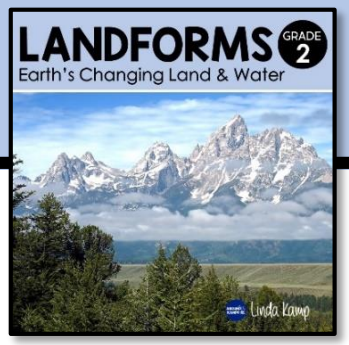


UNIT OVERVIEW

Students are engaged in 7 high-interest lessons that include a teaching PowerPoint with vivid, real-world photographs. Students identify different landforms and bodies of water. They compare features of landforms and identify the processes by which they are formed.

Each lesson is followed by an investigation or lab. Through the investigations, students explore fast and slow changes to the Earth. They demonstrate science and engineering practices by developing and using models and simulations to explain how weathering, deposition, and erosion change the Earth's surface.

Throughout the unit, students compare solutions designed to slow or prevent wind and water from changing the shape of the land. Students apply science practices such asking questions, making observations, planning and carrying out investigations, and analyzing and interpreting data. Students are also asked to evaluate and communicate information.

Students design solutions to solve problems like coastal erosion and flooding. They collaborate with classmates and design ways to protect crop fields from wind erosion, coastlines from weathering and water erosion, and towns from landslides and flooding. They use the engineering practice of comparing solutions to analyze the best way to solve a problem.

As students carry out their investigations, they collect and analyze data. In some lessons, students build models, draw and label diagrams, and make maps. They use tools to measure distances between land features and bodies of water on a map. They use mathematical computational thinking as they convert distances using map scales.

Students view videos on each lesson topic. They engage in *Talk About It* partner discussions after each lesson, and *Write About It* response activities in their science journals.

Key science vocabulary is introduced in each lesson. Students use science content in center activities to practice cause & effect, sorting and classifying, sequencing events, and solving science related word problems.

Students are assessed after each lesson with *Quick Check* exit tickets in two differentiated formats. A final assessment that includes differentiated page options is given upon completion of the unit.

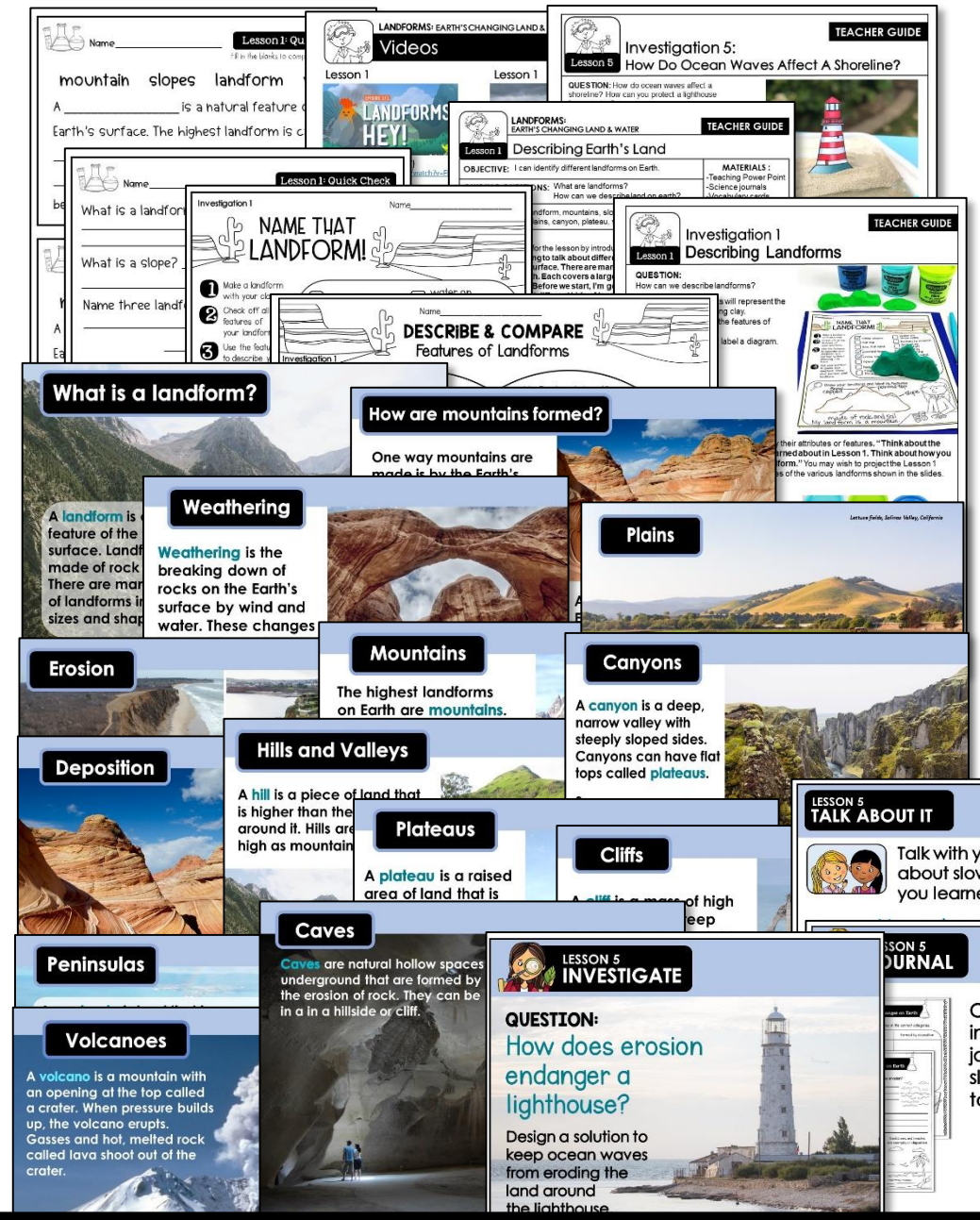
Additional reference materials, including posters, picture cards, and objectives and essential questions cards offer lesson support for students throughout the unit.

TEACHING POWERPOINT

7 ENGAGiNG, CONTENT-RiCH LESSONS:

- Describing Earth's Land
- Exploring Earth's Water
- Mapping Land and Water
- Fast Changes on Earth
- Slow Changes on Earth
- People Change the Earth
- Protecting Earth's Land and Water

EACH LESSON INCLUDES:



- Detailed, scripted lesson plan
- PowerPoint lesson
- Science journal activity
- Investigation/lab experiment
- Exit tickets in 2 formats
- Vocabulary posters
- Objectives display cards
- Turn & talk partner questions
- Read aloud and videos
- Science center activity

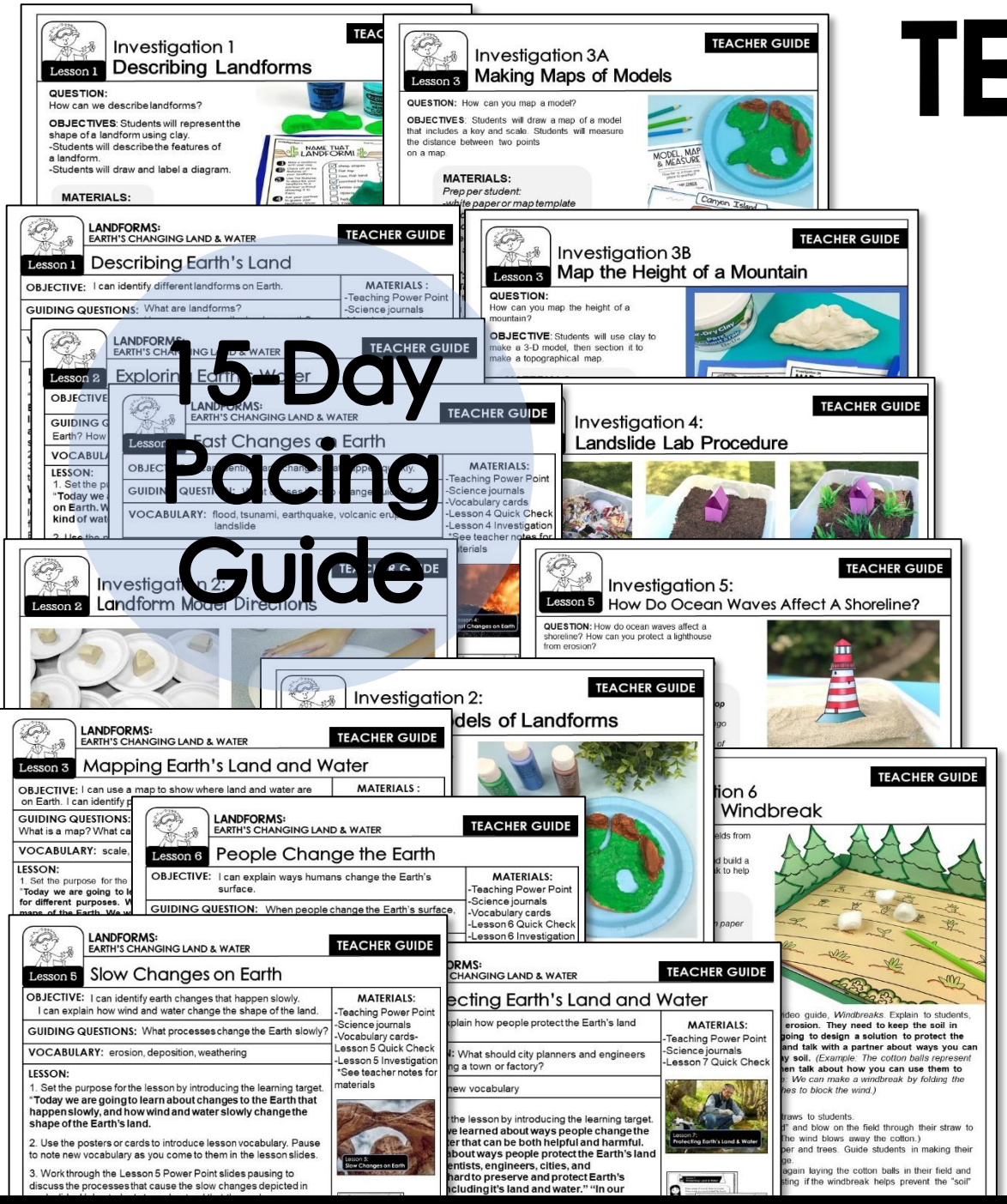
Aligned to
Next Generation Science Standards,
TEKS,
and
Common Core State Standards
for 2nd Grade

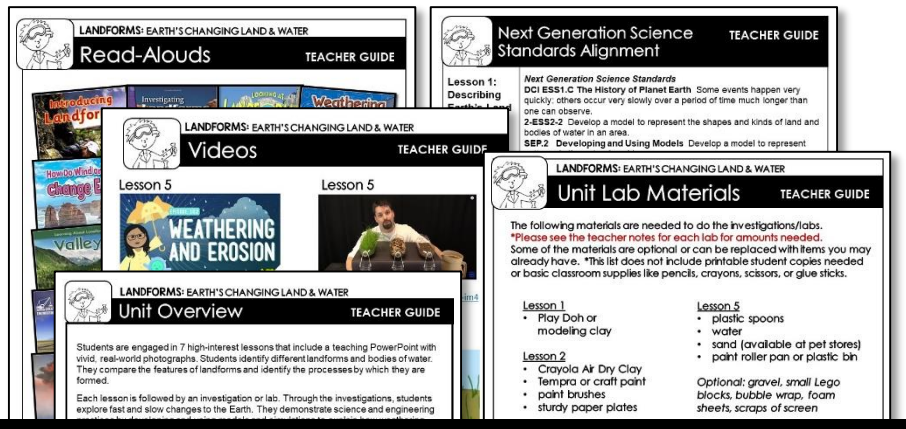
STANDARDS-ALIGNED

TEACHER GUIDE

- Scripted lesson plans
- Lesson objectives
- Performance tasks
- Teacher's notes
- Management tips
- Lab procedures
- Extension activities
- Assessments

15-Day Pacing Guide

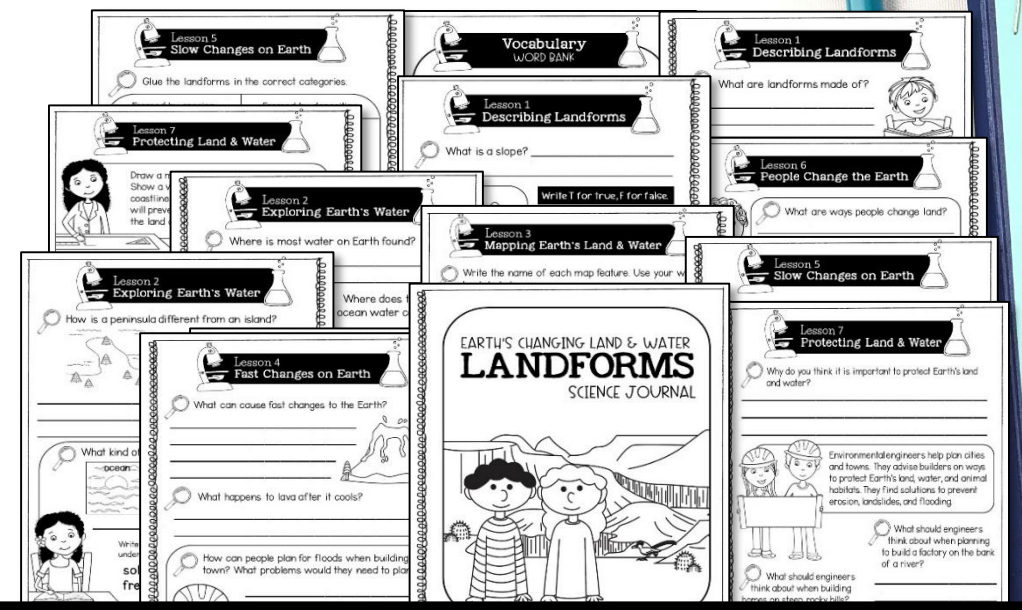


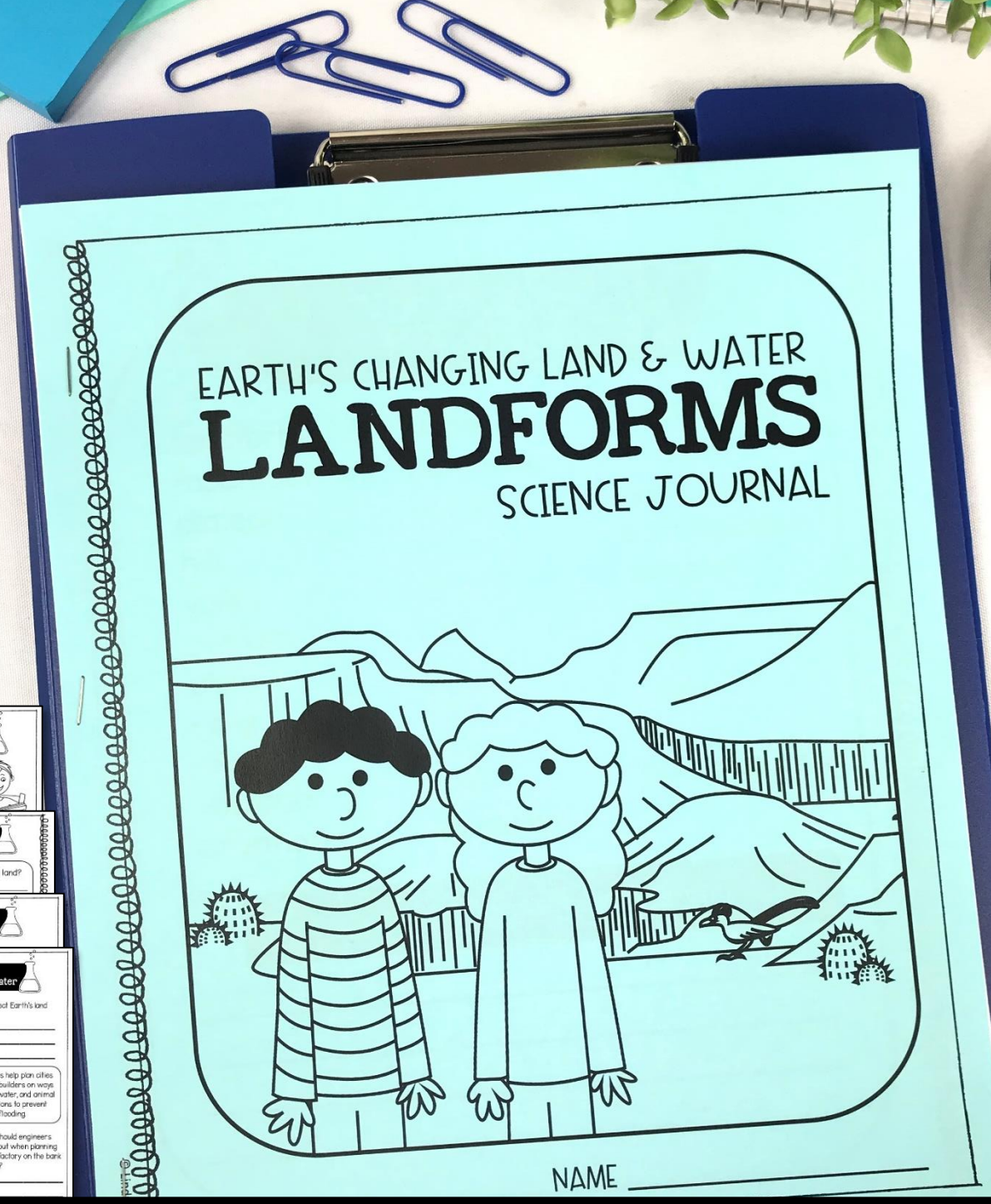


DETAILED LESSON PLANS

RESPONSE JOURNAL ACTIVITIES INCLUDE:

- Applying Vocabulary
- Short written response
- Writing to explain





LESSON RESPONSE JOURNAL

7 HIGH-ENGAGEMENT LESSONS

STUDENTS DiSCUSS, WRiTE & INVESTiGATE

7 HANDS-ON INVESTIGATIONS

Throughout the unit students explore:

- Features of landforms & bodies of water
- Make models of landforms
- Use maps and scales
- Use models to explain erosion and deposition
- Simulate a landslide
- Design a solution to wind erosion
- Make a topographic map of a mountain

STEP-BY-STEP GUIDES

With teacher tips, materials list, procedures, & pictures

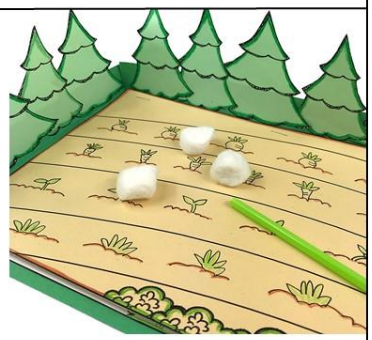
TEACHER GUIDE

Lesson 6

Investigation 6
Design a Windbreak

QUESTION: How do plants protect fields from wind?

OBJECTIVE: Students will design and build a model that uses plants as a windbreak to help prevent wind erosion.



MATERIALS:

Prep per student:
- *-1 sheet 9"x12" green construction paper*
- *-2 or 3 cotton balls*
- *-straw*
- *-Field template*
- *-Windbreak Trees page*
- *-glue stick*
- *-lab sheet*

INSTRUCT:

Show students the Lesson 6 video located in the video guide, *Windbreaks*. Explain to students **"Many farms ar... their fields from... soil from wind. ... use the materia...** *the soil. Blowing ...* **design a solutio...** *sides of the pape...*

PROCEDURE:

1. Pass out the f...
2. Ask students t... simulate wind blo...
3. Ask students t... windbreak using ...
4. Once finished, ... blowing in the str... from blowing awa...
5. Students reco...

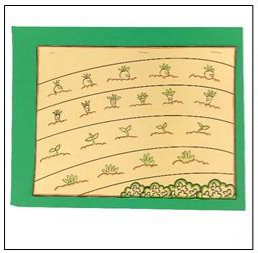
WRAP UP: Ask ... **when building a ... windbreak?**

2-ESS2-1 Compare mul... designed to slow or prev... from changing the shape...

TEACHER GUIDE

Lesson 6

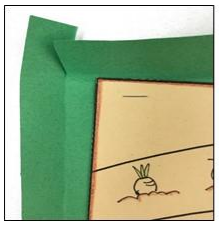
Investigation 6:
Design a Windbreak Directions



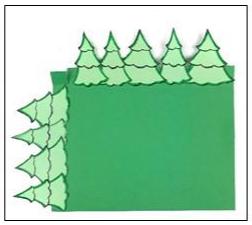
Cut out and lay field on the construction paper, centering in the lower right hand corner. Do not glue.

Fold over the top, crease the fold, then open it.

Fold over the left side. Crease the fold and open it.



Snip corner to the fold only. Once the trees have been glued on, you will tape or



With folds open, glue trees above the fold lines on both folded sides. **Optional:** Cut

Fold up the sides of the construction paper and glue the tab in the back. Center and glue

TEACHER GUIDE

Lesson 1

Investigation 1
Describing Landforms

QUESTION:
How can we describe landforms?

OBJECTIVES: Students will represent the shape of a landform using clay.
-Students will describe the features of a landform.
-Students will draw and label a diagram.

MATERIALS:
Per student:
-Play-Doh or clay
-lab sheet

TEACHER GUIDE

Lesson 3

Investigation 3A
Making Maps of Models

QUESTION: How can you map a model?

OBJECTIVES: Students will draw a map of a model that includes a key and scale. Students will measure the distance between two points on a map.

TEACHER GUIDE

Lesson 2

Investigation 2:
Making Models of Landforms

QUESTION: How can I show the kinds ... water in an area?
... will make a ... that features ... bodies of water.

TEACHER GUIDE

Lesson 3

Investigation 3B:
Topographical Map Directions

Pass out materials. Students use the clay to make a mountain with a flat bottom. Ask students to visualize

Using the dental floss students start ... bottom and cu... section of their

Lay the slice on the lab

TEACHER GUIDE

Lesson 4

Investigation 4:
Landslide Lab Procedure

TEACHER GUIDE

Lesson 3

Investigation 3B
Map the Height of a Mountain

QUESTION:
How can you map the height of a mountain?

OBJECTIVE: Students will use clay to make a 3-D model, then section it to make a topographical map.

MATERIALS:
Per student:
-chunk of Crayola Air-Dry Clay about the size of a lemon
-approx. 12 inches of dental floss
-lab sheet
-marker

INVESTIGATION:

1. Review the Lesson 3 slide on topographical maps in the Power Point. Remind students that mapmakers use 3-D models to study how tall a landform might be. **"Today, you will be making a 3-D model of a mountain out of clay. Then you will use your 3-D model to make a one-dimensional model that shows heights using numbers and curved lines. It is called a topographical map. A topographical map is a another type of model that is used to show how tall a landform is. You will be working with two models in this activity."**
2. Show students the video, Understanding Topographic Maps to demonstrate how to use clay and dental floss to make a topographical map.
3. Explain to students that they will be making 3-5 cross-section cuts with dental floss to their clay. (Differentiate by adjusting the number of cuts depending on student ability.)

LAB PROCEDURE:

1. Pass out clay, dental floss, and lab sheet to students.
2. Students make a mountain with a flat bottom out of their clay.
3. Students trace the outer bottom onto their lab sheet.
4. Students use the dental floss to make 4-5 horizontal, cross-section cuts starting at the bottom of the model and working upward. Explain to students that each section will represent 100 feet.
5. Students place the cut section in the middle of the previously traced line and trace the bottom of each section. Repeat until all sections have been cut and traced.
6. Have students add a scale by labeling the contour lines on their drawings. For simplicity, we will say that each section represents 100 feet.
7. Answer the questions on the back of the lab sheet.

2-ESS2-2 Develop a model to represent the shapes ... SEP.2 Develop a model to represent ...

TEACHER GUIDE

Lesson 5

Investigation 5:
How Do Ocean Waves Affect A Shoreline?

QUESTION: How do ocean waves affect a shoreline? How can you protect a lighthouse from erosion?

OBJECTIVE: Students will design a model to show how ocean waves affect a shoreline

MATERIALS:
Per group:
- *-plastic container or paint roller pan*
- *-sand*
- *-plastic spoon*
- *-water*
- *-lighthouse cut out*
- *-lab sheet*

Optional materials for structures to stop erosion.
Ex: *gravel, small Lego blocks, bubble wrap, foam sheets, scraps of screen*

Instruct:
"Today you are going to build a model to show how ocean waves affect the shore around a lighthouse. Then, you will make a plan to test your model". Before we get started, I want to show you a video about a 120 year old lighthouse in danger of erosion, and how it was saved.

Give students context and background by showing a real life problem, caused by erosion, in this video about a 120 year old lighthouse. Then project the Lesson 5 Investigation slide. Ask students to identify and explain the problem they foresee in the picture. (Waves will soon erode away the land up to the light house causing it to fall into the ocean.

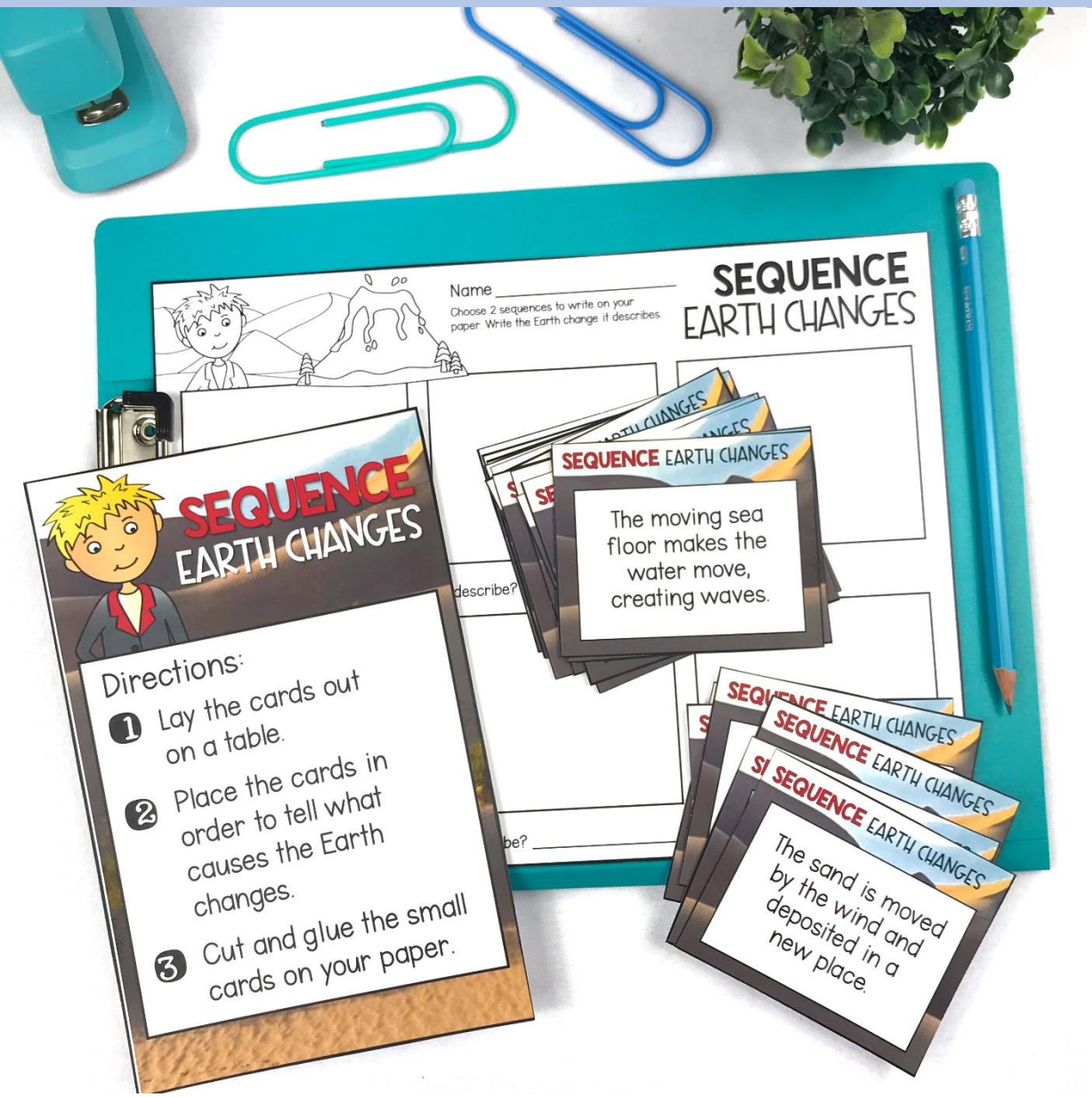
Procedure:
Place students in small groups of 2-4. If needed, guide students through the following procedure.

1. Fill the top of a paint pan liner with sand. Cut out and place the paper lighthouse in the sand about 3 inches from the waterline.
2. Fill the bottom of the pan with water up to the edge of the sand.
3. Observe the sand as you pour in the water. (The sand absorbs the water as it rises.)
4. Using a plastic spoon, gently move the spoon up and down in the water to create small waves. Continue making waves until the shoreline is eroded up to the lighthouse.
5. Observe what happens when the waves wash up against the sand. (The water washes back into the pan carrying sand with it and depositing it in a new location.)

Optional extension: Ask students to design a solution that will stop erosion around the lighthouse. Provide students with the optional materials above to build structures to test.
Ask students to compare their solutions with others and analyze the best way to solve the problem.

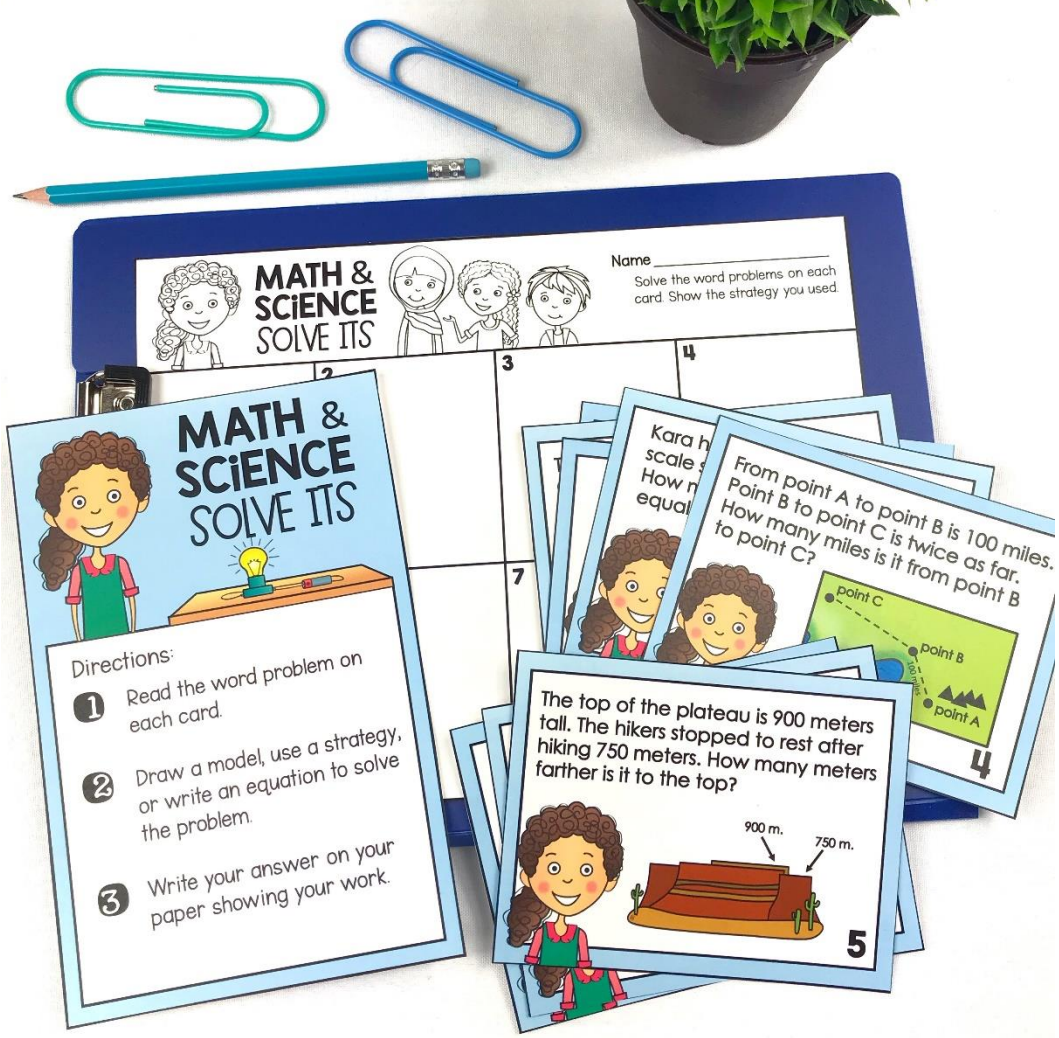
2-ESS2-1 Compare multiple solutions ... SEP.2 Developing and Using Models ... SEP.6 Constructing Explanations and ...

LITERACY-BASED SCIENCE CENTERS



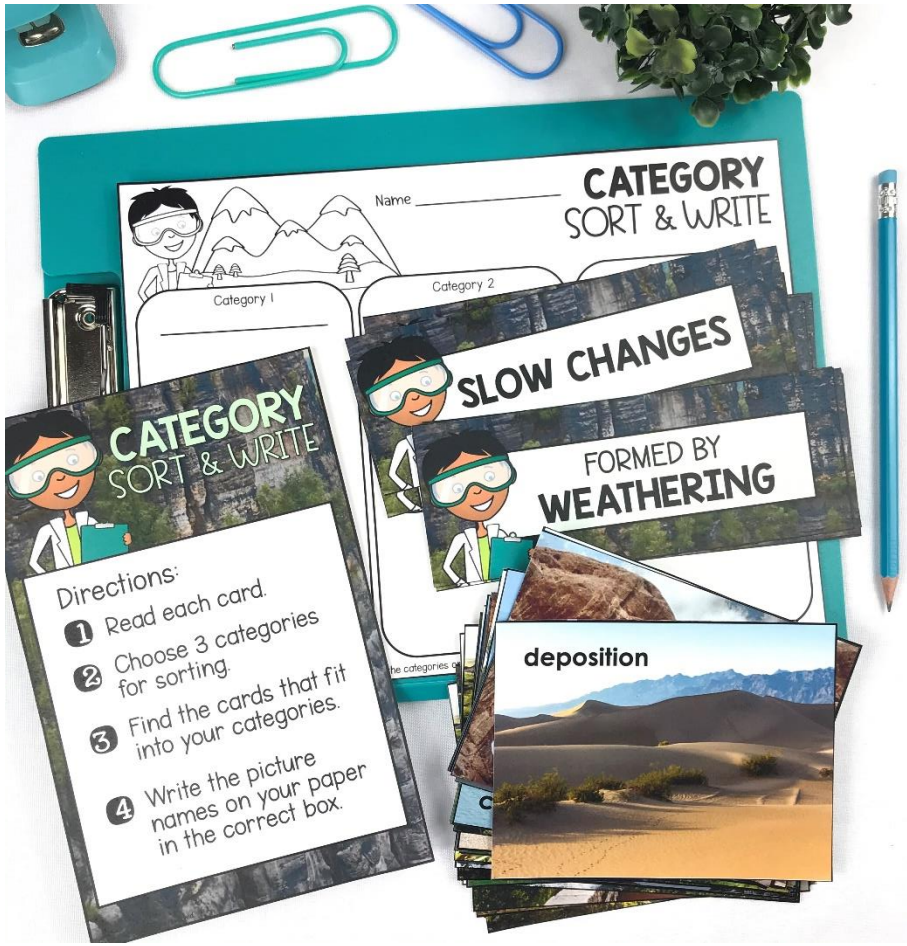
Literacy-based EXTENSION ACTIVITIES

Integrate science in your reading centers



Practice MATH SKILLS

Reinforce SCIENCE CONTENT



Centers included in color and black & white

LESSON SUPPORT

Full Page Vocabulary Posters

UNIT PLANNING BINDER

Organize your unit in a handy planning binder

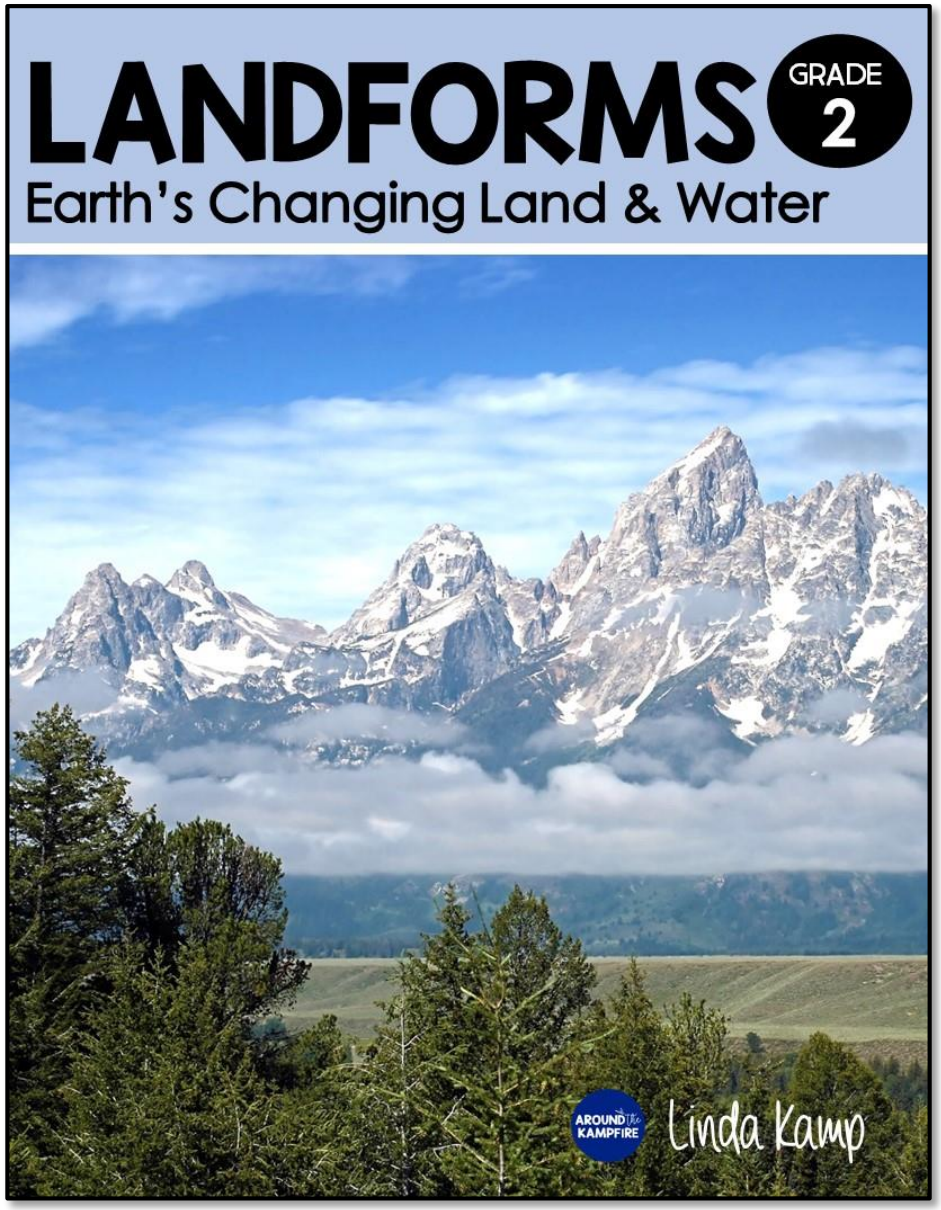
Binder includes:

- cover & spines
- section dividers
- divider tabs

PLAN, **TEACH** & **ASSESS** an in-depth and effective unit

Science for Second Grade

Build a science foundation



STUDENTS GAIN UNDERSTANDING OF:

- Landforms & bodies of water
- Earth's processes
- Stability and change
- Causes and effects of weathering, erosion & deposition
- Types of maps
- Science & engineering practices
- Building & testing models
- Collecting & analyzing data
- Designing solutions

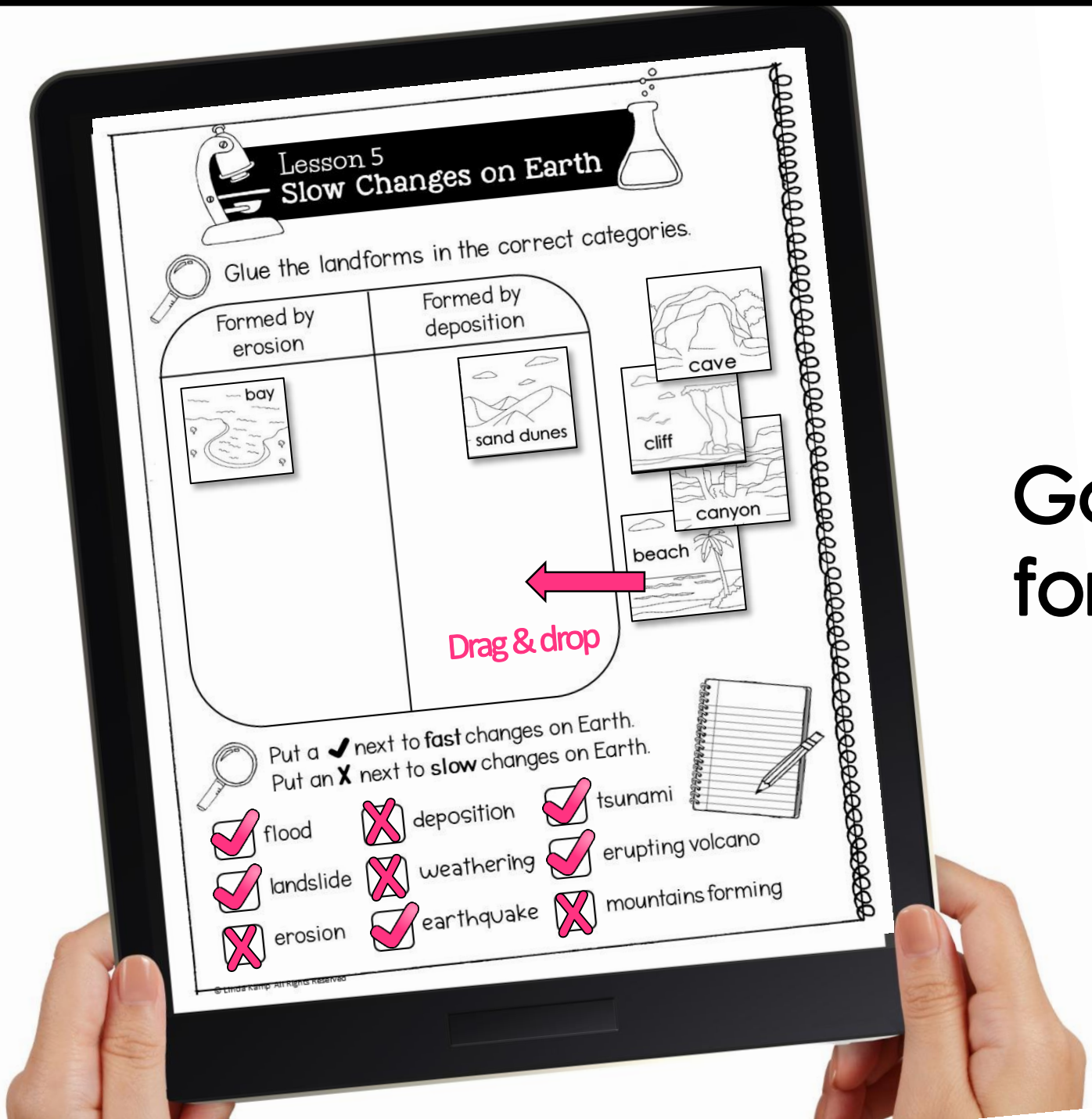
GOOGLE SLIDE LESSONS

7 LISTEN & LEARN LESSONS

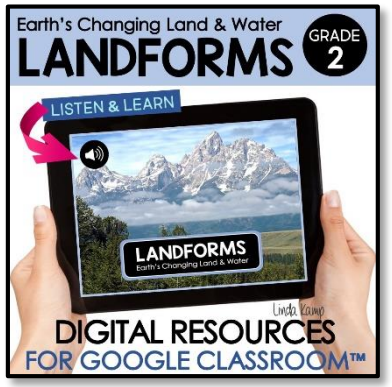
Narrated slides enable independent learning

- Describing Earth's Land
- Exploring Earth's Water
- Mapping Earth's Surface
- Fast Changes on Earth
- Slow Changes on Earth
- People Change the Earth
- Protecting Earth's Land and Water

LESSON RESPONSE ACTIVITIES



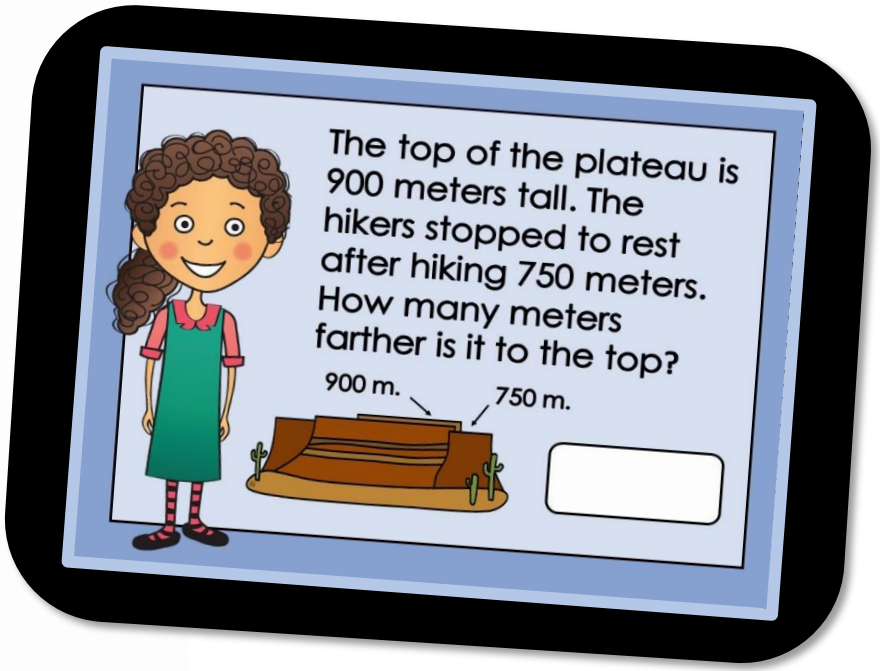
Interactive journal response pages on Google Slides™ for each lesson



GOOGLE SLIDE CENTER GAMES

Reinforce SCIENCE CONTENT

Practice MATH & LITERACY SKILLS

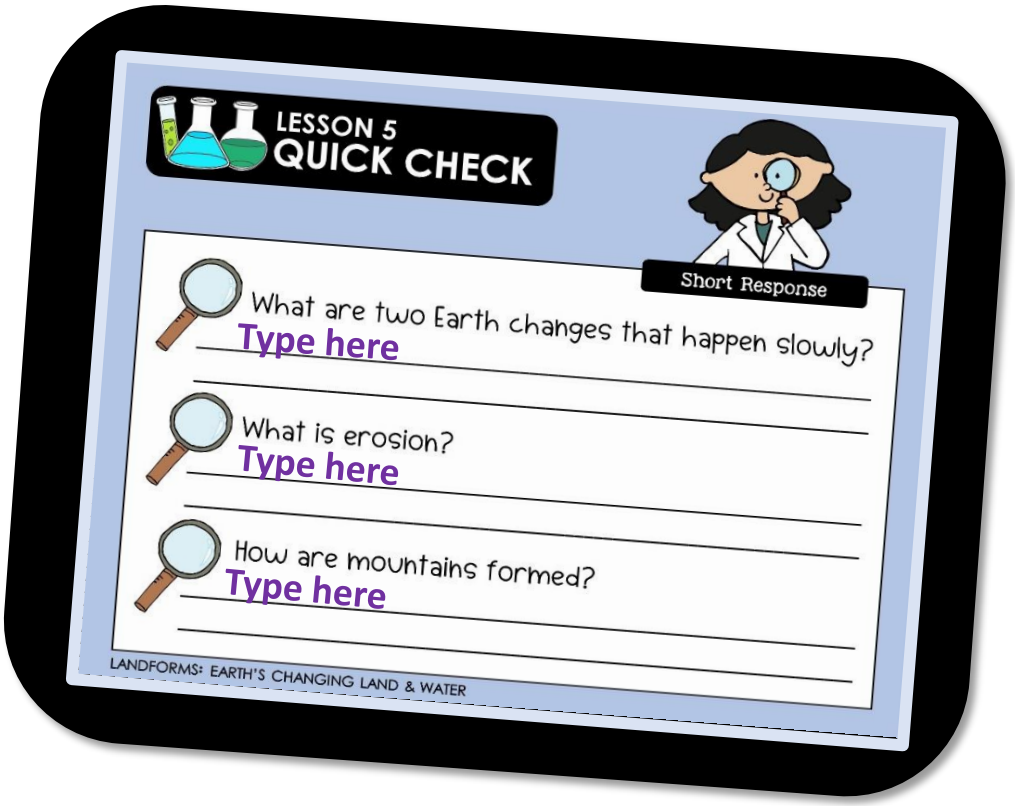


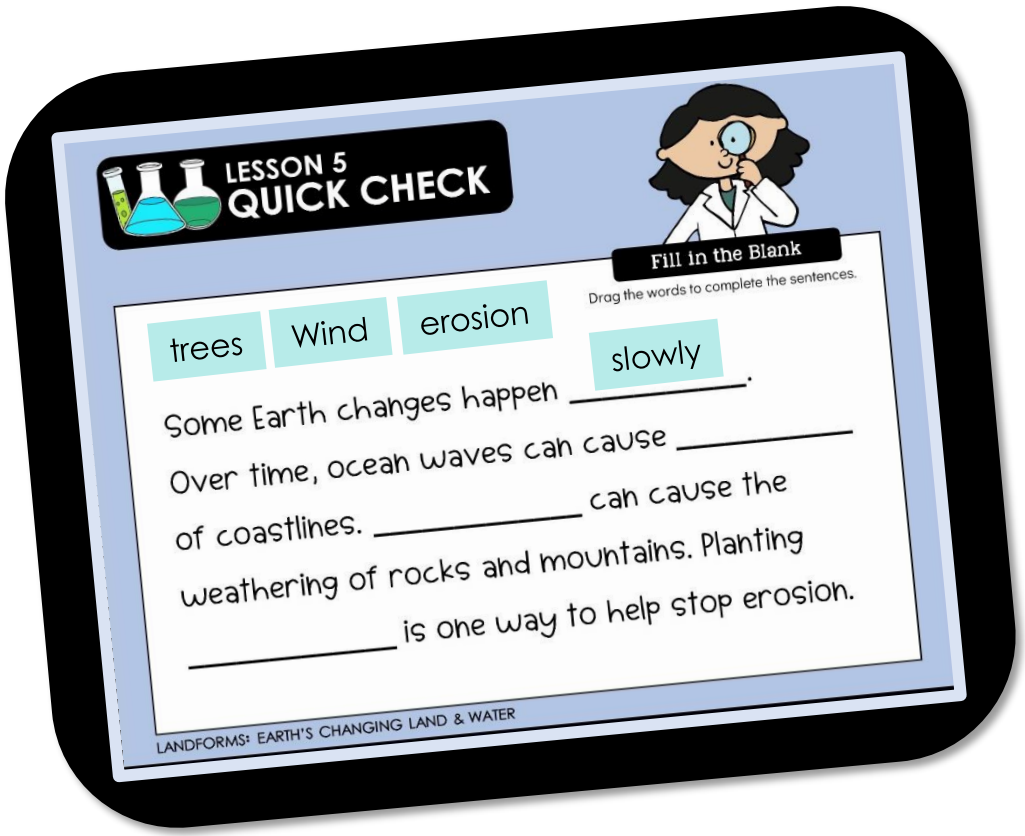
Practice games with moveable pieces

ASSESSMENTS MADE EASY

TYPE YOUR ANSWER

Short response quizzes





DRAG & DROP

Fill in the blank quizzes

Differentiated quizzes & unit test included

TEACH FROM ANYWHERE!

Easily transition between
CLASSROOM and DISTANCE LEARNING