

Metacognition

Teaching and Learning Physics, Fall 2015

Identity

- (4 Min) List as many ways as you can think of that you are
 - Normative in this class.
 - Normative in physics.
 - Non-Normative in this class.
 - Non-Normative in physics.
- (5 min) Quiet Reflection – No Writing
 - Which non-normative trait most impacts you, how and why?
- **Group Share: (4 min per person then 5 min for whole group)**



Reflections on Metacognition in Collisions and Momentum (HW)

Estimate the coefficient of kinetic friction between your book and the table.

Observe differences in solution process.

Which solution do you judge likely the most accurate? Why?

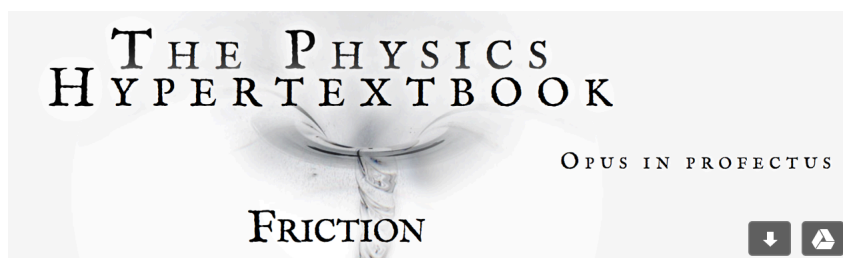
Process?

Variables measured?

Are the answers reasonable (i.e. how does answer compare to known coefficients?)

How should the coefficient of static friction compare? Now estimate it.

A 100 kg physics teacher pushes a 1.0 kg physics textbook across a 222 kg physics demo table. If the teacher needs to apply a force of 5.0 N to start the book sliding, what is the coefficient of static friction between the book and the table?



Corey Ptak – IMPRESS Instructor on how he would turn this activity into a metacognition focused one ...

- I default to the mental models theory. Making one's mental model explicit and then examining it expressly for error is a meta cognitive exercise. I would have them diagram their methods for determining the coefficient of friction, annotate it with the invisible things like forces etc. Ask them to list the concepts demonstrated in their model and rate their certainty of confidence in those topics. I would then give them a super applied scenario where common misconceptions about that topic would manifest themselves. I would ask them work through this applied scenario and identify concepts they aren't certain about then compare to there confidences from earlier, Expressly state what they think they need an improved knowledge of, and then go back and revise their original drawings.

What do you know now that you didn't know at the beginning of class?

How did you learn it?