

# Next Generation Science Standards (NGSS) Implementation Update

Board of Education Study Session

April 3, 2019



# Purpose

Staff will provide an update  
on the SMMUSD NGSS  
Implementation Plan.

# "All Standards, All Students"

- NGSS Standards (2013)
- NGSS Framework (2016)
- Adopted Materials (2018)
- CAST Operational (2019)





Three  
Years

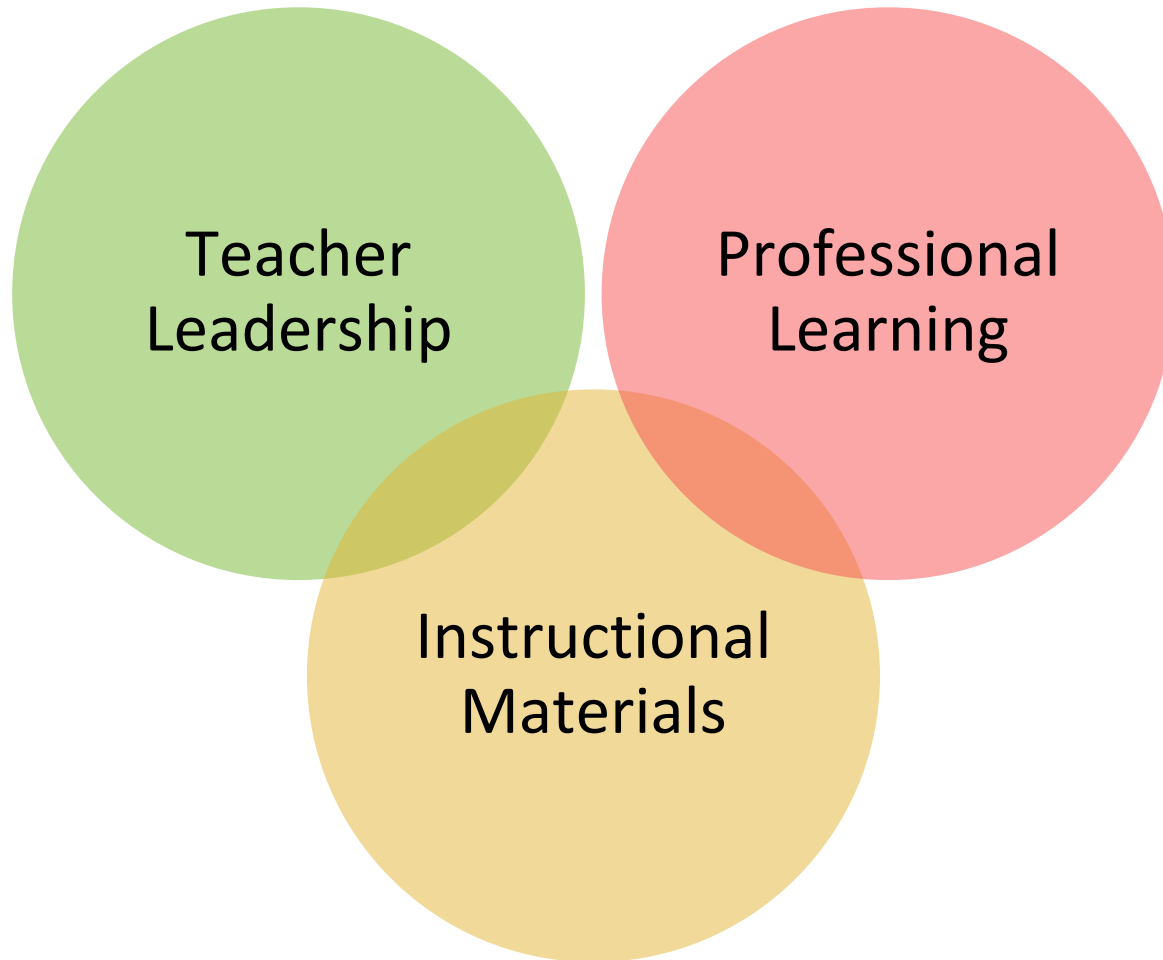
Three  
Grade  
Spans


# SMMUSD NGSS Implementation Plan

Three  
Instructional  
Shifts

Three  
Strategies

# Three Strategies





# Three Instructional “Shifts”

Three  
Dimensional

Coherence

Relevance



# Looks like...

## Students ...

- make sense of phenomena and design solutions
- learn through inquiry
- engage in purposeful reading, writing, speaking and listening

# Early Learning & Elementary







## Strategy 1: Teacher Leadership

### Highlights from our Elementary Leadership Team

- ★ Analyzed feedback from teachers and UCLA adjusted based on our feedback.
- ★ Reps attended Instructional Materials Fairs and continue to support the vetting process
- ★ Powerful to have teachers from across the district talking about current practices and different needs across sites.





## Observing, Collaborating and Making Inferences in Preschool and TK!

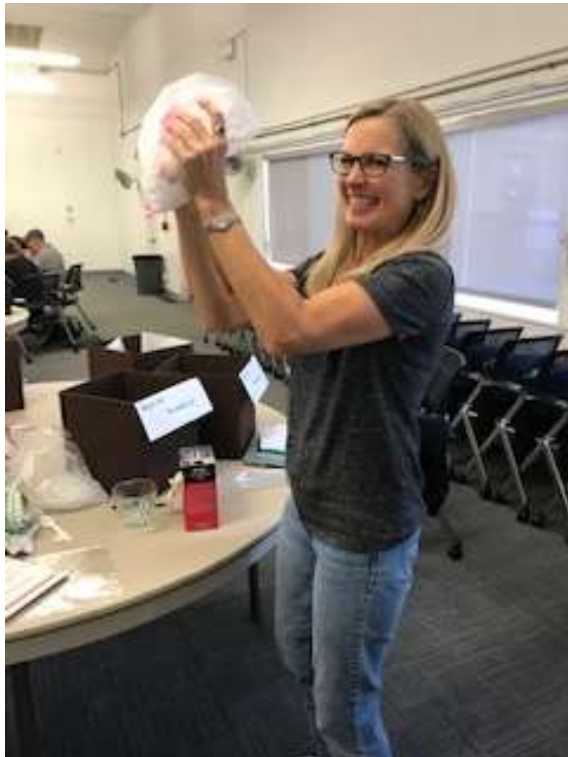
- ★ Observation
- ★ Data Collection
- ★ Simulation of a phenomena
- ★ Learning through Inquiry





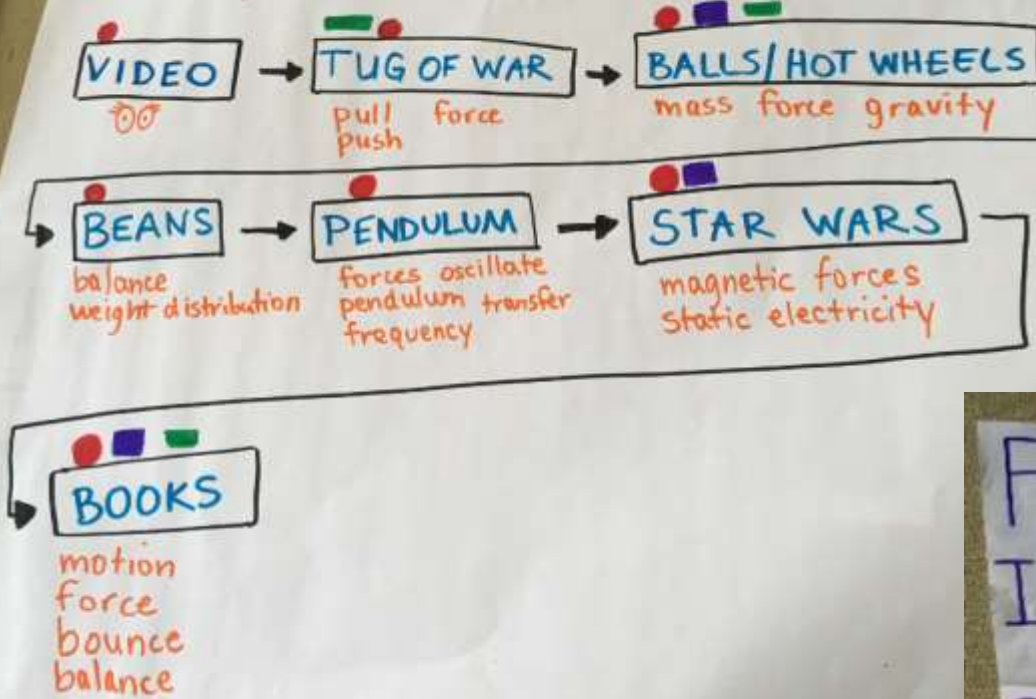
## Strategy 2: Professional Learning

- ★ Anchoring Phenomenon
- ★ Science & Engineering Practices
- ★ Modeling





## SEQUENCE ANALYSIS



## Strategy 3: Instructional Materials “Storylines”

- ❖ Academic Vocabulary
- ❖ Student Agency



“Storyline”  
materials being  
distributed and  
packaged in  
ED Services





# Anchoring Phenomenon & Initial Student Models

## Baby Kangaroo/Adult Kangaroo

### notice

newborn has no ears, tail, legs

newborn is hairless

newborn is blind

adult has lots of hair

newborn is the size of a bean

newborn looks like a short pink worm

adult has all the expected body parts

### wonder

why doesn't the newborn have ears, eyes, tail, legs?

what/where/how can it eat?

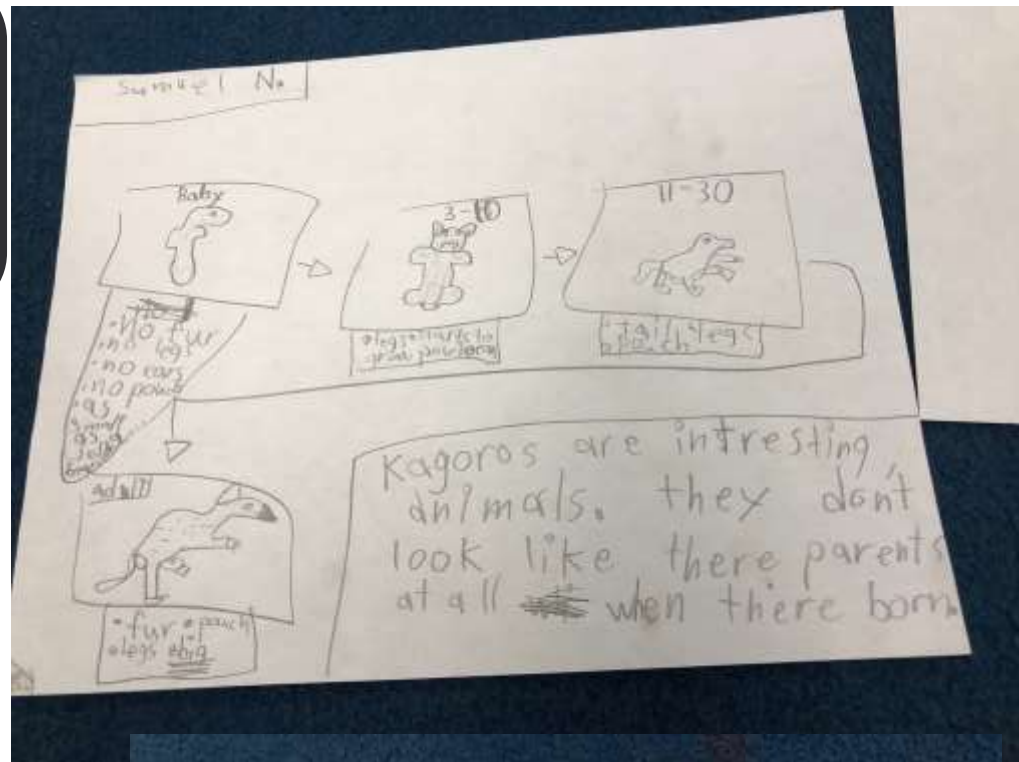
does it have a way to eat?

How was it born?

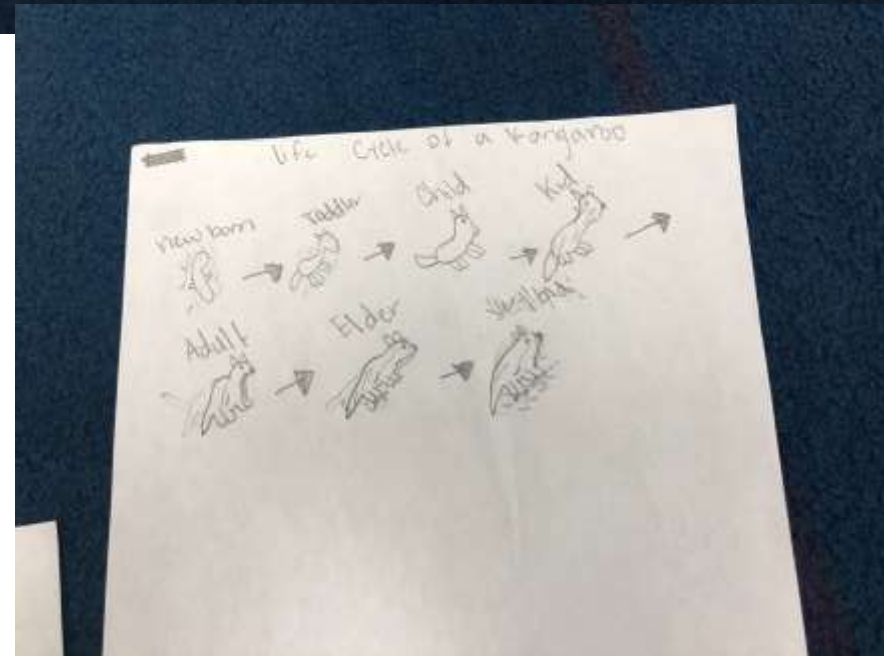
How long before it has hair?

Does the female put the baby in the pouch?

Why does the little joey have a pink nose?



Kangaroos are interesting animals. they don't look like their parents at all ~~when~~ when they're born.



# Inquiry & Model Revision

## KANGAROO



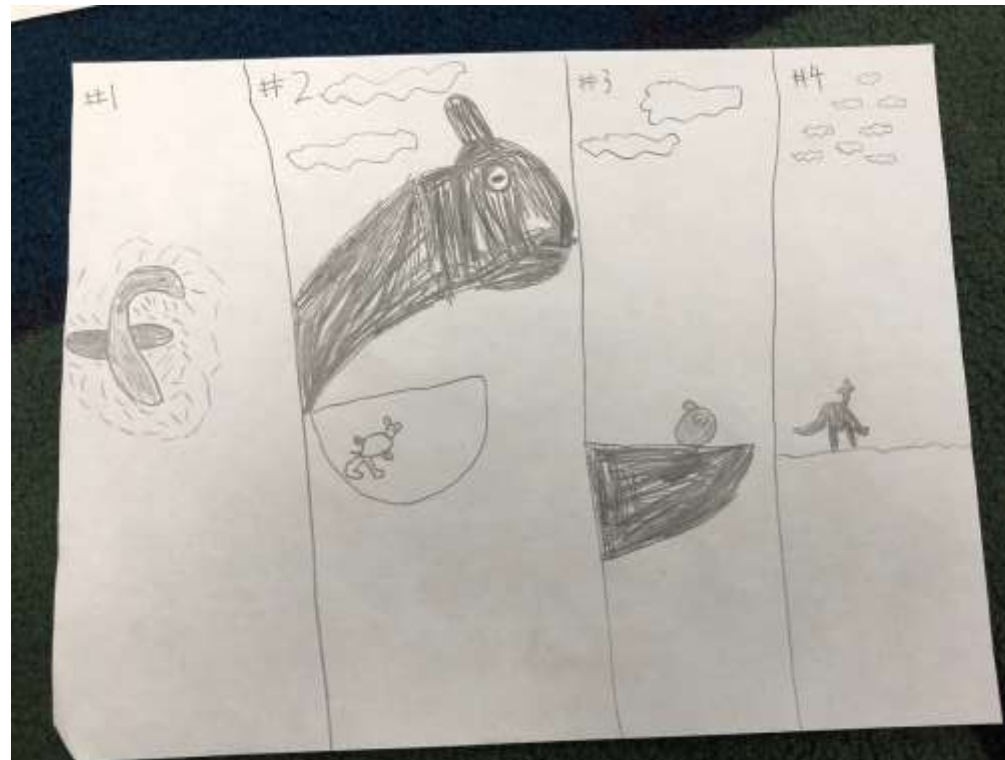
### OVERVIEW

Kangaroos possess powerful hind legs, a long, strong tail, and small front legs. Kangaroos belong to the animal family Macropus, literally "big foot." Thanks to their large feet, kangaroos can leap some 30 feet to meters in a single bound, and travel more than 30 miles (48 kilometers) per hour. Kangaroos use their strong tails for balance while jumping. They are the tallest of all marsupials, standing over 6 feet (2 meters) tall.

Kangaroos live in Eastern Australia. They live in small groups called troops or herds ("mobs" by Australians), typically made up of 50 or more animals. If threatened, kangaroos pound the ground with their strong feet in warning. Fighting kangaroos kick opponents, and sometimes bite.

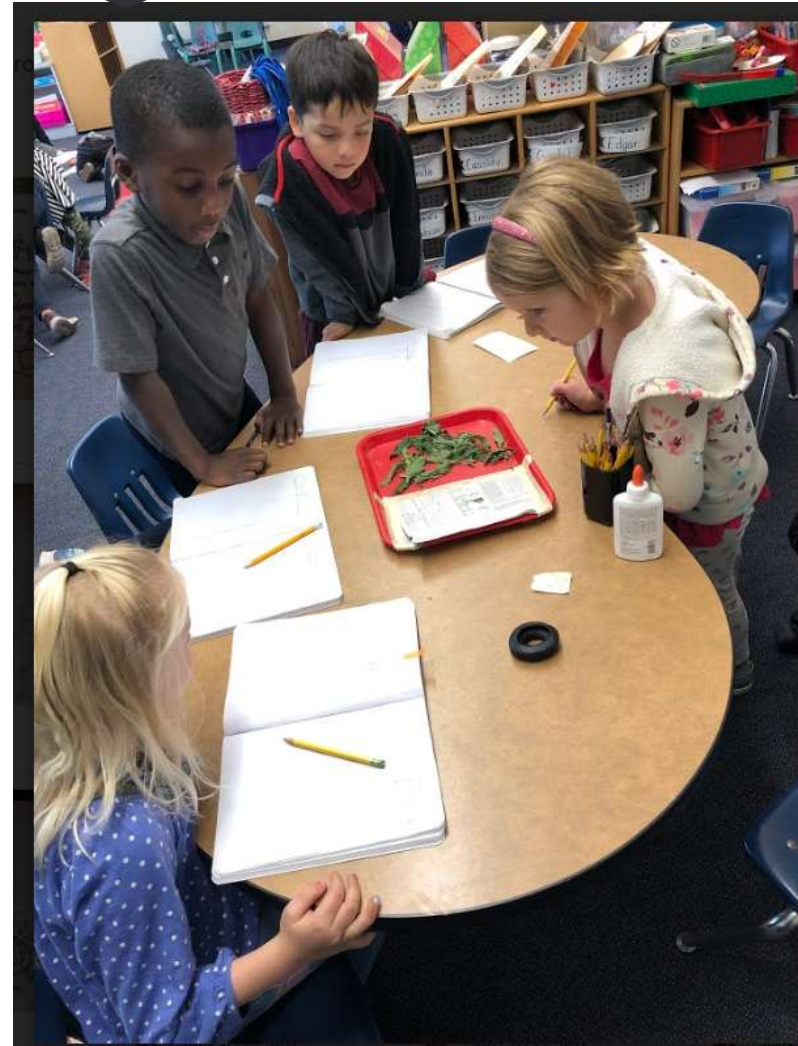
Female kangaroos sport a pouch on their belly, made by a fold in the skin, to cradle baby kangaroos called joeys. Newborn joeys are just one inch long (2.5 centimeters) at birth, or about the size of a grape. After birth, joeys travel, unassisted, through their mom's thick fur to the comfort and safety of the pouch. A newborn joey can't suckle or swallow, so the kangaroo mom uses her muscles to pump milk down its throat. At around 4 months, the joey emerges from the pouch for short trips and to graze on grass and small shrubs. At 10 months, the joey is mature enough to leave the pouch for good.

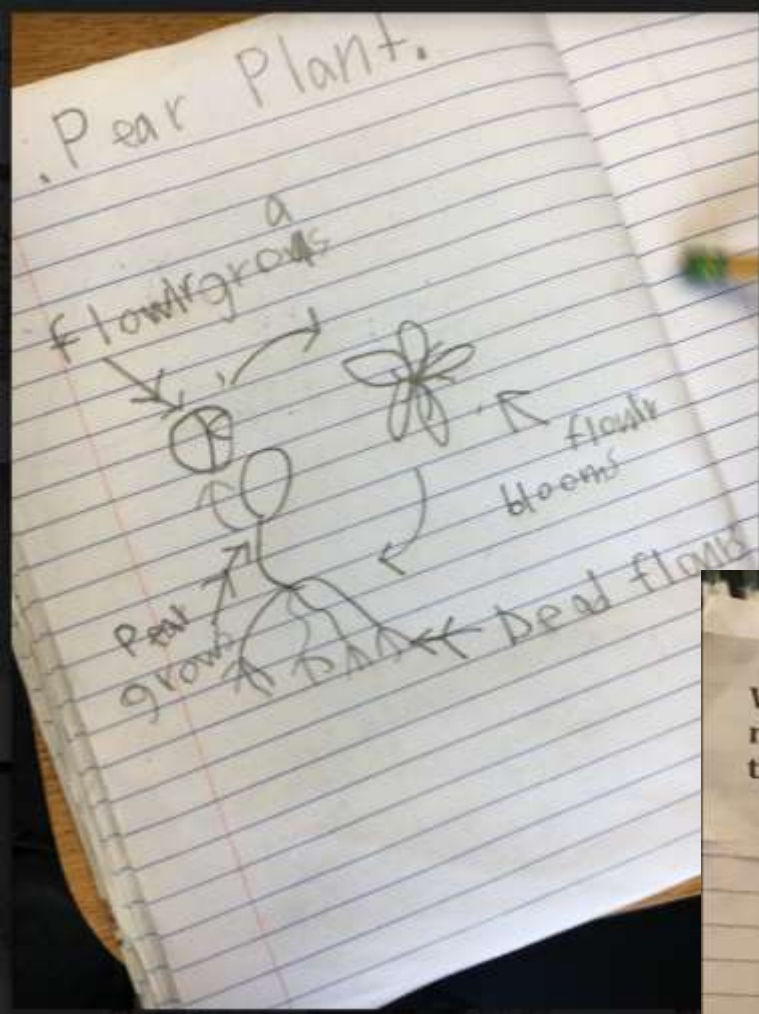
Besides humans and wild dogs called dingoes, kangaroos face few natural predators. Heat, drought, and hunger due to vanishing habitat are the biggest dangers kangaroos face.



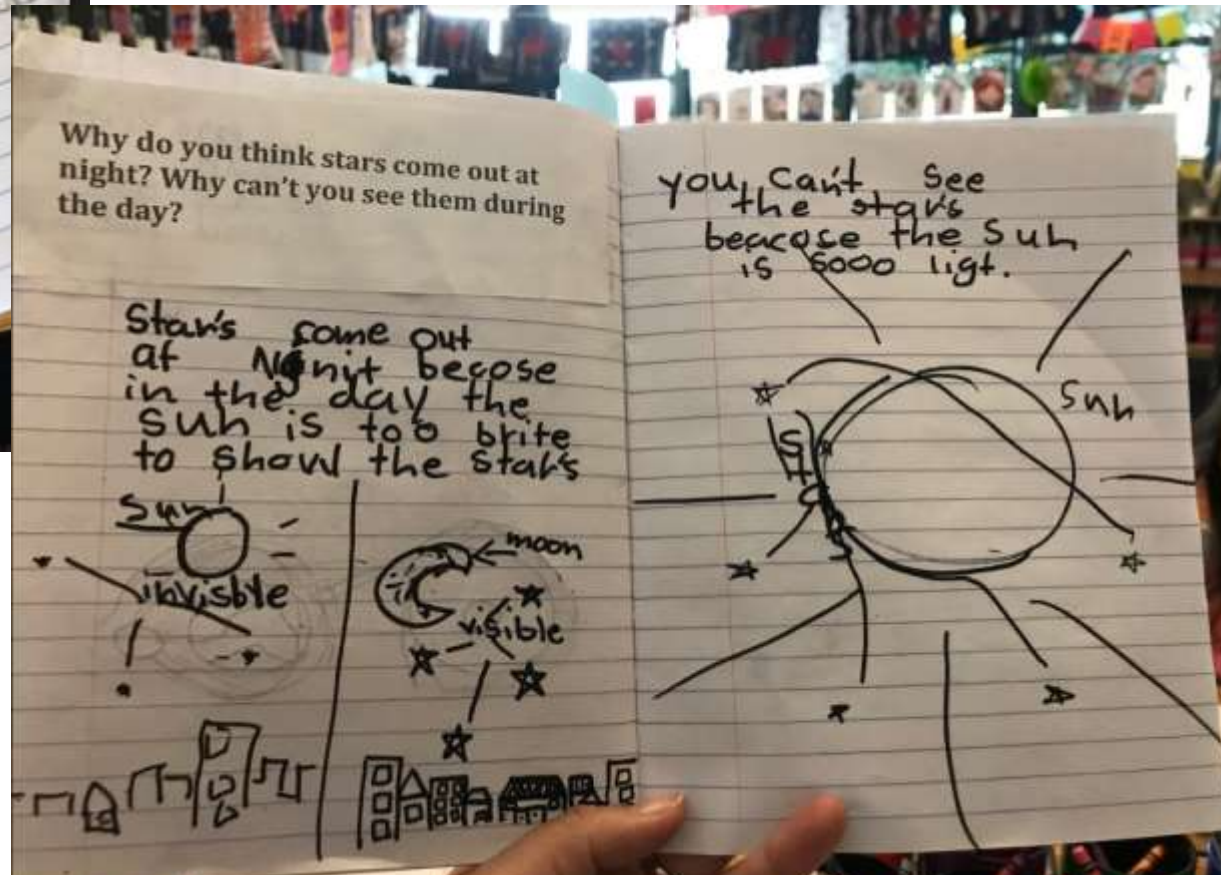


# Observation & Data Collection





# Student Models





# Elementary Next Steps

- ❖ UCLA Science Project (Y2)
- ❖ Build Cadre of Elementary Science Leaders
- ❖ Instructional Materials Pilot



# Middle School





A blue rounded rectangle tilted at an angle, containing the text 'Strategy 1: Teacher Leadership' in white.

## Strategy 1: Teacher Leadership

### Highlights from our Middle School Leadership Team

- ★ Integrated Model
- ★ Curriculum Development
- ★ Professional Learning with UCLA
- ★ Instructional Materials Review







## Strategy 2: Professional Learning

Roller  
Coaster  
Skills!

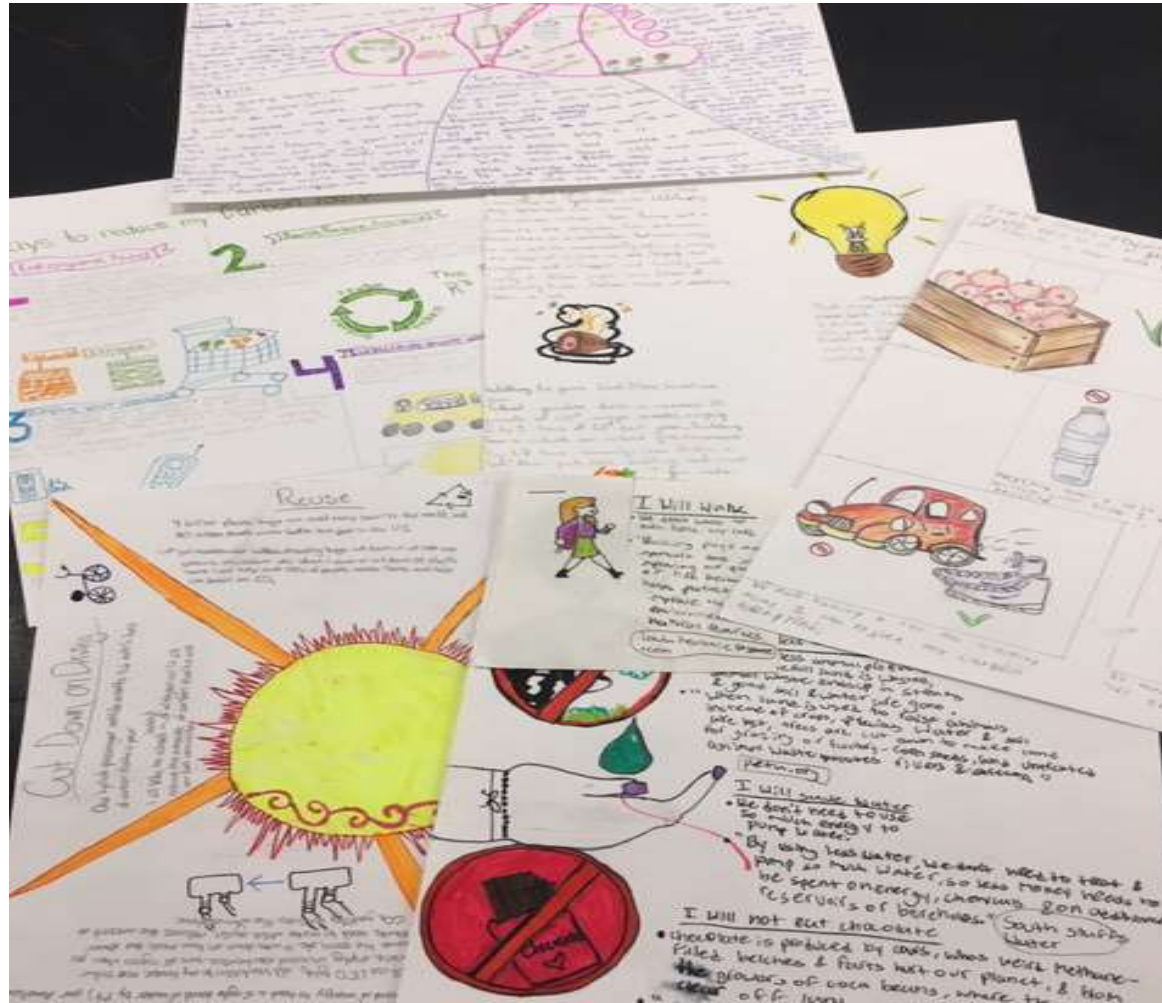




# Anchoring Phenomenon: Climate Change

Through an Inquiry  
Approach...

- ★ Graphs, Articles & Video
- ★ Chasing Ice & Chasing Coral
- ★ Taking Action - Pledges to Reduce Carbon Footprint



## Instructional shift from this to . . . this . . .

Science education for most students

Science for ***all*** students

Learning about

To figuring it out

Teacher providing information to all students

Science for all students





What do you notice?

Momatiuk - Eastcott/Corbis



**Some rocks weigh as much as 500 lbs.**



Grab File Edit Capture Window Help

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https://undsci.berkeley.edu/interactive/#/intro/2

# How Science Works

This flowchart represents the process of science, through which we build knowledge of the natural world. With this interactive, you can trace the development of a scientific idea or investigation. Most research takes a winding path, shaped by a unique combination of people and events. In contrast, journal articles or lab reports often portray science as a simple linear process.

About Educator Resources Help Glossary

hhmi BioInteractive UCM P UNIVERSITY OF CALIFORNIA MUSEUM OF PALEONTOLOGY

# How Science Works

# Chelyabinsk



**Unit Essential Question:** *What are the effects of an asteroid collision and how can we prevent a future one?*

**Lift Off:** Asteroid Collisions

**Task #1:** An Ancient Collision

**Task #2:** Contact Forces

**Task #3:** Non-Contact Forces





# Instructional Materials

- ❑ Instructional Materials Fairs
- ❑ Formation of instructional materials adoption team
- ❑ District “Toolkit” and Lens
- ❑ 2019-20 Pilot



Amplify.

Strategy 3:  
Instructional  
Materials  
“Storylines”





# Middle School Next Steps

- ❖ Continued training and time to collaborate
- ❖ Refine curriculum guides and develop benchmark assessments/tasks
- ❖ Analysis of CA Science Test
  - Standards-based grading (1-4)
  - Graphing and student needs



SANTA MONICA-MALIBU UNIFIED SCHOOL DISTRICT

# High School

To be shared  
on May 16





THANK YOU

The image features a central graphic composed of several overlapping circles. A large magenta circle is the focal point, containing the text 'THANK YOU' in white, uppercase, sans-serif font. It is surrounded by two large light blue circles and two smaller yellow circles. A dotted line arcs from a small blue circle at the top left to a small pink circle at the top right, passing behind the central magenta circle. On the far left, there is a decorative element consisting of three parallel, slanted lines in red, green, and blue, extending from the top to the bottom of the frame.