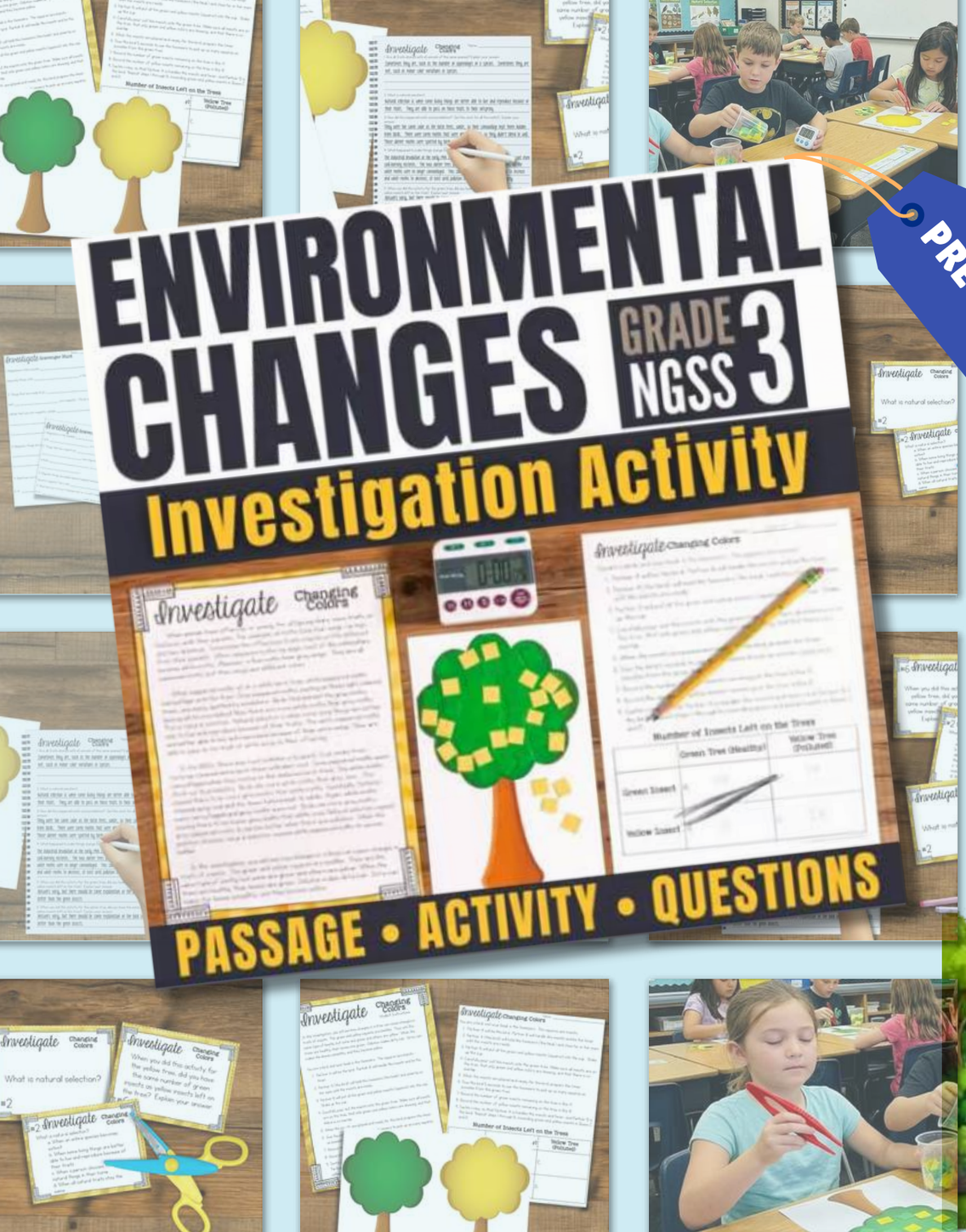


See How Camouflage Helps Animals Survive!

3RD GRADE

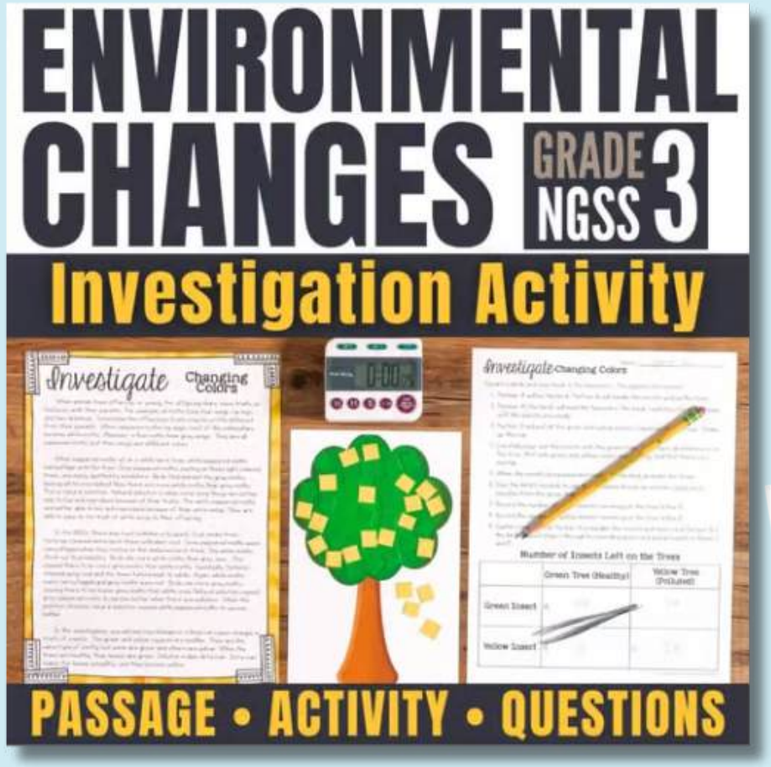
INVESTIGATE

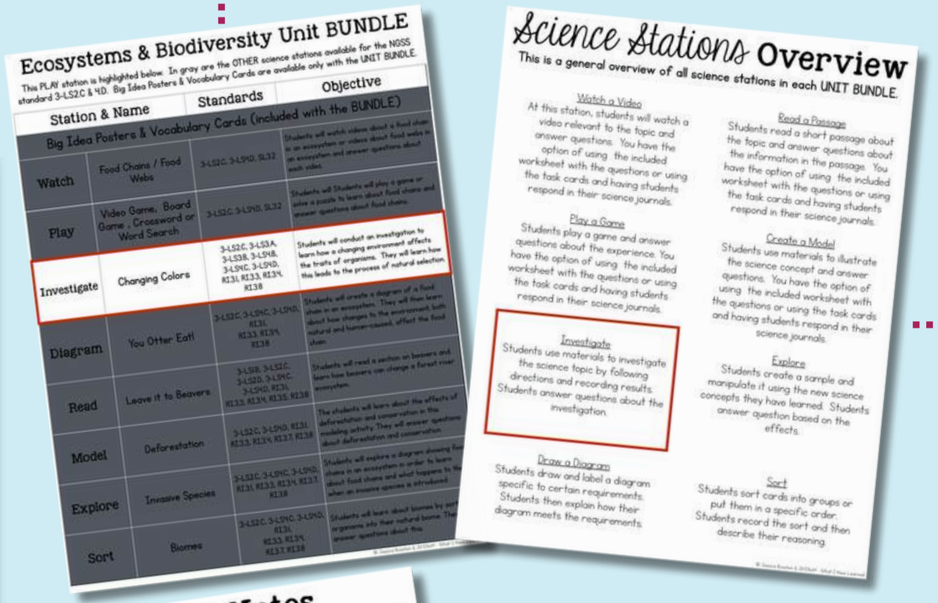
ENVIRONMENTAL CHANGES

KEEP SCROLLING TO SEE WHAT'S INSIDE!



ACTIVITY OVERVIEW




Ecosystems & Biodiversity Unit BUNDLE

This PLAY station is highlighted below. In gray are the OTHER science stations available for the NGSS standard 3-LS2C & 4D. Big Idea Posters & Vocabulary Cards are available only with the UNIT BUNDLE.

Station & Name		Standards	Objective
Big Idea Posters & Vocabulary Cards (included with the BUNDLE)			
Watch	Food Chains / Food Webs	3-LS2C, 3-LS4D, SL3.2	Students will watch videos about a food chain in an ecosystem or videos about food webs in each video.
Play	Video Game, Board Game, Crossword or Word Search	3-LS2C, 3-LS4D, SL3.2	Students will Students will play a game or solve a puzzle to learn about food chains and answer questions about food chains.
Investigate	Changing Colors	3-LS2C, 3-LS3A, 3-LS3B, 3-LS4B, 3-LS4C, 3-LS4D, RI3.1, RI3.3, RI3.4, RI3.8	Students will conduct an investigation to learn how a changing environment affects the traits of organisms. They will learn how this leads to the process of natural selection.
Diagram	You Otter Eat!	3-LS2C, 3-LS4C, 3-LS4D, RI3.1, RI3.3, RI3.4, RI3.8	Students will create a diagram of a food chain in an ecosystem. They will then learn about how changes to the environment, both natural and human-caused, affect the food chain.
Read	Leave it to Beavers	3-LS4B, 3-LS2C, 3-LS2D, 3-LS4C, 3-LS4D, RI3.1, RI3.3, RI3.4, RI3.5, RI3.8	Students will read a section on beavers and learn how beavers can change a forest river ecosystem.
Model	Deforestation	3-LS2C, 3-LS4D, RI3.1, RI3.3, RI3.4, RI3.7, RI3.8	The students will learn about the effects of deforestation and conservation in this modeling activity. They will answer questions about deforestation and conservation.
Explore	Invasive Species	3-LS2C, 3-LS4C, 3-LS4D, RI3.1, RI3.3, RI3.4, RI3.7, RI3.8	Students will explore a diagram showing how a species in an ecosystem in order to learn about food chains and what happens to the when an invasive species is introduced.
Sort	Biomes	3-LS2C, 3-LS4C, 3-LS4D, RI3.1, RI3.3, RI3.4, RI3.7, RI3.8	Students will learn about biomes by sorting organisms into their natural biome. They will answer questions about this.

Science Stations Overview

This is a general overview of all science stations in each UNIT BUNDLE.

Watch a Video
At this station, students will watch a video relevant to the topic and answer questions. You have the option of using the included worksheet with the questions or using the task cards and having students respond in their science journals.

Play a Game
Students play a game and answer questions about the experience. You have the option of using the included worksheet with the questions or using the task cards and having students respond in their science journals.

Investigate
Students use materials to investigate the science topic by following directions and recording results. Students answer questions about the investigation.

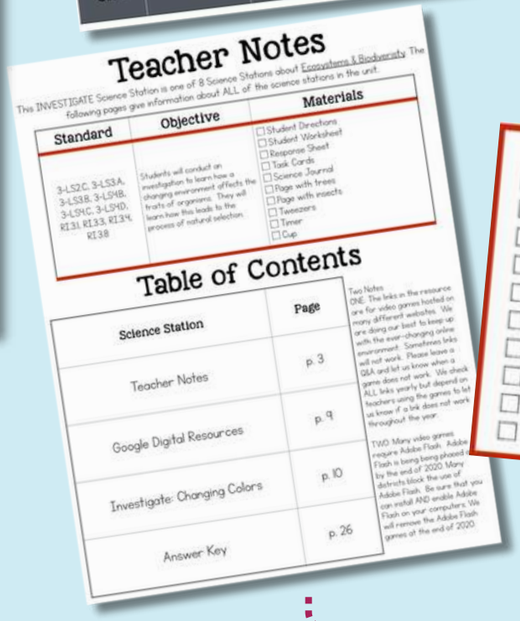
Draw a Diagram
Students draw and label a diagram specific to certain requirements. Students then explain how their diagram meets the requirements.

Read a Passage
Students read a short passage about the topic and answer questions about the information in the passage. You have the option of using the included worksheet with the questions or using the task cards and having students respond in their science journals.

Create a Model
Students use materials to illustrate the science concept and answer questions. You have the option of using the included worksheet with the questions or using the task cards and having students respond in their science journals.

Explore
Students create a sample and manipulate it using the new science concepts they have learned. Students answer question based on the effects.

Sort
Students sort cards into groups or put them in a specific order. Students record the sort and then describe their reasoning.


Teacher Notes

This INVESTIGATE Science Station is one of 8 Science Stations about Ecosystems & Biodiversity. The following pages give information about ALL of the science stations in the unit.

Standard	Objective	Materials
3-LS2C, 3-LS3A, 3-LS3B, 3-LS4B, 3-LS4C, 3-LS4D, RI3.1, RI3.3, RI3.4, RI3.8	Students will conduct an investigation to learn how a changing environment affects the traits of organisms. They will learn how this leads to the process of natural selection.	☐ Student Directions ☐ Student Worksheet ☐ Response Sheet ☐ Task Cards ☐ Science Journal ☐ Page with trees ☐ Page with insects ☐ Tweezers ☐ Timer ☐ Cup

Table of Contents

Science Station	Page
Teacher Notes	p. 3
Google Digital Resources	p. 9
Investigate: Changing Colors	p. 10
Answer Key	p. 26

Two Notes
ONE: The links in the resource are for video games hosted on many different websites. We are doing our best to keep up with the ever-changing online environment. Sometimes links will not work. Please leave a Q&A and let us know when a game does not work. We check ALL links yearly but depend on teachers using the games to let us know if a link does not work throughout the year.

TWO: Many video games require Adobe Flash. Adobe Flash is being phased out by the end of 2020. Many districts block the use of Adobe Flash. Be sure that you can install AND enable Adobe Flash on your computers. We will remove the Adobe Flash games at the end of 2020.


Investigate
☐ Student Directions
☐ Student Worksheet
☐ Response Sheet
☐ Task Cards
☐ Science Journal
☐ Page with trees
☐ Page with insects
☐ Tweezers
☐ Timer
☐ Cup

Unit Bundle

Science Station Overview

Materials Checklist

Teacher Notes & Table of Contents

WHAT'S INCLUDED

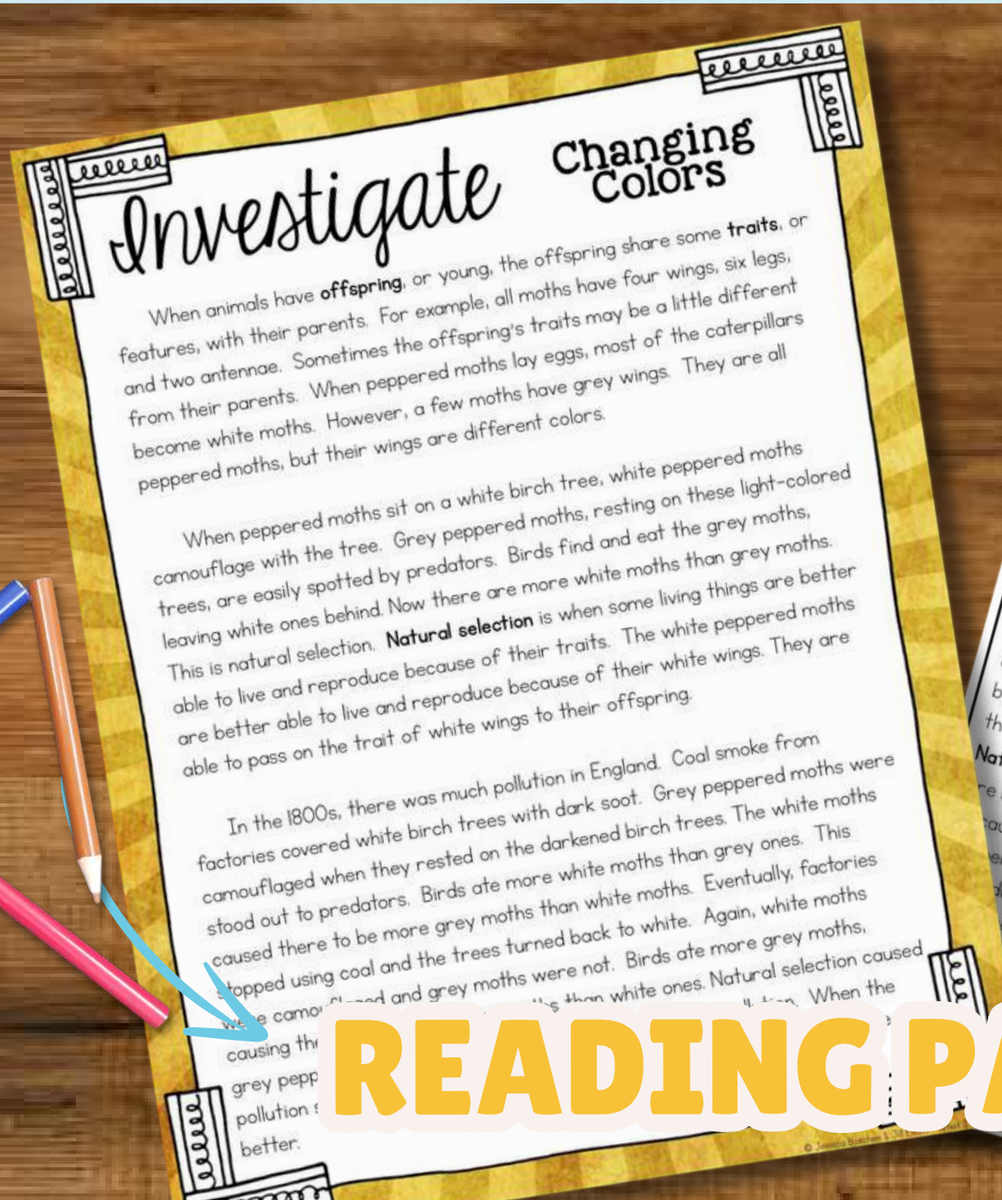
INVESTIGATE SCIENCE STATION

- **Teacher Notes** and **Materials List**
  Reading passage
- **Differentiated worksheets**
- **Science journal prompts** and response sheets
- **Printable task cards** for classroom station rotation
- **Answer Key**
- **Google Form™**
- **Google Slides™**



INVESTIGATE: READING PASSAGE

3RD GRADE

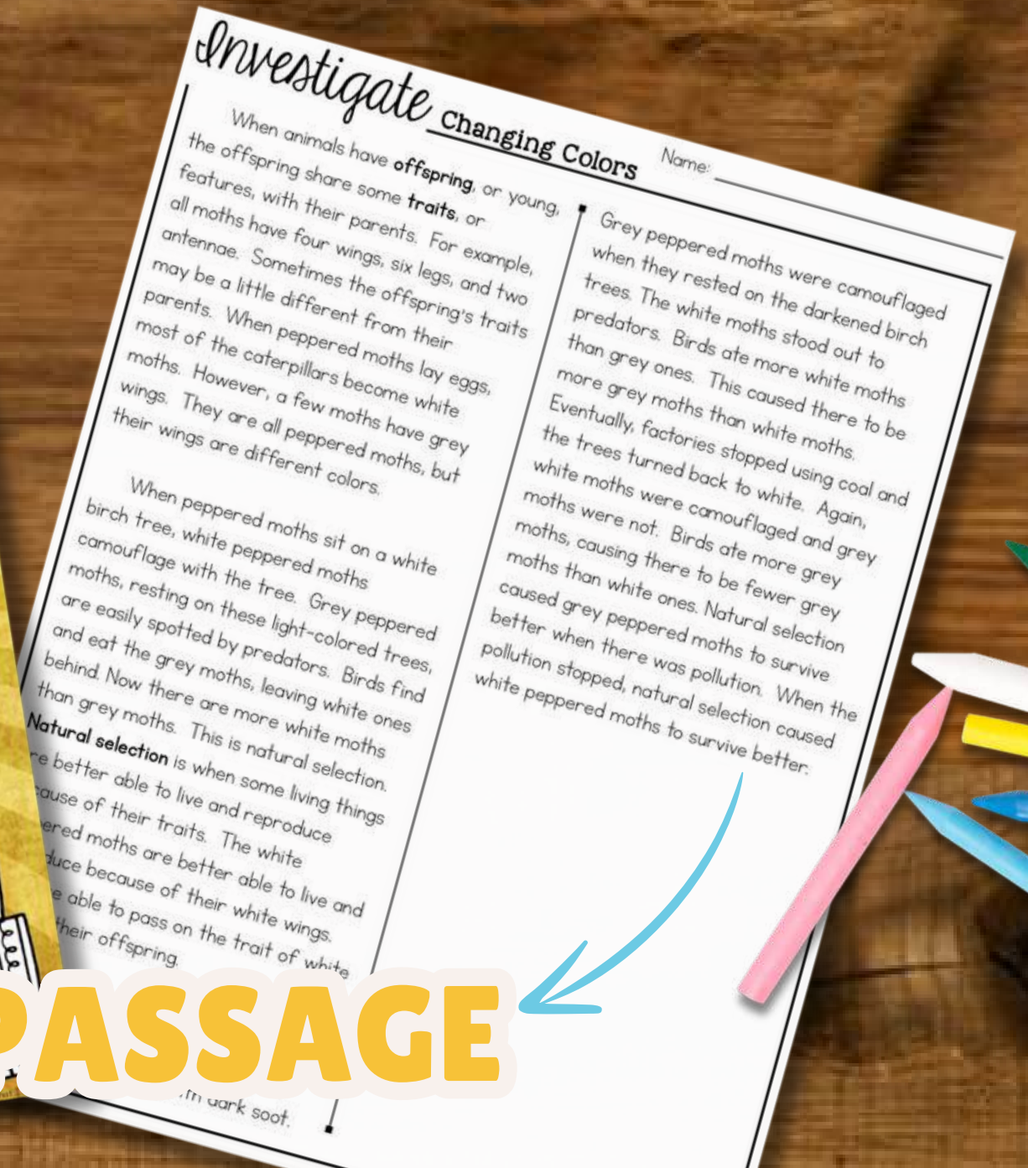


Investigate Changing Colors

When animals have **offspring**, or young, the offspring share some **traits**, or features, with their parents. For example, all moths have four wings, six legs, and two antennae. Sometimes the offspring's traits may be a little different from their parents. When peppered moths lay eggs, most of the caterpillars become white moths. However, a few moths have grey wings. They are all peppered moths, but their wings are different colors.

When peppered moths sit on a white birch tree, white peppered moths camouflage with the tree. Grey peppered moths, resting on these light-colored trees, are easily spotted by predators. Birds find and eat the grey moths, leaving white ones behind. Now there are more white moths than grey moths. This is natural selection. **Natural selection** is when some living things are better able to live and reproduce because of their traits. The white peppered moths are better able to live and reproduce because of their white wings. They are able to pass on the trait of white wings to their offspring.

In the 1800s, there was much pollution in England. Coal smoke from factories covered white birch trees with dark soot. Grey peppered moths were camouflaged when they rested on the darkened birch trees. The white moths stood out to predators. Birds ate more white moths than grey ones. This caused there to be more grey moths than white moths. Eventually, factories stopped using coal and the trees turned back to white. Again, white moths



Investigate Changing Colors

Name: _____

When animals have **offspring**, or young, the offspring share some **traits**, or features, with their parents. For example, all moths have four wings, six legs, and two antennae. Sometimes the offspring's traits may be a little different from their parents. When peppered moths lay eggs, most of the caterpillars become white moths. However, a few moths have grey wings. They are all peppered moths, but their wings are different colors.

When peppered moths sit on a white birch tree, white peppered moths camouflage with the tree. Grey peppered moths, resting on these light-colored trees, are easily spotted by predators. Birds find and eat the grey moths, leaving white ones behind. Now there are more white moths than grey moths. This is natural selection. **Natural selection** is when some living things are better able to live and reproduce because of their traits. The white peppered moths are better able to live and reproduce because of their white wings. They are able to pass on the trait of white wings to their offspring.

Grey peppered moths were camouflaged when they rested on the darkened birch trees. The white moths stood out to predators. Birds ate more white moths than grey ones. This caused there to be more grey moths than white moths. Eventually, factories stopped using coal and the trees turned back to white. Again, white moths were camouflaged and grey moths were not. Birds ate more grey moths, causing there to be fewer grey moths than white ones. Natural selection caused grey peppered moths to survive better when there was pollution. When the pollution stopped, natural selection caused white peppered moths to survive better.

READING PASSAGE

Investigate Changing Colors

When animals have offspring, or young, the offspring share some traits, or features, with their parents. For example, all moths have four wings, six legs, and two antennae. Sometimes the offspring's traits may be a little different from their parents. When peppered moths lay eggs, most of the caterpillars become white moths. However, a few moths have grey wings. They are all peppered moths, but their wings are different colors.

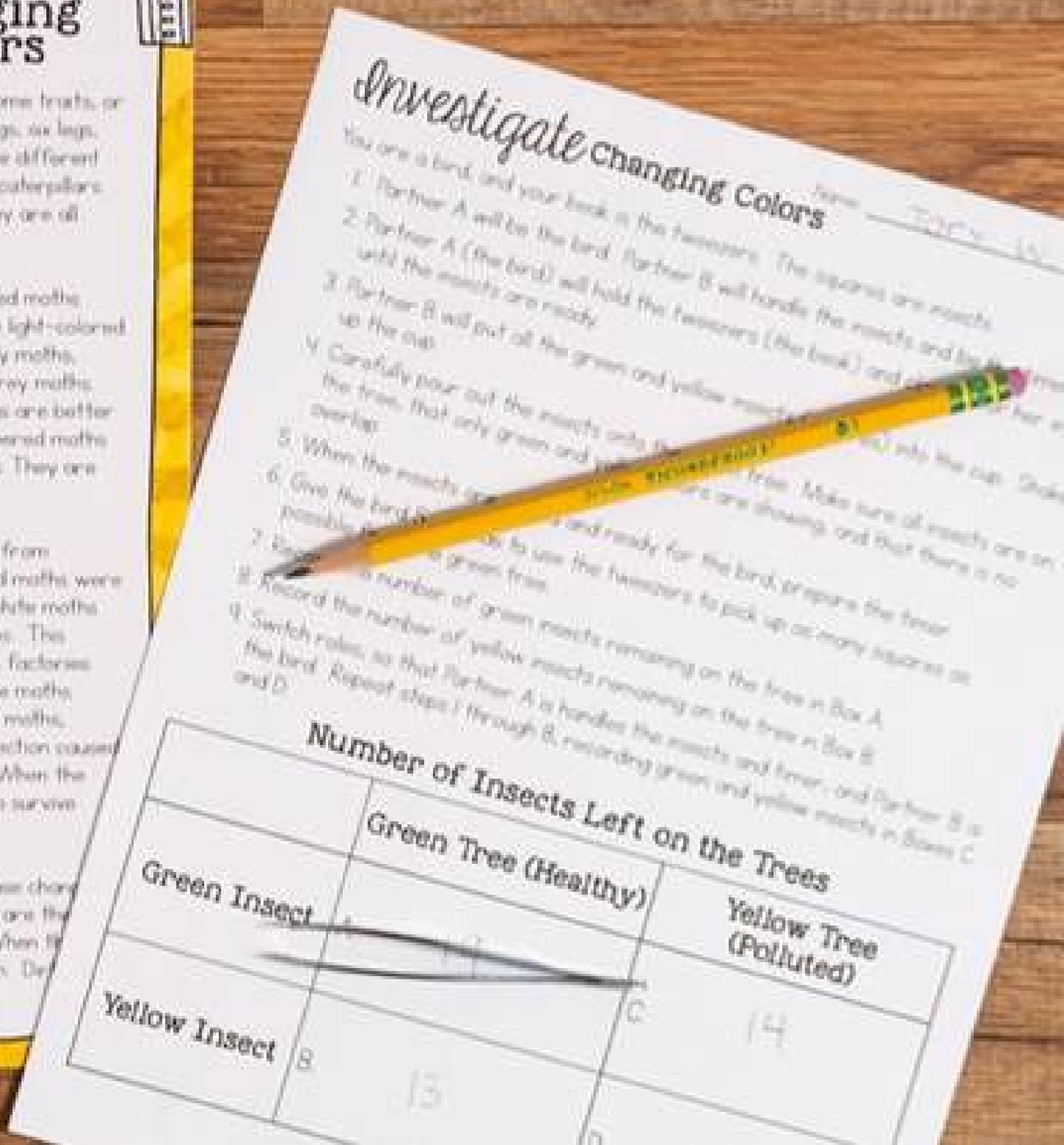
When peppered moths sit on a white birch tree, white peppered moths camouflage with the tree. Grey peppered moths, resting on these light-colored trees, are easily spotted by predators. Birds find and eat the grey moths, leaving white ones behind. Now there are more white moths than grey moths. This is natural selection. Natural selection is when some living things are better to live and reproduce because of their traits. The white peppered moths were able to live and reproduce because of their white wings. They are able to pass on the trait of white wings to their offspring.

In 1800s, there was much pollution in England. Coal smoke from factories covered white birch trees with dark soot. Grey peppered moths were camouflaged when they rested on the darkened birch trees. The white moths were seen by predators. Birds ate more white moths than grey ones. This caused there to be more grey moths than white moths. Eventually, factories began to use less coal and the trees turned back to white. Again, white moths were camouflaged and grey moths were not. Birds ate more grey moths, causing there to be fewer grey moths than white ones. Natural selection caused white peppered moths to survive better when there was pollution. When the pollution decreased, natural selection caused white peppered moths to survive better.

In this activity, you will see how changes in a tree can cause changes in the moths. The green and yellow squares are beetles. They are the moths. Some moths are green and others are yellow. When the tree is healthy, the moths are green. Pollution makes dirty rain. Dirty rain makes the tree sick and they become yellow.







Investigate Changing Colors

Name _____ Date _____

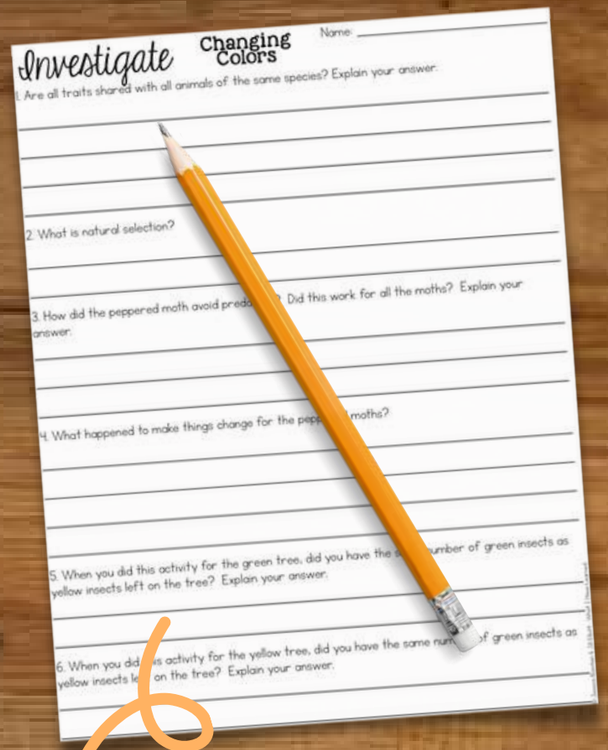
You are a bird and your beak is the tweezers. The squares are insects.

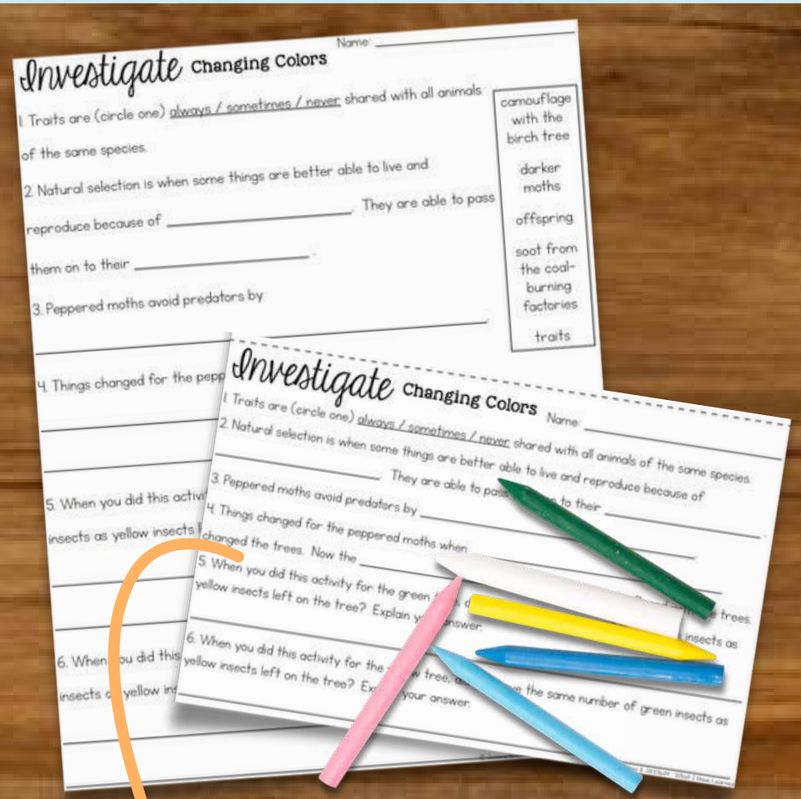
1. Partner A will be the bird. Partner B will handle the insects and keep time.
2. Partner A (the bird) will hold the tweezers (the beak) and close your eyes until the insects are ready.
3. Partner B will put all the green and yellow insects on the tree.
4. Carefully pour out the insects onto the tree. Make sure all insects are on the tree, that only green and yellow insects are showing, and that there is no overlap.
5. When the insects are ready for the bird, prepare the timer.
6. Give the bird the tweezers to pick up as many insects as possible in 15 seconds.
7. Record the number of green insects remaining on the tree in Box A.
8. Record the number of yellow insects remaining on the tree in Box B.
9. Switch roles, so that Partner A is handles the insects and timer, and Partner B is the bird. Repeat steps 1 through 8, recording green and yellow insects in Boxes C and D.

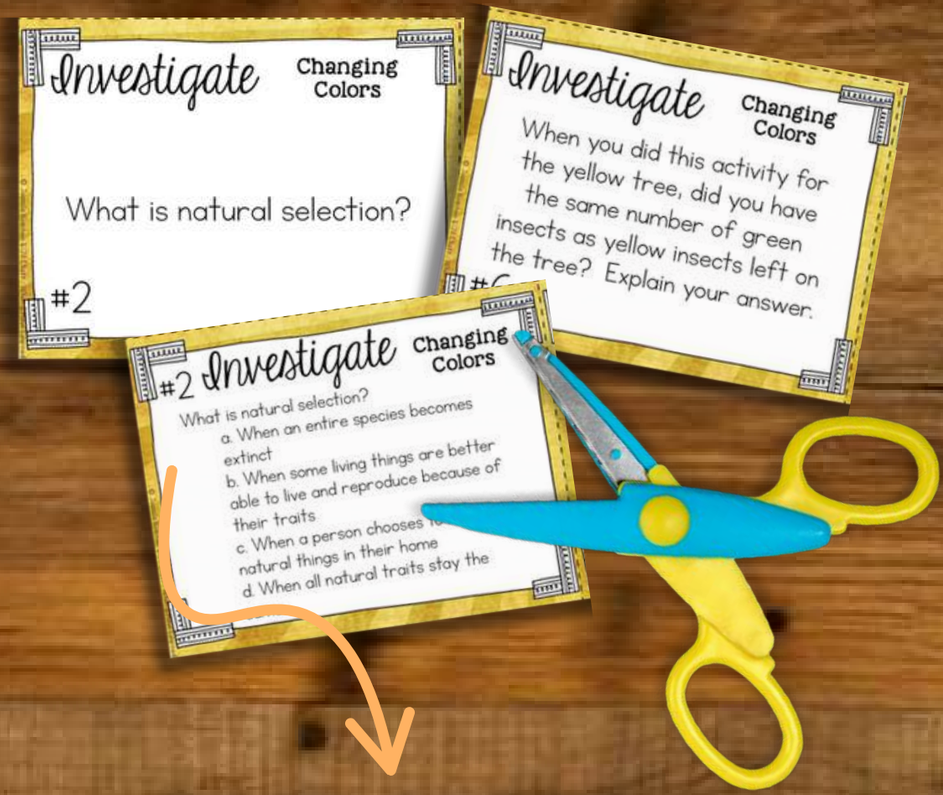
Number of Insects Left on the Trees

	Green Tree (Healthy)	Yellow Tree (Polluted)
Green Insect	A	C 14
Yellow Insect	B 13	D

DIFFERENTIATED QUESTIONS







SHORT ANSWER

FILL-IN-THE BLANK

TASK CARDS: SHORT ANSWER & MULTIPLE CHOICE

Investigate Changing Colors

Student Instructions

In this investigation, you will see how changes in a tree can cause changes in traits of insects. The green and yellow squares are beetles. They are the same type of beetle, but some are green and others are yellow. When the trees are healthy, their leaves are green. Pollution makes dirty rain. Dirty rain makes the leaves unhealthy, and they become yellow.

You are a bird, and your beak is the tweezers. The squares are insects.

1. Partner A will be the bird. P… the insects and be the timer.
2. Partner A (the bird) will h… her eyes until the insects …
3. Partner B will put all the … Shake up the cup.
4. Carefully pour out the … are on the tree, that … there is no overlap
5. When the insects ar…
6. Give th…





Investigate Changing Colors

Name: _____

1. Are all traits shared with all animals of the same species? Explain your answer.

Sometimes they are, such as the number of appendages of a species. Sometimes they are not, such as minor color variations in species.

2. What is natural selection?

Natural selection is when some living things are better able to live and reproduce because of their traits. They are able to pass on those traits to their offspring.

3. How did the peppered moth avoid predators? Did this work for all the moths? Explain your answer.

They were the same color as the birch trees, white, so their camouflage kept them hidden from birds. There were some moths that were da… so they didn't blend in well. Those darker moths were spotted by birds…

4. What happened to make things change fo…

The Industrial Revolution of the early 19th c… soot from coal-burning factories. The now darker trees p… ths, as the white moths were no longer camouflaged. This cau… s to increase and white moths to decrease, at least until pollution … grey.

5. When you did this activity for the green tree, did you have… en insects as yellow insects left on the tree? Explain your answer.

Answers vary, but there should be some explanation of the … w insects better than the green insects

6. When you did this activity for the yellow tree, did you have the same … ects as yellow insects left on the tree? Explain your answer.

Answers vary, but there should be some explanation of the bird s… cts better than the green insects.

#6 Investigate Changing Colors

When you did this activity for the yellow tree, did you have the same number of green insects as yellow insects … tree? Explain

#2 Investigate Changing Colors

What is natural selection?

a. When an entire species becomes extinct
b. When some living things are better able to live and reproduce because of their traits
c. When a person chooses … natural things in … e only
d. When …

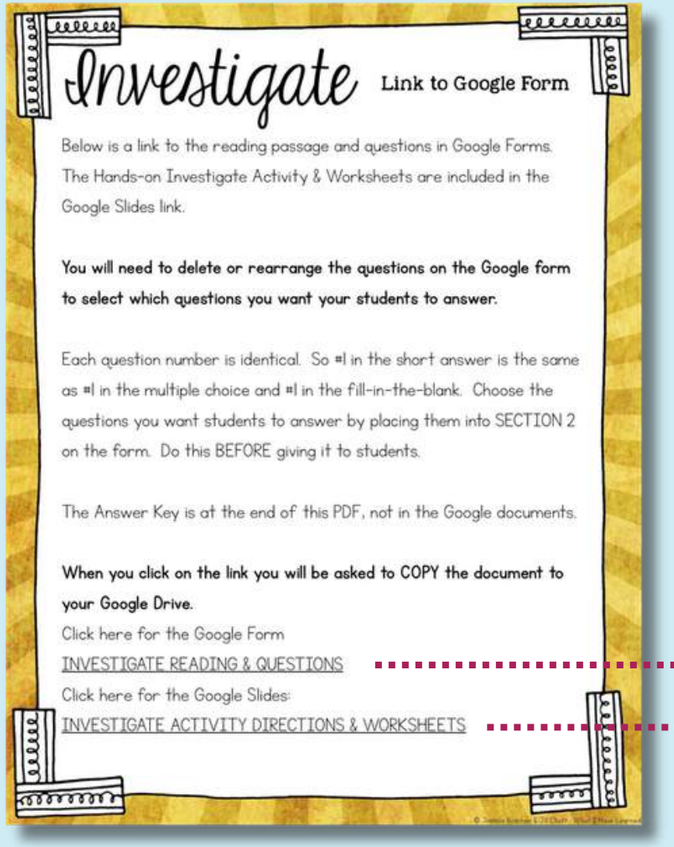
Investigate Changing Colors

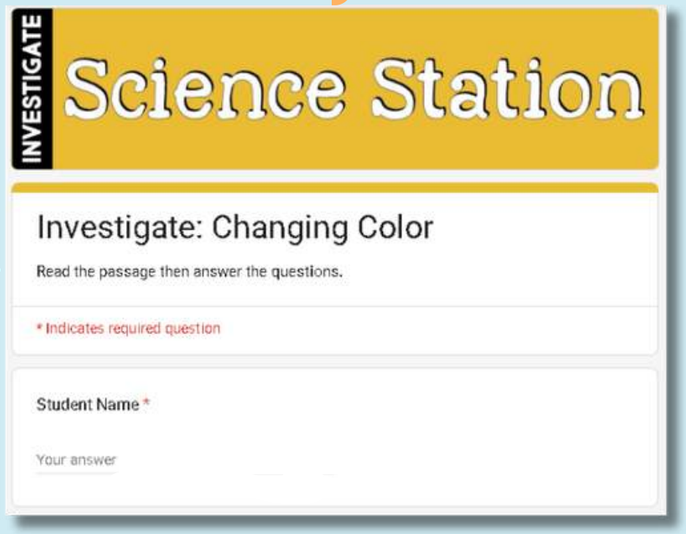
What is natural selection?

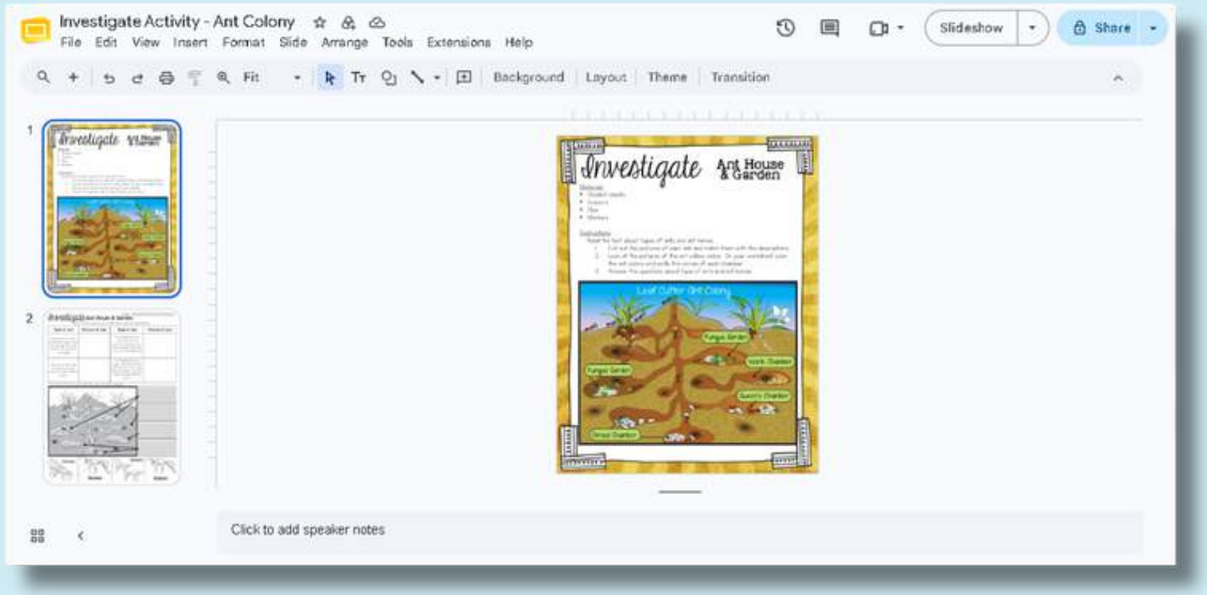
#2



DIGITAL VERSIONS







DIGITAL VERSIONS

- ✔ Google Sheet with Activity & Directions
- ✔ Google Form with Reading & Questions

Answer keys provided

YOU WILL LOVE THIS BECAUSE



Connects Science and Literacy

Students connect reading, vocabulary, diagram analysis, observation, and evidence-based explanations through one meaningful science activity.



Strong NGSS Alignment

Supports NGSS 3-LS3.A, 3-LS3.B, and 3-LS4.B, connecting traits, inherited characteristics, environmental variation, and survival.



Easy Prep with Simple Materials

Requires only simple classroom materials while offering multiple response formats, printable activities, and digital options to support diverse learners.

TEACHERS LOVE IT!

This checked several boxes for my team and me. It came in so handy and covered some literacy standards as well. I'll be looking at more of your products!

by Briannon

I used this resource with my third grade students.

Laura M.





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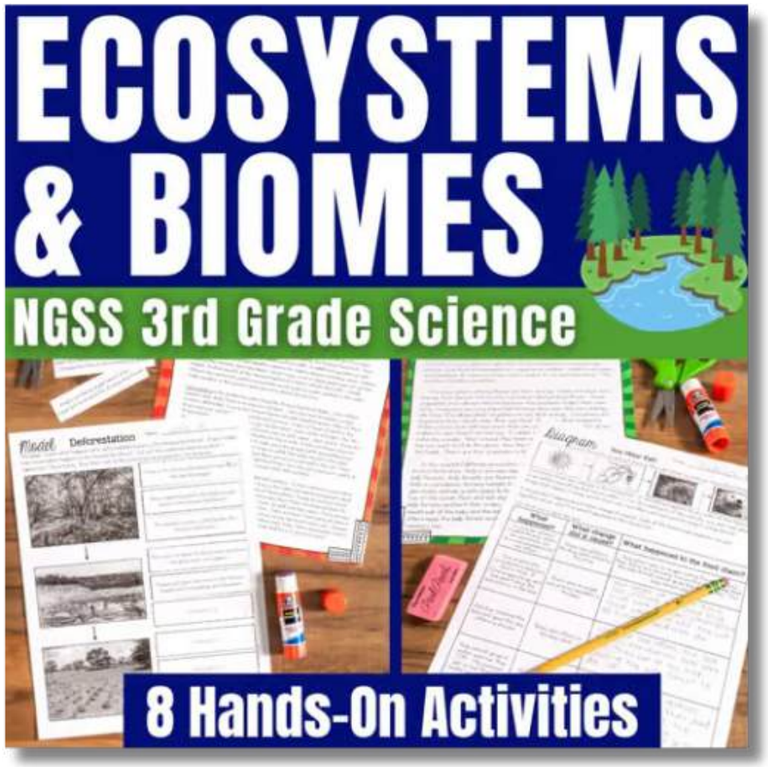
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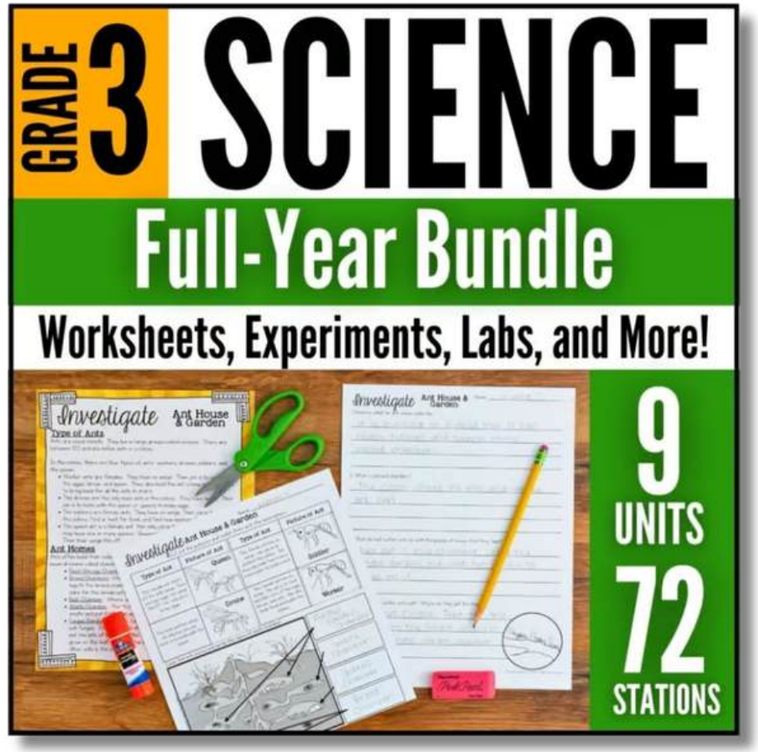
GOOD VALUE



SEE THE BUNDLE

FULL-YEAR BUNDLE

BEST VALUE



SEE THE BUNDLE

My passion is making learning accessible to all students.
I love scaffolding learning, breaking down the concepts and building them up so that students can see the connections.
I love figuring out the small components that build up to the big ideas and helping students see it all.





What I have LEARNED