WELCOME

2023-24

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Tuesday, Aug 15, 2023

8:30-9:00am WELCOME AND KEYNOTE ADDRESS			
Middle School		**High School**	
9:15-11:15am	Teaching Thinking Skills through 3D Instruction with Cathy Brooks, Science Outreach Clemson University	9:10-10:40am	Q1 Curriculum Discussion Bio 1 | PhySci | All other HS Sci
		10:50-12:20pm	Q1 Curriculum Discussion Chem | AP/IB Sci | All other HS Sci
11:15-12:15pm	**Lunch**	12:20-1:20pm	**Lunch**
12:15-3:30pm	Q1 Curriculum Discussions by Grade-Level: -Content Points of Emphasis -Teachers agree upon Labs -Assessment Planning -ESE Considerations: IEPs, ESOL	1:30-3:30pm	Teaching Thinking Skills through 3D Instruction with Dr.Cathy Brooks, Science Outreach Clemson University

Mission:
Rock Hill Schools will provide all students with challenging work that authentically engages them in the learning process and prepares them for successful futures.

Vision:
Rock Hill Schools – a community inspiring students to learn, grow, connect, and thrive.

Motto

We are Rock Solid

Professional Code

- Put Students First
- Nurture Relationships
- Work Together for a Shared Vision
- Grow Professionally
- Continuously Find Ways to Improve

Ice Breaker

Can You Fit Through an Index Card?

https://www.sciencebuddies.org/blog/science-experiment-icebreakers

What's New for 2023-24

Science Standards: This year, students in ALL grade-levels K-12, will be taught the 2021 SC College and Career Ready Science Standards.

-SC has applied for a waiver to forego SCREADY-Science in 4th and 6th grade. We do not know yet if the test will be waived. Mrs. Massey will let us know.

-There is no waiver for the Biology EOC. Students will be tested on overlapping content and new content will be field tested.

Planning for Q1

PLANNING FOR Q1 Overview

01 **Classroom Rules/Procedures**

Returning teachers share with new teachers what rules/procedures should be in place.

02 **Notebook Setup**

Discuss plans for notebooks/journals. Interactive, virtual, etc.

03 **Teaching the SEPs**

While the SEPs and CCCs will be integrated with the content, how can we jumpstart student thinking with some opening activities?

04 **Teaching the Content**

How will we organize and teach Q1 content? How will we assess student knowledge?

01

Classroom Rules and Procedures

01 Classroom Rules & Procedures

Classroom Procedures

- Students will come to class prepared and ready to learn each day!
- Bring materials to class everyday.
- Raise your hand if you have a question.
- No eating or drinking during lab

Responsibilities:

- All students are expected to participate and are responsible for all information covered.

Behavior in Class:

- Expected classroom behaviors are the same as the school's behavior code of conduct.
- Failure to follow proper lab safety will result in the removal from the lab activity immediately. **Safety is the #1 priority!**

Group Work Rules

G – Give everyone a chance to speak.

R – Respect ideas and opinions of others.

O – Offer ideas, suggestions, and feedback that is thoughtful.

U – Use your notes to guide discussion and assignments.

P – Participate in discussion and assignments

S – Stay focused and on task

*__You may not__ visit, talk with, or disrupt other groups.

02

Textbook and Notebook Setup

7th Grade Textbook

Topic 1: Energy

Topic 2: Introduction to Matter

Topic 3: Chemical Reactions

Topic 4: Cell Processes

Topic 5: Ecosystems

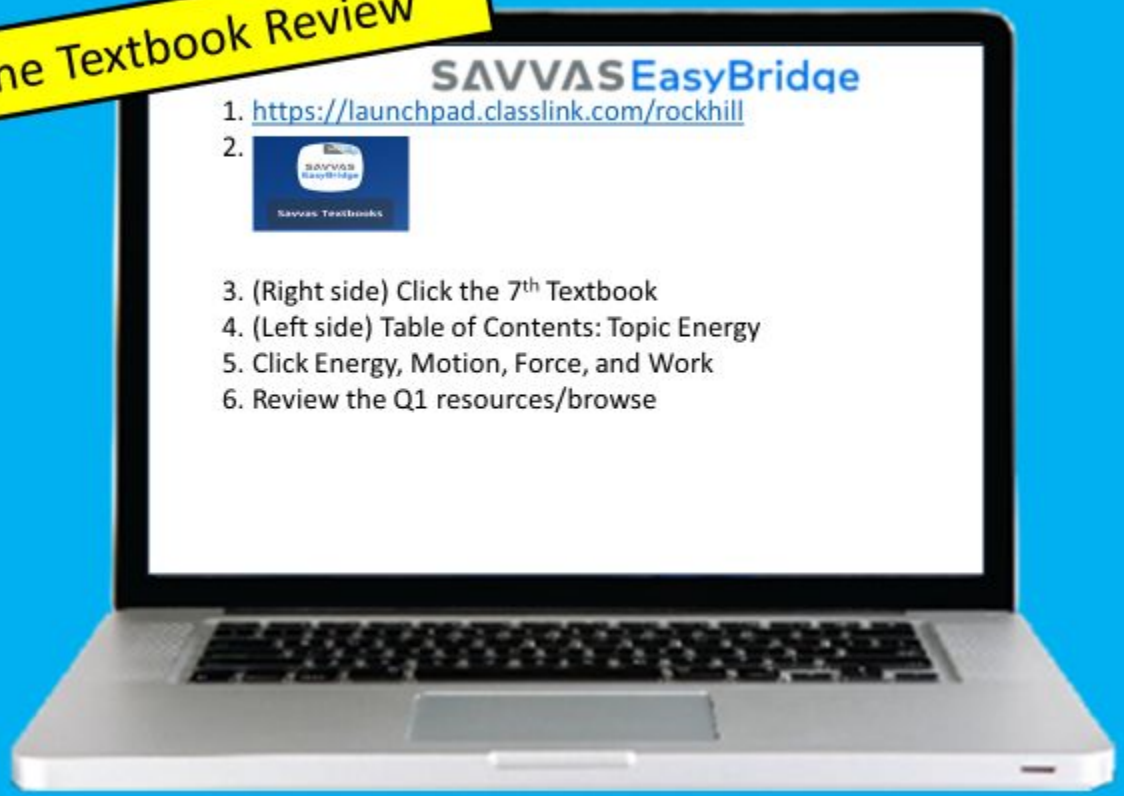
Topic 6: Populations, Communities, and Ecosystems

Topic 7: Distribution of Natural Resources

Topic 8: Human Impacts on the Environment

Topic 9: Climate

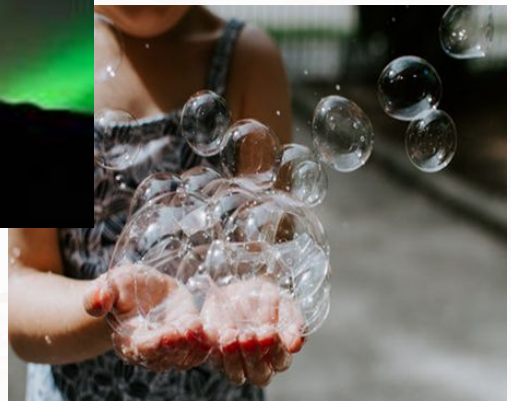
Online Textbook Review



PHENOMENON

- Sparks curiosity; used to anchor an entire unit.
- Observable events that occur in a natural or designed system. This can be a fact, situation, event happening, or circumstance that is observed to exist or happen.
- Events that we can explain with Science.
- Develops core ideas through problem-solving and designing solutions.

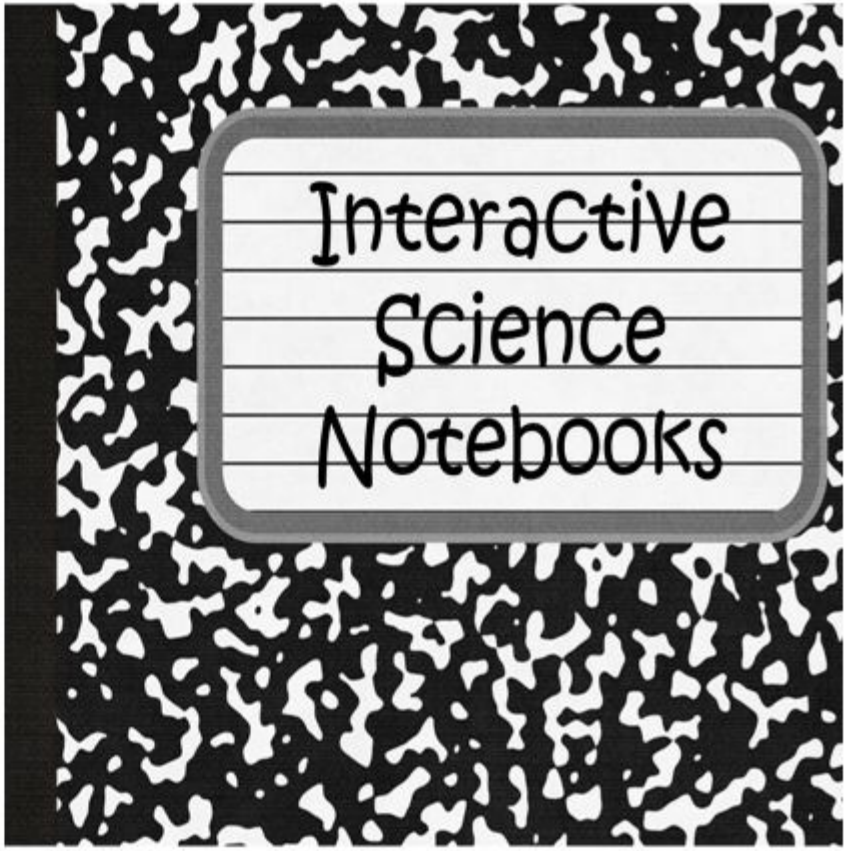
Phenomena Explained



5 Good Reasons to Use Interactive Science Notebooks

Notebooks …

1. Are Thinking Tools
2. Guide Instruction
3. Enhance Science Literacy
4. Support Different Learning Styles
5. Foster Student-Teacher Collaboration



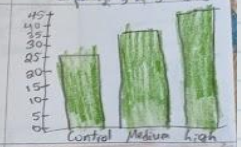
02 Notebook Setup

- Table of Contents
- Grading Rubric
- Interactive Contract
- Bookmark Tab or Labeled Work Tabs

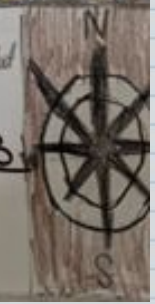
Table of Contents

Vocabulary

Independent Variable	Is the variable you have control over what you can choose or manipulate.
dependent Variable	something that depends on another thing
Inference	A conclusion reached on the basis of evidence and reasoning.
Prediction	Opinion that something will happen.
Experiment	To test something using a careful method in order to find about it.



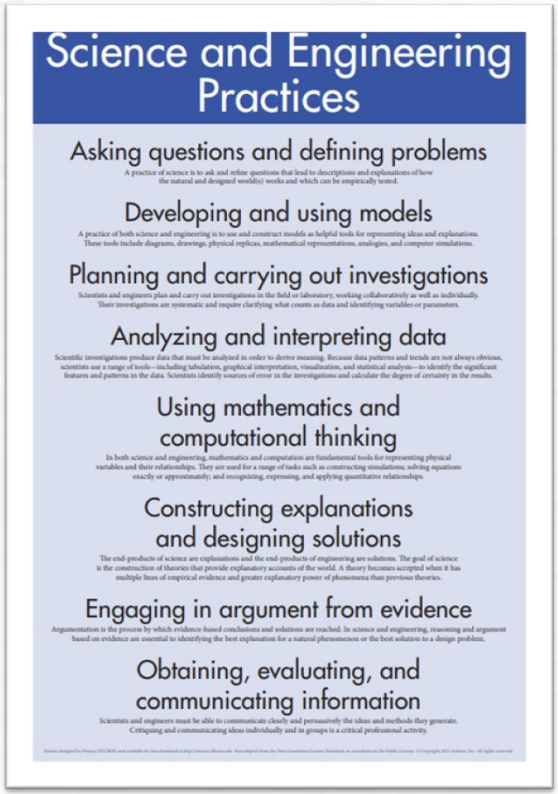
Gravity	A pull that brings things together.
friction	The force that opposes motion between two different surfaces.
Position	The position of something is its location relative to something else.
Speed	A measure of how fast something is going.
Direction	Direction of motion is the course or path that something is going.



03

Teaching the SEPs

Science Learning Practices



Science and Engineering Practices

Asking questions and defining problems

A practice of science is to ask and refine questions that lead to descriptions and explanations of how the natural and designed world(s) works and which can be empirically tested.

Developing and using models

A practice of both science and engineering is to use and construct models as helpful tools for representing ideas and explanations. These tools include diagrams, drawings, physical replicas, mathematical representations, analogies, and computer simulations.

Planning and carrying out investigations

Scientists and engineers plan and carry out investigations in the field or laboratory, working collaboratively as well as individually. Their investigations are systematic and require clarifying what counts as data and identifying variables or parameters.

Analyzing and interpreting data

Scientific investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists use a range of tools—including tabulation, graphical interpretation, visualization, and statistical analysis—to identify the significant features and patterns in the data. Scientists identify sources of error in the investigations and calculate the degree of certainty in the results.

Using mathematics and computational thinking

In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships.

Constructing explanations and designing solutions

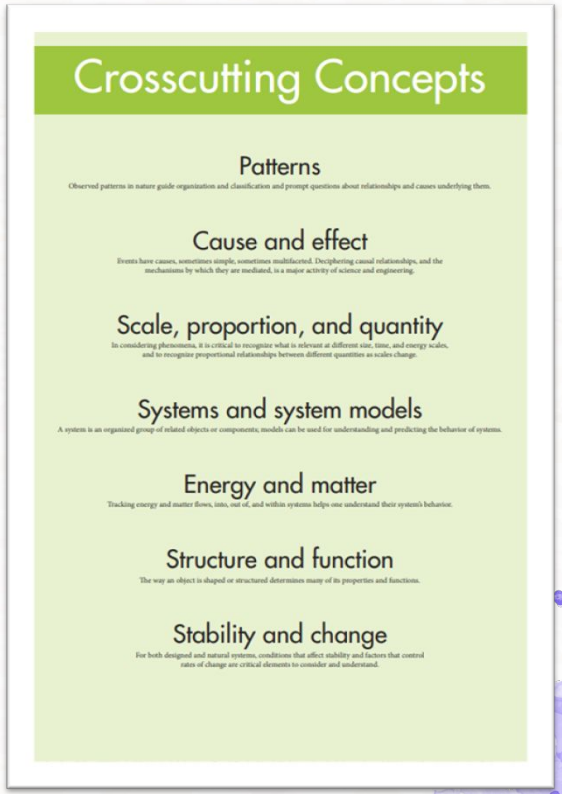
The end-products of science are explanations and the end-products of engineering are solutions. The goal of science is the construction of theories that provide explanatory accounts of the world. A theory becomes accepted when it has multiple lines of empirical evidence and greater explanatory power of phenomena than previous theories.

Engaging in argument from evidence

Argumentation is the process by which evidence-based conclusions and solutions are reached. In science and engineering, reasoning and argument based on evidence are essential to identifying the best explanation for a natural phenomenon or the best solution to a design problem.

Obtaining, evaluating, and communicating information

Scientists and engineers must be able to communicate clearly and persuasively the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity.



Crosscutting Concepts

Patterns

Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.

Cause and effect

Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.

Scale, proportion, and quantity

In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.

Systems and system models

A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.

Energy and matter

Tracking energy and matter flows, into, out of, and within systems helps one understand their system's behavior.

Structure and function

The way an object is shaped or structured determines many of its properties and functions.

Stability and change

For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.

SEP Thinking Skills

STEM/STEAM Activities: https://docs.google.com/presentation/d/1461CO_0wNhg-kd9JE5RMfWZXaNvNHvakujJgsvzJLoo/edit?usp=sharing

Q1 Focus Thinking Skills

Asking Questions and Defining Problems

Science begins with a question about a phenomenon, such as "Why is the sky blue?" or "What causes cancer?" and seeks to develop theories that can provide explanatory answers to such questions.

Planning and Carrying Out Investigations

Science often involves the construction and use of a wide variety of models and simulations to help develop explanations about natural phenomena. Models make it possible to go beyond observables and imagine a world not yet seen. Models enable predictions of the form "if . . . then . . . therefore" to be made in order to test hypothetical explanations.

Analyzing and Interpreting Data

Scientific investigation may be conducted in the field or the laboratory. A major practice of scientists is planning and carrying out a systematic investigation, which requires the identification of what is to be recorded and, if applicable, what are to be treated as the dependent and independent variables (control of variables).

Developing and Using Models

Scientific investigations produce data that must be analyzed in order to derive meaning. Because data usually do not speak for themselves, scientists use a range of tools—including tabulation, graphical interpretation, visualization, and statistical analysis— to identify the significant features and patterns in the data.

What is “Unpacking a Standard or Learning Target?”

Breaking a standard, goal, or benchmark into smaller, more explicit learning targets.

Activity: Unpack Learning Targets

As a team, “unpack” a Standard that you have agreed upon for the course/term/unit.

- Highlight or circle the skills the students will need to be able to do (verbs).
- Underline the concepts students need to know (important noun or noun phrases).
- Double underline any **context** in which the students will need to know these concepts.

Fill in the graphic organizer. Include a lab or an activity from the text that you would include in your lesson.

Step 1: Choose the Standard

7-PS3-1. Construct and interpret graphical displays of data to describe the proportional relationships of kinetic energy to the mass of an object and to the speed of an object.

Step 2: Annotate Standard

7-PS3-1. Construct and interpret graphical displays of data to describe the proportional relationships of kinetic energy to the mass of an object and to the speed of an object.

Determine what students need to know, understand and be able to do.

7-PS3-1. Construct and interpret graphical displays of data to describe the proportional relationships of kinetic energy to the mass of an object and to the speed of an object.

KNOW	UNDERSTAND	BE ABLE TO DO
• Kinetic energy • How to describe proportional relationships of kinetic energy.	• Calculate mass of an object • Calculate speed of an object	• How to construct and interpret graphical data.

Collaborative Conversations

GALLERY WALK

If a child can't learn the way we teach, maybe we should teach the way they learn.

Ignacio Estrada

Based on the knows, understands, and dos for **Thinking Skills & Content Practices**, please complete the following sentence starters below.

I still have questions about . . .

I am going to implement. . .

I need the support with....

04

Teaching the Content

Odd One Out

Research suggests that laboratory experiences will be more likely to achieve these goals if labs are: (1) designed with clear learning outcomes in mind, (2) thoughtfully sequenced into the flow of classroom science instruction, (3) integrate learning of science content and process, and (4) incorporate ongoing student reflection and discussion.

Teaching the Content: 7th Grade Science-At-A-Glance 2023-24

Science Rock Hill: https://www.sciencerockhill.com/ **7th Grade:** https://www.sciencerockhill.com/7th-grade-science.html

Science

7th Grade Science Curriculum Map 2022-23

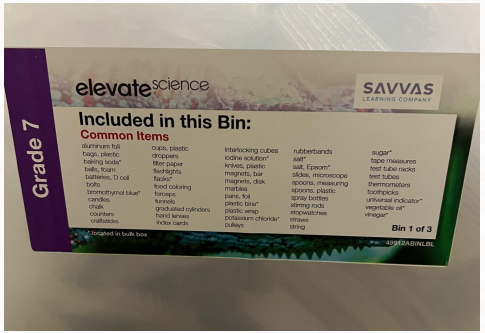
Q1 Introduction Topic 1: Energy Topic 2: Introduction to Matter	Q2 Topic 3: Chemical Reactions Topic 4: Cell Processes	Q3 Topic 5: Ecosystems Topic 6: Populations, Communities & Ecosystems	Q4 Topic 7: Natural Resources Topic 8: Human Impacts Topic 9: Climate
Introduction (2 weeks) • Setup Science Notebooks (virtual or paper) • Meaning of Science, Scientific Attitudes, Scientific Reasoning, Theories and Laws (new text p. 568-573) • Claims-Evidence-Reasoning • Lab Safety • Scientific Method • Use of Data to support scientific reasoning 7-PS3-1. Construct and interpret graphical displays of data to describe the proportional relationships of kinetic energy to the mass of an object and to the speed of an object. 7-PS3-2. Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system. 7-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. 7-PS1-1. Develop models to describe the atomic composition of simple molecules and extended structures.	7-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. 7-PS1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. 7-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. 7-PS1-6* Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. 7-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. 7-LS1-7. Develop a model to describe how food molecules in plants and animals are rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. 7-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	7-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. 7-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. 7-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. 7-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. 7-LS2-5.* Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	7-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. 7-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. 7-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. 7-ESS3-5. Ask questions to clarify evidence of the factors that have impacted global temperatures over the past century.

* Engineering, Technology and Applications of Science - Requires Engineering Design or Linkage to Engineering, Technology, Science and Society
^ Standard is duplicated in another grading period

Required Lab Activities for 7th Grade

- Each teacher will lead their students in **4 labs during Q1** placing emphasis on the SEPs noted here.
- Middle school Benchmarks will each contain 10 SEP questions - as the school year progresses, each benchmark students should answer more and more correctly.
- Contact Mrs. Jeannie Parker to request the items needed. jparker@rhmail.org

Lab Kits



7th grade FlipGrid link:

https://flip.com/7f3beb94

Teachers will record a 1min video of a student (group) completing a lab focused on the SEPs and upload to FlipGrid. Share instructions and reflections on what went well or what you would do differently.

Flipgrid

Kinetic and Potential Energy Lab

THANKS!

DO YOU HAVE ANY QUESTIONS?

PLC Co-Leader: Jalavender Clowney, STMS,jclowney@rhmail.org
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Kim Massey, K-12 Science Instructional Specialist
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Don't Forget Complete Needs Assessment!!

7th Grade Science

Tue August 15th, 2023

6QWNJY

Best Wishes for the 23-24 School Year !