The Effect of Emotion on Cognition

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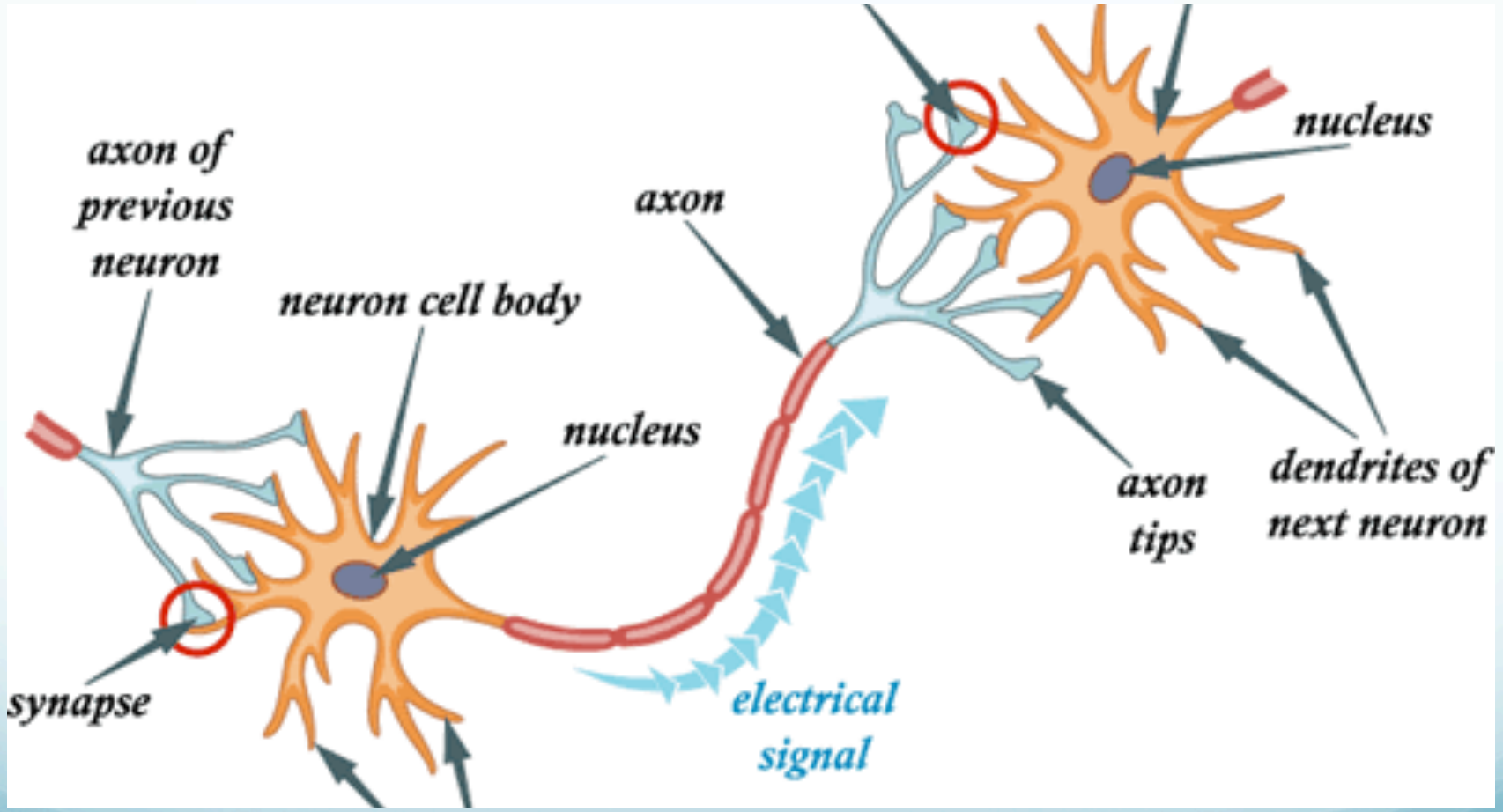
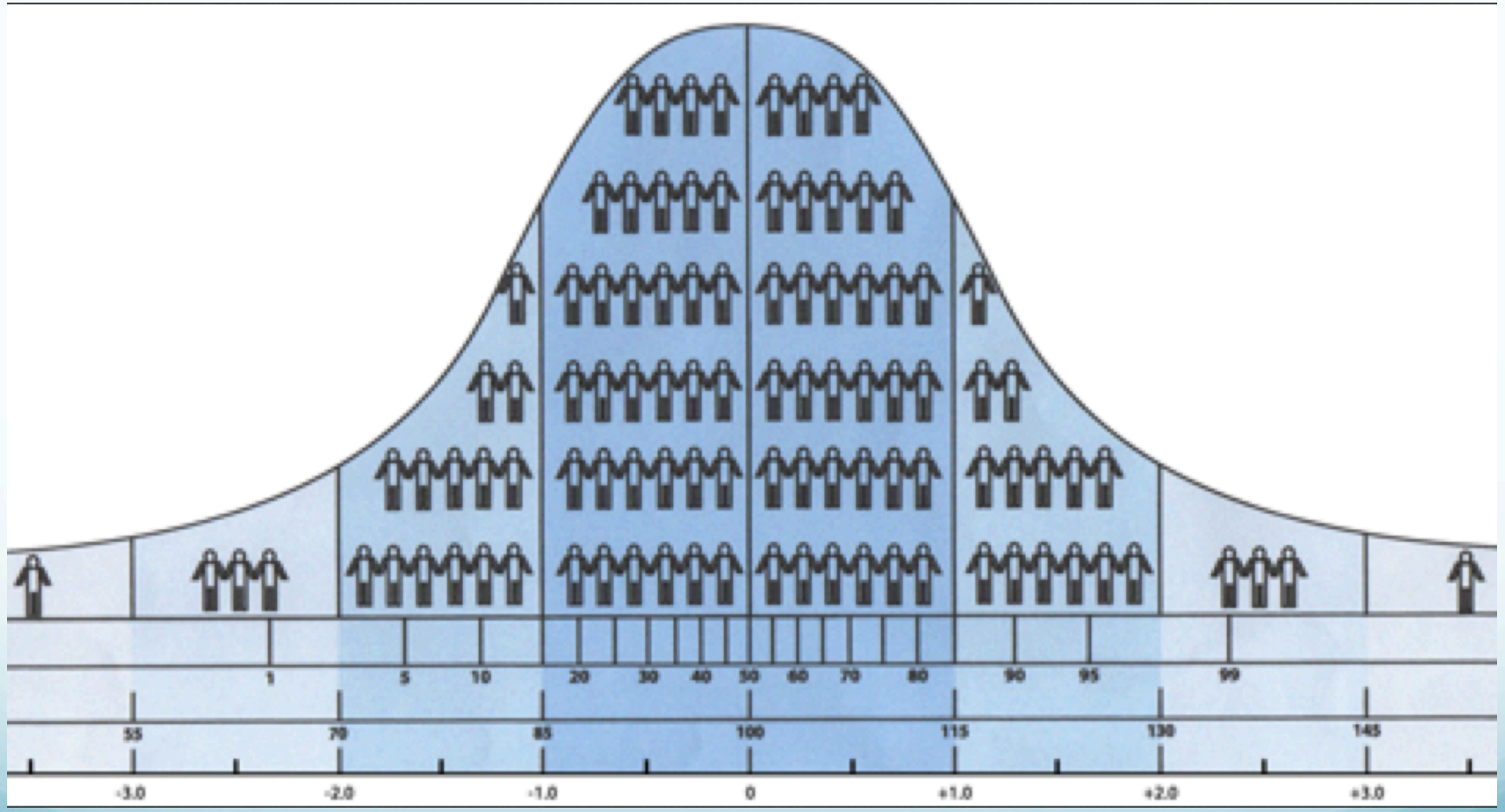
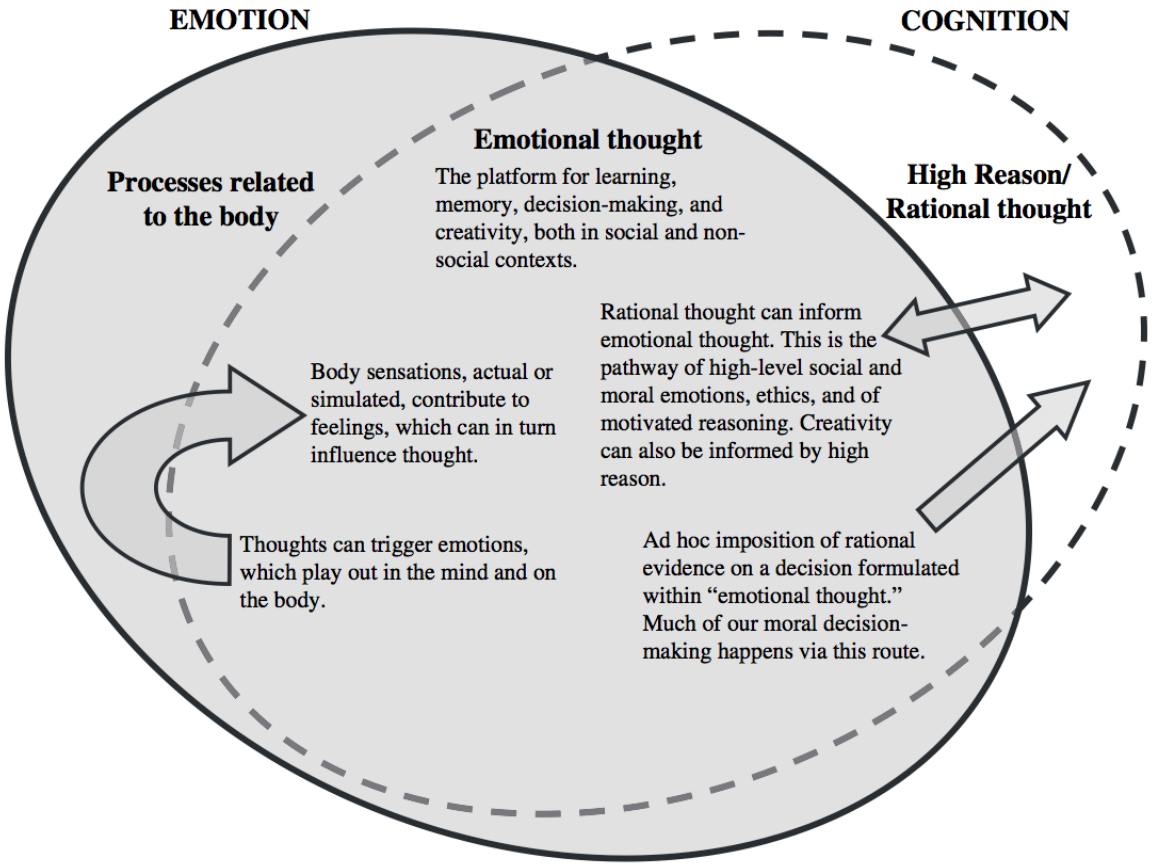
The learning brain



Neurodiversity

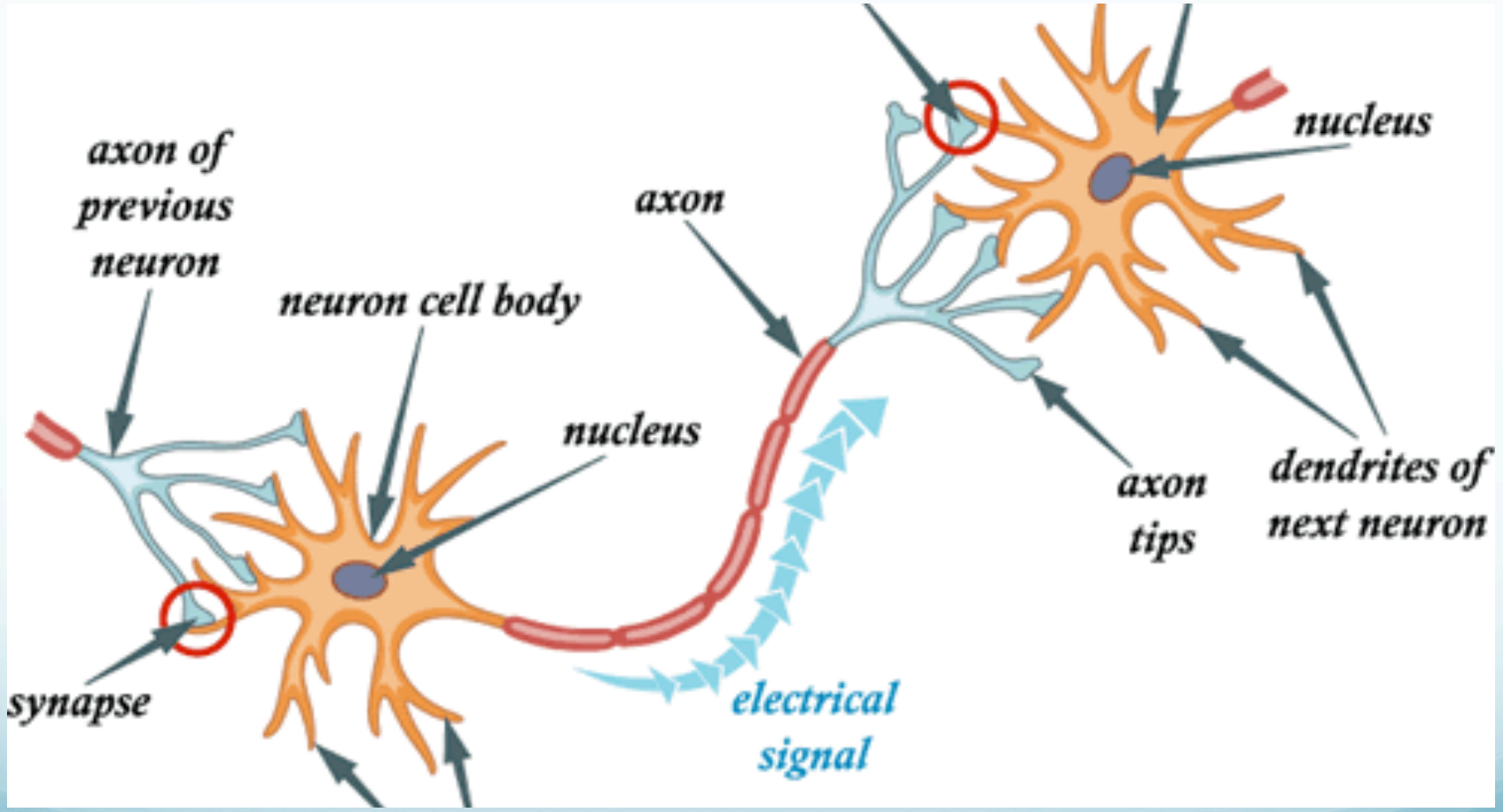


Emotion and the Brain



Immordino-Yang and Damasio, 2007. We Feel, Therefore We Learn: The Relevance of Affective and Social Neuroscience to Education. onlinelibrary.wiley.com/doi/10.1111/j.1751-228X.2007.00004.x/full

The learning brain



CAST.org: UDL

Universal Design for Learning

Recognition Networks

The "what" of learning

How we gather facts and categorize what we see, hear, and read. Identifying letters, words, or an author's style are recognition tasks.

Strategic Networks

The "how" of learning

Planning and performing tasks. How we organize and express our ideas. Writing an essay or solving a math problem are strategic tasks.

Affective Networks

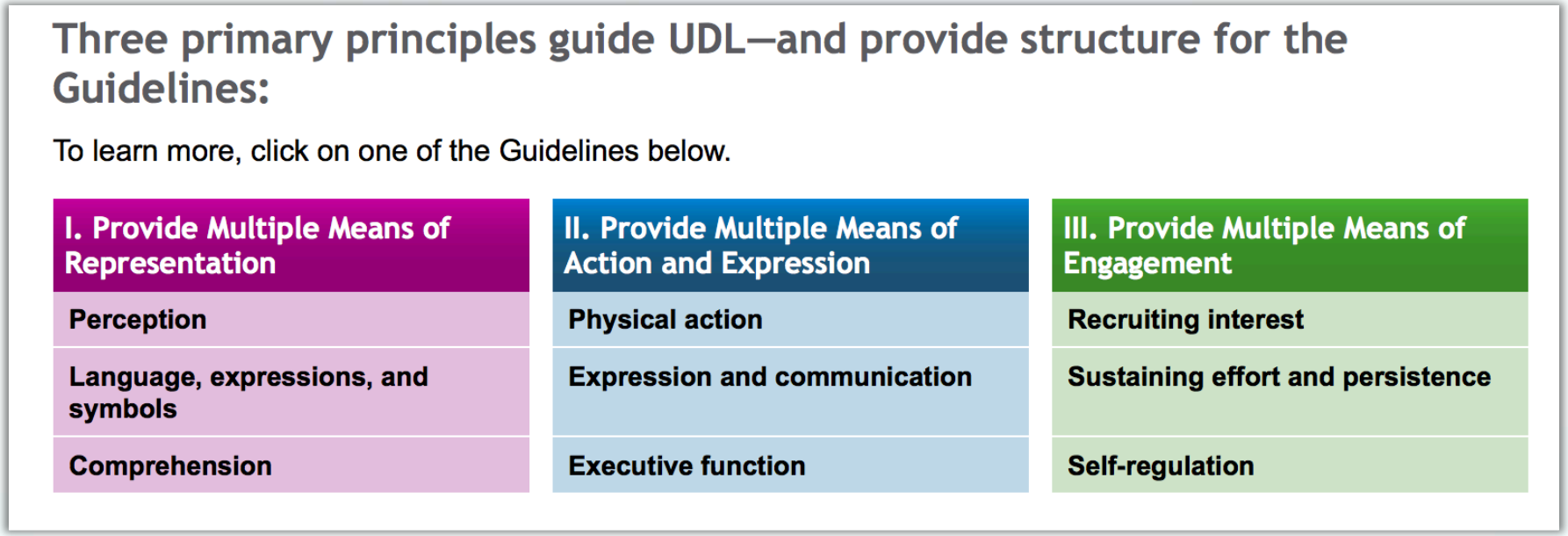
The "why" of learning

How learners get engaged and stay motivated. How they are challenged, excited, or interested. These are affective dimensions.

Adolescence: The Age of Opportunity

- Neuroplasticity: adolescence is a window of brain growth and change, comparable to the birth-3 window
- Puberty is happening earlier and lasting longer
  - Cause is multidetermined
  - Has been decreasing by about 3 months every decade
- The age of frontal lobe growth has not changed (13-14), so we develop self-control around the same age, but the age when hormones take over the body is happening ever younger
- **Self-regulation can be explicitly taught**

From Steinburg, L. (2015). The Age of Opportunity.



UDL Guidelines

http://www.udlcenter.org/aboutudl/udlguidelines


III. Provide Multiple Means of Engagement
7: Provide options for recruiting interest
7.1 Optimize individual choice and autonomy
7.2 Optimize relevance, value, and authenticity
7.3 Minimize threats and distractions
8: Provide options for sustaining effort and persistence
8.1 Heighten salience of goals and objectives
8.2 Vary demands and resources to optimize challenge
8.3 Foster collaboration and community
8.4 Increase mastery-oriented feedback
9: Provide options for self-regulation
9.1 Promote expectations and beliefs that optimize motivation
9.2 Facilitate personal coping skills and strategies
9.3 Develop self-assessment and reflection
Purposeful, motivated learners

Self-regulation

- Promote expectations and beliefs that optimize motivation
  - Personalized goals for prolearning behaviors
    - NOT academic goals!!!! Self-regulatory goals
- **Facilitate personal coping skills and strategies**
  - Scaffolding and feedback for managing frustration or stress, seeking adult assistance, or coping individually
- Develop self-assessment and reflection
  - Self-assessment of prolearning behaviors: getting enough exercise or sleep, increasing time spent on task, seeking support for stress, decreasing number of aggressive responses, etc.
  - Use charts and rubrics for objective reference and feedback.

http://www.udlcenter.org/aboutudl/udlguidelines/principle3

Coping with Academic Stress

- Mindfulness
  - Mindful meditation and breathing can be explicitly taught and can reduce cortisol levels and improve working memory
  - Stress is contagious: teachers and students feed off each other
- Exercise and School-based movement
  - Students should move a minimum of two minutes every hour – how can you incorporate it into your classroom? Can be as simple as jumping jacks.
  - 20-45 minutes of cardio improves dopamine and other neurotransmitters involved in attention and concentration

Coping with Academic Stress

- SLEEP: Tired children are stressed children who cannot cope.
  - For each letter grade difference, students vary by a tight average of 15 minutes of sleep
  - Delaying school start times improves mood, decreases anxiety and behavioral problems, increases standardized test scores
- Emotional connection:
  - Physical handshake and eye contact
- Cognitive restructuring: the importance of YET

Shortlist of Stress Strategies

- Mindful Minute start to class for a blank slate
- Chair yoga for mindful movement
- Square breath to clear working memory
- Handshake and eye contact to promote connection
- Cognitive restructuring to change negative thought loops
- Power poses for confidence and optimism
- Movement breaks for dopamine and oxygen
- Practicing growth mindset language

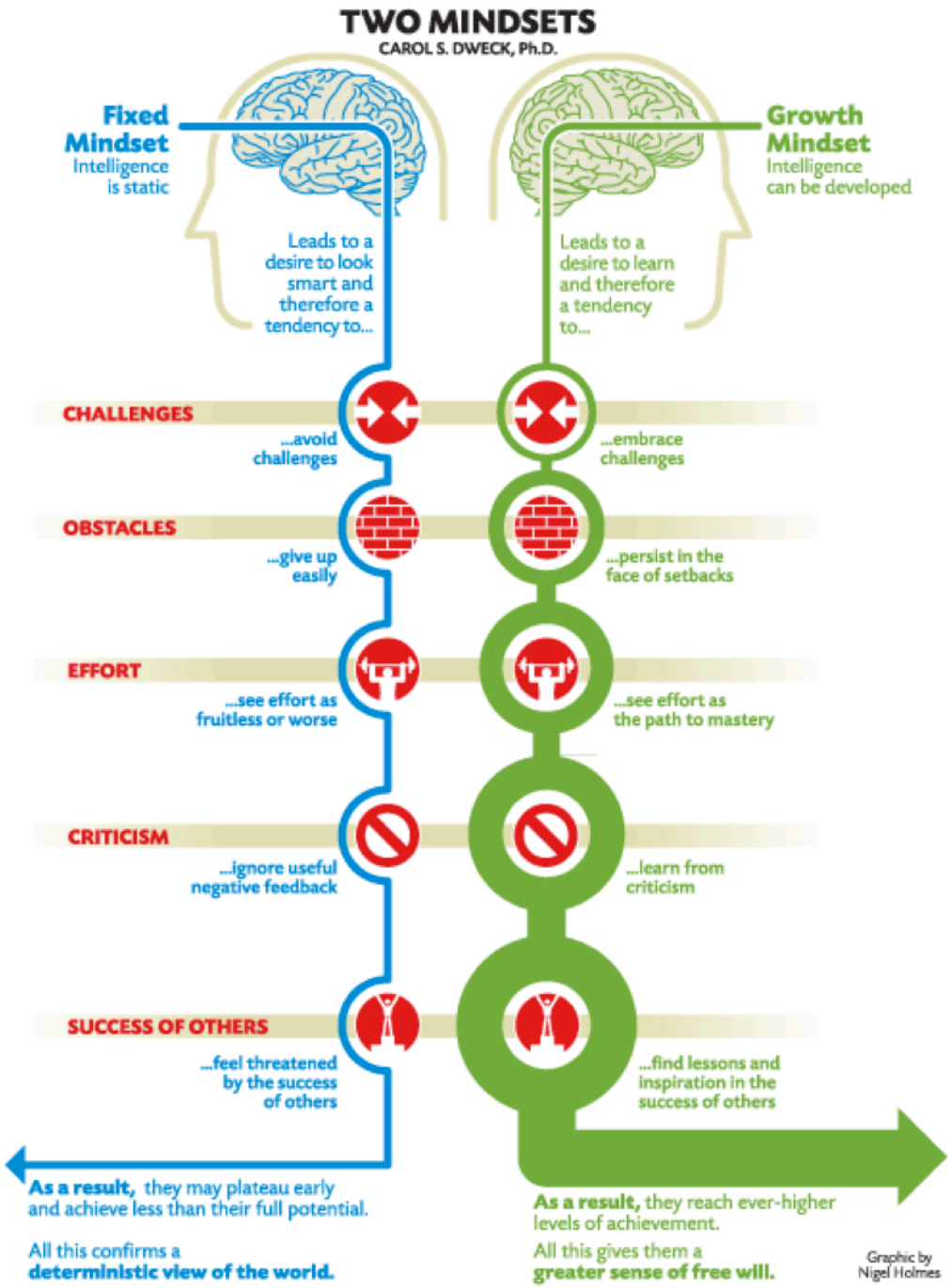
Sustaining effort and persistence

- Heighten salience of goals and objectives
- Vary demands and resources to optimize challenge
  - Kids don't work if it's too easy or too hard, so have different degrees of freedom within a class based on neurodiversity.
- Foster collaboration and communication
  - Clear roles and responsibilities in group work with breaks and individual work – honor the introverts.
- **Increase mastery-oriented feedback**
  - Focus on process!! Praise effort.
  - Carol Dweck's work on Growth Mindset vs. Entity Mindset

http://www.udlcenter.org/aboutudl/udlguidelines/principle3

Mindsets and Learning mindsetonline.com

- Fixed mindset:
  - Intelligence and talent are fixed traits, innate.
  - Less likely to take academic risks, as failure could "prove" that they aren't as smart as supposed. Tend to give up easily.
  - Failure is seen as evidence of stupidity.
  - Having to work hard is seen as evidence of stupidity
- Growth mindset:
  - Intelligence and talent can be developed through dedication and hard work.
  - Tend to be resilient in the face of intellectual challenge, take more risks. Work longer and harder in the face of adversity.
  - Failure is seen as evidence that they haven't worked hard enough.
  - Basic belief that all people can work hard, ergo all can succeed.


TWO MINDSETS
CAROL S. DWECK, Ph.D.
Fixed Mindset
Intelligence is static
Growth Mindset
Intelligence can be developed
Leads to a desire to look smart and therefore a tendency to...
Leads to a desire to learn and therefore a tendency to...
CHALLENGES
...avoid challenges
...embrace challenges
OBSTACLES
...give up easily
...persist in the face of setbacks
EFFORT
...see effort as fruitless or worse
...see effort as the path to mastery
CRITICISM
...ignore useful negative feedback
...learn from criticism
SUCCESS OF OTHERS
...feel threatened by the success of others
...find lessons and inspiration in the success of others
As a result, they may plateau early and achieve less than their full potential.
All this confirms a deterministic view of the world.
As a result, they reach ever-higher levels of achievement.
All this gives them a greater sense of free will.
Graphic by Nigel Holmes

PRAISE EFFORT

- Changing mindsets requires us to change the way we talk to students
- Students need 5 items of praise for every one item of criticism – but how we praise them matters.
- Praise the work that students do – be specific and detailed.
- Process-oriented vs. Outcome-oriented
- http://mindsetonline.com/howmindsetaffects/parentsteacherscoaches/index.html
- http://www.mindsetworks.com/default.aspx

Growth Mindset in the Classroom

- Help students understand how brain growth works
  - Between ages 13-14 and 21-22, brain growth in the frontal lobe is exponential, then slows to linear and plateaus around age 60
    - Drug use during the teens/early 20s has the greatest negative impact it ever will
  - Working on our weaknesses improves our ability – our weaknesses can become our strengths, with hard work
  - Cognitive Restructuring: reframing negative thoughts, over time, breaks unhealthy pathways and creates new ones.
    - Over time, this protects us from depression and anxiety

Growth Mindset in the Classroom

- Mistakes are not only ok, they're crucial
  - When we do a sheet of math problems and get them all correct, we learn nothing. The fMRI shows no brain changes. When we make mistakes and correct them, we get smarter through increased connections in the brain.
- Model recovery from mistakes
  - Teacher mistakes are an opportunity to build resilience: how do you handle it? A learning opportunity (growth) or a defensive reaction (fixed).
  - Opportunity for emotional connection.

Growth Mindset in the Classroom

- Create time for growth
  - Build time in the schedule for students to work on whatever needs improvement
    - By working on areas where students see themselves to be weak (providing free choice), they can improve their ability/intelligence at an IQ level
  - Teach healthy brain habits and coping skills
    - Teens need 9-10 hours of sleep per night, and long term memories are formed during the last 3-4 hours of that time
    - Daily work in mindfulness and other coping skills
    - The importance of exercise in learning and mood

Reimagining High School

The research shows that increasing self-regulation in a sustained, scaffolded way is the key to increased performance and decreased stress in secondary education.

- Later start times and brain/sleep education. The question should not be why but how.
- Explicit teaching of coping skills and SEL/CARE
  - Mindfulness meditation and physical activity
  - Growth mindset
- Training executive function and working memory
- Built in aerobic exercise throughout the day, in every class

Adapted from Steinburg, L. (2015). The Age of Opportunity.

Moving Forward

- Please email me any questions, concerns, or topics that you would like addressed in the future: cristina@affectacademics.com
- “Homework”: try one strategy and next time come prepared to give your experience – what worked, what didn’t.

Thank you!!

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available at affectacademics.com/blog/
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