

# Teaching a Growth Mindset

Joseph Espinosa  
February 12th, 2015



# Sessions Outcomes

- To review the PDSA Cycles for the introduction and 4 Growth Mindset Lessons.
- To vet and select the Mindset Works, PERTS Lessons and formative assessments.
- To create a checklist of those lesson components selected to be taught.
- To create SMART Goals for the teaching and assessing of Growth Mindset Concepts.



# Grounding:

- Why is growth mindset important for equity in education?
- How do we foster a growth mindset in our students?
- What does it look like to foster growth mindset in ourselves?



Carol S. Dweck

## Mind-Sets and Equitable Education

**M**uch talk about equity in education is about bricks and mortar—about having equal facilities and equal resources. Those factors, although extremely important, are relatively easy to quantify. What may be harder to capture are the beliefs that administrators, teachers, and students hold—beliefs that can have a striking impact on students' achievement.

In my research, I have identified two sets of beliefs that people can have about students' intelligence (and that students can have about their own intelligence). They may have a fixed mind-set, in which they believe that intelligence is a static trait: some students are smart and some are not, and that's that. Or they may have a growth mind-set, in which they believe that intelligence can be developed by various means—for example, through effort and instruction. A growth mind-set doesn't imply that everyone is the same or that anyone could be Einstein, but it does imply that everyone's intellectual ability can grow—and that even Einstein wasn't Einstein before he put in years of passionate, relentless effort.

Recent research has shown that students' mind-sets have a direct influence on their grades and that teaching students to have a growth mind-set raises their grades and achievement test scores significantly (Blackwell, Trzesniewski, & Dweck, 2007; Good, Aronson, & Inzlicht, 2003). In addition, studies demonstrate that having a growth mind-set is especially important for students who are laboring under a negative stereotype about their abilities, such as Black or Latino students or girls in mathematics or science classes (Blackwell et al., 2007; Good et al., 2003; Aronson, Fried, & Good, 2002). Adopting a growth mind-set helps those students remain engaged and achieve well, even in the face of stereotypes.

### Students' Mind-Sets

To see the effect of mind-sets, my collaborators, Lisa Blackwell and Kali Trzesniewski, and I followed several hundred students in New York City during their difficult transition to seventh grade. We measured their mind-sets at the beginning of the school year and monitored their grades over the next two years to see how they had coped with the challenge. Despite their differing mind-sets, students entered seventh grade with similar mathematics achievement, but their grades jumped apart in their first term and continued to diverge over the next two years. The students with the growth mind-set (those who believed that intelligence could be developed) significantly outperformed their classmates who held a fixed mind-set. Why did this happen?

Because they believed that their intellect could be developed, students with a growth mind-set focused on learning, believed in effort, and were resilient in the face of setbacks. Students with

# PDSA Cycle 1d: Teaching and Learning about Brain Basics

<b>What is the goal of the test?*</b>	Students discover how to maintain readiness to learn and how attention and concentration are supported.	<b>Cycle #:</b> 1d	<b>Driver being tested:</b>	Student Mindset & Self-Efficacy in Relation to Doing Math
<i>*Identify your overall goal: To make something work better? Learn how an innovation works? Learn how to test in a new context? Learn how to spread or implement?</i>				
<b>(1) PLAN</b>		<b>(3) STUDY</b>		
Questions. What questions do you have about what will happen?	Predictions. What do you think might happen as a result of this change?	Record results. Use measures based on your predictions. How do measures compare to your predictions?		
<b>(Q1)</b> Will teachers find the lessons facilitate the teaching and learning of the growth mindset	Yes, teachers will find the lessons provide strong content for teaching about the brain, how it works, and under what conditions learning best occurs.	→		
<b>(Q2)</b> Will teachers teach with increasing self-efficacy the agreed upon lesson components with confidence, fidelity, and pacing.	Yes, using tools such as the teaching guide, checklist, and pacing guide teachers will maintain a one unit per week pacing.	→		
<b>(Q3)</b> Will teachers formatively assess student learning of the growth mindset and provide written or oral feedback on student work.	Yes, will use a formative assessment to assess the teaching and learning of brain basics.	→		
<b>(Q4)</b> Will students demonstrate an understanding of brain basics major concepts	Yes, as measured by the formative assessment(s)	→		
Details. Describe the who/what/when/where of the test. Include your data collection plan.		Was the test successful? What did you learn?		
<b>Task:</b> Teach and assess the lesson components related to brain basics. <b>Teachers</b> will teach brain basics lessons and assess students understanding. Teachers will finish the introduction and brain basic lessons within the time frame using the teacher's guide, pacing schedule, and checklist as supports to ensure task completion. Teachers will fill out a weekly survey on usefulness and perceived impact of the brain basics lessons. <b>Project Leader</b> will collect data from checklists, formative assessments, and surveys <b>Students</b> will fill out biweekly survey measuring growth mindset components including how they value challenge, mistakes, and effort in the math class.				
<b>(2) DO</b>		<b>(4) ACT</b>		
Briefly describe what happened during the test, surprises, difficulty getting data, obstacles, successes, etc.		What will you do next? Describe modifications/decisions for the next cycle		

# PDSA Cycle 2d: Teaching & Learning about Brain Behavior

<b>What is the goal of the test?*</b>	Students discover how to maintain readiness to learn and how attention and concentration are supported.	<b>Cycle #:</b> 1d	<b>Driver being tested:</b>	Student Mindset & Self-Efficacy in Relation to Doing Math
*Identify your overall goal: To make something work better? Learn how an innovation works? Learn how to test in a new context? Learn how to spread or implement?				
<b>(1) PLAN</b>		<b>(3) STUDY</b>		
Questions. What questions do you have about what will happen?	Predictions. What do you think might happen as a result of this change?	Record results. Use measures based on your predictions. How do measures compare to your predictions?		
(Q1) Will teachers find the lessons facilitate the teaching and learning of the growth mindset	Yes, teachers will find the lessons provide strong content for teaching about the brain, how it works, and under what conditions learning best occurs.	→		
(Q2) Will teachers teach with increasing self-efficacy the agreed upon lesson components with confidence, fidelity, and pacing.	Yes, using tools such as the teaching guide, checklist, and pacing guide teachers will maintain a one unit per week pacing.	→		
(Q3) Will teachers formatively assess student learning of the growth mindset and provide written or oral feedback on student work.	Yes, will use a formative assessment to assess the teaching and learning of brain basics.	→		
(Q4) Will students demonstrate an understanding of brain basics major concepts	Yes, as measured by the formative assessment(s)	→		
Details. Describe the who/what/when/where of the test. Include your data collection plan.		Was the test successful? What did you learn?		
<b>Task:</b> Teach and assess the lesson components related to brain basics. <b>Teachers</b> will teach brain basics lessons and assess students understanding. Teachers will finish the introduction and brain basic lessons within the time frame using the teacher's guide, pacing schedule, and checklist as supports to ensure task completion. Teachers will fill out a weekly survey on usefulness and perceived impact of the brain basics lessons. <b>Project Leader</b> will collect data from checklists, formative assessments, and surveys <b>Students</b> will fill out biweekly survey measuring growth mindset components including how they value challenge, mistakes, and effort in the math class.				
<b>(2) DO</b>		<b>(4) ACT</b>		
Briefly describe what happened during the test, surprises, difficulty getting data, obstacles, successes, etc.		What will you do next? Describe modifications/decisions for the next cycle		

# PDSA Cycle 3d: Teaching & Learning about Brain Building

<b>What is the goal of the test?*</b>	Students discover how to maintain readiness to learn and how attention and concentration are supported.	<b>Cycle #:</b> 1d	<b>Driver being tested:</b> Student Mindset & Self-Efficacy in Relation to Doing Math
*Identify your overall goal: To make something work better? Learn how an innovation works? Learn how to test in a new context? Learn how to spread or implement?			
<b>(1) PLAN</b>		<b>(3) STUDY</b>	
Questions. What questions do you have about what will happen?	Predictions. What do you think might happen as a result of this change?	Record results. Use measures based on your predictions. How do measures compare to your predictions?	
<b>(Q1)</b> Will teachers find the lessons facilitate the teaching and learning of the growth mindset	<i>Yes, teachers will find the lessons provide strong content for teaching about the brain, how it works, and under what conditions learning best occurs.</i>	<div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: black; margin-right: 5px;"></div> <div style="border-bottom: 1px solid black; width: 100%;"></div> </div> <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: black; margin-right: 5px;"></div> <div style="border-bottom: 1px solid black; width: 100%;"></div> </div> <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: black; margin-right: 5px;"></div> <div style="border-bottom: 1px solid black; width: 100%;"></div> </div> <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: black; margin-right: 5px;"></div> <div style="border-bottom: 1px solid black; width: 100%;"></div> </div>	
<b>(Q2)</b> Will teachers teach with increasing self-efficacy the agreed upon lesson components with confidence, fidelity, and pacing.	<i>Yes, using tools such as the teaching guide, checklist, and pacing guide teachers will maintain a one unit per week pacing.</i>		
<b>(Q3)</b> Will teachers formatively assess student learning of the growth mindset and provide written or oral feedback on student work.	<i>Yes, will use a formative assessment to assess the teaching and learning of brain basics.</i>		
<b>(Q4)</b> Will students demonstrate an understanding of brain basics major concepts	<i>Yes, as measured by the formative assessment(s)</i>		
Details. Describe the who/what/when/where of the test. Include your data collection plan.		Was the test successful? What did you learn?	
<b>Task:</b> Teach and assess the lesson components related to brain basics. <b>Teachers</b> will teach brain basics lessons and assess students understanding. Teachers will finish the introduction and brain basic lessons within the time frame using the teacher's guide, pacing schedule, and checklist as supports to ensure task completion. Teachers will fill out a weekly survey on usefulness and perceived impact of the brain basics lessons. <b>Project Leader</b> will collect data from checklists, formative assessments, and surveys <b>Students</b> will fill out biweekly survey measuring growth mindset components including how they value challenge, mistakes, and effort in the math class.		<b>4) ACT</b>	
<b>(2) DO</b>		What will you do next? Describe modifications/decisions for the next cycle	
Briefly describe what happened during the test, surprises, difficulty getting data, obstacles, successes, etc.			

# PDSA Cycle 4d: Teaching & Learning about Brain Boosters

<b>What is the goal of the test?*</b>	Students discover how to maintain readiness to learn and how attention and concentration are supported.	<b>Cycle #:</b> 1d	<b>Driver being tested:</b> Student Mindset & Self-Efficacy in Relation to Doing Math
*Identify your overall goal: To make something work better? Learn how an innovation works? Learn how to test in a new context? Learn how to spread or implement?			
<b>(1) PLAN</b>		<b>(3) STUDY</b>	
Questions. What questions do you have about what will happen?	Predictions. What do you think might happen as a result of this change?	Record results. Use measures based on your predictions. How do measures compare to your predictions?	
<b>(Q1)</b> Will teachers find the lessons facilitate the teaching and learning of the growth mindset	<i>Yes, teachers will find the lessons provide strong content for teaching about the brain, how it works, and under what conditions learning best occurs.</i>		
<b>(Q2)</b> Will teachers teach with increasing self-efficacy the agreed upon lesson components with confidence, fidelity, and pacing.	<i>Yes, using tools such as the teaching guide, checklist, and pacing guide teachers will maintain a one unit per week pacing.</i>		
<b>(Q3)</b> Will teachers formatively assess student learning of the growth mindset and provide written or oral feedback on student work.	<i>Yes, will use a formative assessment to assess the teaching and learning of brain basics.</i>		
<b>(Q4)</b> Will students demonstrate an understanding of brain basics major concepts	<i>Yes, as measured by the formative assessment(s)</i>		
Details. Describe the who/what/when/where of the test. Include your data collection plan.		Was the test successful? What did you learn?	
<b>Task:</b> Teach and assess the lesson components related to brain basics. <b>Teachers</b> will teach brain basics lessons and assess students understanding. Teachers will finish the introduction and brain basic lessons within the time frame using the teacher's guide, pacing schedule, and checklist as supports to ensure task completion. Teachers will fill out a weekly survey on usefulness and perceived impact of the brain basics lessons. <b>Project Leader</b> will collect data from checklists, formative assessments, and surveys <b>Students</b> will fill out biweekly survey measuring growth mindset components including how they value challenge, mistakes, and effort in the math class.			
<b>(2) DO</b>		<b>(4) ACT</b>	
Briefly describe what happened during the test, surprises, difficulty getting data, obstacles, successes, etc.		What will you do next? Describe modifications/decisions for the next cycle	

# Aspect of a Classroom Teaching that Communicate Growth Mindset Messages



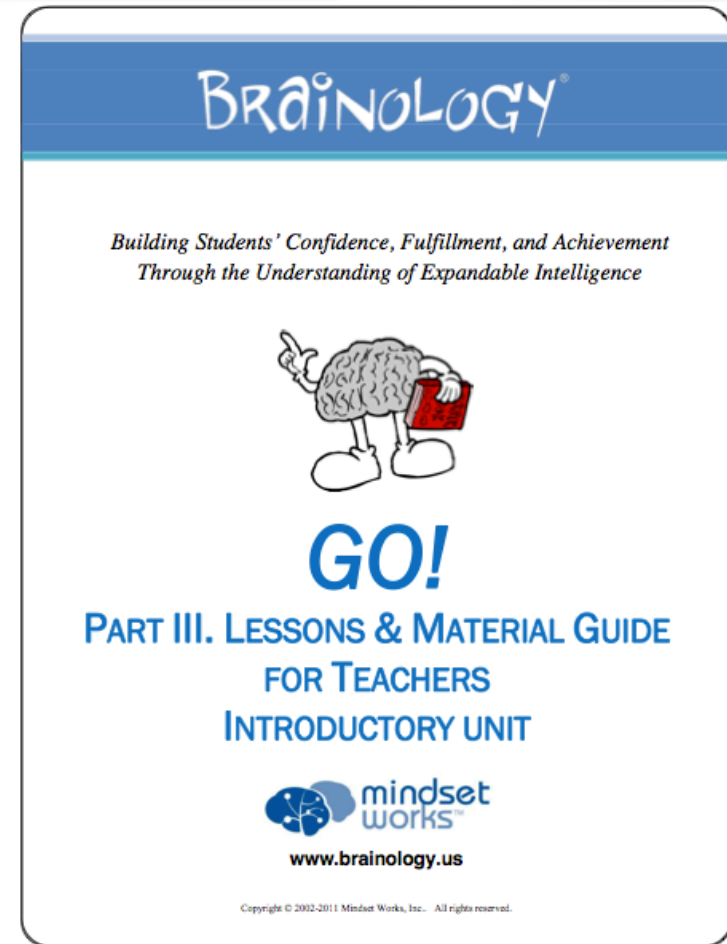
Source: J. Boaler 2013



# Introduction

## Vetting Protocol:

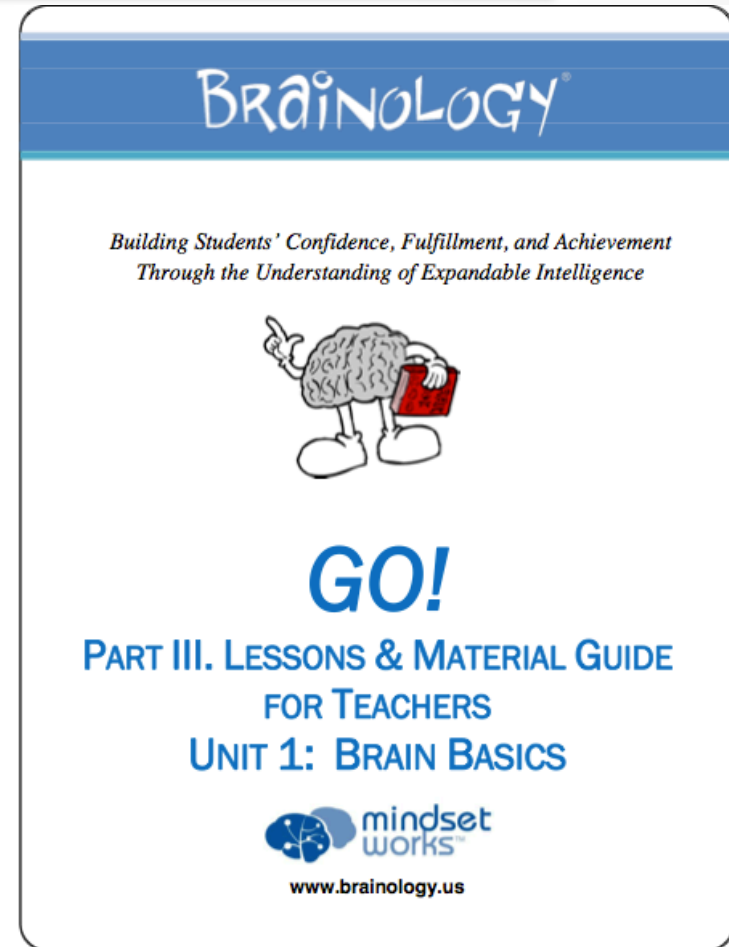
- Read and Highlight 1-7
- Read the Printable Materials and think about what activities and materials would be essential to teach.
- Discuss and decide what components on page 7 to teach
- Add them to a checklist



# Unit 1: Brain Basics

Vetting Protocol:

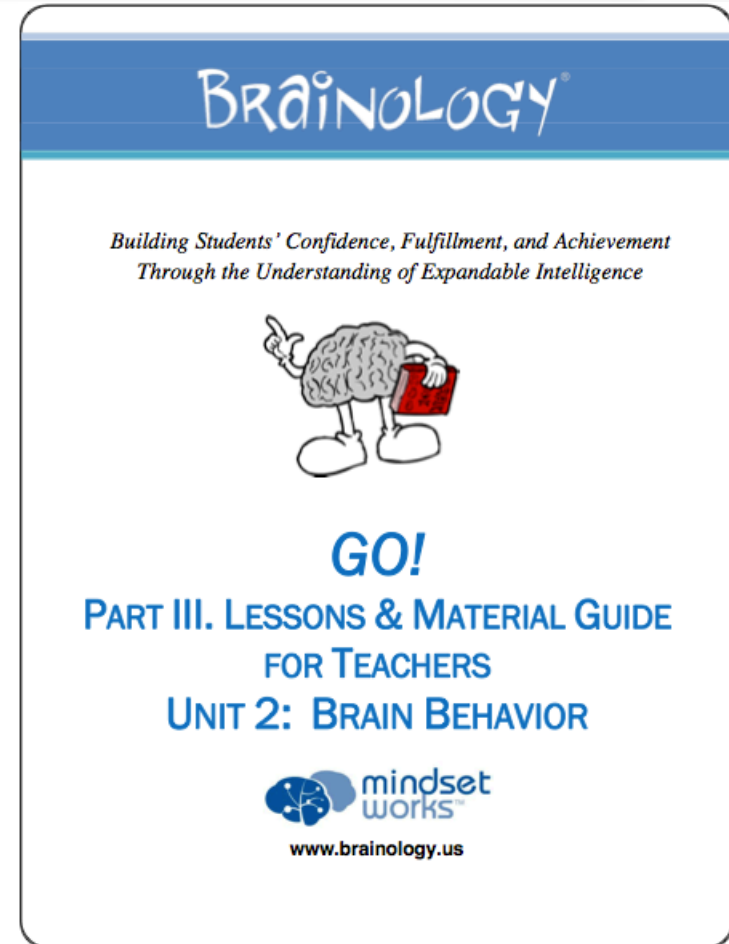
- Read and Highlight 2-5
- Read the Printable Materials and think about what activities and materials would be essential to teach for the formative assessment-Check It Quiz.
- Discuss and decide what components on page 5 to teach
- Add them to a checklist



# Unit 2: Brain Behavior

## Vetting Protocol:

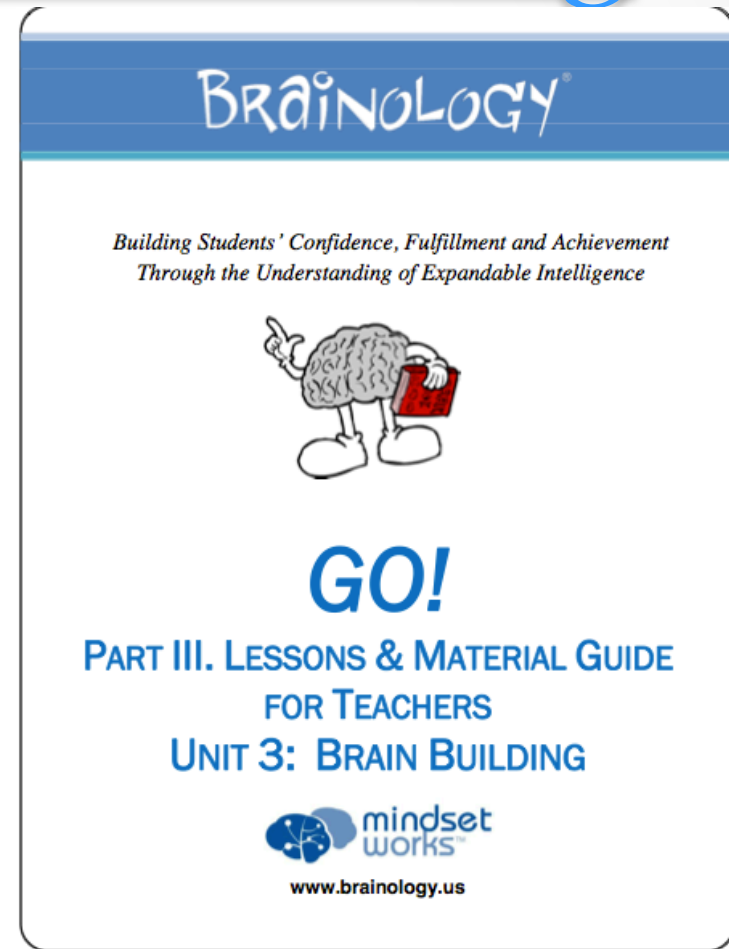
- Read and Highlight 2-5
- Read the Printable Materials and think about what activities and materials would be essential to teach for the formative assessment-Check It Quiz.
- Discuss and decide what components on page 5 to teach
- Add them to a checklist



# Unit 3: Brain Building

Vetting Protocol:

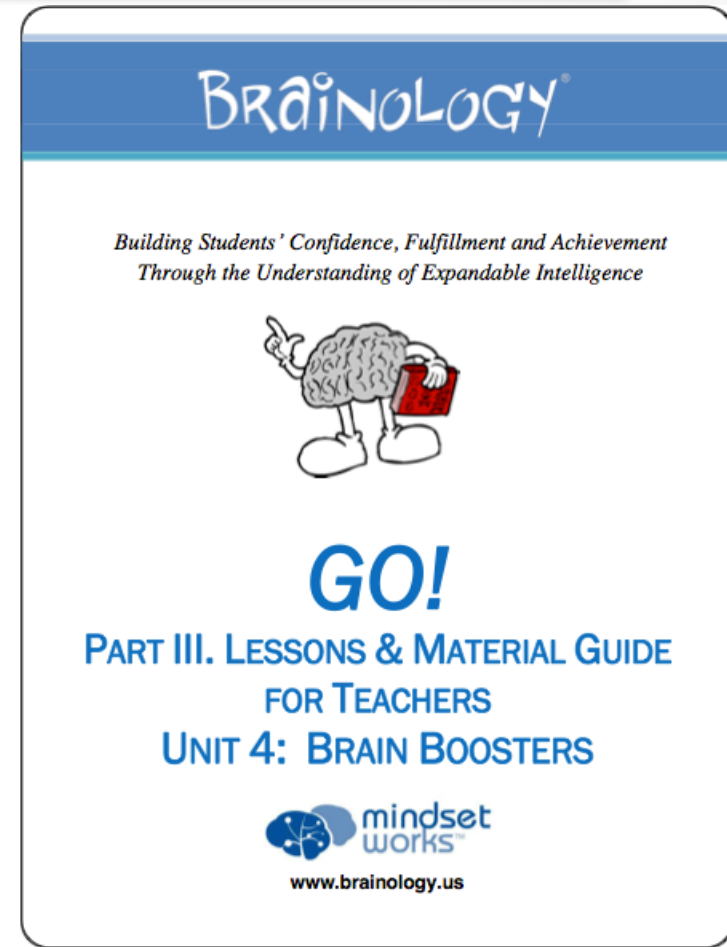
- Read and Highlight 2-5
- Read the Printable Materials and think about what activities and materials would be essential to teach for the formative assessment-Check It Quiz.
- Discuss and decide what components on page 5 to teach
- Add them to a checklist



# Unit 4: Brain Boosters

Vetting Protocol:

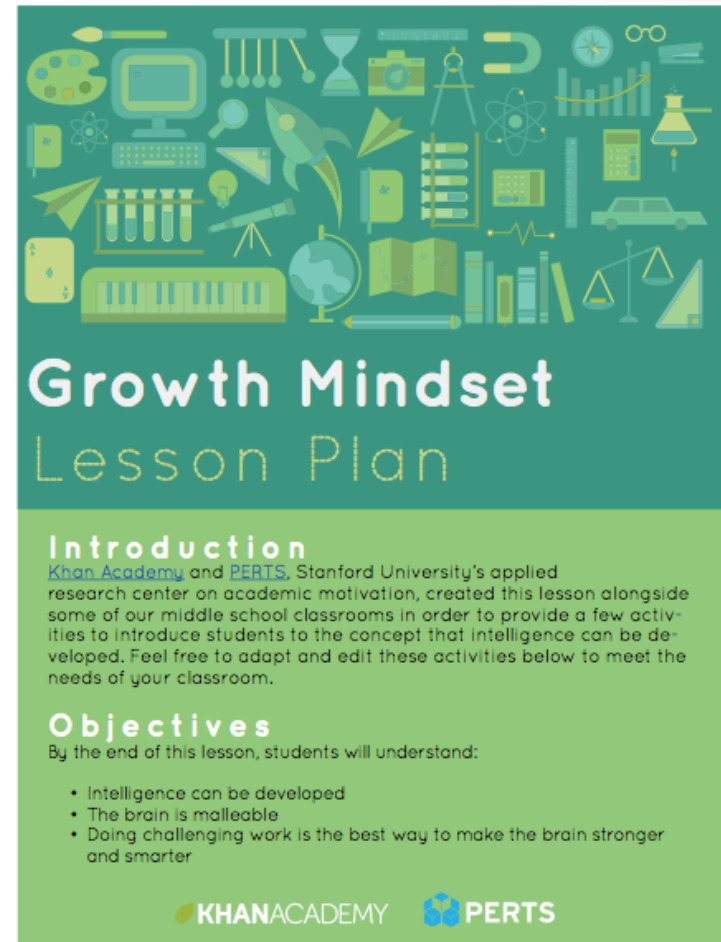
- Read and Highlight 2-5
- Read the Printable Materials and think about what activities and materials would be essential to teach for the formative assessment-Check It Quiz.
- Discuss and decide what components on page 5 to teach
- Add them to a checklist



# PERTS Growth Mindset Lessons

## Integration Protocol

- Read the Introduction and Objectives and Highlight.
- Read the Activities.
- Decide which ones can support the other 4 lessons and where in the pacing they might go.
- If any activities were chosen add them to the checklist





**Growth Mindset Lesson Plan**

**Introduction**  
Khan Academy and PERTS, Stanford University's applied research center on academic motivation, created this lesson alongside some of our middle school classrooms in order to provide a few activities to introduce students to the concept that intelligence can be developed. Feel free to adapt and edit these activities below to meet the needs of your classroom.

**Objectives**  
By the end of this lesson, students will understand:

- Intelligence can be developed
- The brain is malleable
- Doing challenging work is the best way to make the brain stronger and smarter

 KHANACADEMY  PERTS

# Scheduling the Lessons, Formative Assessments, & Surveys

- Calendar Lesson & Assessments Components for February
- Calendar Lesson and Assessments Components for March

February 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

March 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

# SMART Goal Template

Math Anxiety Action Research Project: Communicating a Growth Mindset

## SMART Goal!

Teacher(s): \_\_\_\_\_

Grade: \_\_\_\_\_

Date: \_\_\_\_\_

Circle: EO, IFEP, LEP, RFEP, or ALL

Target:

- Individual
- Small group
- Whole group
- Grade level

### Specific (Goal):

1. By April 30, 2015 all participating teachers will have established a growth mindset math classroom through the teaching and learning of major concepts on brain science, brain behavior, brain building, and brain boosters.
2. By April 30, 2015 all math anxious students' interest and disposition toward math will increase as well as their growth mindset.

### Measurable (How?):

1. Checklist (Everyday)
2. Teacher Survey (After each Unit, about weekly)
3. Student Survey (Bi-Weekly)

### Action Steps (What?):

- 1.

### Relevant (Why?):

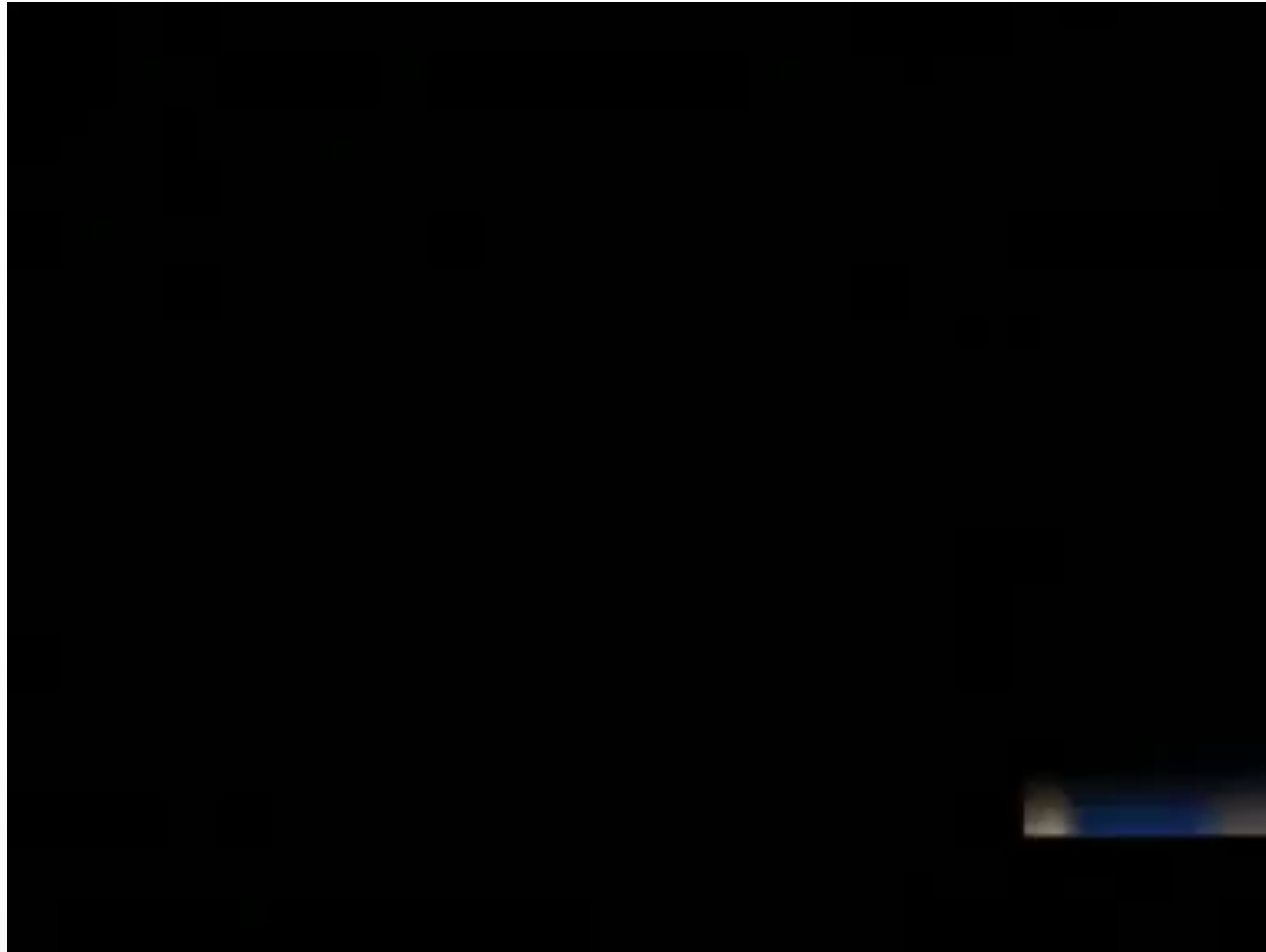
1. We want to help reduce students' math anxiety
2. Reducing their math anxiety, increasing their growth mindset can lead to better grades and high achievement on math assessments.

### Time Frame (How long?):

1. PDSA Cycle 1d – Introduction and Brain Basics Feb 17-20
2. PDSA Cycle 2d- Brain Behavior-February 23-27
2. PDSA Cycle 3d-Brain Building March 2<sup>nd</sup>-6<sup>th</sup>
4. PDSA Cycle 4d-Brain Boosters March 9<sup>th</sup>-13<sup>th</sup>



# The Golden Circle



# It Starts with You

- The most important factor in fostering a growth mindset is you, the teacher, in what and how you communicate a growth mindset, and your model of the growth mindset. Your mindset will inspire theirs.
- I believe in you!
- And . . . I know you can do it



# What's Next

- Implementation of Improvement Pathway 2 and 3
- February 17<sup>th</sup>-20<sup>th</sup>
  - PDSA Cycle 1b-Process Praise and Feedback
  - PDSA Cycle 1d: Introduction and Lesson on Brain Basics.
- February 23<sup>rd</sup>-27<sup>th</sup>
  - PDSA Cycle 2b-Process Praise and Feedback
  - PDSA Cycle 2d-Brain Behavior
- March 2<sup>nd</sup>-6<sup>th</sup>
  - PDSA Cycle 1c-Portraying Challenge, Effort, and Mistakes in Math as Valuable
  - PDSA Cycle 3d-Brain Building
- March 9<sup>th</sup>-13<sup>th</sup>
  - PDSA Cycle 2c-Portraying Challenge, Effort, and Mistakes in Math as Valuable
  - PDSA Cycle 4d-Brain Boosters

Thank You!

