

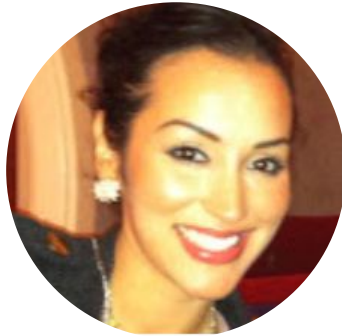
A close-up photograph of several green leaves with prominent veins. Small, clear water droplets are scattered across the leaf surfaces, reflecting light. The leaves are arranged in a fan-like pattern, filling the entire frame.

Dessert with 161: Science/ STEAM

Presented by the SD161 Instructional Coaching Team

November 2, 2021

Hello!



Nadia Alaeddin
*Social-Emotional
Learning Coach*
All Elementary Schools

**Christina
Bollenbacher**
Instructional Coach
Western Avenue

Nancy Larocca
Instructional Coach
Heather Hill

Jen McLean
Instructional Coach
Serena Hills

Ashley Somer
Instructional Coach
Flossmoor Hills

Elementary Coaches of SD161

Parker Junior High Instructional Coaches



**Alyssa
Zajack**
6th Grade
Instructional Coach



**Amy
Gehrt**
7th Grade
Instructional Coach



**Tiffany
Washington**
8th Grade
Instructional Coach



**Kwalfle
Scott-Bradley**
Social-Emotional
Learning Coach



Agenda

- ❖ Good Things/What grade is your child in?
- ❖ K-5 Activate Learning/STEAM
- ❖ 6-8 IQWST/FUSE
- ❖ Questions
- ❖ Launch

Science in Action!





Why Activate Learning?

- K-5 Prime (product of UChicago STEM Education)
 - Students engage “hands-on” with science
- 6-8 IQWST (grant funded by the National Science Foundation)
 - Student-driven learning
- Aligns to Next Generation Science Standards (NGSS)



Kindergarten



Pushes and Pulls



Plants and Animals



Tracking the Weather

Grade 1



Light and Sound



Examining Living Things



Watching the Sky

Grade 2



Solids, Liquids, and Gases



Diversity in Habitats



Land, Water, and Wind

Grade 3



Forces in Action



Changing Environments



Patterns in Life Cycles



Inheritance and Variation



Weather and Climate

Grade 4



Energy Transfers



Technology and Energy



Waves



Structures in Living Things



Our Geosphere

Grade 5



Investigating Matter



Ecosystems



Earth's Systems



Earth in Space



Parent Letter

K-5
Teachers will be sending home family newsletters for the science units.



Dear Families,

Our class is beginning the Activate Learning® *Waves* topic. The *Waves* topic guides students through a hands-on exploration of the science of waves, and encourages them to build on their natural sense of wonder and curiosity about their world. As they observe, describe, and experiment, children hone their science process skills and begin to discover the various ways waves can be produced as well as their effects on objects.

During the *Waves* topic, the students will:

- Create wave patterns in water and learn that waves form in a regular pattern.
- Learn that waves require a source and travel through a medium. For example, the source of water waves is a motion somewhere. The medium for waves in the ocean is water.
- Produce waves on a rope and a slinky™ to discover the properties of waves and that waves transfer energy from place to place.



Kindergarten-2nd Grade



Timeline of Units of Study

Kindergarten



Pushes and Pulls



Plants and Animals



Tracking the Weather

Unit 1: Plants and Animals

**Unit 2: Tracking the
Weather**

Unit 3: Pushes and Pulls

Grade 1



Light and Sound



Examining Living Things



Watching the Sky

**Unit 1: Examining Living
Things**

Unit 2: Light and Sound

Unit 3: Watching the Sky

Grade 2



Solids, Liquids, and Gases



Diversity in Habitats



Land, Water, and Wind

**Unit 1: Land, Water, and
Wind**

**Unit 2: Diversity in
Habitats**

**Unit 3: Solids, Liquids, and
Gases**

KINDERGARTEN

Unit 1: Plants and Animals

Students begin this topic with the Driving Question: **What do plants and animals need to live? How do they meet these needs?**



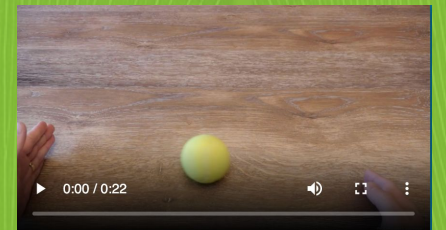
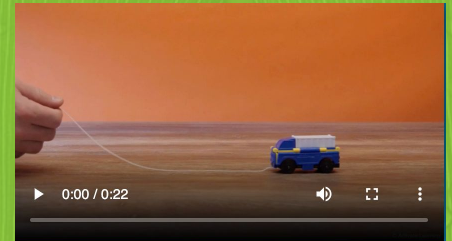
Unit 2: Tracking the Weather

Students begin this topic with the Driving Question: **What can we learn from watching and tracking the weather?**

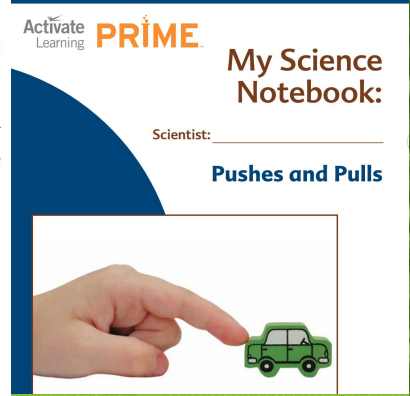
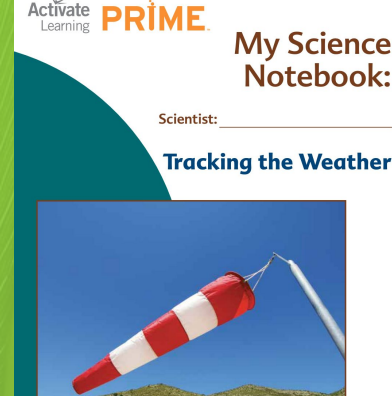
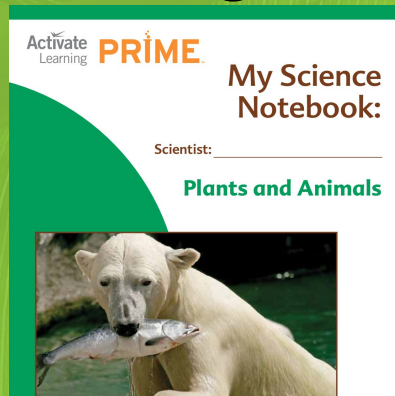
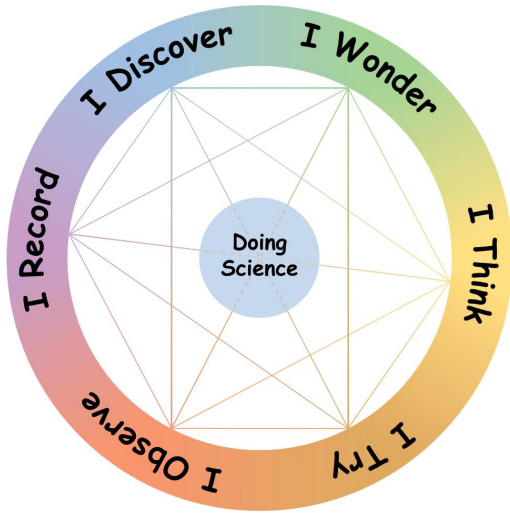


Unit 3: Pushes and Pulls

Students begin this topic with the Driving Question: **Why do things move?**



Kindergarten Student Science Notebooks



I Wonder: notice, ask questions, state problems

I Think: consider, gather information, predict

I Try: experiment, model, test ideas, repeat

I Observe: watch, examine, measure

I Record: record data, organize, describe, classify, graph, draw

I Discover: look for patterns, interpret, reflect, conclude, communicate discoveries

Kindergarten Student Science Notebook

Hello Scientist,

All scientists like to study things carefully. They like to think and ask questions. They try things out and then see what happens. They use their senses to observe things.

They describe their observations with pictures and words. Scientists use science notebooks to write and draw their ideas and their observations about the things they study.

This is your science notebook. You will write and draw some of your ideas and your observations here.

Enjoy it!

Date: _____
Planning My Animal Home

We will build a home for _____
(name of animal)

We will use these materials:



How will you make your materials hold together?

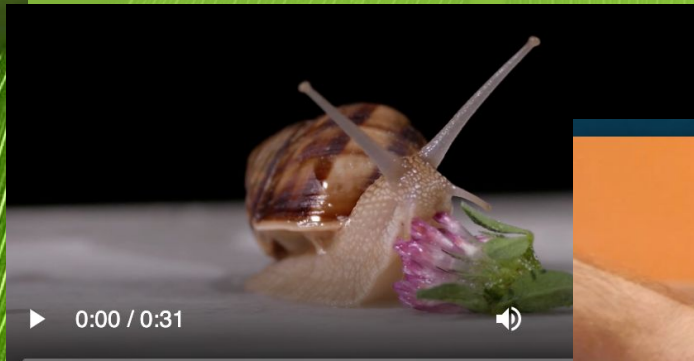
Our animal home will meet these needs:
[Check the ones that apply.]

- A place to raise young.
- Shelters the animal from weather.
- Hides or protects the animal from predators.
- Helps the animal get food.
- Other. (Explain)

FIRST GRADE

Unit 1: Examining Living Things

Students begin this topic with the Driving Question: **What parts do animals and plants have, and why?**



Unit 2: Light and Sound

Students begin this topic with the Driving Question: **Why do we see and hear things?**



Unit 3: Watching the Sky

Students begin this topic with the Driving Question: **What can we learn by observing and tracking objects in the sky?**



First Grade Student Science Notebook

Date: _____

Hello Scientist,

All scientists like to study things carefully. They like to think and ask questions. They try things out and then see what happens. They use their senses to observe things.

They describe their observations with pictures and words. Scientists use science notebooks to write and draw their ideas and their observations about the things they study.

This is your science notebook. You will write and draw some of your ideas and your observations here.

Enjoy it!

Glossary

absorb

To soak up or take in.

antenna

One of two long, thin parts on the head of an insect or other animal, such as a lobster. Animals use it to sense their surroundings.

Date: _____ part of a bird's mouth.

Velcro Race

Results

How long did it take to fasten a jacket?

| Velcro (number of seconds) | Other (number of seconds) |
|-------------------------------|------------------------------|
| | |
| | |
| | |
| | |
| | |

This way was faster: Velcro Other

(circle one)

bill acts.

amplifies living things.

cut by cutting through an object.

is a seed.

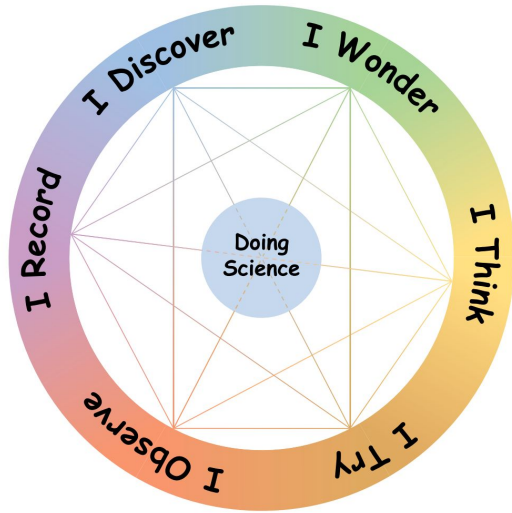
surrounds a living thing.

part used by water animals for swimming underwater.

is that makes fruits and seeds.

rails use to move. It is located on the body.

First Grade Student Science Notebooks



Activate Learning **PRIME**

My Science Notebook:

Scientist: _____

Examining Living Things



Activate Learning **PRIME**

My Science Notebook:

Scientist: _____

Light and Sound



Activate Learning **PRIME**

My Science Notebook:

Scientist: _____

Watching the Sky



I Wonder: notice, ask questions, state problems

I Think: consider, gather information, predict

I Try: experiment, model, test ideas, repeat

I Observe: watch, examine, measure

I Record: record data, organize, describe, classify, graph, draw

I Discover: look for patterns, interpret, reflect, conclude, communicate discoveries

Second Grade

Unit 1: Land, Water, and Wind

Students begin this topic with the Driving Question: What is Earth's surface like, and how does it change?

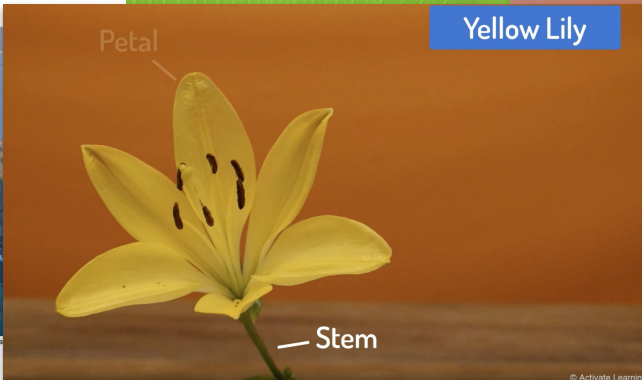
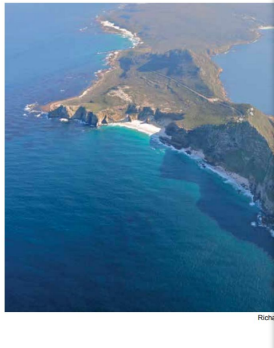
Unit 2: Diversity in Habitats

Students begin this topic with the Driving Question: Why do living things live in certain places (their habitats)?

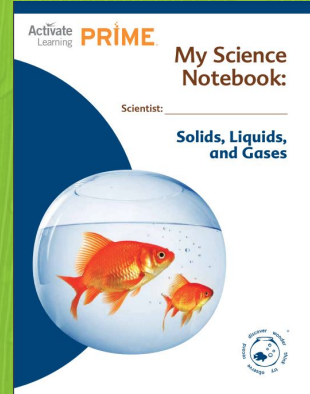
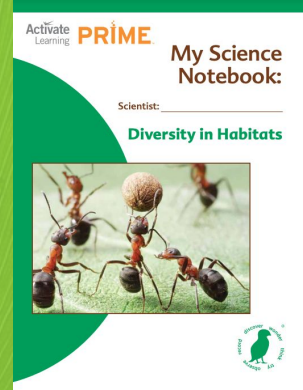
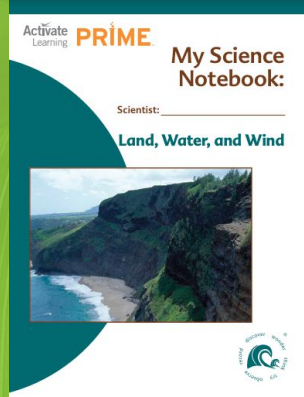
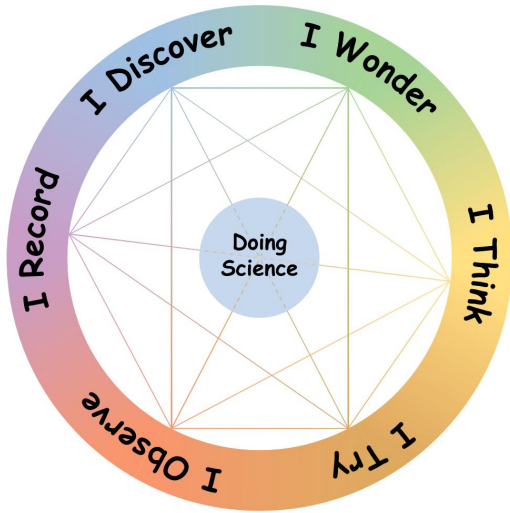
Unit 3: Solids, Liquids, and Gases

Students begin this topic with the Driving Question: How can we describe different materials? How do materials change?

Comparing Landforms: Island and Peninsula



2nd Grade Student Science Notebooks



I Wonder: notice, ask questions, state problems

I Think: consider, gather information, predict

I Try: experiment, model, test ideas, repeat

I Observe: watch, examine, measure

I Record: record data, organize, describe, classify, graph, draw

I Discover: look for patterns, interpret, reflect, conclude, communicate discoveries

2nd Grade Student Science Notebook

Hello Scientist,

All scientists like to study things carefully. They like to think and ask questions. They try things out and then see what happens. They use their senses to observe things.

They describe their observations with pictures and words. Scientists use science notebooks to write and draw their ideas and their observations about the things they study.

This is your science notebook. You will write and draw some of your ideas and your observations here.

Enjoy it!

Date: _____

Building Objects

3. Compare the objects:

| Ways they are the same | Ways they are different |
|------------------------|-------------------------|
| | |



4. Take your first object apart. Make a new one. Draw it here.



5. Can you think of other things that are made of the same kinds of pieces, but look different from each other?



Assessments

What do student assessments look like?

- Rubrics for Kdg
- Rubrics, Performance Tasks, and Quick Check for 1st
- Quick Checks (2nd-5th)
 - Comparing/Contrasting
 - Matching
 - Observations
 - Labeling
 - Short Answer
 - Diagrams

RUBRIC: Plants Around Us

| | Criterion A | Criterion B |
|--|--|--|
| | Plants need water and light to live and grow. | Plants get the things they need from their environment. |
| 4 - Exceeds Expectations Explores content beyond the level presented in the lessons. | Can supply evidence that plants need water and light to live and grow, and also describes other needs that plants have (such as air, optimal soil, or room to grow). | Can describe how particular plants get water and light in their particular environments, and also describes how the environment meets other needs as well. |
| 3 - Secure (Meets Expectations) Understands content at the level presented in the lessons and does not exhibit misconceptions. | Can supply evidence that plants need water and light to live and grow. | Can describe how particular plants get water and light in their particular environments. |
| 2 - Developing (Approaches Expectations) Shows an increasing competency with lesson content. | Can state that plants water and light to grow, but cannot support the idea with evidence. | Can state that plants get water and light in their particular environments, but cannot supply examples of how these needs are met for a particular plant. |

Name _____ Date _____

Objects in the Sky

There are sky objects on the next page. Cut out each sky object and glue it onto the appropriate place on the Venn diagram below.

Daytime only

Nighttime only

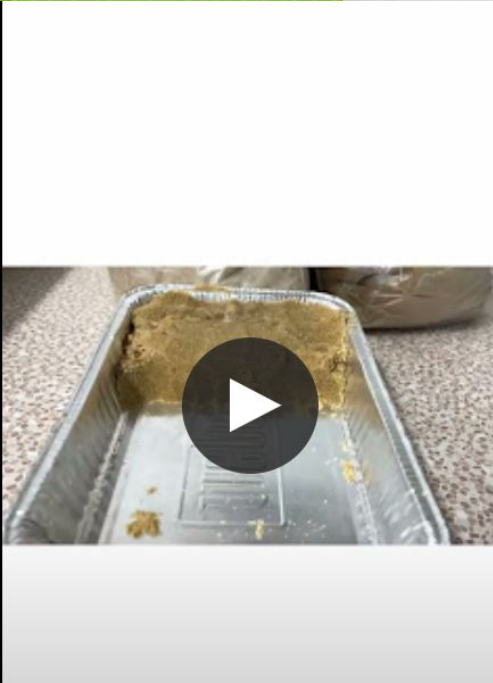
Daytime and Nighttime

Sky Objects cluster

K-2 Science in Action

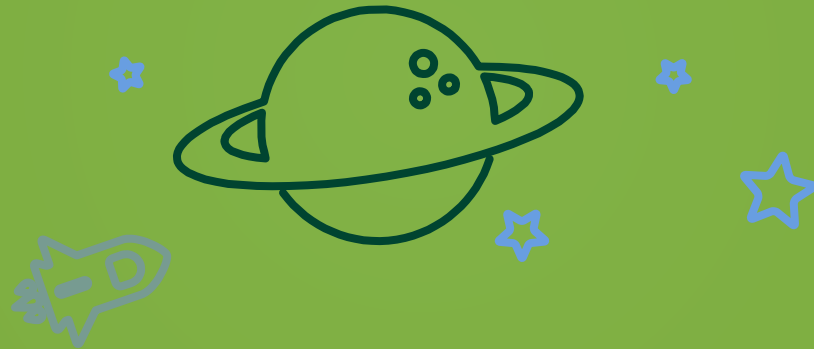


K-2 Science in Action



Thank you!

Q/A Time!



Please feel free to reach out to your child's teacher with specific questions and for additional support!



3rd-5th Grade



Units of Study

Grade 3



Forces in Action



Changing Environments



Patterns in Life Cycles



Inheritance and Variation



Weather and Climate

Grade 4



Energy Transfers



Technology and Energy



Waves



Structures in Living Things



Our Geosphere

Grade 5



Investigating Matter



Ecosystems



Earth's Systems



Earth in Space

Third Grade

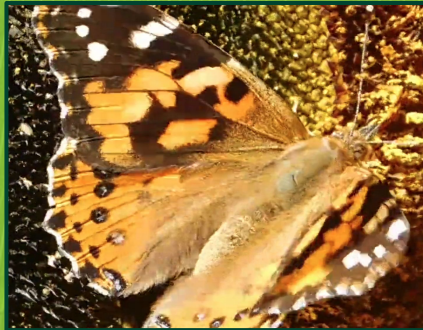
Life Science: Inheritance and Variation

Driving Question:
*Why do living things
look the way they
do?*



Life Science: Patterns and Life Cycles

Driving Question:
How are the life
cycles of different
living things similar
and different?



Life Science: Changing Environments

Driving Question:
What happens to
living things when
the environment
changes?



Third Grade

Earth Science: Weather and Climate

Driving Question: How do we describe and measure weather?



Physical Science: Forces in Action

Driving Question: Why is it useful to know about different kinds of forces and how they work?



Fourth Grade

Life Science: Structures & Living Things

Driving Question: How do organisms parts help it survive, grow, and reproduce?



Earth Science: Our Geosphere

Driving Question:
What causes
changes to the
surface of the
Earth?



Fourth Grade

Physical Science: Energy Transfers

Driving Question: What is energy and what can it do?



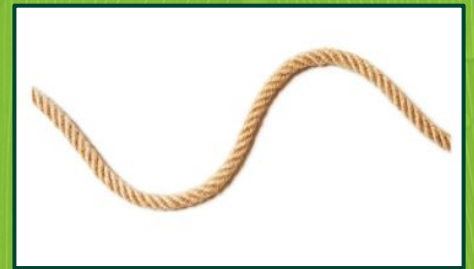
Physical Science: Technology and Energy

Driving Question: What are some ways to use energy to help us in our everyday lives?



Physical Science: Waves

Driving Question: What are waves and how might they be useful?



Fifth Grade

Life Science: Ecosystems

Driving Question:
How do living things get what they need to survive?



Earth Science: Earth's Systems

Driving Question:
How do land, air, water, and living things interact?



Earth Science: Earth and Space

Driving Question:
How does Earth interact with objects near and far?



Physical Science: Investigating Matter

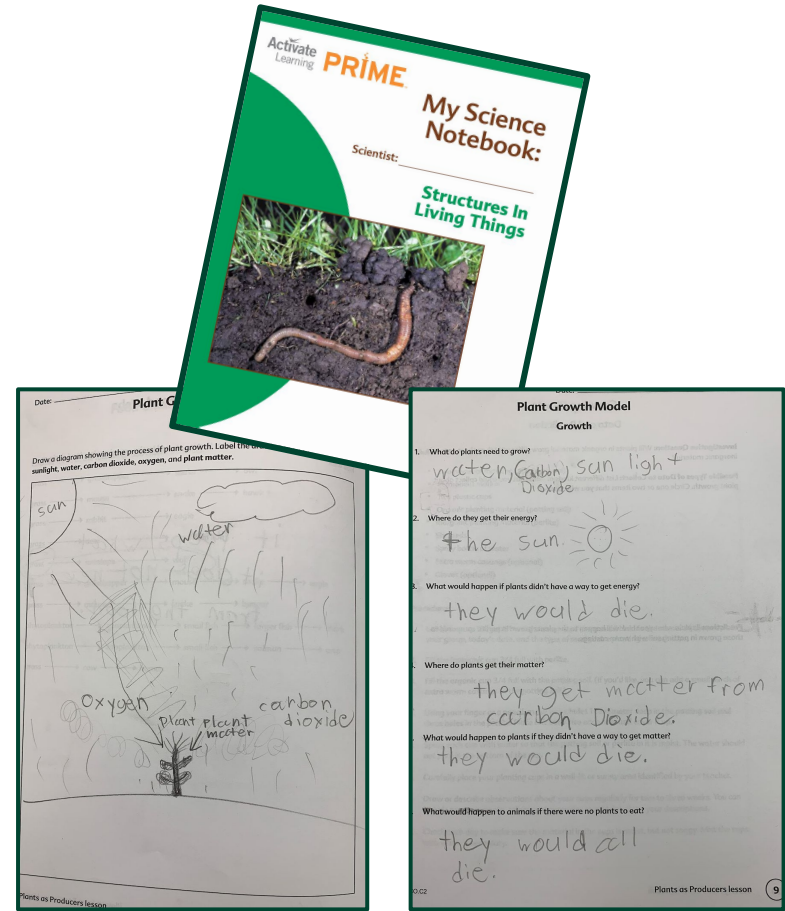
Driving Question:
What are things made of and how can they change?





My Science Notebook

- This notebook is the students' place to record discoveries about organisms, their structures, and how they function.
- Students will ask questions, conduct investigations, and use data, models, and other information to help make scientific explanations and arguments.
- Students will use this science notebook to keep a record of work that can be shared and returned to.





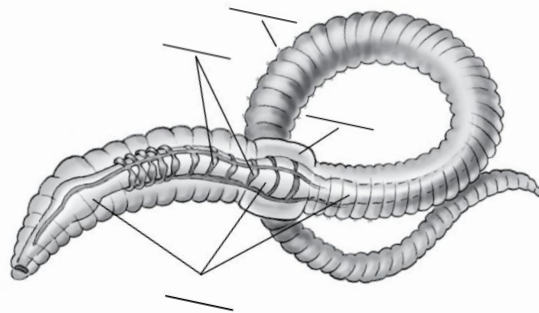
Assessments

What do student assessments look like?

- Quick Checks
 - MC Questions
 - Matching
 - True/False
 - Fill in the Blank
 - Short Answer
 - Diagrams

9. Identify the following structures on this image of an earthworm.

- a. Saddle
- b. Bristles
- c. Blood vessels
- d. Digestive system



10. Describe a fair investigation to determine if earthworms can sense and respond to sounds.

The diagram shows a detailed anatomical drawing of an earthworm. It is coiled into a loose 'S' shape. Several lines with small horizontal bars at the end point to specific internal and external features. The labels correspond to the list provided in question 9: 'Saddle' (the transverse partitions between segments), 'Bristles' (small hair-like structures on the sides of segments), 'Blood vessels' (the dorsal and ventral blood vessels running through the body), and 'Digestive system' (the internal organs including the crop and gizzard).



STEAM

K-5

During STEAM Class, our K-5 students:

Collaborate

Create

Communicate

Critically Think

The Engineering Process

Ask

Imagine

Plan

Create

Improve

Communicate

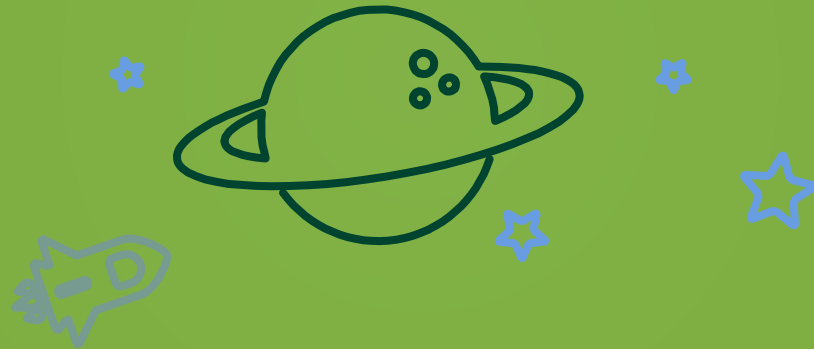
How can I support my child with STEAM goals and expectations?

Allow your child to *problem solve, persevere,
and provide 100% effort!*

In the STEAM Lab, students learn from their
mistakes. They learn it *is* okay to fail ***because
that is where learning takes place!***

Thank you!

Q/A Time!



Please feel free to reach out to your child's teacher with specific questions and for additional support!



6th-8th Grade

Let's discuss IQWST and FUSE

IQWST

Investigating & Questioning our World Through Science and Technology

**Discussion
Based**

**Claim
Evidence
Reasoning**

**Scientific
Reasoning**

**Hands on
experience**

6th Grade

Earth Science

How Does Water Shape our World?

Water and rock cycles

Earth Science

What Makes the Weather Change?

Atmospheric processes in weather and climate

Earth Science

How is the Earth Changing?

Geological processes

Physical Science

How Will It Move?

Force and motion

7th Grade

Life Science

Where Have All the Creatures Gone?

Organisms and ecosystems

Life Science

What is Going on Inside of Me?

Body systems and cellular processes

Life Science

Why Do Organisms Look the Way They Do?

Heredity and natural selection

Intro to Chemistry

How Does Food Provide My Body with Energy?

Chemical reactions in living things

8th Grade

Intro to Chemistry

How Can I Smell Things From A Distance?

Particle nature of matter

Intro to Chemistry

How Can I Make New Stuff from Old Stuff?

Chemical reactions and conservation of matter

Physical Science

Can I Believe My Eyes?

Light, its role in sight and its interaction with matter

Physical Science

Why Do Some Things Stop While Others Keep Going?

Transformation and conservation of energy



Science Grading Scale

IQWST is student driven via in class investigations and discussion

| Category | Assessments /Projects | Classwork | Labs | Homework |
|----------|-----------------------|-----------|------|----------|
| Weight | 50% | 15% | 30% | 5% |

Supporting IQWST at Home



- Ask your child what they did in class and what they learned from it
- Encourage your child to ask questions and not to be afraid to talk about ideas
- To follow up their reading, ask, “What’s the most interesting thing you read about?” Or, “What’s one thing you learned from that reading that you didn’t know before?”
- If you wish to support your child by reading with him or her, always stop and answer the questions in the book together



FUSE

The Interest-driven FUSE Studio

Challenges

At the heart of FUSE are our challenges



Beats Builder IPAD

Produce your own music with professional audio mixing software.



Coaster Boss

Can you build the fastest roller coaster in FUSE?



Cookie Customizer ONLINE

Design and print unique cookie cutters, make awesome cookies, and then eat them.



Design to Fly



Dream Home ONLINE



DH2: Gut Rehab ONLINE

- Personalized, educational activities
- Composed of levels of increasing difficulty
- Based in a STEAM topic
- Appeals to students' personal, non-STEAM interests



Supporting FUSE at Home

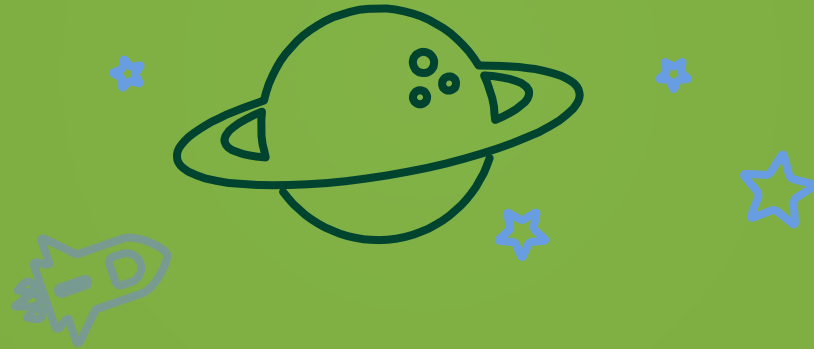
- You can see your child's progress and/or completion of challenge levels on the 'MY STUFF' tab on the FUSE website, www.fusestudio.net
- Ask your child what they did in class
- Discuss possible solutions to problems with your child
- Encourage your child to participate in challenges: EFFORT matters!

The graphic features the text 'STEAM & FUSE' in a bold, yellow, sans-serif font at the top, and 'IN ACTION' in a bold, light blue, sans-serif font at the bottom. The text is centered on a bright green background. Behind the text, there are faint, white outlines of three interlocking gears. The entire graphic is framed by a dark green border with black horizontal bars at the top and bottom.

STEAM & FUSE
IN ACTION

Thank you!

Q/A Time!



Please feel free to reach out to your child's teacher with specific questions and for additional support!

What are Flossmoor SD 161 students saying?

"I like it because it is more hands-on and gives more visual learning"
Kamryn T.

"I like it because we are not just reading it out of a book, but actually learning by watching and doing the experiment." Anaya M.

"I love that we do labs all the time, it is so much better than just looking at a book" 6th Grade PJH Student

"I had fun exploring nature and we found a lot of different plants and insects!" Jack B.

"We don't have to carry around a huge text book"
Charlie W.