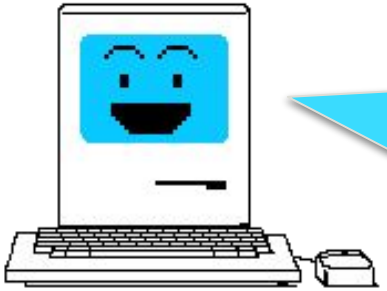
Growing Mathletes Facilitator Training Day 1

Online Orientation - ZOOM

Summer 2023

Setting the Tone

You get paid for all of this training time! (And your prep time in between!)

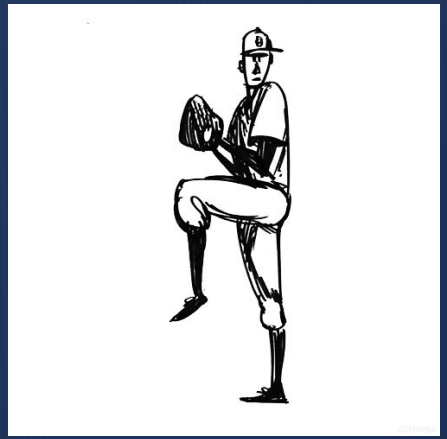


Today we will do a lot of talking but the trainings will get increasingly interactive!

Day 1 Agenda

Good afternoon!

1. Launch
2. Introduction to Mathletes
3. Introduction to Growth Mindset Principles
4. Pay and Expectations
5. Closing



Part 1.1: Launch

Tell us about yourselves!

We like to “LAUNCH!” & connect to prior knowledge and experiences

- Name
- Brief background:
  - Experiences with baseball/softball and/or other sports
  - Experiences working with youth
  - Relationship with math
  - Any prior knowledge about growth mindset
- One thing you are most looking forward to!
- Anything else you need us to know about you?

Growing Mathletes UA Team

Ricardo Valerdi, Professor of Systems & Industrial Engineering

Erin Turner, Professor of Teaching, Learning and Sociocultural Studies

Sanlyn Buxner, Associate Research Professor of Teaching, Learning and Sociocultural Studies

Christina Baze, Assistant Research Professor, Systems & Industrial Engineering

Seneca Miller, Ph.D. student in Teaching, Learning, and Sociocultural Studies

Full Training Overview

Day 1: Today! 1:00-2:30 pm CDT, virtual (on Zoom)

Day 2: Wednesday, May 31, 10 am-4 pm, in-person

Day 3: Thursday, June 1, 10 am-4 pm, in-person

Day 4: Friday, June 2, 10 am-1 pm, in-person

Part 1.2: Introduction to the Growing Mathletes Project

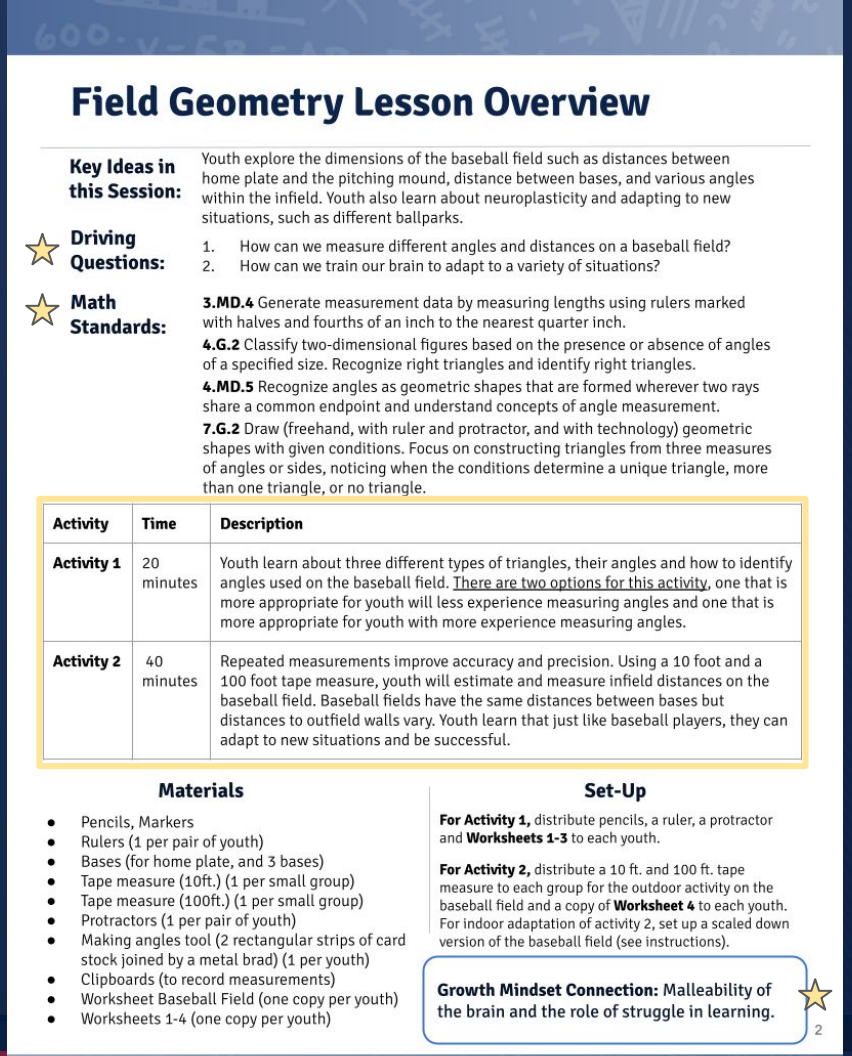
Our Project and Purpose

1. Purpose: develop a curriculum and professional learning model to **support math learning by integrating sports, math, and mindset** concepts.
2. We are investigating how well these activities work and what **changes** need to be made to make them even better.
3. We are collecting data on **engagement and learning** of different core concepts.
4. We are evaluating **how well we have prepared you** to implement. We are looking for your feedback - you know your youth and your setting best!

Structure of a Growing Mathletes Lesson

Lessons are organized around driving questions that integrate math concepts, baseball, and growth mindset ideas

Lessons are “chunked” into activities – the lessons overview provides a summary of what you need to know and prepare



Field Geometry Lesson Overview

Key Ideas in this Session: Youth explore the dimensions of the baseball field such as distances between home plate and the pitching mound, distance between bases, and various angles within the infield. Youth also learn about neuroplasticity and adapting to new situations, such as different ballparks.

Driving Questions:
1. How can we measure different angles and distances on a baseball field?
2. How can we train our brain to adapt to a variety of situations?

Math Standards:
3.MD.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch to the nearest quarter inch.
4.G.2 Classify two-dimensional figures based on the presence or absence of angles of a specified size. Recognize right triangles and identify right triangles.
4.MD.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint and understand concepts of angle measurement.
7.G.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

Activity	Time	Description
Activity 1	20 minutes	Youth learn about three different types of triangles, their angles and how to identify angles used on the baseball field. There are two options for this activity, one that is more appropriate for youth will less experience measuring angles and one that is more appropriate for youth with more experience measuring angles.
Activity 2	40 minutes	Repeated measurements improve accuracy and precision. Using a 10 foot and a 100 foot tape measure, youth will estimate and measure infield distances on the baseball field. Baseball fields have the same distances between bases but distances to outfield walls vary. Youth learn that just like baseball players, they can adapt to new situations and be successful.

Materials

- Pencils, Markers
- Rulers (1 per pair of youth)
- Bases (for home plate, and 3 bases)
- Tape measure (10ft.) (1 per small group)
- Tape measure (100ft.) (1 per small group)
- Protractors (1 per pair of youth)
- Making angles tool (2 rectangular strips of card stock joined by a metal brad) (1 per youth)
- Clipboards (to record measurements)
- Worksheet Baseball Field (one copy per youth)
- Worksheets 1-4 (one copy per youth)

Set-Up

For Activity 1, distribute pencils, a ruler, a protractor and **Worksheets 1-3** to each youth.

For Activity 2, distribute a 10 ft. and 100 ft. tape measure to each group for the outdoor activity on the baseball field and a copy of **Worksheet 4** to each youth. For indoor adaptation of activity 2, set up a scaled down version of the baseball field (see instructions).

Growth Mindset Connection: Malleability of the brain and the role of struggle in learning.

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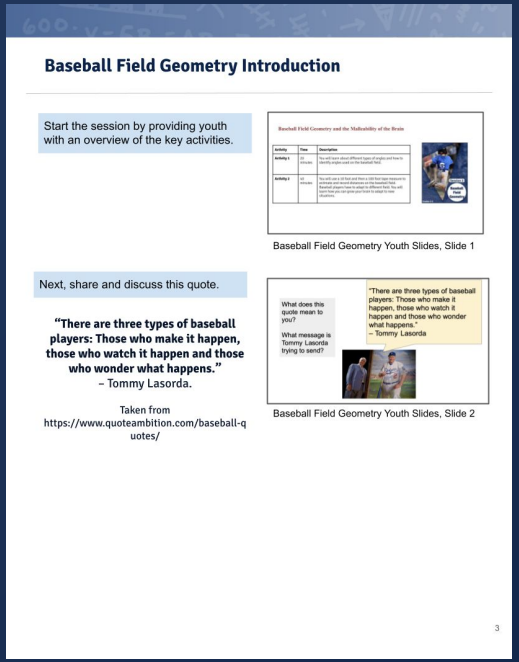
Structure of a Growing Mathletes Lesson

Begin each lesson with an overview of the lesson and a discussion of a quote



Baseball Field Geometry Introduction

Start the session by providing youth with an overview of the key activities.

Baseball Field Geometry Youth Slides, Slide 1

Next, share and discuss this quote.

"There are three types of baseball players: Those who make it happen, those who watch it happen and those who wonder what happens."
– Tommy Lasorda.

Taken from https://www.quoteambition.com/baseball-quotes/

Baseball Field Geometry Youth Slides, Slide 2

Lessons include background information about baseball concepts and/or math concepts for facilitators

Each activity begins with "LAUNCH" connections to youths' prior knowledge and experiences

Baseball Field Geometry

Activity 1 - Identifying Angles on a Baseball Field (1 of 5)

Description:	Youth learn about three different types of triangles, their angles and how to identify angles used on the baseball field.
Math Ideas in Activity Option 1: For Younger Youth	In this activity, youth discuss shapes and angles that they see on the baseball field. Shapes could include circles, different kinds of triangles, rectangles or squares. For each shape identified, ask youth to describe the properties of the shape including the number of sides, and the angles. For example, youth might recognize equilateral triangles - a triangle with three congruent sides and three congruent angles. All angles in an equilateral triangle measure 60 degrees. Youth may also recognize right triangles - a triangle with one right (90 degree) angle. Youth may also identify rectangles - shapes with four sides and four right (90 degree) angles. Youth will also explore different angles on a baseball field, including acute angles (less than 90 degrees), obtuse angles (more than 90 degrees) and right angles (equal to 90 degrees).
Math Ideas in Activity Option 2: For Older Youth	In this activity, youth discuss and draw three different kinds of triangles. An isosceles triangle is a triangle with two congruent sides and angles. An equilateral triangle is a triangle with three congruent sides and three congruent angles. All angles in an equilateral triangle measure 60 degrees. A right triangle is a triangle with one right (90 degree) angle. Youth use rulers to measure lines and compare distances. Youth use protractors to measure and label angles on the baseball field, including acute angles (less than 90 degrees), obtuse angles (more than 90 degrees) and right angles (equal to 90 degrees). Youth also identify perpendicular lines on the baseball field. Perpendicular lines intersect to form four right (90 degree) angles.
LAUNCH: Connecting to Prior Knowledge	Project an image of a real-life baseball field. Ask youth to share with a partner what shapes, lines and angles they see on the field. • What shapes do you see on the baseball field? • What do you notice about the distance between the bases? • What else do you notice?

Activity 1: Shapes on the Baseball Field

Baseball Field Geometry Youth Slides, Slide 3

Structure of a Growing Mathletes Lesson

Growth mindset activities invite students to identify their strengths, and connect to their interests and goals in sports, school, and other areas of life

Activity 2 - Measure the Dimensions of your Baseball Field (1 of 5)

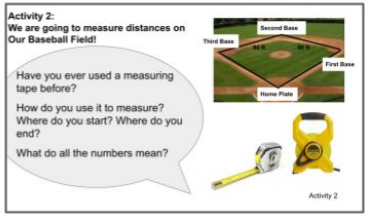
Description: Create small groups for this activity. Using a 10 foot and then a 100 foot tape measure, youth will estimate, measure and record distances of the infield.

Math Ideas: In measurement, **accuracy** refers to how close a measurement is to the actual, agreed upon value. If a distance measures 10 feet, and youth measure the distance and get 10 feet, then the measurement is considered accurate. In measurement, **precision** refers to the closeness of repeated measurements to one another. If youth measure a given distance 3 times, and get the same distance each time, then the measurement is very precise. By measuring distances repeatedly, youth can improve the accuracy of their measurements.

Growth Mindset Ideas: While all baseball fields have the same distances between bases, the distance to the outfield wall may vary. To score home runs, players have to adapt to the distances of each ballpark. The brain can be trained to adapt to new situations as they arise. Youth learn that just like baseball players, they too can adapt to new situations and be successful.

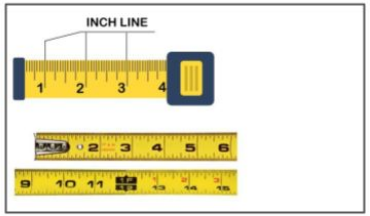
LAUNCH Connection to Prior Knowledge: Show youth a picture of a baseball field and ask youth to share what they know about distances on the field and how to use tools to measure distances:

- What do you know about the distance between the bases?
- What do you know about measuring distance? What tools do you use?
- Where do you start when you measure? What do the numbers on the measuring tape mean?



Baseball Field Geometry Youth Slides, Slide 14

Your curriculum guide shows you which youth slides go with what you are presenting



Baseball Field Geometry Youth Slides, Slide 15

Structure of a Growing Mathletes Lesson

Lessons include worksheets with images, diagrams, and tables visuals for youth to record data, create representations, and visually represent key math concepts (printed in the youth workbooks and in your guide).

Activities suggest a range of participation structures (whole group, pairs, etc) to promote discussion and collaboration among youth

Worksheet 4 - Measuring and Recording Distance

Directions: Work with your group to measure infield distances on the baseball field.

1. Estimate each distance and record your estimate.
2. Measure the distance using a 10-foot measuring tape, as accurately as possible.
3. Measure the distance again, using a 100-foot measuring tape.
4. Record your measurements in the table below.

Part of the Field we measured	Estimate of Distance (in feet)	Measured distance with10-foot tape (in feet)	Measured distance with100-foot tape (in feet)
Home plate to first base			
Home plate to second base			
Home plate to third base			
Home plate to pitcher's mound			

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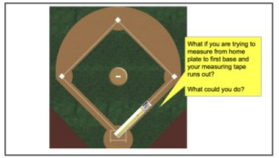
Baseball Field Geometry

Activity 2 - Measure the Dimensions of your Baseball Field (2 of 5)

Outdoor Activity: Measuring Infield Distances with 10-foot and 100-foot measuring tapes

Tell youth that they will work in small groups to measure an infield distance using a 10 foot measuring tape, and a 100 foot measuring tape.

Ask youth to notice the different units on the measuring tape and to discuss which side of the measuring tape they should use.



Baseball Field Geometry Youth Slides, Slide 16

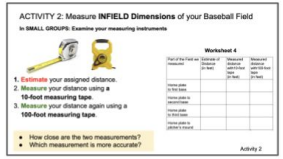
NOTE: indoor adaption described on next page

Clarify key concepts such as keeping the measuring tape flat and straight, and aligning the beginning of the measuring tape with the beginning of the distance to be measured. Also discuss how to measure distances that are longer than the measuring tape.

Transition to the Small Group Activity

Divide youth into small groups with 2-4 youth per group. Assign each small group one infield distance to measure.

- home plate to first base
- home plate to second base
- home plate to third base
- home plate to the pitching mound



Baseball Field Geometry Youth Slides, Slide 17

Explain the ins…

- First, youth will **estim**… assigned distance.
- Next, youth **measure their assigned dist**… (in feet) using a **10-ft tape measure**.
- Finally, youth use a **longer tape measure (100 ft)** to **measure the same infield distance** previously measured.
- Youth record their estimates and measured distances on **Worksheet 4**.

Youth Worksheet 4

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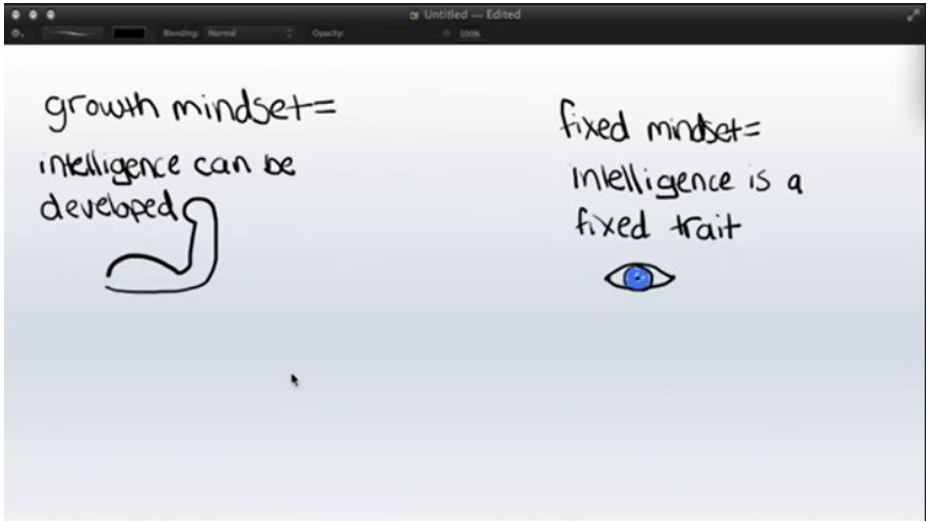
Your curriculum guide shows which worksheet goes with each activity

Part 1.3: Growth Mindset Principles

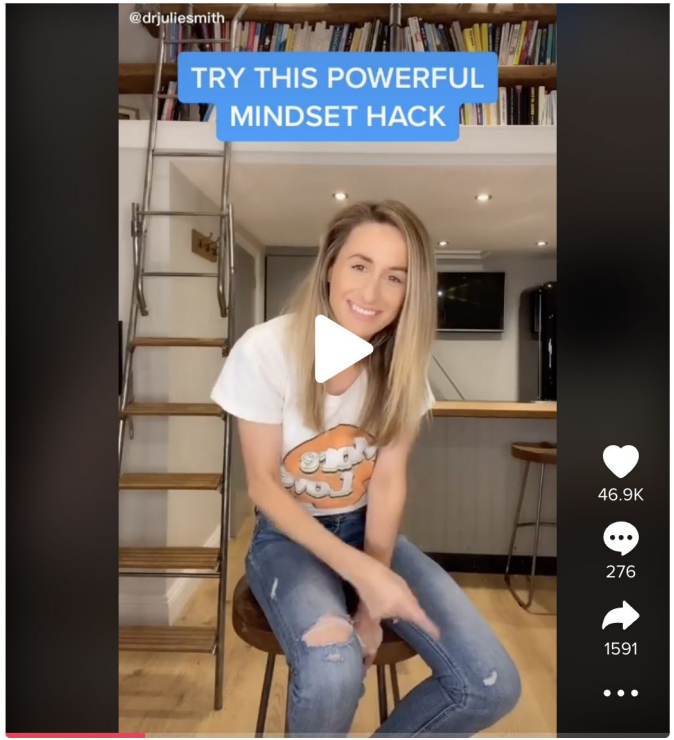
Introduction to Growth Mindset

VIDEO: What is a Growth Mindset?



Source: MindsetKit.org

Introduction to Growth Mindset



What is a Growth Mindset?

Video: What is a growth mindset?, About Growth Mindset

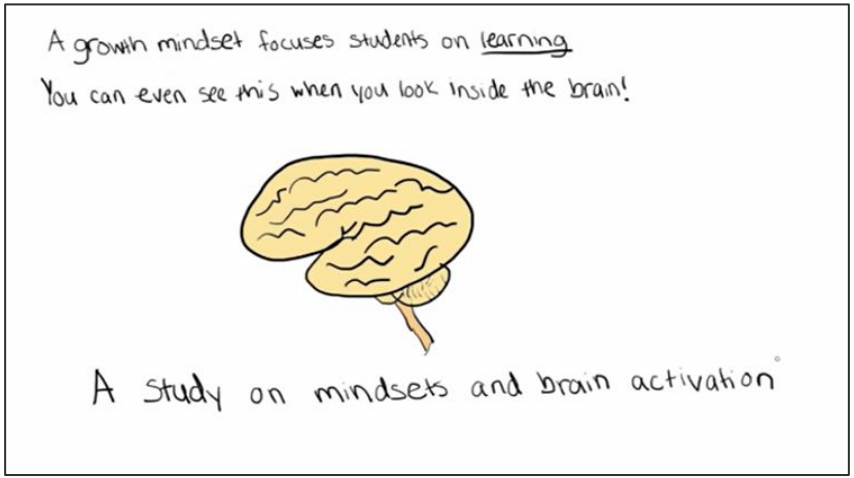
I can learn anything I want to.
When I'm frustrated, I persevere.
I want to challenge myself.
When I fail, I learn.
Tell me I try hard.
If you succeed, I'm inspired.
My effort and attitude determine everything.

I'm either good at it, or I'm not.
When I'm frustrated, I give up.
I don't like to be challenged.
When I fail, I'm no good.
Tell me I'm smart.
If you succeed, I feel threatened.
My abilities determine everything.

Introduction to Growth Mindset

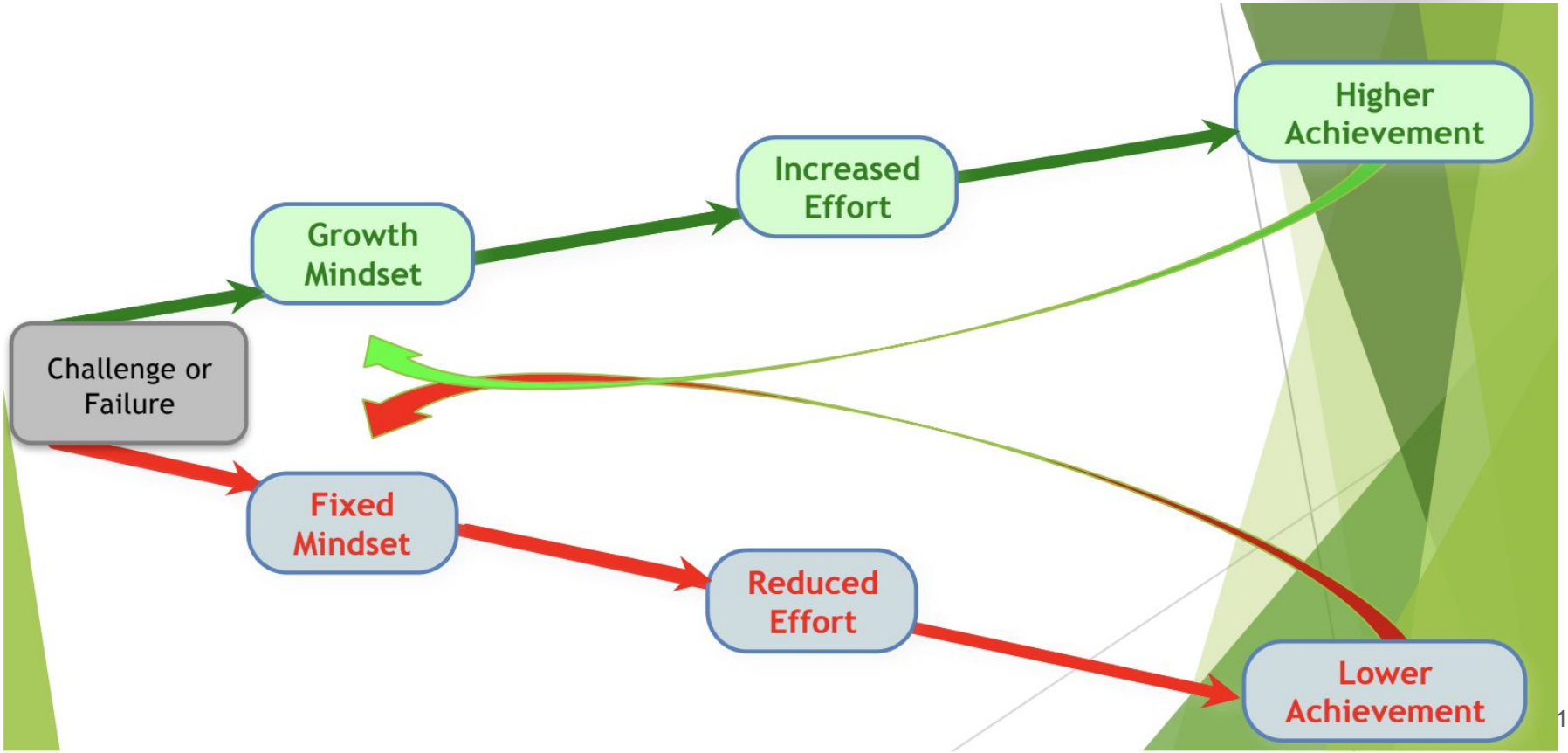
Why is Growth Mindset Important?

Video: [The evidence: how a growth mindset leads to higher achievement, About Growth Mindset]



Source: MindsetKit.org

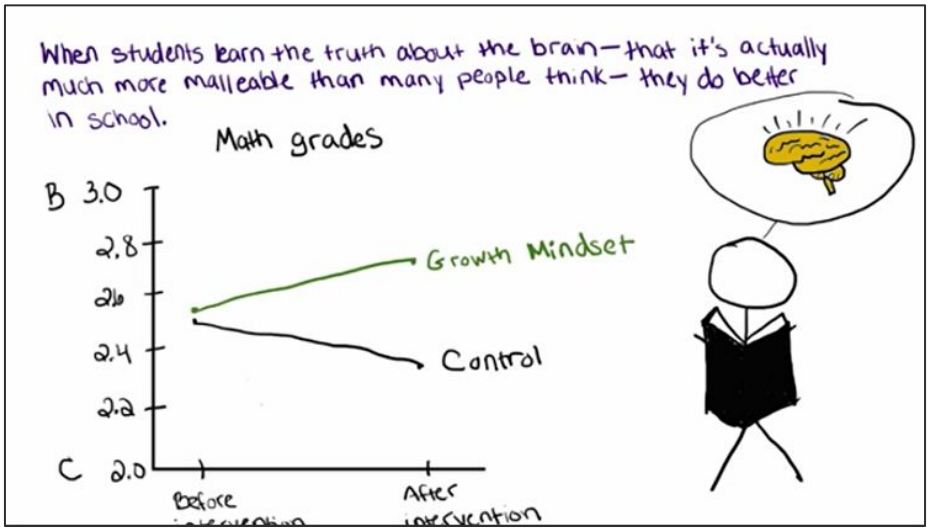
Mindsets and Facing Challenges



Introduction to Growth Mindset

Mindsets can change!

Video: [Mindsets can change, About Growth Mindset]



Source: MindsetKit.org

Five Growth Mindset Principles

1. ***The value of collaboration. Everyone has strengths to contribute to the team.*** Many tasks require a number of different skills and abilities. None of us may have all of these skills and abilities, but as a team we can draw on the strengths of each team member to succeed.
2. ***The power of effort and persistence.*** We can improve and reach our goals through goal setting, effort, and progress tracking. Effort pays off when we persevere and keep working toward goals. The Power of ..... Yet!
3. ***The value of mistakes in supporting learning.*** Mistakes are a normal and valuable part of the learning process. We can learn from our mistakes through reflecting on our errors and taking lessons from them. Mistakes make our brain grow!
4. ***Malleability of the brain and the role of struggle in learning.*** The brain can get stronger and smarter. New connections between neurons in the brain change all the time as a result of our experiences.
5. ***Praise the process, not the person.*** Modify your language to focus on the process instead of the person. Praise youth when they work hard to accomplish a difficult task.

Introduction to Growth Mindset

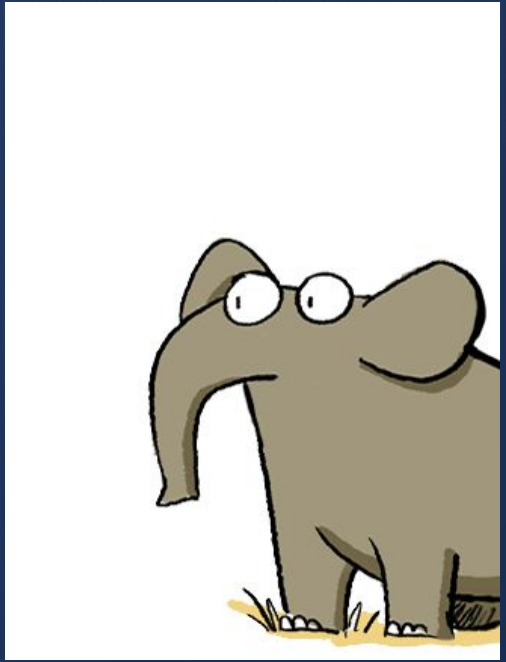
Growth Mindset Principles

1. ***The value of collaboration. Everyone has strengths to contribute to the team.***
2. ***The power of effort and persistence.***
3. ***The value of mistakes in supporting learning.***
4. ***Malleability of the brain and the role of struggle in learning.***
5. ***Praise the process, not the person.***

Look in your facilitator guide front matter, pages 9-10

Discussion

- What stood out to you in these videos?
- How have you seen these principles in your own life?
- How do you think these principles apply to the youth that you work with?



Closing and Q&A

Looking Ahead

1. **Building community in Week 1:**
   a. What will you do to help youth get to know one another, to teach routines, to set up productive small group interactions?
2. **Preview of next training days & your to-dos (loggable hours!):**
   a. Review materials (facilitator guides and youth slides on Google Drive)
   b. Start thinking about how you might adapt and/or add to this curriculum to suite the needs of your kids and your own expertise
   c. Heads up: you will practice leading lessons and co-facilitation!
3. **Q & A**

END of Day 1!