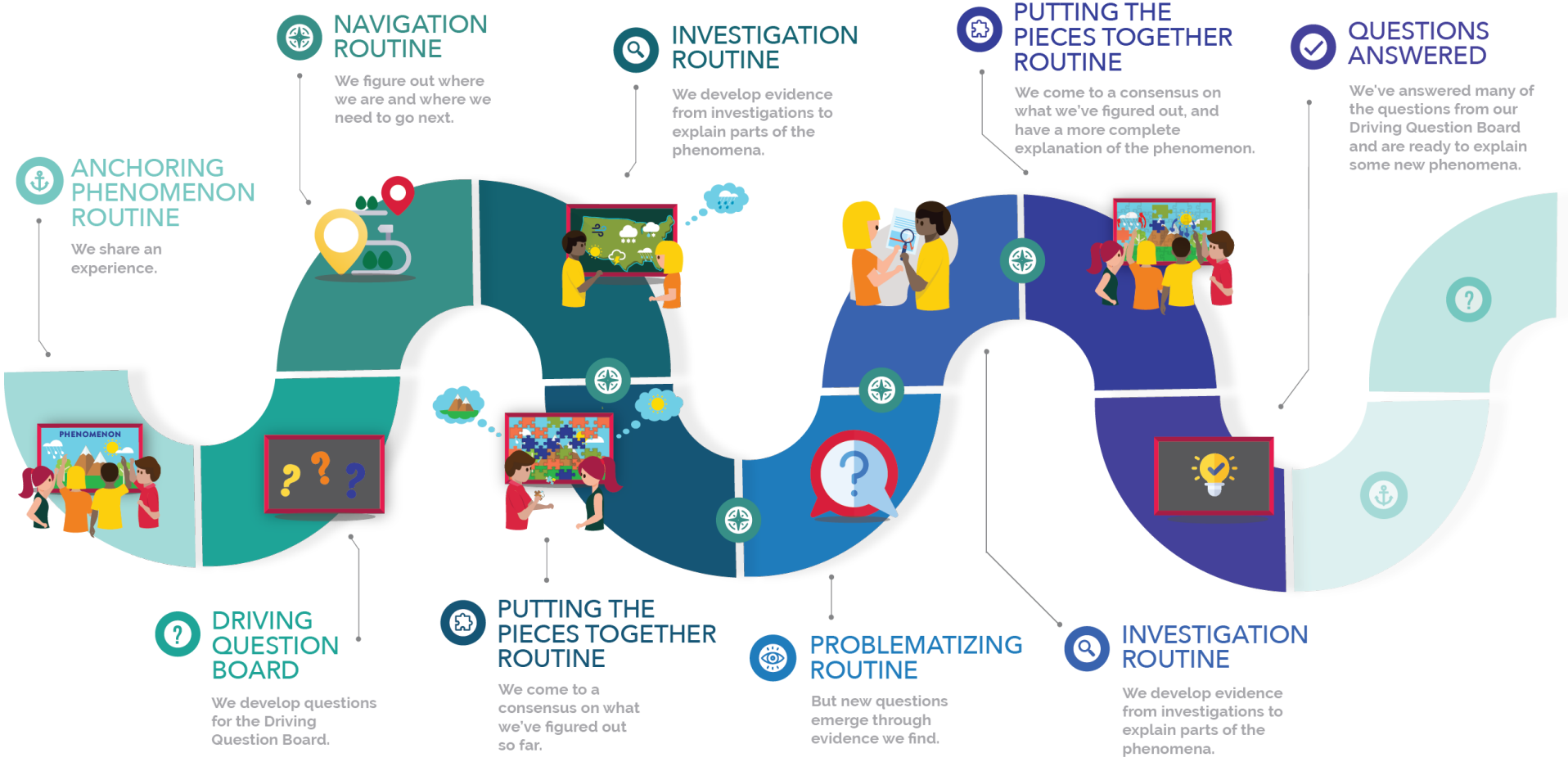
Instructional Model Walk Through



Take a stroll along our Instructional Model to experience the routines that drive our phenomenon-based, 3D curriculum materials. See how these routines ignite curiosity and inspire discussion for teachers and students alike.

ANCHORING PHENOMENON ROUTINE

We share an experience and develop questions for the Driving Question Board

Purpose

This routine is used to kick off a unit and drive student motivation throughout the unit. It provides a common experience with a phenomenon that is engaging and puzzling and elicits student questions and a drive to figure things out.

When used

At the beginning of the unit or when it needs transition to a new related phenomena.

Elements of the Anchoring Phenomenon Routine

Explore the Anchoring Phenomenon	The class observes and experiences a puzzling phenomenon and answers "What do we notice?"
Attempt to Make Sense	Students try to come up with an explanation, model, or some other reasoning to explain why or how the phenomenon under investigation is happening.
Identify Related Phenomena	Students identify related phenomena to broaden the scope of what the class is really interested in figuring out
Pose Questions to Resolve and Discuss Next Steps	The class uses a Driving Question Board (DQB) to create a joint list of questions and action items to help understand the anchoring phenomenon.

Routine in Action

This montage shows two different classrooms developing their Driving Question Boards as part of the Anchoring Phenomenon Routine.

NAVIGATION ROUTINE

We figure out where we are and where we need to go next.

Purpose

The Navigation Routine enables students to link learning across lessons and activities and see how it is connected to their original questions about the phenomena.

Positions students as problem-solvers and partners in figuring out how the world works.

When used

Throughout the unit at transition points between days and lessons.

Elements of the Navigation Routine

Look Back:
How did we get here?

At the beginning of each lesson, the class asks,

- What brought us to this point?
- Where are we in our mission?
- What have we accomplished?
- What's the main thing we need to work on now?

Take Stock:
Where are we now?

During a lesson use routine to help students identify connections between the activities and the phenomena we are trying to figure out.

Look Forward:
Where are we going?

The lesson ends by reflecting on what we have figured out and then the class considers, *Where do we need to go next?*

Routine in Action

In this classroom video, the teacher is leading a whole group navigation discussion of what they should investigate next.

INVESTIGATION ROUTINE

We develop evidence from investigations to explain parts of the phenomena.

Purpose

The Investigation Routine is used to gather additional information the class needs to help answer the questions on the Driving Question Board. Rather than following lab procedures dictated by the teacher, students develop plans for the investigations and data collection and then make sense of what the data means.

When used

Throughout the unit whenever students identify gaps in their understanding of the phenomenon.

Elements of the Investigation Routine

Create a Plan of Action

The class works together to articulate a plan of action for investigating a particular question and discuss why certain things might be measured or attended to during an investigation.

Do the work with Science & Engineering Practices

Students use science and engineering practices to make sense of a puzzling phenomenon and answer a question.

Make Sense: What did we figure out?

At each step in the unit, students assemble another piece of the phenomenon puzzle through the process of summarizing and synthesizing new information.

Routine in Action

This video shows students determining what investigations they are going to do to answer their questions about the movement of Mt. Everest.

PROBLEMATIZING ROUTINE

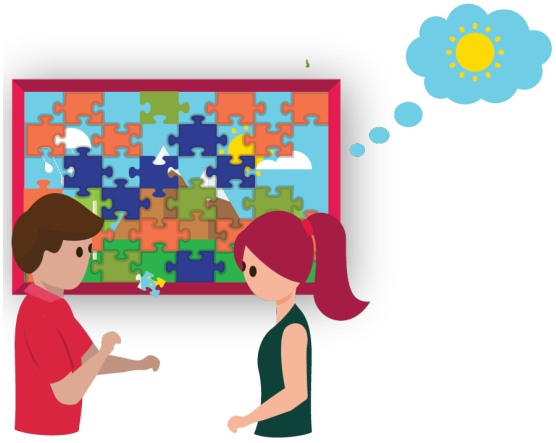
As we gather evidence and make sense of the phenomenon, new questions emerge

Purpose

This routine reveals potential problems with the current model, explanation, or design solution. The problems and disagreements elicited are useful in motivating students to extend or revise their thinking.

When used

When we need students to recognize that there is more to figure out.



Elements of the Problematizing Routine

The Problematizing routine has a great deal in common with the Anchoring Phenomenon routine. Both routines are about helping students see that there are aspects of a phenomenon that they are unable to explain.

Identify What We Can't Explain

Observe and experience a puzzling phenomenon answer "What do we notice?" Determine what aspects can't be explained by our consensus model.

Understand the Limits of the Model

Students return to their explanation or model and attempt to explain why or how the phenomenon under investigation is happening.

Pose Questions to Resolve and Discuss Next Steps

Return to the Driving Question Board (DQB) and add new questions and action items that will help us understand the phenomenon.

Routine in Action

Students are working in small groups determining what investigations they could do next. The teacher discusses the students' ideas, helping them to problematize their current thinking.

PUTTING THE PIECES TOGETHER ROUTINE

We come to a consensus on what we've figured out so far and have a more complete explanation of the phenomenon

Purpose

In this routine, students take the pieces of ideas they have developed across multiple lessons and figure out how they can be connected to account for the phenomenon the class is working on.

This helps students take stock of their learning and engage with the class to develop a consensus model.

When used

At the end of a lesson set or unit when students are ready to synthesize understanding.

Elements of the Putting Pieces Together Routine

Take Stock

Reflect on what it is that they are trying to figure out and what they have figured out as a class so far.

Put Pieces Together

Students individually attempt to put the ideas in the Gotta-Have-It Checklist to explain the phenomenon.

They share and revise their ideas with a partner to surface areas we agree we want to see represented in the class consensus model.

Finally, the whole class then has a consensus discussion.

Revisit the Driving Question Board

The lesson ends by reflecting on what we have figured out and then the class considers, *Where do we need to go next?*

Routine in Action

A class is engaged in a consensus discussion as they work to revise their initial model to answer how the magnet and wire work together in a speaker.