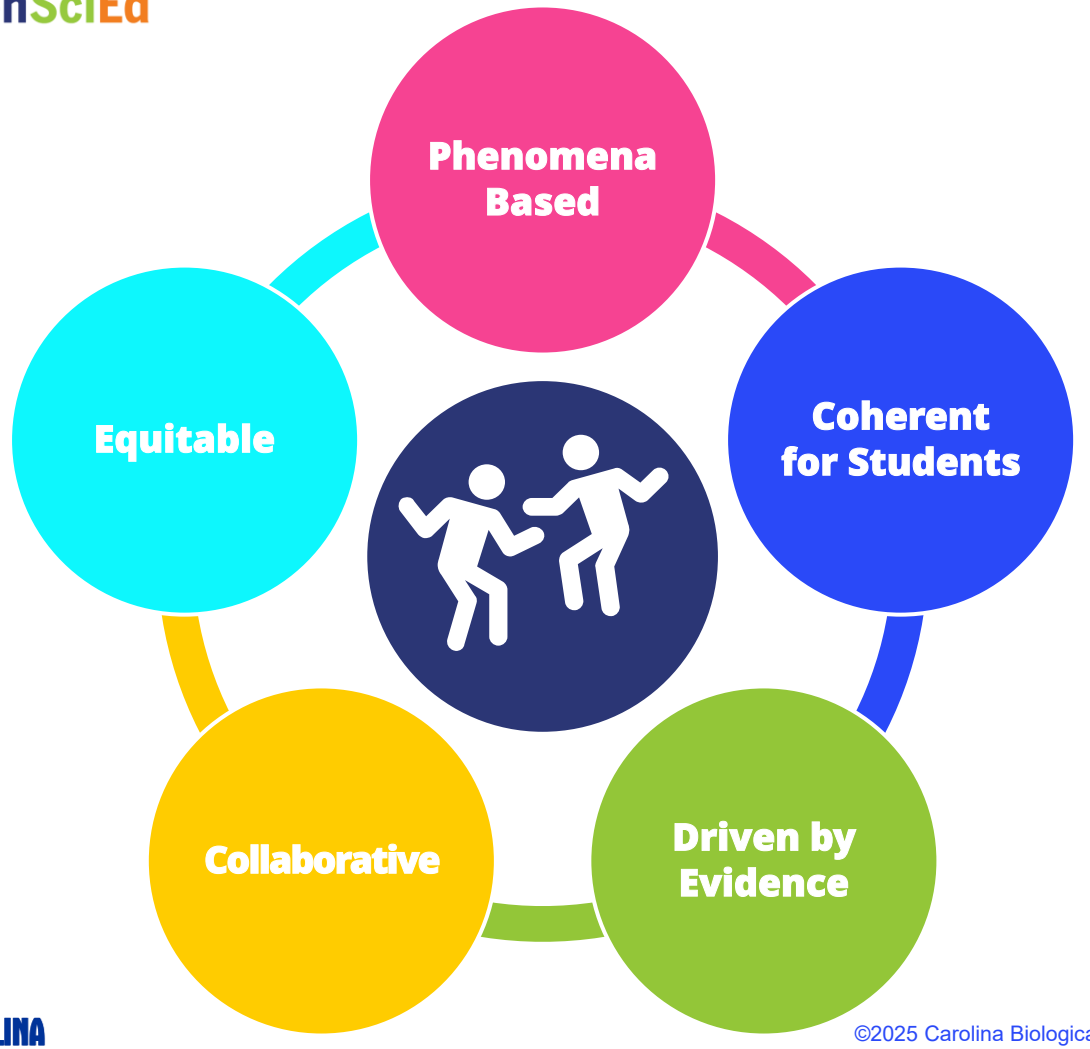
CAROLINA
UNLEASH LEARNING™

CAROLINA® + OpenSciEd®

Carolina's Certified Version of OpenSciEd® Middle School

High-Quality Instructional Materials Just Got Even Better.

Designed and Built with Students Front and Center



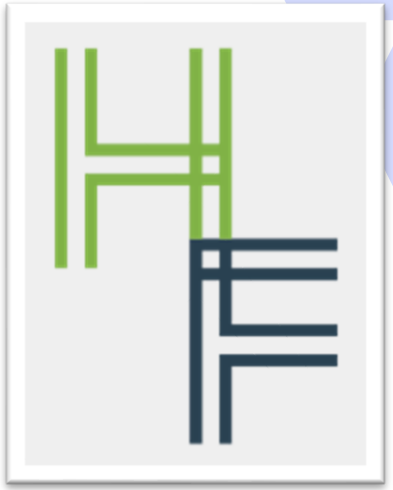
- Exploration is driven by **students'** questions and ideas
- Builds on **students'** prior knowledge and experiences
- **Students** use evidence to revise their thinking
- **Students** figure out ideas as a classroom community

Funded by Renowned Philanthropic Organizations

Bill & Melinda Gates Foundation

Carnegie Corporation of New York

Charles and Lynn Schusterman Family Foundation



William and Flora Hewlett Foundation

Developed by Leading Education and Research Institutions

BSCS Science Learning Team

Dana Center Team

Northwestern University Team

University of Colorado Boulder Team

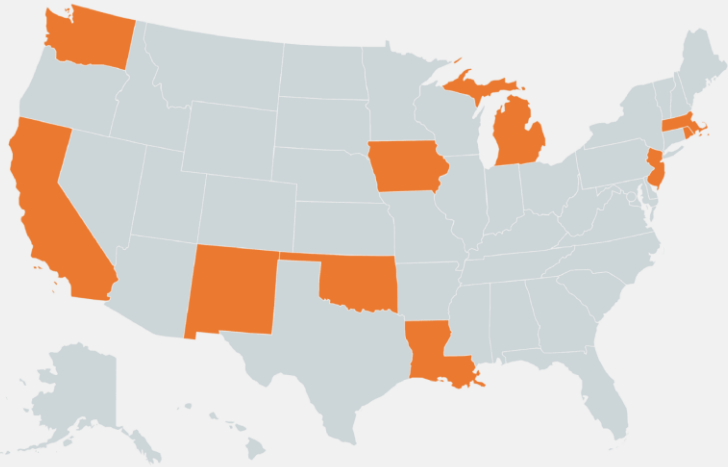
Boston College Team

Field Tested by Teachers and Students Across the Country

OpenSciEd Teachers & Students

265 field test teachers
and
5800 participating students
in
115 school districts
in
10 states
teach the OpenSciEd units and provide feedback.

The 10 OpenSciEd Partner States



California
Iowa
Louisiana
Massachusetts
Michigan
New Jersey
New Mexico
Oklahoma
Rhode Island
Washington

Instructional Routines

Each step is driven by student questions about the phenomenon.

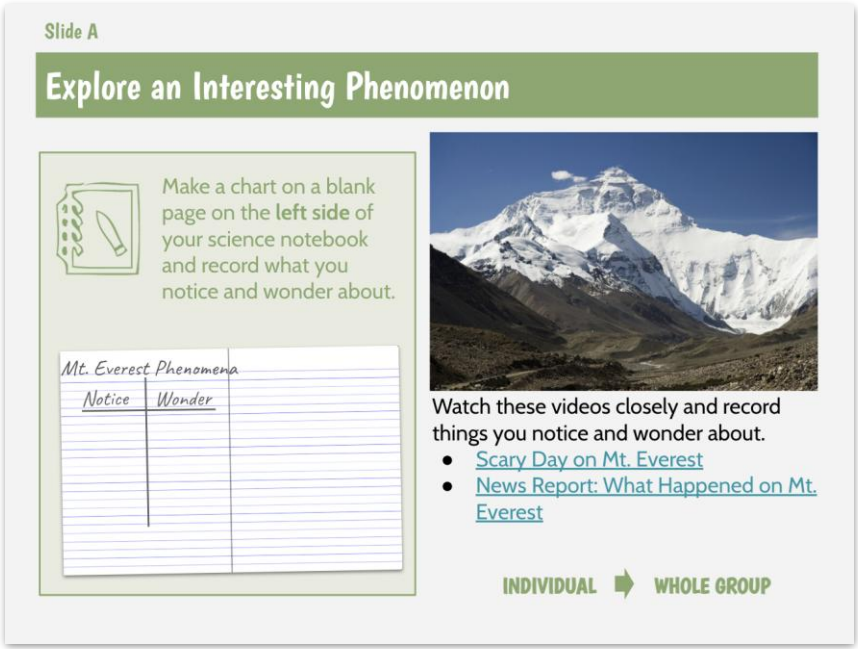
Anchoring Phenomenon Routine	How do we kick off investigations in a unit?
Navigation Routine	How do we work with students to motivate the next step in an investigation?
Investigation Routine	How do we help students use practices to figure out pieces of the science ideas?
Putting the Pieces Together Routine	How do we help students put together pieces of the disciplinary core ideas and crosscutting concepts?
Problematizing Routine	How do we push students to go deeper and revise their science ideas?

CAROLINA UNLEASH LEARNING

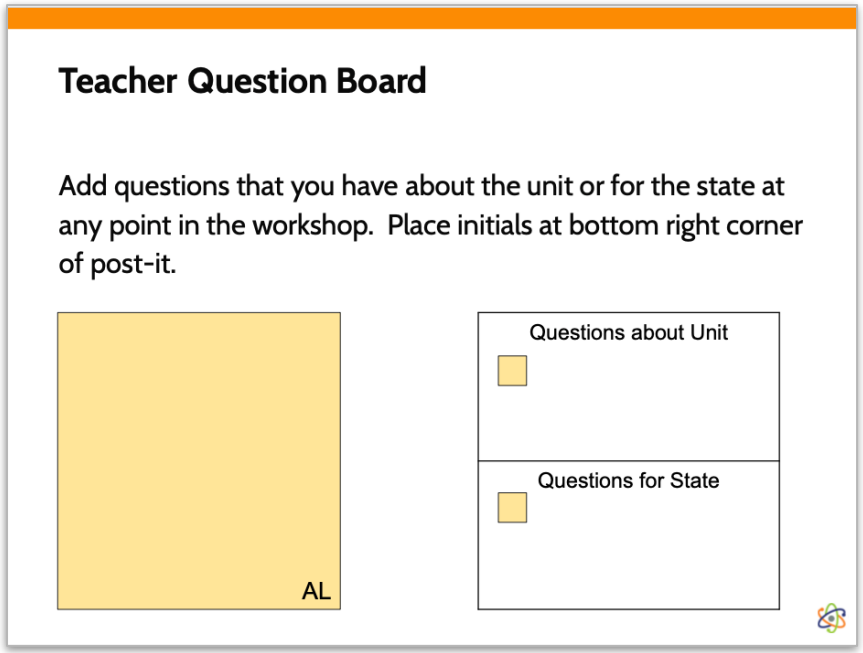
OpenSciEd

Switching Hats

Student hat: Think like a kid. What do you anticipate a middle school student might think? What might they say? Channel your inner middle schooler.



Teacher hat: Reflect on the pedagogical approach, instructional routines, classroom culture, logistics/supports, NGSS, etc.



Welcome 6th Grade Students!

What is causing Mt. Everest and other mountains to move, grow, or shrink?

Lesson #1

Explore an Interesting Phenomenon

NPR
@NPR

Mount Everest just grew a couple more feet overnight — at least on paper.

After years of surveys and calculations, China and Nepal have officially revised the elevation of the world's highest peak: to precisely 29,031.69 feet above sea level.

Turn and Talk

What might cause a mountain to grow?

lutz6078

Read About the Mt. Everest Phenomenon

Science Notebook

Add noticings and wonderings from Mount Everest changing.

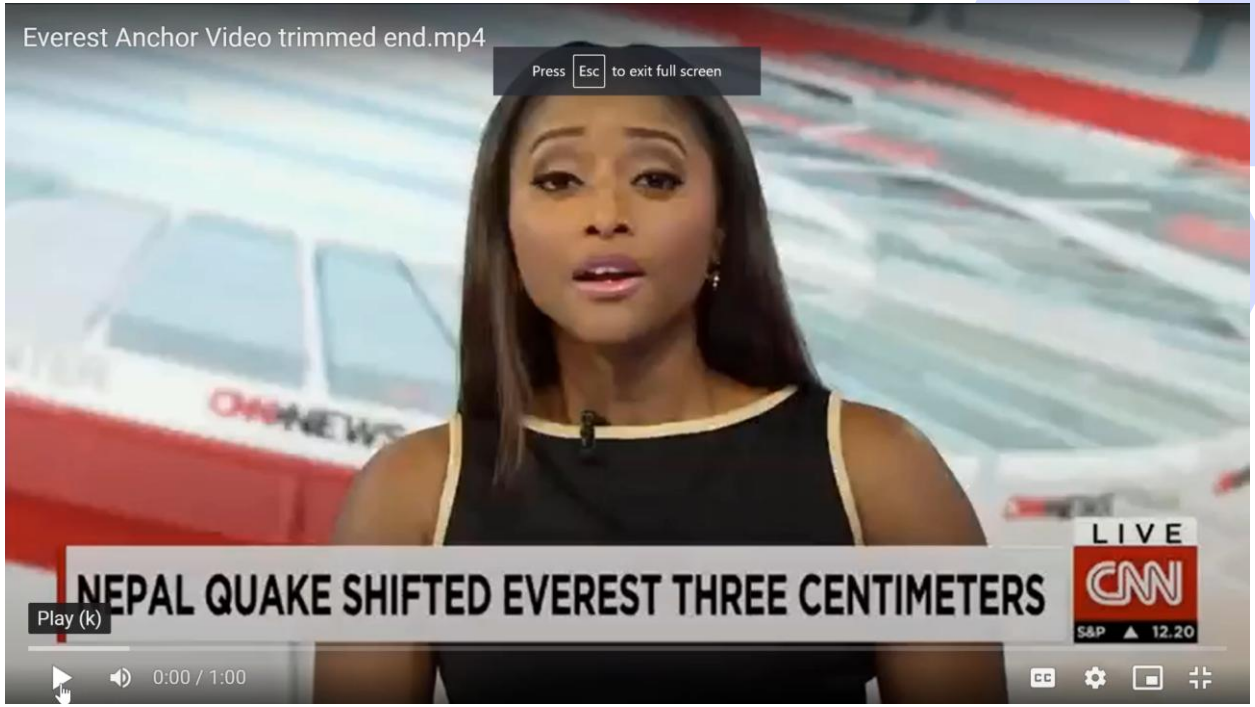
Mt. Everest Reading

Notice	Wonder

Rohit Tandon

With a Partner

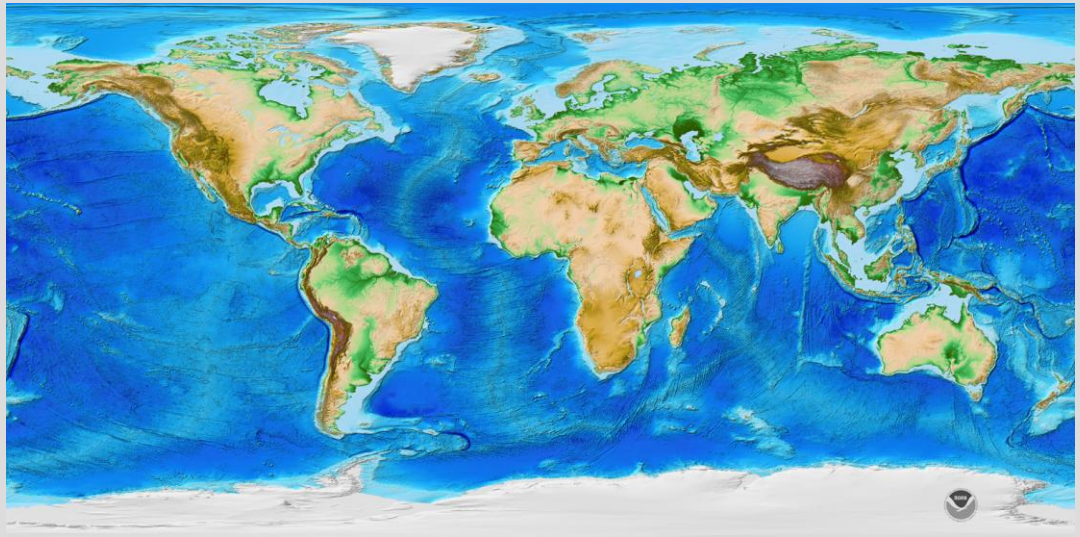
- What is happening on Everest?



Identifying Mt. Everest on a Map

With Your Class

Let's locate where Mt. Everest is on a world map.



NASA

Read About the Mt. Everest Phenomenon

Science Notebook

Add noticings and wonderings from the reading about Mount Everest changing.

Mt. Everest Reading	
Notice	Wonder

Rohit Tandon

With a Partner

- Read with a partner.
- What is happening on Everest?
- Stop at the end of each paragraph to add noticings and wonderings to your science notebook.

What evidence do scientists have that Mt. Everest is getting taller?

Close Reading Strategy

1. Identify the question(s) you are trying to answer in the reading.
2. Read once for understanding to see what the reading is about.
3. Read a second time to highlight a few key ideas that help answer the questions you had.
4. Summarize the key idea(s) in your own words, in diagrams, or both.
5. Jot down new questions that this raises for you.

Let's do one together for the first section of the reading.

Share Noticings and Wonderings

- What were some of the things you noticed about what happened to Mt. Everest?
- What are some of your wonderings?

Brainstorm

Discuss the following:

- Possible causes for the increase in elevation of Mt. Everest
- Possible causes for Mt. Everest moving to the northeast

Checkpoint

Develop an initial model for what is happening to Mt. Everest

Assessment Opportunity/On Your Own

You will develop a model for what you think are:

- Possible causes for the increase in elevation of Mt. Everest
- Possible causes for Mt. Everest moving to the northeast

What we know is happening to Mt. Everest:

Mt. Everest grows about 6-7 cm taller each year

In 1856, Mt. Everest was 29,002 feet tall

In 2021, Mt. Everest was 29,032 feet tall

lutz6078

Mt. Everest moves about 4 cm/year to the northeast

Revisit Classroom Norms

Respectful Our classroom is a safe space to share.	• We provide one another with support and encouragement. • We share our time to talk. We do this by giving others time to think and share. • We critique the *ideas* we are working with but not the *people* we are working with.
Equitable Everyone's participation and ideas are valuable.	• We monitor our own time spent talking. • We encourage others' voices who we have not heard from yet. • We recognize and value that people think, share, and represent their ideas in different ways.
Committed to our community We learn together.	• We come prepared to work toward a common goal. • We share our own thinking to help us all learn. • We listen carefully and ask questions to help us understand everyone's ideas. • We speak clearly and loud enough so everyone can hear.
Moving our science thinking forward We work together to figure things out.	• We use and build on others' ideas. • We use evidence to support our ideas, ask for evidence from others, and suggest ways to get additional evidence. • We are open to changing our minds. • We challenge ourselves to think in new ways.

Checkpoint

Class Consensus

With Your Class

You will develop a model for what you think are:

- Possible causes for the increase in elevation of Mt. Everest
- Possible causes for Mt. Everest moving to the northeast

What we know is happening to Mt. Everest:

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lutz6078

Mt. Everest moves about 4 cm/year to the northeast

Considering Other Mountains

There are a lot of other mountains in the world (see cards).

With Your Class

- What are some other mountains or mountain ranges you know about?
- Do you think that they are changing in similar ways?
- How could investigating other mountain ranges, or the area they are part of, help us figure out what might be happening at Mt. Everest?

Organize a Table to Record Data We Find

Science Notebook

With your class, develop a table to use to record data you find about different mountains and mountain ranges.

Mountain Case Sites

Type of data	Data	How this data connects to mountains changing

What are some types of data we would want about other mountains?

Compare Different Mountain Info Cards

Work with your group to analyze the mountain case site cards. Each person will read ONE card and report back what they learned to their team.

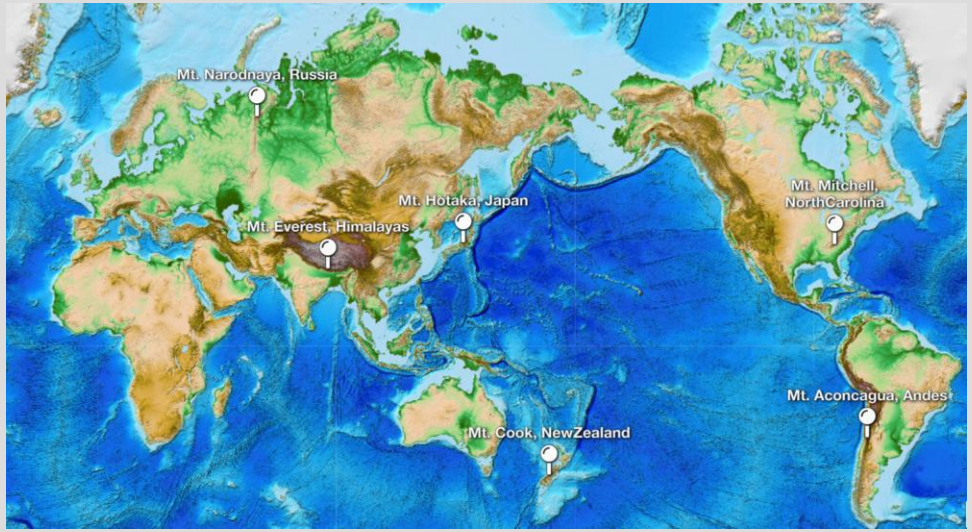
- Are any other mountains changing either by elevation or location?
- Why might these other mountains be changing?
- What patterns do you notice between the different mountains?

Sharing Noticings and Wonderings

Scientists Circle

Let's now add the locations of the mountains from the data cards to our map.

What data did you find for your mountain that could help us explain how mountains can change in height and location?



Seismic Explorer by Concord Consortium

Checkpoint

Add to Initial Model

With a Partner

- Choose a location where the data shows that the mountain has been shrinking.
- Develop a model to represent what you think is causing this to happen.

Add to Our Class Consensus Model

With Your Class

If all mountains aren't growing, then our initial consensus model won't explain what is happening to every mountain.

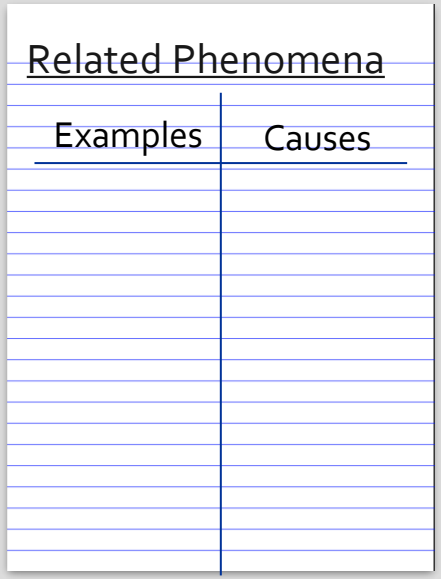
As a class, let's revise our model to capture the ideas we have for what we think might be causing changes in these other mountains.

Related Phenomena

Think back on all your experiences you've had over your life where you noticed a change in the surface of the land or landforms. Consider all scales: these changes from the very small to the very large.

Assessment Opportunity/On Your Own

- What are other examples of where you have seen the size or shape of the land or landforms change over time?
- What do you think caused these changes?



Related Phenomena

With a Partner

- Share examples of where you have seen the size or shape of the land or landforms change over time.
- Identify any causes for these that you think might also cause the size or shape of some mountains to change over time.

Related Phenomena

- Share examples of
  - where we have seen the size or shape of the land or landforms change over time
  - what we think are the causes for these changes
  - whether we think the causes of mountains changing over time are similar to the land changes we see where we live

Navigation: Record New Questions

Science Notebook

Write down any new questions you are thinking about after making our class consensus models.

Be prepared to share these with the whole class in our next class.

Share Questions to Post on Our Driving Question Board

Review the questions you brainstormed at the end of last class.

Use these question starters to create two revised or new questions to post to our Driving Question Board:

- Why ...?
- How ...?
- How would it be different if ...?
- What if ...?
- What is the purpose of ...?
- What causes ...?

Then write one question per sticky note.

Write in marker—big and bold.

Put your initials on the back in pencil.

What Questions Do You Now Have?

Take a minute to review the following to identify questions that you have about the phenomena we have explored so far.

- ➔ Your Notice and Wonder charts about Mt. Everest and the mountain data cards
- ➔ Our initial class models
- ➔ Our list of related phenomena

Then write one question per sticky note.

Write in marker—big and bold.

Put your initials on the back in pencil.

Checkpoint

Driving Question Board (DQB)

Take out your sticky notes with questions. Bring those with you to our Scientists Circle, along with your science notebook.

How to build a Driving Question Board

1. The first student reads his or her question aloud to the class, then posts it on the DQB.
2. Students should raise their hand if one of their questions relates to the question that was just read aloud.
3. The first student selects the next student whose hand is raised.
4. The second student reads his or her question, says why or how it relates, and posts it near the question it most relates to on the DQB.
5. The student selects the next student.
6. We will continue until everyone has at least one question on the DQB.

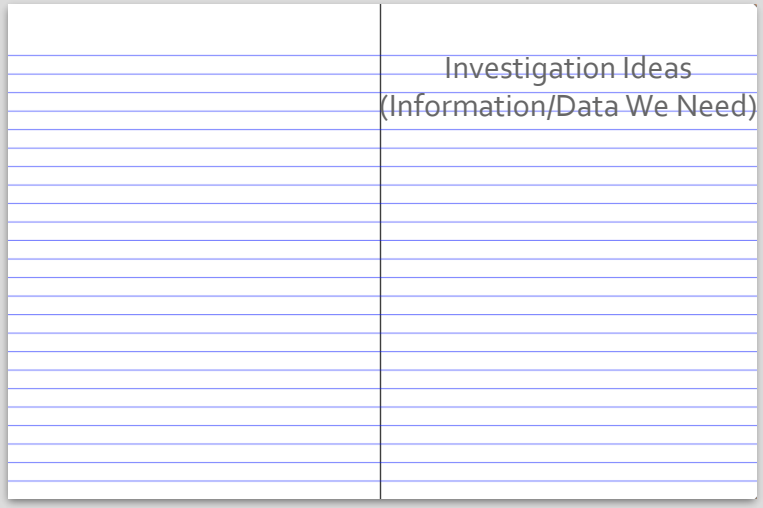
Information and Data Needed

What additional sources of data might we need to figure out the answers to our questions? What information do we still need?

Science Notebook

Add your ideas to a new notebook page titled:

Investigation Ideas (Information/Data We Need)



Be prepared to share these with the whole class.

What Could Help Us Figure Out More About Why Mt. Everest (and these other mountains) Are Changing?

Take a moment to look at our questions on our Driving Question Board. Talk with your elbow partner:

What potential causes did we identify as a class for Mt. Everest changing? What seems the most likely cause to you and why?

Welcome Back Educators!

Anchoring Phenomenon Routine

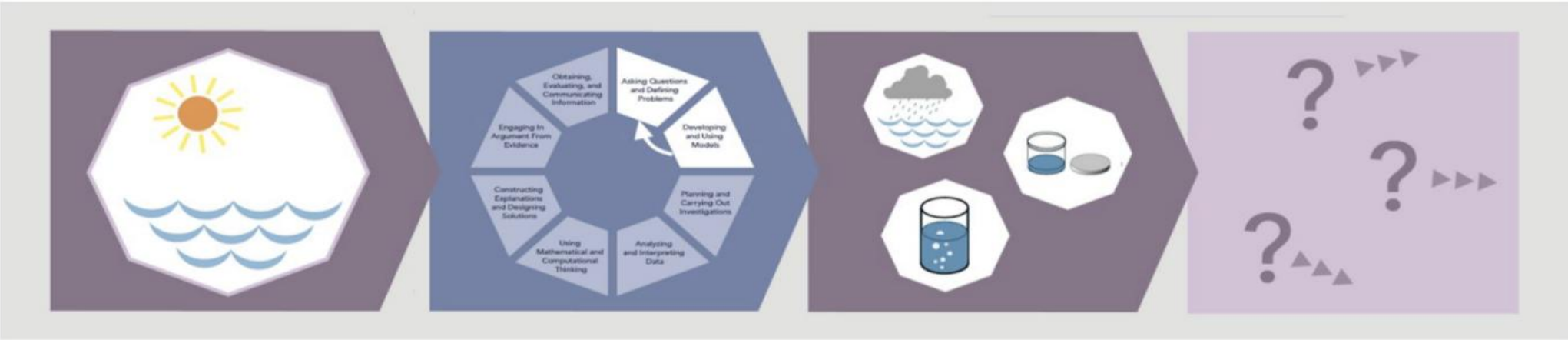
This is the first routine of the OpenSciEd curriculum to position students in making sense of a phenomenon, grounding all students in a common experience, and raising student questions.

Element #1: Explore the phenomenon

Element #2: Attempt to make sense

Element #3: Identify related phenomena

Element #4: Questions and next steps



Anchoring Phenomena Routine Tracker

Anchoring Phenomena Routine Tracker

OpenSciEd

	Element 1: Explore the Phenomenon  *What do we notice?*	**Element 2:** Attempt to Make Sense of the Phenomenon  *How can we explain this? Do our explanations agree?*	**Element 3:** Identify Related Phenomena  *Where else does something similar happen?*	**Element 4:** Develop Questions and Next Steps  *What should we do to figure out how to explain this?*
Notes about what you or the students did.				
How does this support ***figuring out***?				
How does this support a ***classroom culture where all students have access?***				

Student hat

↓

Teacher hat

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Reflection/Discussion

Why did we do the Anchoring Phenomena Routine?

How is it different from current middle school science?

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