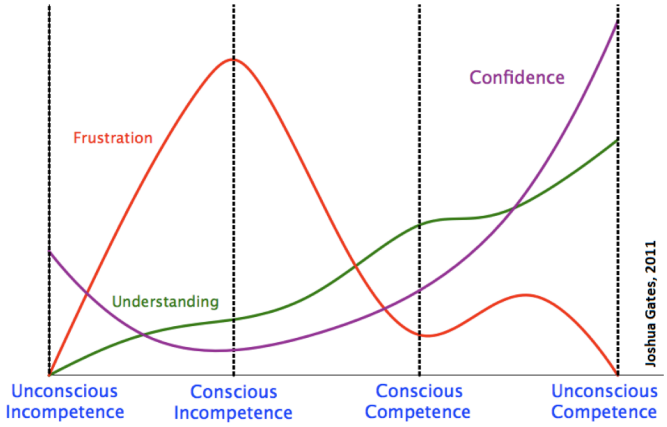
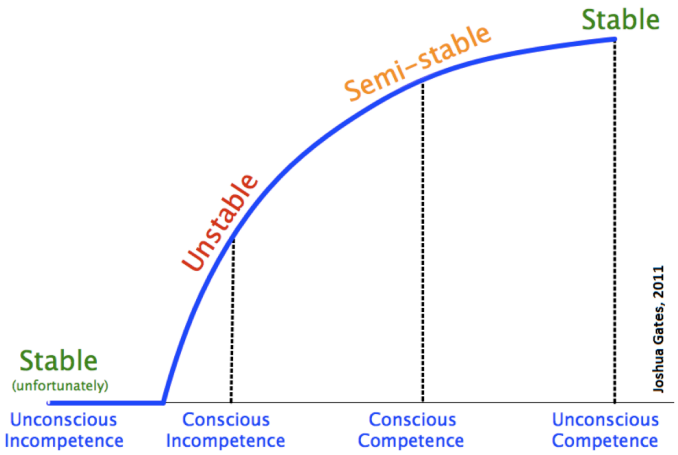
AP Physics Mindset Version 5 Name:_____

"Failure to plan is planning to fail." John Wooden

"We are what we repeatedly do. Excellence, then, is not an act but a habit." Aristotle

Below are two graphs about the stages of learning:





1. **Unconscious Incompetence (UI)**: You don't know what you don't know.
2. **Conscious Incompetence (CI)**: You now know what you don't know **AND** it is really frustrating!
3. **Conscious Competence (CC)**: You know what you know, but it takes effort to do.
4. **Unconscious Competence (UC)**: You know what you know and you don't have to think much about it. It is close to effortless to do task or solve a problem related to your knowledge.

1. You never paid attention to tying your shoes because someone did the work for you. **(UI)**
2. You started learning how to tie your shoes and didn't get them tied, FRUSTRATION levels rising, you know you don't know it! **(CI) At this stage many people give up learning something new…**
3. You can tie your own shoes!!! BUT it takes a long time and you have to think about it. **(CC)**
4. You can tie your own shoes and you don't even think about it! You can tie others shoes! **(UC)**

How do you move from **Unconscious Incompetence** to **Unconscious Competence**? **Deliberate practice**. "Based on studies in elite performance, Gladwell contended that it's "an extraordinarily consistent answer in an incredible number of fields ... you need to have practiced, to have apprenticed, for 10,000 hours before you get good." Gladwell's message — people aren't born geniuses, they get there through effort …"

What does deliberate practice mean? Deliberate practice is not just spending time on a topic. It should be focused on a specific goal. There should be some type of feedback. Thinking about your thinking (**metacognition**), so examining why you got something wrong if you got it wrong.

Example: I am not making my free throws.
Why? Were my feet correctly positioned? Was my elbow in the correct position?
What can I do to fix it? Practice dribbling? Practice passing? Have someone watch / video me as I shoot free throws and give me feedback?
Which of those things I could practice would help me get better at making free throws?

Why did I do poorly on a test? Metacognition – What did I do to prepare? Did I focus on my subject? Did I do deliberate practice?

Attacking the misconception of "I'm not good at physics" after a year or two of physics. Several experts including Malcolm Gladwell and Anders Ericsson, and research studies have suggested it takes an average of 10 years (or 10,000 hours) of dedicated practice to become an expert in a topic. By the end of a year of physics, you should certainly be better, but not an expert.

At the end of AP Physics, students have had the opportunity to study the same scientific field for one or two years, which should take them farther to understanding, Two years of deliberate practice should take you farther than one year.

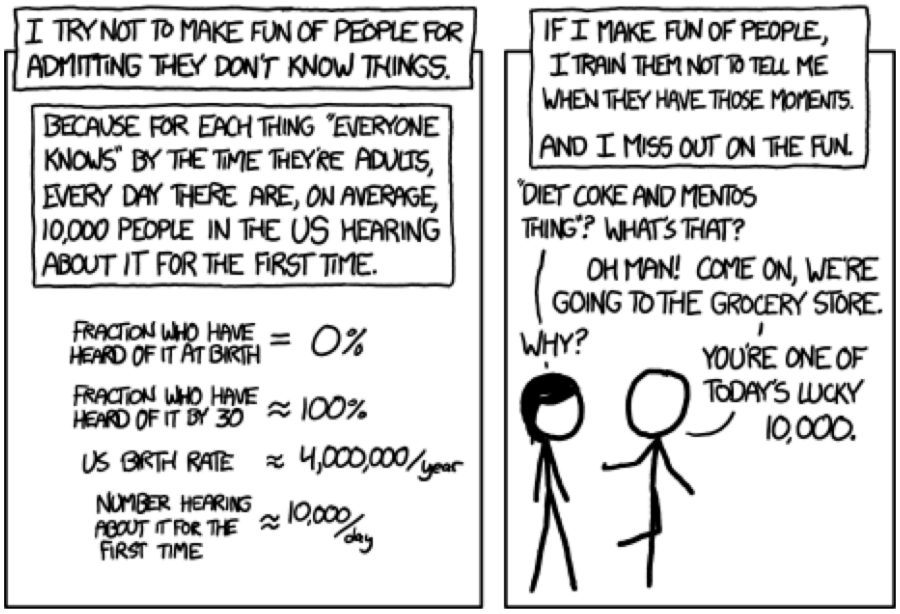
Even after teaching for 20+ years, I change and modify things all the time and I'm not sure if I'd consider myself an 'expert'. If students are having difficulty learning something, I need to put deliberate practice into determining how to help them learn better.

- What does deliberate practice in class look like?
    - Social media and cell phones should be limited to that given by a teacher's instructions
    - You're focused on physics in physics class, not other schoolwork or extracurricular activities.
    - You're ready to use the whole class period for academics including being prepared for class.
    - The self-direction to begin classwork without a bell (or at times the teacher) to direct you.
    - You have done the necessary work before class to be prepared so you can be an active participant in class and ask questions about the things you need clarification on.
    - Being an active part of class discussions, whiteboard development and actively engaged in lab work.
    - Having the courage to ask the teacher or peers for help when something doesn't make sense.
    - A willingness to try new things and a positive attitude toward class
    - ***Note taking: Make sure your mind is focused on the notes and you ask questions while taking the notes.***

- What does deliberate practice in class look like for the teacher?
    - The instruction has been planned and organized so students know what to expect and so they are able to develop concepts in a logical and progressive manner
    - The teacher is focused on students and their actions for the entire class, not grading assignments, doing email, etc.
    - The teacher will respect students' time – both starting and ending class on time, whether or not there is a bell
    - The teacher using the Socratic method to help students achieve understanding. A teacher asking the student questions when asked a question research has shown to be one of the most effective methods of teaching.
    - Activities and labs are designed to allow students to figure things out rather than verify what they already know
    - Open discussion and physics related questions are encouraged
    - Students making a good faith effort will be supported and rewarded to continue their effort
    - Having the courage to ask the students for feedback and help if a lesson doesn't make sense
    - To do list based on Quemments

- What does deliberate practice look like outside of class for students?
    - Finding a method to organize your assignments and responsibilities for class
    - Making a habit of a deliberate practice of thinking about physics outside of class each day, whether there is an assignment or not
    - Taking the time to complete assignments at a high level
    - Actively asking yourself about what you understand well and what you need to improve on
    - Taking advantage of extra help that's offered

- What does deliberate practice look like outside of class for the teacher?
    - Setting up labs and activities with materials so they are ready to go at the start of class
    - Making a habit of a deliberate practice of thinking about each class every day to be ready for upcoming events making a calendar
    - Grading assignments consistently, thoroughly and quickly to give students useful feedback
    - Assessing students' work to determine what they understand well and what needs further instruction
    - Taking advantage of materials available online and elsewhere to help students learn



- What does deliberate practice look like when you're trying to overcome a difficulty?

    - When frustrated, seeking help from classmates, former students, other experts and your teacher
    - Checking to make sure you've prepared yourself for the task at hand (reading assignments, looking for examples, and information posted by your teacher)
    - Appropriate use of social media such as your phone tree, Edmodo, GroupMe, etc.
    - Developing an action plan to overcome your struggle, as opposed to waiting until the day of a test
    - When something goes wrong, look inward at what you can do to improve as opposed to blaming others or looking for an excuse
    - Try using different resources, crash course, flipping physics, youtube,
    - Take a break

- What do you think deliberate practice looks like when a teacher is trying to overcome a difficulty?

Being frustrated and confused at times is fine, it's really about finding ways to get better. Just as how the athlete doesn't improve by having his or her trainer lift weights at the gym, you as a student will only get better if you put in the deliberate practice in this class. Your teacher is the coach who can observe your performance, offer strategies for success tailored to you as an individual, and show you resources that can help your understanding. Your teacher can't learn for you. Your academic journey may be the proverbial ten thousand steps; your teacher can help you learn about climbing from any point along that mountain, but it is you alone who has to decide how high to climb.

Keep your thoughts positive because your thoughts become your words.
Keep your words positive because your words become your behavior.
Keep your behavior positive because your behavior becomes your habits.
Keep your habits positive because your habits become your values.
Keep your values positive because your values become your destiny.
- Mohandas Karamchand Gandhi

Confusion is ignorance leaving your brain. – Kelly O'Shea

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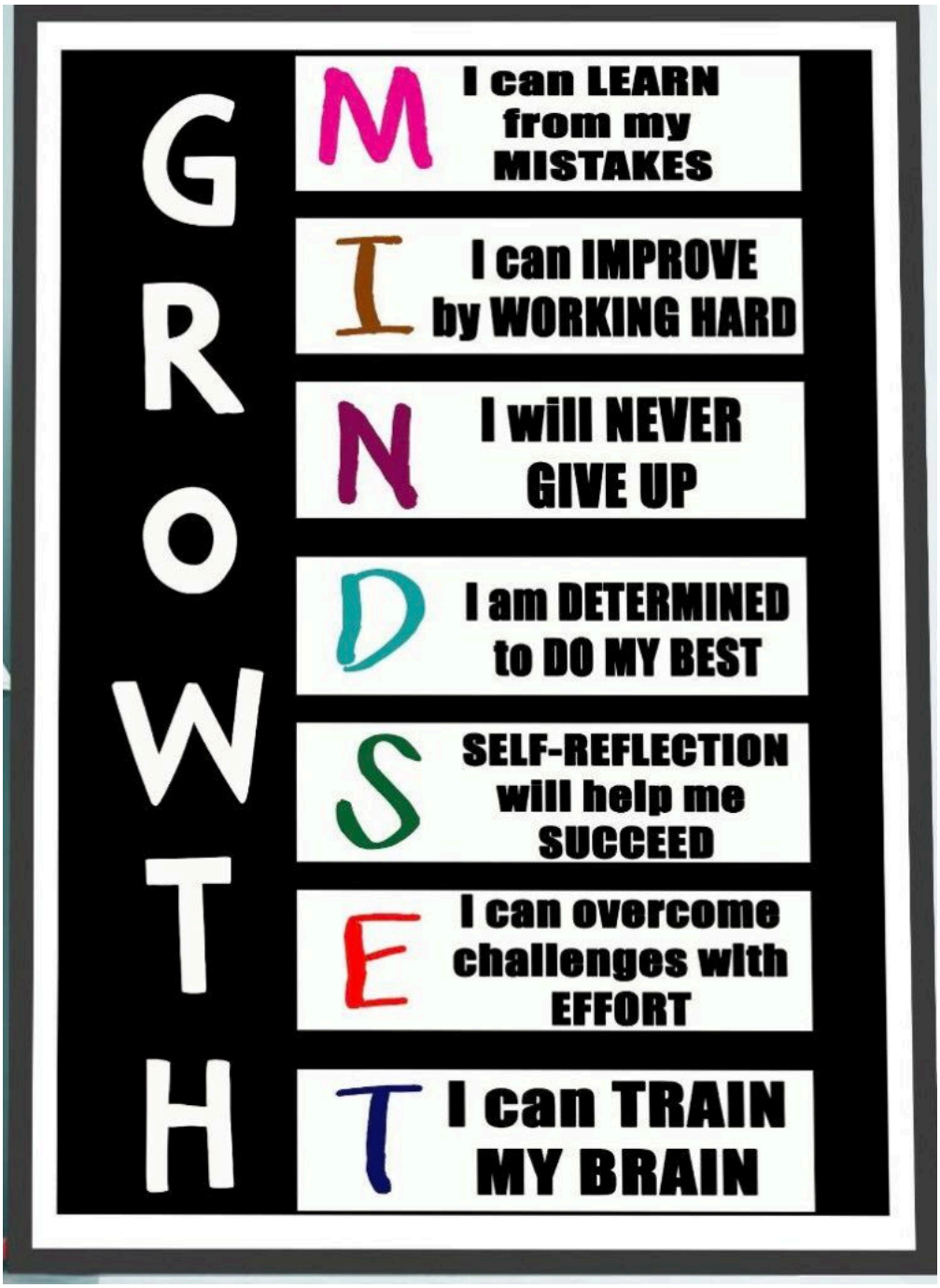

http://mindsetonline.com/testyourmindset/step1.php