Thinking Skills & Content Practices

RISING 6TH GRADE

Q1 Curriculum Discussion

Dr. Stephanie Bryant
Ms. Randy Hart

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**

PLANNING FOR Q1

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?

Power Point Link

04

Teaching the Content

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

Can You Fit Through an Index Card?

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

https://www.science-sparks.com/can-you-step-through-an-index-card/#:~:text=When%20you%20look%20at%20an,same%2C%20it%20just%20gets%20redistributed.

Odd One Out

A

B

C

D

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.

Required Activities [Labs] for Grade 6

- Each teacher will lead their students in **4 labs during Q1** placing emphasis on the SEPs noted here.
- **Grading**: Majors 3 (minimum)
  5 (maximum)
- 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

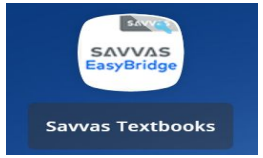
Lab Bins at Your School

SCIENCE

Topic 1: The Cell System
Topic 2: Human Body Systems
Topic 3: Solids, Liquids and Gases
Topic 4: Thermal Energy
Topic 5: Waves and Electromagnetic Radiation
Topic 6: Weather in the Atmosphere
Topic 7: Energy in the Atmosphere and Ocean
Topic 8: Minerals and Rocks in Geosphere
Topic 9: Earth's Surface Systems
Topic 10: Plate Tectonics
Topic 11: History of Earth

Online Textbook Review

SAVVAS EasyBridge

1. https://launchpad.classlink.com/rockhill
2. 

3. (Right side) Click the 6th Textbook
4. (Left side) Table of Contents: Topic The Cell System
5. Click Living Things
6. Review the Q1 resources
7. Warm-Up

Q1 Warm-Up Activity

Name _____ Class _____ Date _____

Connect Activity Lab

All Wound Up

How do you know whether an object you are observing is alive?

Background

Suppose you are walking to school one day and you notice some small objects on the ground or on the sidewalk. You bend down low to get a better look. The objects are small, like ants. They seem to be moving. Or perhaps the wind is simply pushing around nonliving objects, such as bits of leaves. In this activity, you will conduct an investigation to help you distinguish between living things and nonliving things.

Materials (per pair)

- wind-up toy

Safety

Be sure to follow all safety procedures provided by your teacher.

Procedure

☐ **1.** Your teacher will give you and your partner a wind-up toy.

☐ **2.** One of you will look for evidence that the toy is alive, and the other will look for evidence that the toy is not alive.

☐ **3.** Observe the wind-up toy. Record the characteristics of the toy that support your position about whether or not the toy is alive.

_____

_____

☐ **4.** Share your lists of living and nonliving characteristics with your classmates.

Name _____ Class _____ Date _____

Analyze and Interpret Data

1. Define Based on what you learned from this activity, form an operational definition of what it means to be alive by creating a list of characteristics that living things share.

_____

_____

_____

_____

2. Identify Choose a living thing with which you are familiar. Identify the characteristics and needs of your living thing that help you know that it is alive.

_____

_____

_____

3. Infer Do you think the wind-up toy is dependent on its interactions with its environment to meet its needs? Explain your answer in terms of how living things interact with their environment.

_____

_____

_____

4. Construct Arguments Do you think the wind-up toy you used in this lab is a good model of a living thing? Use your answer to Question 3 and evidence from this lab to explain your reasoning.

_____

_____

_____

_____

Interactive

Wordwall

https://wordwall.net/resource/2303771/science/teacher-activity-year-4-5-6-living-things-living-or-non

6th grade FlipGrid link:
https://flip.com/aa4120f9

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

6th Grade Science-At-A-Glance 2023-24

https://www.sciencerockhill.com/

https://www.sciencerockhill.com/6th-grade-science.html

6th Grade Science Quarter-At-A-Glance 2023-24

Quarter 1

1st Quarter	Topic	Standard(s)	Content
8/21 - 8/25	Introduction		Classroom Rules and Procedures Course Overview Notebook setup Lab Safety Start Portfolios
8/28 - 9/1	Introduction	SEP's 1-8	What is Science? Why study Science? Science Fair Discussion Science & Engineering Practices
9/4 - 9/8*	Topic 1: The Cell System	6-LS1-1	Lesson 1: Living Things Lesson 2: Structure and Function of Cells
9/11 - 9/15	Topic 1: The Cell System	6-LS1-2	Lesson 3: Cell Structures Lesson 4: Obtaining and Removing Materials
9/18 - 9/22	Topic 2: Human Body Systems	6-LS1-3 6-LS1-8 (See Note)	Lesson 1: Body Organization Lesson 2: Systems Interacting
9/25 - 9/29	Topic 2: Human Body Systems	6-LS1-3 6-LS1-8 (See Note)	Lesson 3: Supplying Energy
10/2 - 10/6	Topic 2: Human Body Systems	6-LS1-3 6-LS1-8 (See Note)	Lesson 4: Managing Materials
10/9 - 10/13*	Topic 2: Human Body Systems	6-LS1-3 6-LS1-8 (See Note)	Lesson 5: Controlling Processes
10/16 - 10/20*	Topic 2: Human Body Systems	6-LS1-3 6-LS1-8 (See Note)	*Science Fair Discussion/Work Time* Benchmark Test

At the end of Q1 students should be able to elaborate upon the following question. What does your PLC agree the answer should be?

How do cells contribute to the function of living organisms and the organism's response to its environment?

Note: The focus of 6-LS1-3 is on normal function and subsystems within. Students will not be assessed on individual body systems organs or structures, but should be familiar with how the circulatory, excretory, digestive, respiratory, muscular, skeletal and nervous systems work interdependently.

Resources:

- This may help you gain insight on the study of human physiology. Link
- This activity may help you bridge 6-LS1-3 and 6-LS1-8. Students catch a falling ruler (dropped by a partner) and record how many centimeters it fell, then calculate their reaction time, which is dependent on their sense of sight, and how fast they can react. Link
- I have built some of these models. Let me know if you want to try them.

Quarter 2

2nd Quarter	Topic	Standard(s)	Content
10/23 - 10/27	Topic 3: Solids, Liquids and Gases	6-PS1-4	Lesson 1: States of Matter
10/30 - 11/3	Topic 3: Solids, Liquids and Gases	6-PS1-4	Lesson 2: Changes of State
11/6 - 11/10	Topic 3: Solids, Liquids and Gases	6-PS1-4	Lesson 3: Gas Behavior
11/13 - 11/17	Topic 4: Thermal Energy	6-PS1-4 6-PS3-3 6-PS3-4	Lesson 1: Thermal Energy, Heat and Temperature
11/20 - 11/24*	Topic 4: Thermal Energy	6-PS1-4 6-PS3-3 6-PS3-4	Lesson 2: Heat Transfer
11/27 - 12/1	Topic 4: Thermal Energy	6-PS1-4 6-PS3-3 6-PS3-4	Lesson 3: Heat and Materials
12/4 - 12/8	Topic 4: Thermal Energy	6-PS1-4 6-PS3-3 6-PS3-4	*Flex time for assessments, reteaching, projects, etc.* *Please complete the lessons above by 12/8.*
12/11 - 12/15 Science Fair will be this week.	Topic 5: Waves and Electromagnetic Radiation	6-PS4-2	Lesson 1: Wave Properties Semester Review
12/18 - 12/22*	Topic 5: Waves and Electromagnetic Radiation	6-PS4-2	Benchmark Test

At the end of Q2 students should be able to elaborate upon the following questions. What does your PLC agree the answers should be?

- How do waves behave?
- How can a substance be changed by energy and how can energy be transferred from one object or system to another?

Quarter 3

3rd Quarter	Topic	Standard(s)	Content
1/8 - 1/12*	Topic 5: Waves and Electromagnetic Radiation	6-PS3-3 This standard is considered overlapping content, and will be tested on SCREADY-Sci.	Lesson 2: Wave Interactions
1/15 - 1/19*	Topic 5: Waves and Electromagnetic Radiation	6-PS3-3 This standard is considered overlapping content, and will be tested on SCREADY-Sci.	Lesson 3: Sound Waves
1/22 - 1/26	Topic 5: Waves and Electromagnetic Radiation	6-PS3-3 This standard is considered overlapping content, and will be tested on SCREADY-Sci.	Lesson 4: Electromagnetic Waves
1/29 - 2/2	Topic 5: Waves and Electromagnetic Radiation	6-PS3-3 This standard is considered overlapping content, and will be tested on SCREADY-Sci.	Lesson 5: Light
2/5 - 2/9	Topic 6: Weather in the Atmosphere	6-ESS2-4 6-ESS2-5 This standard is considered overlapping content, and will be tested on SCREADY-Sci.	Lesson 1: The Atmosphere Around You Lesson 2: Water in the Atmosphere
2/12 - 2/16*	Topic 6: Weather in the Atmosphere	6-ESS2-4 6-ESS2-5 This standard is considered overlapping content, and will be tested on SCREADY-Sci.	Lesson 3: Air Masses Lesson 4: Predicting Weather Changes
2/19 - 2/23*	Topic 7: Energy in the Atmosphere and Ocean	6-ESS2-6 This standard is considered overlapping content, and will be tested on SCREADY-Sci.	Lesson 1: Energy in Earth's Atmosphere
2/26 - 3/1	Topic 7: Energy in the Atmosphere and Ocean	6-ESS2-6 This standard is considered overlapping content, and will be tested on SCREADY-Sci.	Lesson 2: Patterns of Circulation in the Atmosphere
3/4 - 3/8	Topic 7: Energy in the Atmosphere and Ocean	6-ESS2-6 This standard is considered overlapping content, and will be tested on SCREADY-Sci.	Lesson 3: Patterns of Circulation in the Ocean
3/11 - 3/15	Topic 7: Energy in the Atmosphere and Ocean	6-ESS2-6 This standard is considered overlapping content, and will be tested on SCREADY-Sci.	*Flex time for assessments, reteaching, projects, etc.* *Please complete the lessons above by 3/15.*
3/18 - 3/19*	Topic 7: Energy in the Atmosphere and Ocean	6-ESS2-6 This standard is considered overlapping content, and will be tested on SCREADY-Sci.	Benchmark Test

At the end of Q3 students should be able to elaborate upon the following questions. What does your PLC agree the answers should be?

What factors interact and influence weather and climate?

Note that the standards taught during this quarter are overlapping standards from the 2014 and 2021 SC Science Standards. Please use the Overlapping Standards document from the SC Dept. of Education to aid in the instruction of these standards.

Quarter 4

4th Quarter	Topic	Standard(s)	Content
3/20 - 3/22*	Topic 8: Minerals and Rocks in the Geosphere	6-ESS2-1	Lesson 1: Earth's Interior Lesson 2: Minerals
3/25 - 3/29*	Topic 8: Minerals and Rocks in the Geosphere	6-ESS2-1	Lesson 3: Rocks Lesson 4: Cycling of Rocks
4/1 - 4/5	Spring Break		
4/8 - 4/12	Topic 9: Earth's Surface Systems	6-ESS2-2	Lesson 1: Weathering and Soil Lesson 2: Erosion and Deposition
4/15 - 4/19	Topic 10: Plate Tectonics	6-ESS2-2 6-ESS2-3 6-ESS3-2	Lesson 1: Evidence of Plate Tectonics Lesson 2: Plate Tectonics and Earth's Surface Lesson 3: Earthquakes and Tsunami Hazards Lesson 4: Volcanoes and Earth's Surface
4/22 - 4/26			*Flex time for assessments, reteaching, projects, etc.* *Please complete the lessons above by 4/26*
4/29 - 5-3*			Review: Specifics to come
5/6 - 5/10			Review: Specifics to come
5/13 - 5/17			SCREADY-Science will likely occur this week.
5/20 - 5/24	Topic 11: History of Earth	6-ESS1-4	Lesson 1: Determining the Age of Rocks Lesson 2: Geologic Time Scale
5/27 - 5/31*	Topic 11: History of Earth	6-ESS1-4	Lesson 3: Major Events in Earth's History
6/3 - 6/7*			*Portfolio/Project Presentations, Projects*

At the end of Q4 students should be able to elaborate upon the following questions. What does your PLC agree the answers should be?

- How do we know that the Earth and life on Earth have changed through time?
- How do the materials in and on Earth's crust change over time?
- How do natural hazards and technologies impact Earth's systems and people?

Classroom Rules and 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

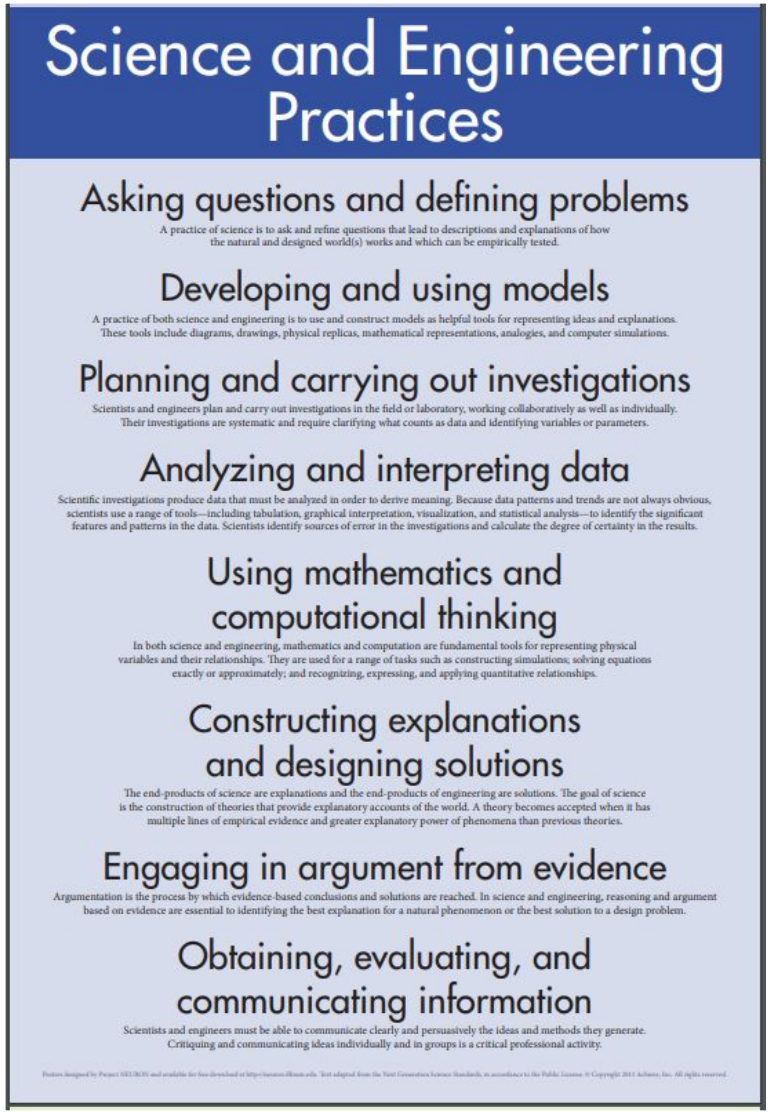
*__You may not__ visit, talk with, or disrupt other groups.

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: https://www.youtube.com/watch?v=VS0hln090AU

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

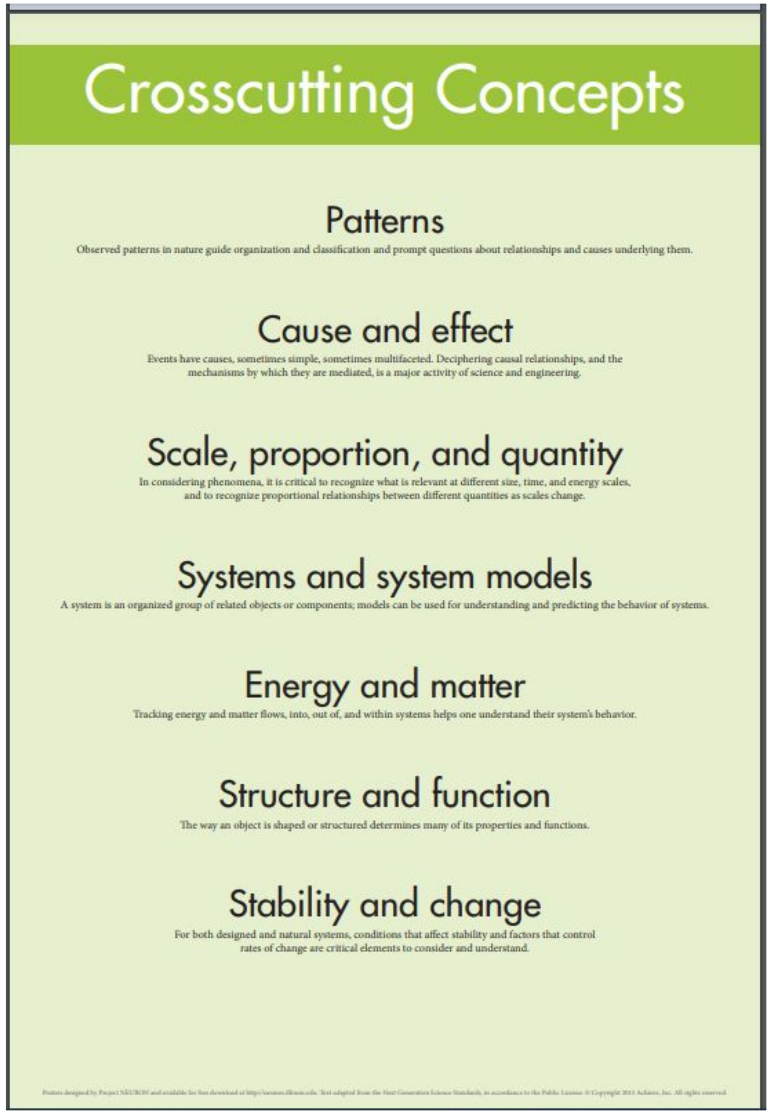
The end-products of science are explanations and the end-products of engineering are solutions. The goal of science is the construction of theories that provide explanatory accounts of the world. A theory becomes accepted when it has multiple lines of empirical evidence and greater explanatory power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

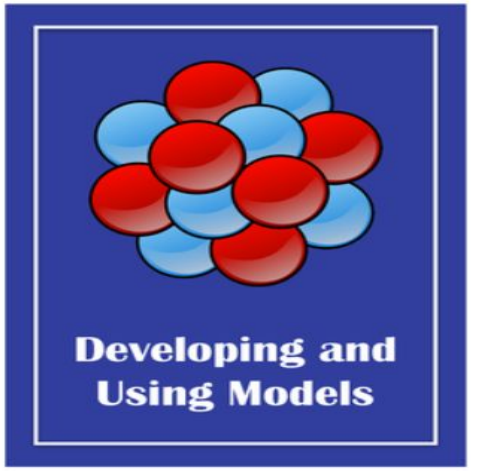
The way an object is shaped or structured determines many of its properties and functions.

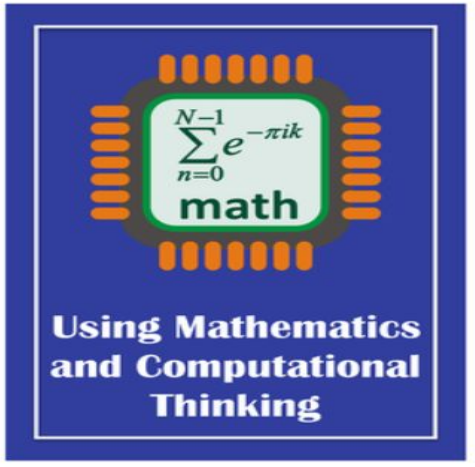
Stability and change

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

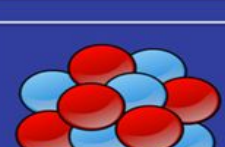
SEP Thinking Skills

STEM/STEAM Activities: https://docs.google.com/document/d/1kSmNLGDsAYLu5tHHBGVv9GSb7i_cHqwei_-Ny3bQi7Y/edit?usp=sharing



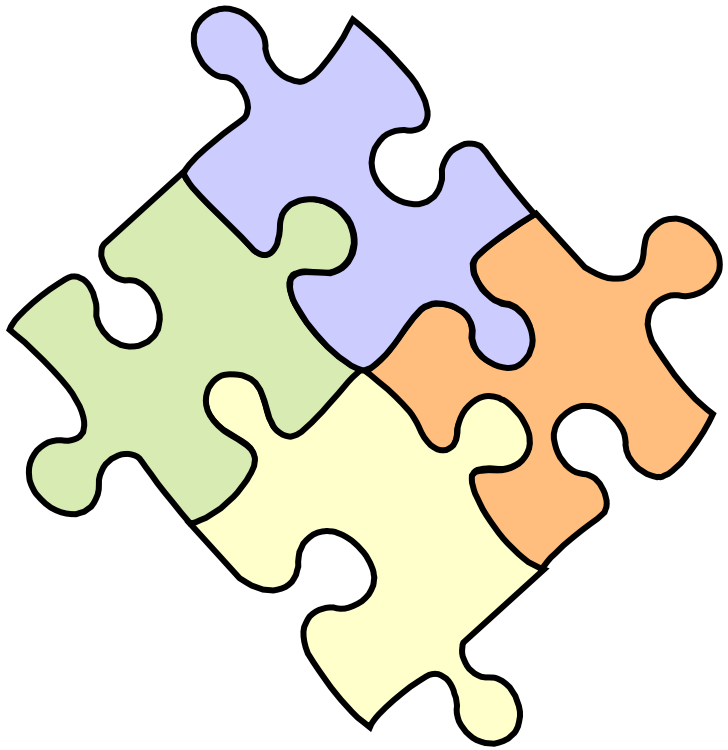


Q1 Focus Thinking Skills

 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.



Step 1A. Choose the Standard

6-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.

Step 7B Annotate Standard

6-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.

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

6-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.

KNOW	UNDERSTAND	BE ABLE TO DO
What is a cell and the function of a cell as a whole.	All living things are made of cells. In organisms, cells work together to form tissues and organs that are specialized for particular body functions.	Compare and contrast types of cells. Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function. Identify and name at least six organelles in the cell.

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.

Collaborative Conversations

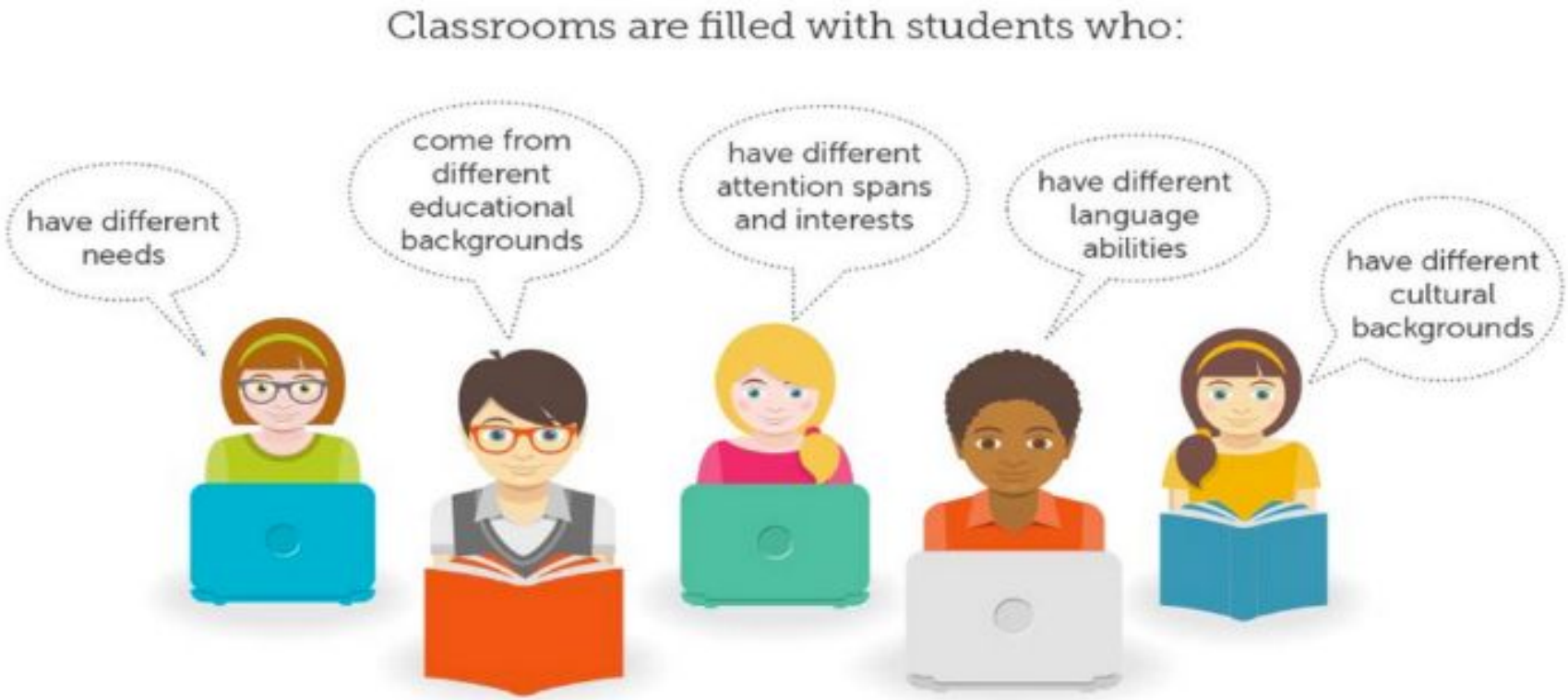
GALLERY WALK

Modifications/Accommodations for IEP's /ESO Learners

Physical Arrangement of Classroom	Lesson Presentation	Assignments & Worksheets
❑ Seat student facing overhead/board ❑ Seat student near the teacher/presentation ❑ Stand near student when giving directions/presenting ❑ Seat student near **positive** role model.	❑ Provide visual aids/graphics ❑ Ensure all directions are understood. ❑ Provide written outlines/guided notes/printed notes ❑ Segment long presentations ❑ Teach through multi-sensory modes/manipulatives ❑ Check for understanding of key points ❑ Provide wait time for question responses. ❑ Pre-teach vocabulary. ❑ Oral fluency (small group)	1. Allow extra time for exam. 2. Allow flexible setting. 3. Give frequent short quizzes instead of lengthy exams. 4. Note taking assistance

5 minutes

Why Differentiate Instruction?

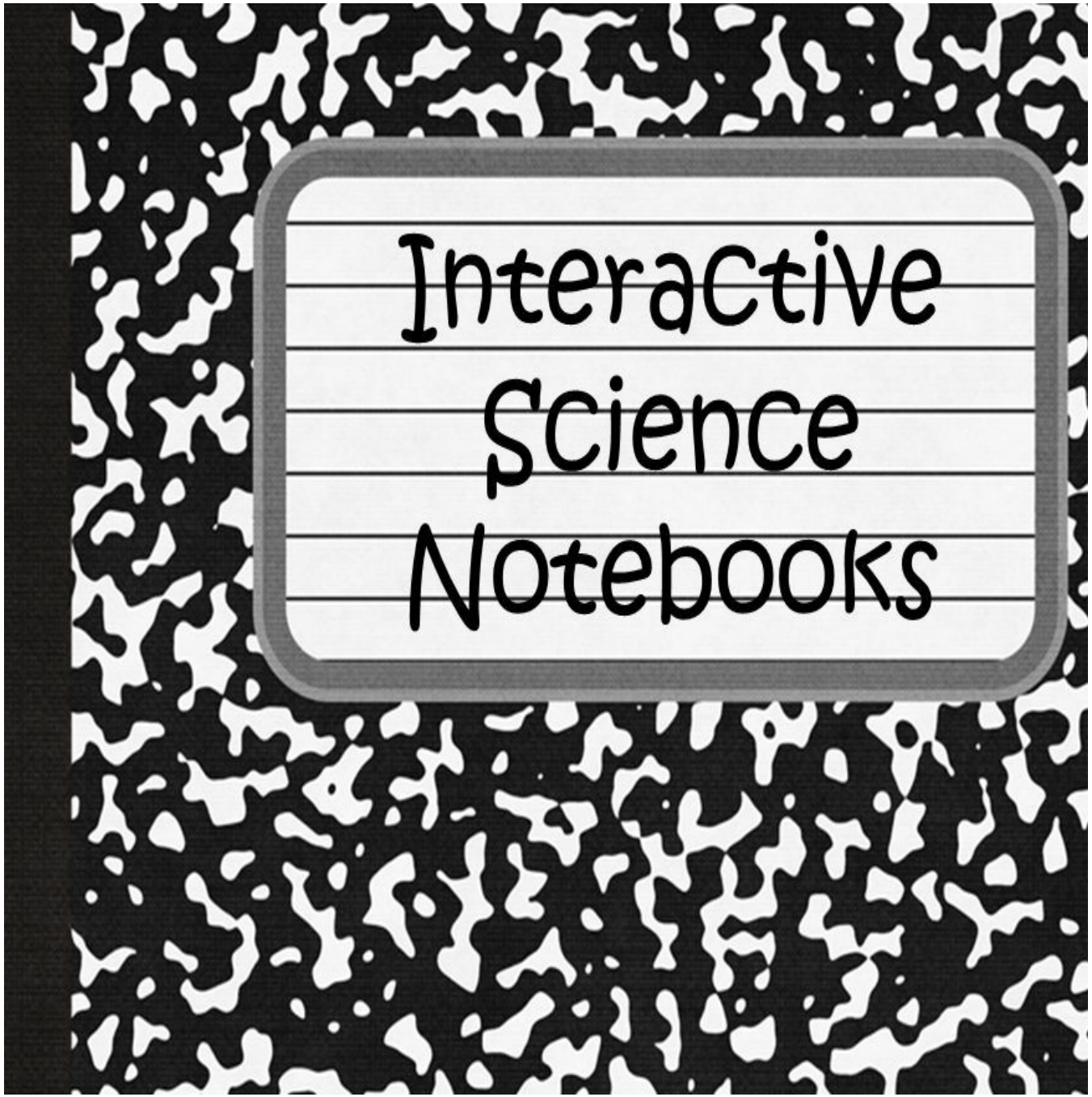


Differentiated instruction is the process of **tailoring lessons** to meet each student's individual interests, needs, and strengths. Teaching this way gives students **choice** and **flexibility** in how they learn, and helps teachers **personalize learning**.

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



Notebook Setup

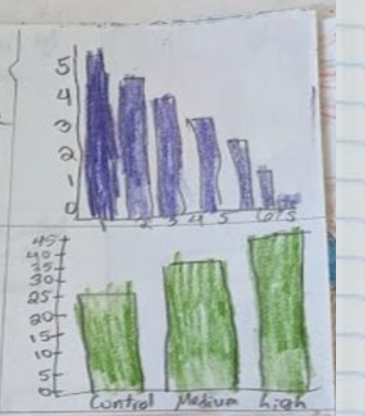
- Table of Contents
- Grading Rubric
- Interactive Contract
- Bookmark Tab or Labeled Work Tabs

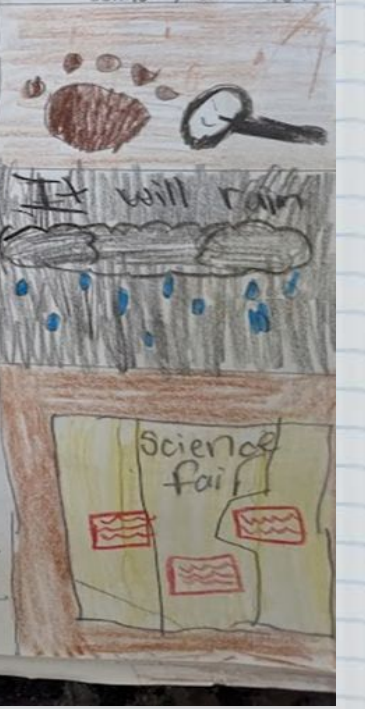
Table of Contents

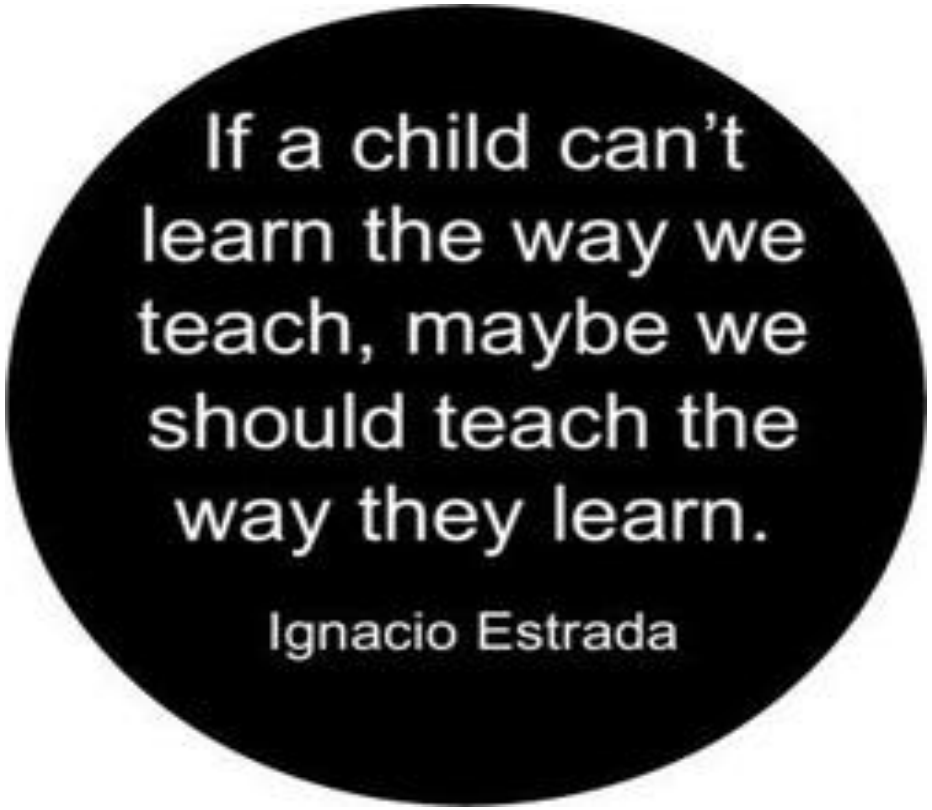
Table of Contents

Gravity	A pull that brings things together.
Friction	The force that opposes motion between two different surfaces.
Position	The position of something is the 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.

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.





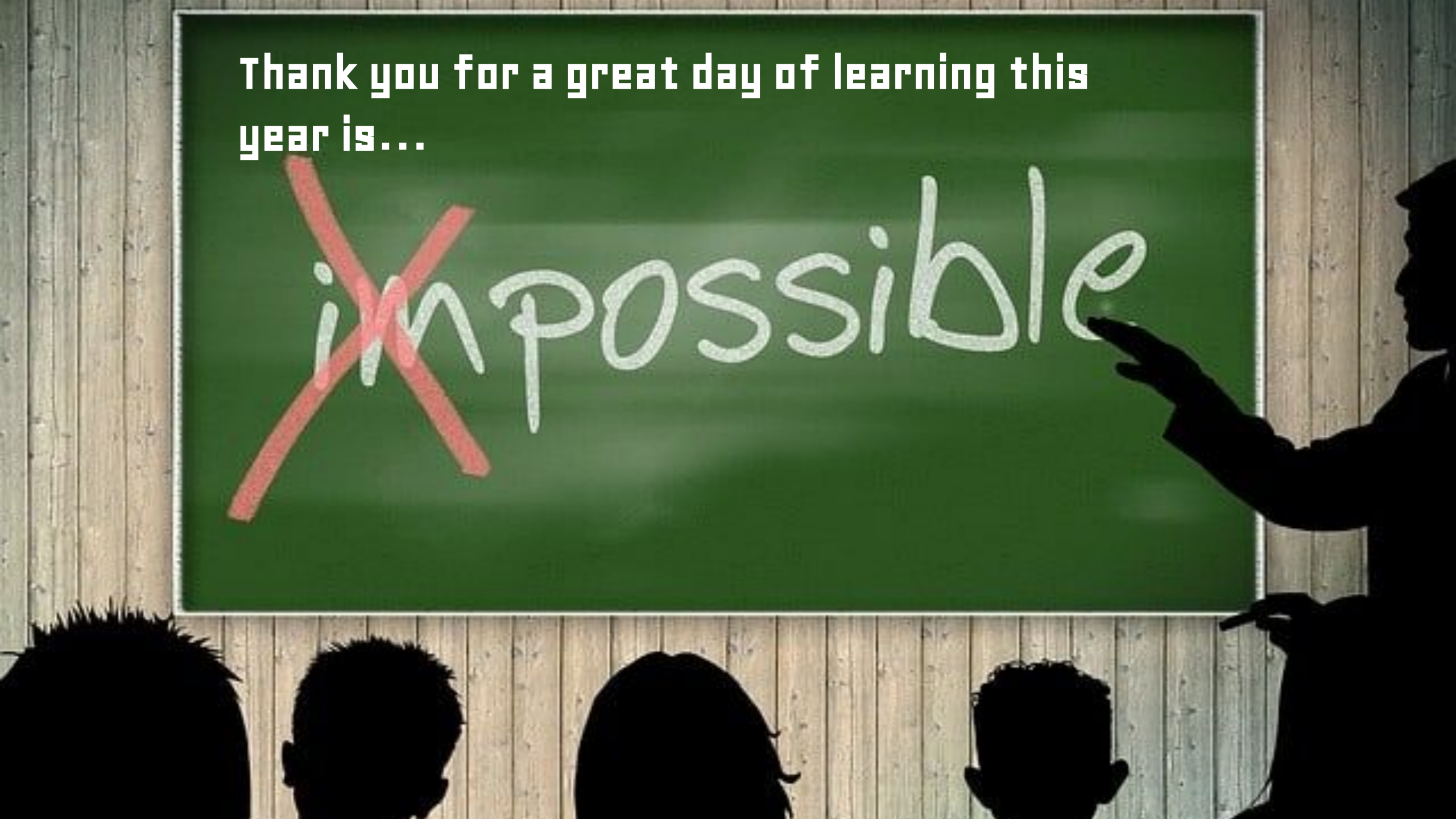


Based on the knows, understands, and dos for **Thinking Skills & Content Practices**, please complete the following sentence starters below.

I still have questions about . . .

I am going to implement. . .

I need the support with….


Thank you for a great day of learning this year is...
impossible


THANK YOU