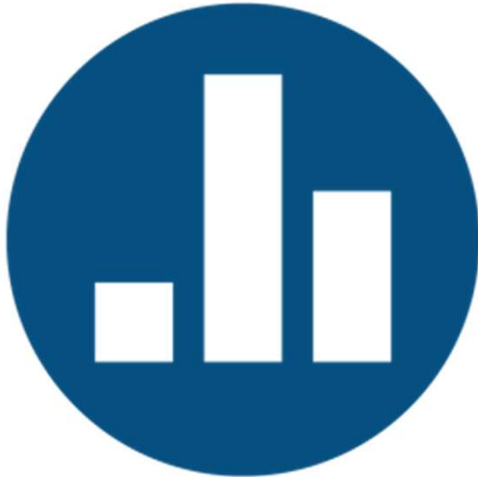
Evaluation and Revision

- Confidence
- Topic Comprehension
- End of Course Survey

Evidence and automatic Feedback provided throughout

Data is being collected and stored simultaneously

Content checks provided at the end of the lecture



Poll Everywhere

“It is an easy tool to use to give feedback.”

“It was very easy!”

“Online and simple.”

“I never had to log in.”

“Answering the questions was easy.”

“Quick and simple.”

“I was able to go back and look at the questions and answers.”

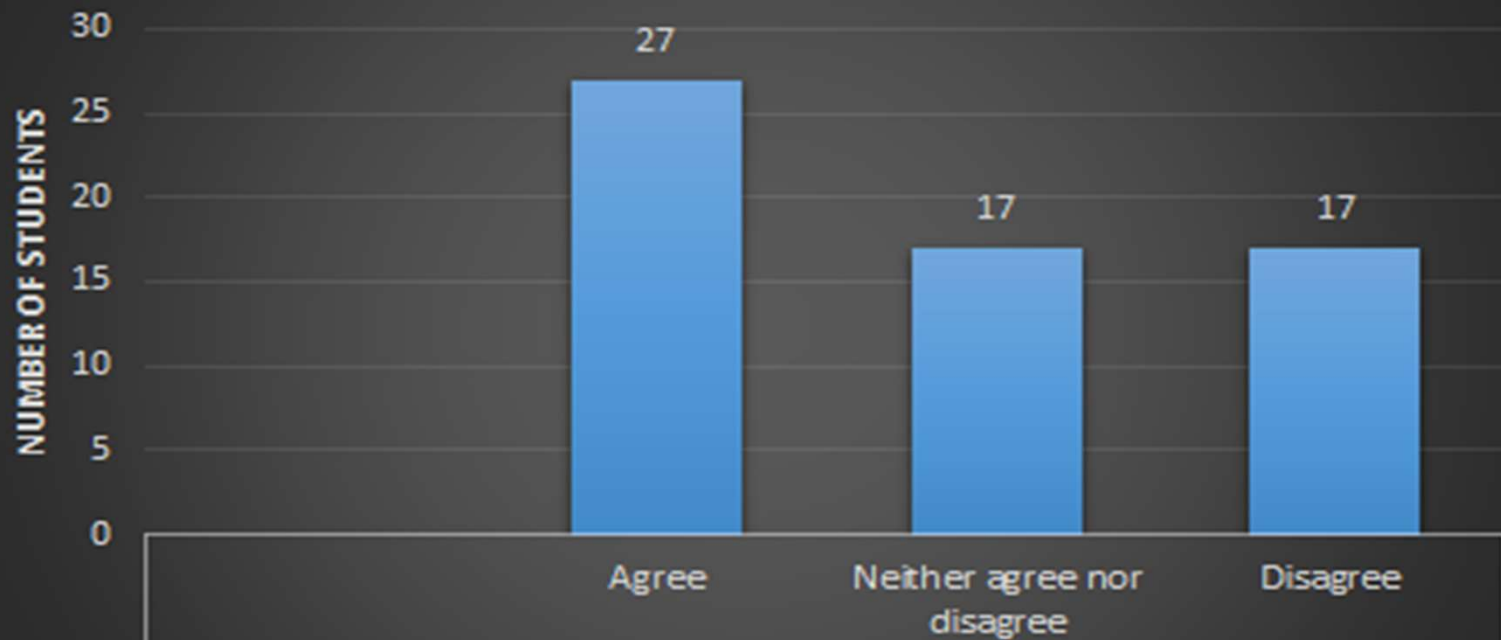


Let's Take a Look at Our Results



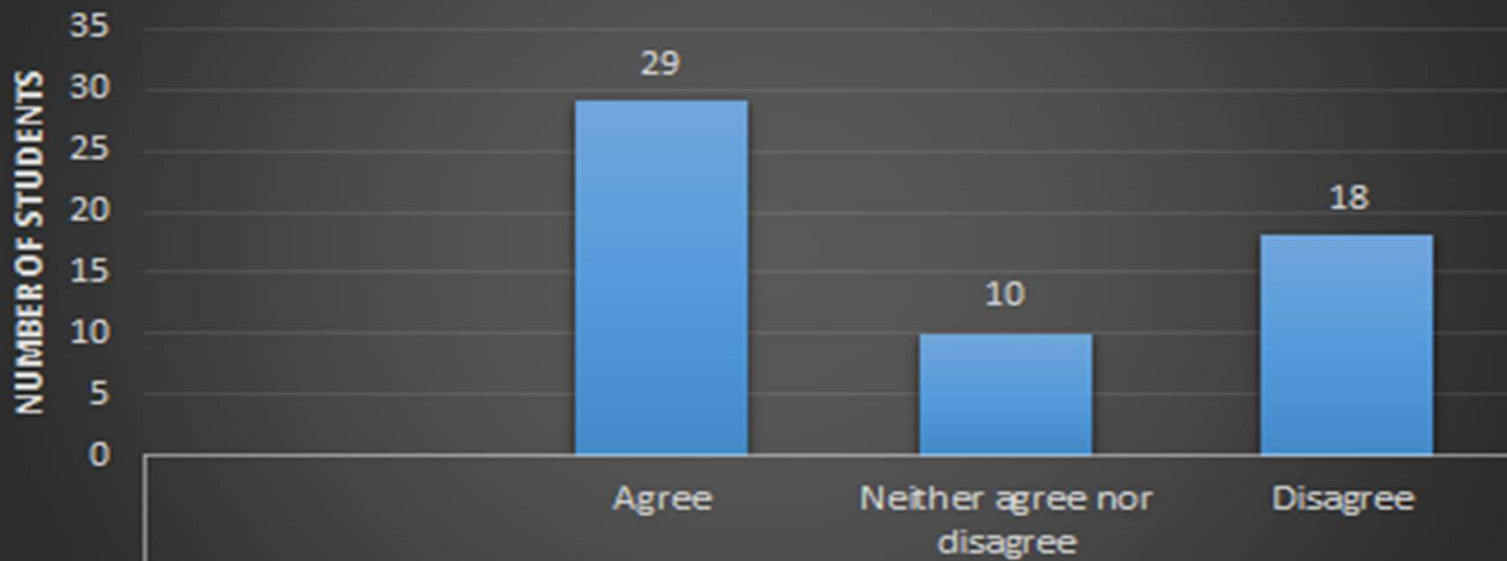


Recognizing areas of deficiency

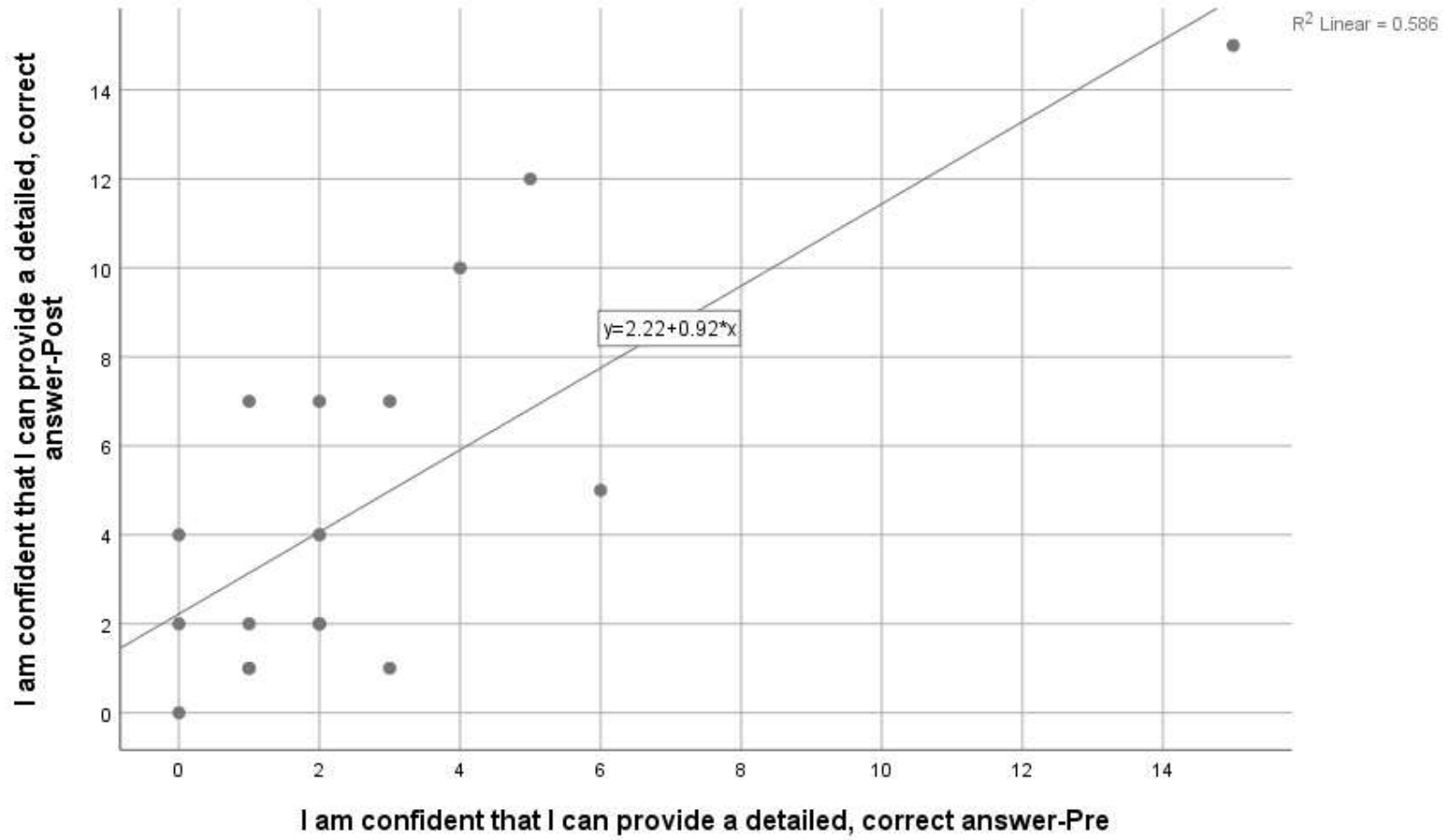


Q20 - The Poll Everywhere exercise helped me to determine the areas of the content that I needed to revisit and/or seek help.

Students found value in the exercises

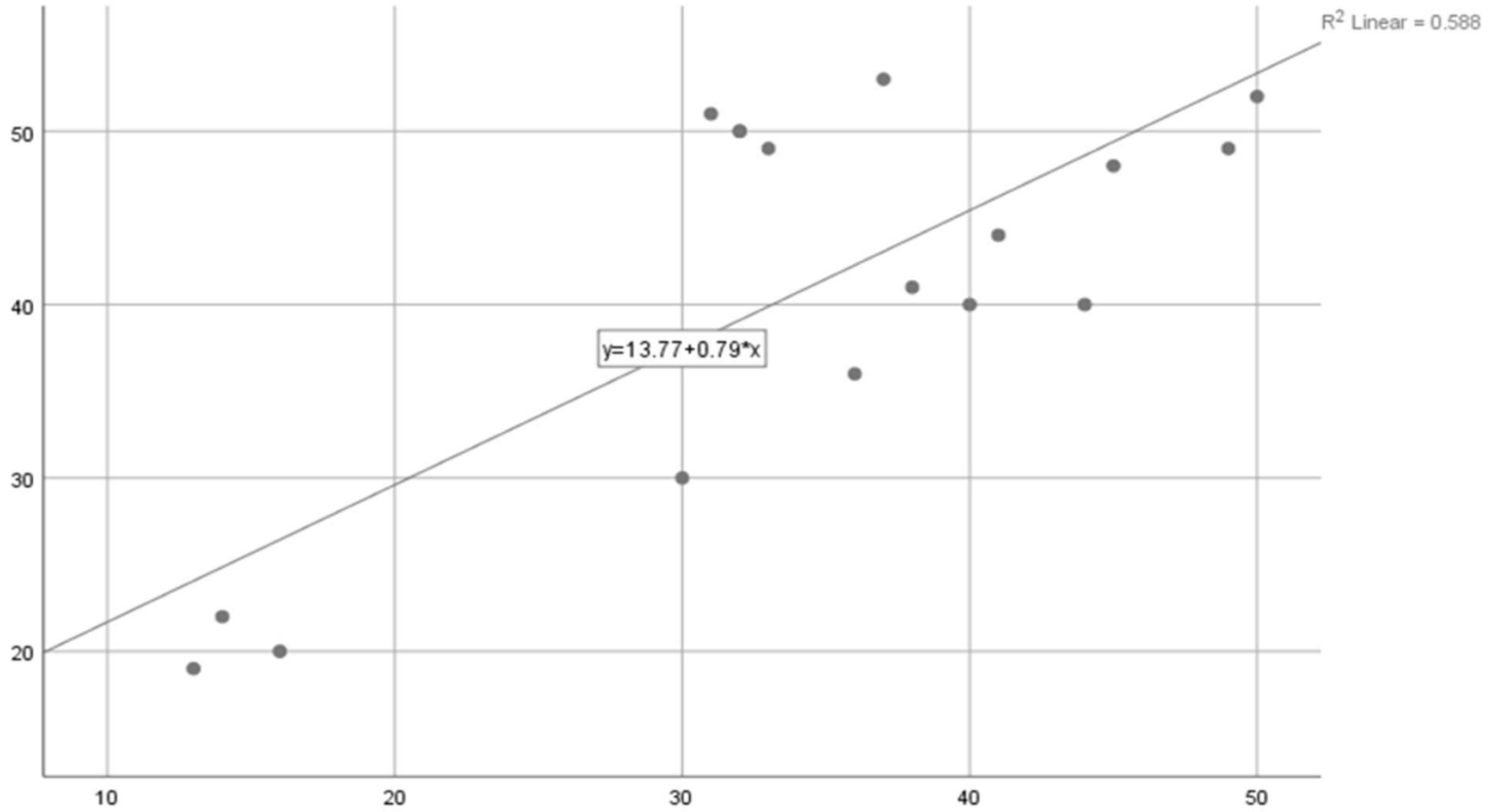


Q16 - The poll questions and checks for comprehension were valuable to my learning experience.





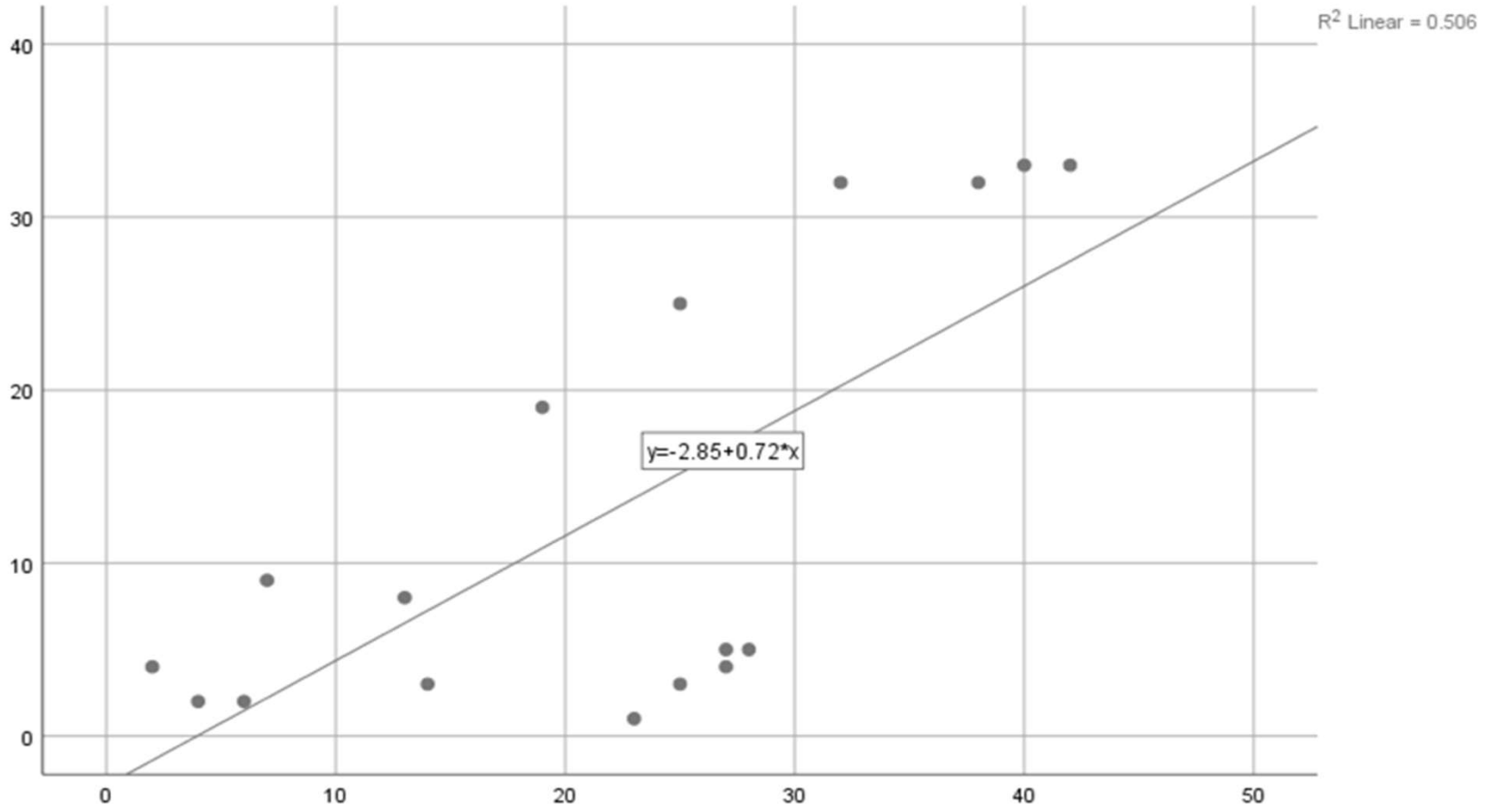
I am confident that I could answer at least 50% of questions correctly-Post



I am confident that I could answer at least 50% of questions correctly-Pre



I am not confident that I can answer questions related to this topic-Post



I am not confident that I can answer questions related to this topic-Pre

● Major themes extracted from open ended comments

✓ Overall content checks, requested more & higher level questions

? Students were unsure how to assess their own confidence

Blanch-Hartigan D. Medical students' self-assessment of performance: Results from three metaanalyses. Patient Educ Couns (2010), doi:10.1016/j.pec.2010.06.037

✗ Timing of confidence checks, requested more time



Discussion

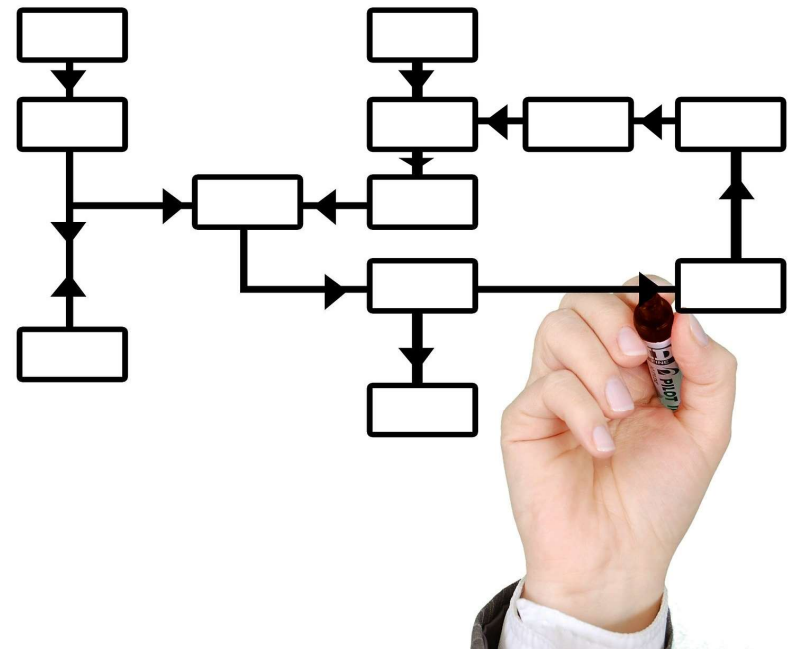
~~What more can we do?~~

How can we help our students take a more active role in their learning?



● Takeaways (Structural/Logistics)

- Set Clear Expectations
- Anonymity worked best
- Low stakes assessment
- Keep your questions brief, no more than three-four in a row.



Takeaways (Tie to Value)

- Prioritize the exercise & set aside class time (30 sec -10 min, average 4 min).
- Explain the purpose of the exercises, and how it can benefit them
 - *Tip: Using planned assessments helps to ensure you hit your main/important points
- Quality of the question, using knowledge based questions versus application questions
- Align the questions with the learning objectives and other high-stake assessments
- Expose the students to the specific language they will see in high-stakes assessments





**Thoughts?
Questions?**





Contact information



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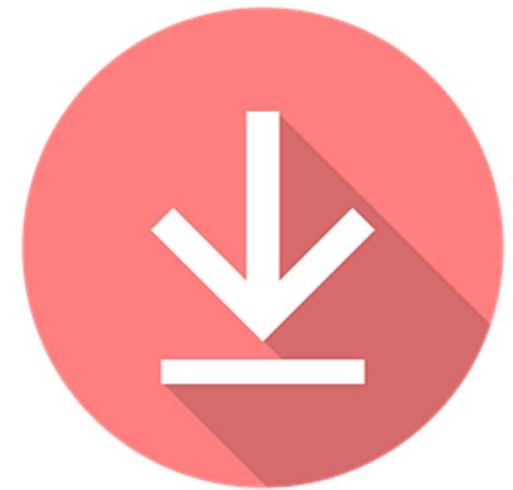
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- **To access our presentation**

<https://tinyurl.com/qkkpapg>



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- Blanch-Hartigan D. (2010). Medical students' self-assessment of performance: Results from three metaanalyses. *Patient Educ Couns*, doi:10.1016/j.pec.2010.06.037
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- Sweller, J. (1988) Cognitive load during problem solving, *Cognitive Science* 12: 257–285.
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