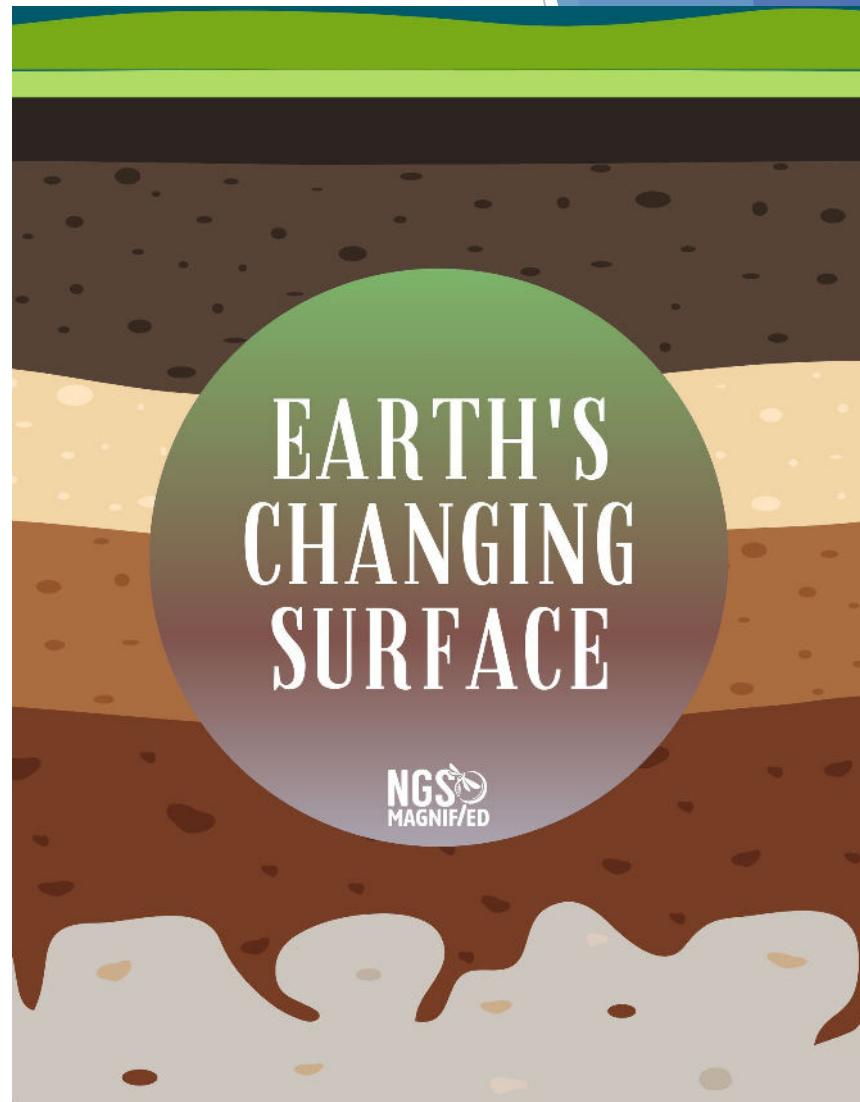




Earth's Changing Surface

Earth's Changing Surface Unit includes:

- Print and digital Interactive Notebooks
- Editable Resources, including notes, PowerPoints, and test
- Instructional Videos
- Teacher-led Demos & Guided Inquiry Labs
- Task Cards & Digital Task Cards
- Study Guides





Suggested Pacing Guide

The following is a **suggested pacing guide** for my COMPLETE COURSES (Earth, Life or Physical Science) which are based on 50-minute class periods. There are three variations below. Each variation is based on the [number of sections in your SCIENCE INTERACTIVE NOTEBOOK chapter](#).

Based on a **4-Section Chapter**

Day	Lesson/Activity	Engage	Explain	Explore	Elaborate	Evaluate
1	• Teacher Demo	x				
	• Section 1 Notes – INB input		x			
	• INB Activity – INB output (homework if not completed in class)			x		
2	• Mini-quiz					x
	• Section 2 Notes – use PowerPoint	x				
	• INB Activity		x			
3	• Mini-quiz					x
4	• Guided Inquiry Lab – Student Led		x			
	• Section 3 Notes – use PowerPoint	x				
	• INB Activity		x			
5	• Mini-quiz					x
	• Section 4 Notes – use PowerPoint	x				
	• INB Activity		x			
6	• Mini quiz					x
7	• Science Stations			x		
	• Science Stations			x		
	• Final draft and testing for Creation Station (STEM)			x	x	
9	• Task Card Review (game-style, full class, partner)			x		
	• Chapter Test					x
	• Have students complete notes for next chapter*	x				

* **Note-taking option:** Once students are done with chapter test, they get the next set of notes and work quietly on completing them while other students finish up. All notes are to be completed when they return to class. Have students glue each page of notes into the next few pages of their INB (right side only). This way, when you go over the PowerPoint each day, they have already reviewed topic and are ready for class.

5 E Model

Engage – Teacher-led demos foster wonder and classroom discussion and serve as the hook for the lesson. Videos and images of natural phenomena also foster questioning and communication. NGSS phenomena are aligned to middle school NGSS standards.

Explain – PowerPoints, instructional videos, and guided notes (input side of interactive notebooks) provide definitions, explanations, and information through mini-lecture, text, internet, and other resources which encourages students to explain concepts and definitions in their own words.

Explore – Students investigate problems, events, or situations. As a result of their mental and physical involvement in these activities, students question events, observe patterns, identify and test variables, and communicate results.

Elaborate – It is important to involve students in further experiences that apply, extend, or elaborate the concepts, processes, or skill they are learning. Elaborate activities provide time for students to apply their understanding of concepts and skills. They might apply their understanding to similar phenomena or problems.

Evaluate – Use a variety of assessment to gather evidence of student's understanding and provide opportunities for them to assess their own progress.

Student Interactive Notebook

Each concept shares:

- Actual photos of both the INPUT and OUTPUT pages of Science Interactive Notebook
- Instructions on how to create/use/complete activity for OUTPUT side
- Mini-Quizzes for each concept to check students' understanding
- Answer Keys for all mini-quizzes
- Appendix with Teacher Notes for Interactive Notebook in LARGE print.

Introduction

If you are new to the idea of using classroom, stop by my Nifty Britty Science Interactive Notebooks hub to begin with your students, what importance it will enhance your students.

Focus

Use the mixed strand having Side - (200) strand Left Instr on my first, then you w area Mini- Mini q under you c

Section 1: Weathering

Introduction

The process that breaks down rock and other substances called weathering. There are two types of weathering: Mechanical weathering is when rock is physically broken over a long period of time. Chemical weathering is a process that breaks down rock through chemical changes.

Section 2: Soil Formation

Life in the Soil

Directions:

1. Cut out the five examples of life in two soil following diagram.
2. Paste each organism on top of their description ABOVE the divided line. Then answer the questions.
3. Label and describe the three layers of soil.
4. Search the diagram for more life, circling each of soil movers in BLUE.
5. Paste completed page into your Science Notebook.

Description:

Students will love finding all the organisms that live in or help create soil. They will need to match toppers with descriptions and decide which organisms are decomposers and which are earth movers.

Student printable, answer key and a mini-quiz are available for this activity.

Section 3: Weathering

Introduction

Weathering

TYPES OF WEATHERING

Type	Causes
Mechanical	Wind, water, ice, temperature, pressure, gravity
Chemical	Water, acids, heat, cold, pressure, time

Directions:

1. Write a *C* statement as describing chemical weathering.
2. Roots grow into cracks of rocks and soil.
3. Oxidation produces rust on iron and steel.
4. Breaks rocks by ice freezing and then melting.
5. Rainwater reacts with acid that slowly eats away rock.

Section 4: Erosion & Deposition

Moss Movement and Glaciers

Directions:

1. Color the letter of each glacial feature that has been written. Assign each letter.
2. Color the letter of each feature that has been written.
3. Cut out the completed diagram and descriptions below and paste into your Science Interactive Notebook.

Description:

The final activity for this chapter is having students identify land and water features created by erosion and deposition by a glacier. Not only will they need to identify the features, but they will need to match them to their description, and then determine which features are created by erosion and which are created by deposition.

Student printable, answer key and mini-quiz are included for this activity.

Section 5: Glaciers

Directions:

1. Color the letter of each glacial feature that has been written. Assign each letter.
2. Color the letter of each feature that has been written.
3. Cut out the completed diagram and descriptions below and paste into your Science Interactive Notebook.

Description:

The final activity for this chapter is having students identify land and water features created by erosion and deposition by a glacier. Not only will they need to identify the features, but they will need to match them to their description, and then determine which features are created by erosion and which are created by deposition.

Student printable, answer key and mini-quiz are included for this activity.

Student Digital Notebook

The student notebook is on Google Drive and ready for you to share with your students. Here's a quick overview of the features:

Set up like a traditional interactive notebook with input and output sides.

Directions: The process that breaks down rock and other substances on Earth's surface is called weathering.

There are two types of weathering: mechanical and chemical. Mechanical weathering is when rock is physically broken down into smaller pieces over a long period of time. Chemical weathering is also a slow process, but it breaks down rock and substances through chemical changes.

Complete the chart by researching and describing each type. Click and drag the image to the corresponding cause.



TYPES OF WEATHERING			
Type	Cause	Description	Picture
Mechanical	Abrasion		
	Freezing & Thawing		
	Animal Actions		
	Plant Growth		
Chemical	Acid Rain		
	Carbonic Acid		
	Living Organisms		
	Oxygen		

Hyperlinked tabs so student can easily move through chapter for review

WEATHERING

Weathering -

Erosion -

Mechanical Weathering - rock is physically broken down into smaller pieces by processes such as:

-
-
-
-
-

Chemical Weathering -

- Water -
- Oxygen -
- Carbon dioxide -
- Living organisms -
- Acid Rain -

Important Factors that determine the rate at which weathering occurs:

Climate -

Type of rock -

Students watch video < 6 min to complete notes.



Encouraging independent learners. Directions for output side are here along with what they need to complete the activity.

Notes are chunked into manageable sections with large spaces for textboxes

*Some pages have links so students can go deeper into the topic if they need.

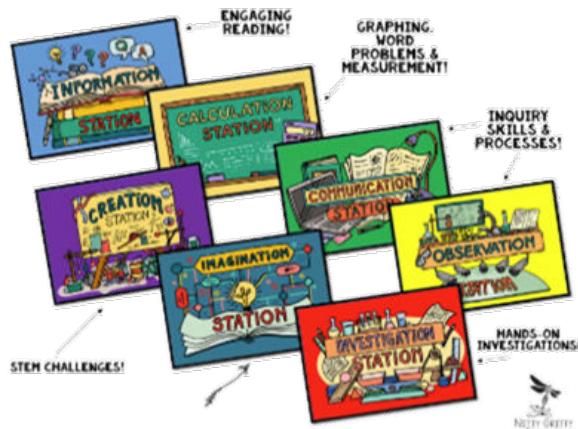
Demos, labs, & Science Stations

Working in the lab and being engaged in science experiments is the most exciting part of science.

Demo, Labs, and Science Stations Includes:

1. **SCIENCE STATION SIGNAGE** for all 7 stations is provided in color and in black and white (see preview) and all student answer sheets have icons that correspond with each station for ease of use.
2. **DEMONSTRATION** (teacher-led) allows teachers to invite scientific discussions and can help uncover misconceptions and, most importantly, lead to heightened curiosity and interest in the topic being studied.
3. **GUIDED INQUIRY LAB** which is a traditional lab that allows students to perform an investigation in order to solve a problem. Students will hypothesize, collect and analyze data and communicate their results.
4. **TEACHER GUIDES to DEMOS & SCIENCE STATIONS** help get you started and give you background information to make your science lessons engaging.
5. **7 SCIENCE STATIONS** which are designated locations in the classroom with activities that challenge students to extend their knowledge and elaborate on their science skills by working independently of the teacher in small groups or pairs. Stations included are:
 - INFORMATION STATION – Group members will read an interesting and relevant science passage then complete a task to help increase science literacy and deepen their understanding of the science concept.
 - OBSERVATION STATION – Group members will have images, illustrations, or actual samples at this station that show applications or processes of the science topic. Using what they've learned, they will need to apply their observation skills to complete the questions attached to each.
 - CALCULATION STATION – Group members use their math skills to complete the station challenge. Skills may include graphing, analyzing data, using models, measurement, and calculating formulas or word problems.
 - INVESTIGATION STATION – Group members will work with one another to explore the concept through hands-on activities so they may practice specific inquiry process skills as they learn.
 - COMMUNICATION STATION – There are three different options for this station: interviews, video, group essay. Depending on the option you choose, group members will communicate what they know by answering questions in creative ways.
 - CREATION STATION – Group members will work together to solve a STEM (Science, Technology, Engineering, Math) challenge by creating models or designs that demonstrate their understanding of the science topic being taught.
 - IMAGINATION STATION – This station makes science concepts relevant for students by asking them to imagine scenarios that will bring about discussion and critical thinking.
6. **INQUIRY PROCESS SKILLS CHECKLIST** is provided with each set to show teachers and administrators the inquiry skills used by students in each activity. These skills include, but are not limited to, communicating, creating models, inferring, classifying, identifying variables, measuring, observing, predicting, gathering and organizing data, comparing and contrasting, interpreting data, and manipulating materials.

SCIENCE STATIONS



Eye Safety
SCIENCE SKILLS AND LAB SAFETY

Procedure:

1. Blow an eye on the underside of the Petri dish and display for class using the projector.
2. Crack open the egg and place the egg white only in the Petri dish.
3. Explain that the proteins in egg white are similar to those found in the protein layer of the eye.
4. Tell them that acetone was being cautious and has splashed acid into their eye. Add drops of acid to the egg white.
5. Ask students to make observations of what is happening to the egg white.
6. Try adding water to reverse the effects. Do or indicate make observations.

Discussion:

Q: What happened to the egg white?
A: The protein layer became cloudy and damaged the eye.

Q: What type of safety equipment must be worn when doing lab?
A: goggles, aprons, hair ties, gloves

Teacher guide and answer key offered for every lab!

Easy-to-get materials!



Measure with SI Units
SCIENCE SKILLS AND LAB SAFETY

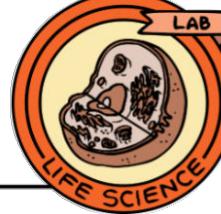
The standard system of measurement used by scientists around the world is known as the International System of Units (SI). Prefixes are used to make units easier to use. They can help in multiplying or dividing by 10. Each step is 10 times larger than the last. Millions only add one more step. The following table lists the prefixes used to name the most common SI units.

Prefix	Symbol	Amount
kilo-	k	1,000
hecto-	h	100
deka-	d	10
deci-	d	0.1
centi-	c	0.01
milli-	m	0.001

Materials:

- o graduated cylinder
- o tape
- o balance
- o petri dish
- o small empty small containers
- o fertilizer solution
- o water
- o 10 ml. graduated cylinder
- o colored pencils

Safety:



Drip, Drop, Splat!
How does the density of a liquid will affect the height of the liquid and shape of droplet splatters?

Materials:

- colored water (graduated cylinder A)
- colored syrup (graduated cylinder B)
- eye dropper
- paper
- metric ruler
- meter stick

Procedure:

1. Make a hypothesis of how density of a liquid will affect splatter size on your lab sheet.
2. Place the piece of paper down on the lab table in order to catch droplets.
3. Measure the heights listed in the data table using a meter stick. Place meter stick with end starting at zero on paper and move up stick when measuring height of drops.
4. Use the eye dropper to drip ONE drop of colored water and ONE drop of colored syrup. Make sure to drop on different places on paper.
5. Measure the size of the splatter in MILLIMETERS. Record in data table on answer sheet.
6. Repeat for each height.
7. Use the collected data to graph the splatter size versus drop height for each liquid.

Analyze and Conclude

1. Was your hypothesis correct? Explain.
2. What are two controls in your experiment that helped you collect the most accurate data possible?

USER-FRIENDLY PAGES:

Students easily recognize which answer sheet to use at each station by matching station icons located on each page!!

Hypothesis

Drop Height (cm)

Colored Water	Colored Syrup
5	
25	
50	
75	
100	

Height of Drop vs. Splatter Size

Legend: Water Syrup

Analyze and Conclude:

1. _____

2. _____

TEACHERS SAVE TIME:
Laminate station pages and reuse for each class and for years to follow!
Inquiry skills used are timeless!

Instructional Videos

Earth's Changing Surface Instructional Videos and Digital Assessments are designed to help teachers move instruction from the group learning space to the individual learning space. Not only does this give students independence in their learning, but it also allows more time for dynamic and interactive learning when teachers meet with students in a group setting.

This resource is perfect for:

- Flipped Classroom
- Absent students
- 1:1 Classrooms
- Sub Plans
- Hybrid Schedules
- Teachers who want more time to guide students as they apply concepts and engage creatively in the subject matter

Features of this resource include:

- Instructional videos which are six minutes or less to keep students focused
- Videos and assessments can be completed independently
- Auto grading and reporting in Google Forms
- Share link with students through educational platforms or email
- Quizzes are editable with 5 - 8 questions per quiz
- Information in video pairs with NGS Magnified Interactive Notebooks

Task Cards & Digital Task Cards

Task cards are a great tool for concept review that can be used in a variety of ways - pairs, small groups, team games, or individually. The reason they are so effective is there is only ONE task per card, allowing students to focus on that single task until they have successfully completed it. Answers sheet and answer key for teachers are included.

The digital, self-checking task cards are hosted at Boom Learning™ and are compatible with Google Classroom. These are perfect for displaying on your interactive whiteboard and leading class games or review sessions.

Print Task Cards

Print Task Cards for 'Earth's Changing Surface' (16 cards):

- DECIDE**
The grinding away of rock by other rock particles carried by water is _____.
a. drought c. oxidation
b. abrasion d. acidification
- LTST**
- DECIDE**
In soil formation, fungi, bacteria and worms are soil _____.
a. aerators c. decomposers
b. mixers d. oxidizers
- IDENTIFY**
The most important agent of chemical weathering is _____.
- DECIDE**
_____ is a type of soil that is good for growing plants.
a. Loam c. Humus
b. Clay d. Sand
- IDENTIFY**
Soil that is made up of about equal parts of clay, sand and silt is _____.
a. humus c. gravel
b. sand d. loam
- COMPLETE**
Decayed organic matter is called _____.
- COMPLETE**
The measure of how well soil supports plant growth is called _____.
- DESCRIBE**
Describe how contour plowing is a method of soil conservation.

Digital Task Cards

Digital Task Cards for 'Earth's Changing Surface' (3 cards):

- Earth's Changing Surface**
A bowl-shaped hollow eroded by a glacier is called a _____.
- Earth's Changing Surface**
Identify the cause of weathering in the picture above.
- Earth's Changing Surface**
The grinding away of rock by other rock particles carried by wind and water is _____.
a. oxidation
b. drought
c. abrasion
d. acidification

Study Guides: Includes print or digital options

NGS Magnified Study Guides are directly aligned to the notes and assessments offered by NGS Magnified and include a variety of review strategies that meet the needs of your learners for independent study and indirect instruction.

Each study guide provides a combination of strategies which may include:

- Graphic organizers
- Vocabulary building
- Compare and contrast
- Problem-solving
- Concept mapping
- Interpreting data
- Critical thinking
- Theme connection
- Matching
- Fill-in-the-blank
- Short answer
- Real-world application
- QR videos with accompanying questions

The image shows a stack of six study guide pages for the topic of 'WEATHERING + EROSION'. Each page is titled 'STUDY GUIDE' and contains various sections and activities:

- Page 1 (Top):** 'WEATHERING + EROSION' title. Includes a 'Name: _____ Date: _____' header. Section 1: 'Directions: Determine if each reaction is mechanical or chemical and write a line to the example.' Examples include 'Add Rain' (Mechanical) and 'Living organisms' (Chemical). Section 2: 'Directions: Use the picture to answer the questions below and fill in the blanks the correct formation of soil layers.' The diagram shows 'sand & soil' at the top, 'minerals' in the middle, and 'parent material' at the bottom. Section 3: 'Directions: Use your knowledge of erosion to fill out the graphic organizer below.' The organizer has 'Erosion' at the top, followed by 'Factors that affect rate of erosion' (with boxes for 'Wind', 'Water', 'Ice', and 'Human activity'), and a question 'What is mass wasting? _____'. Section 4: 'Directions: Use your knowledge of erosion to fill out the graphic organizer below.' The organizer has 'Fusion' at the top, followed by 'Factors that affect rate of erosion' (with boxes for 'Wind', 'Water', 'Ice', and 'Human activity'), and a question 'What is mass wasting? _____'. Section 5: 'Directions: Use your knowledge of glaciology to fill out the graphic organizer below.' The organizer has 'Glacier' at the top, followed by 'Continental glacier' and 'Valley glacier'. It includes a question 'Did you know the longest glacier is almost 270 miles long? _____' and a 'Fusion the p' section.
- Page 2 (Second from top):** 'WEATHERING + EROSION' title. Includes a QR code. Section 6: 'Directions: Scan the QR code to watch the video and answer the questions below.' The page contains six numbered questions:
 1. What is weathering? _____
 2. List 3 causes of weathering.
 - _____
 - _____
 - _____
 3. What are the two types of weathering? Give two examples for each.
 - _____
 - _____
 4. Weathering helps make a mess and _____ helps clean it up.
 5. Explain the process of the disappearing beach front: How did the beach in Cape Cod break into small pieces?

 6. What did the geosphere say to the hydrosphere?

Assessments:

Teachers can use a variety of assessments to evaluate student progress throughout the unit. The curriculum provides mini-quizzes for each Interactive Notebook chapter and an online assessments that goes with the instructional videos. The chapter test includes multiple choice, short answer, interpreting diagrams, and an essay.

Name _____ Date _____

Quiz Weathering

Write a *C if* statement as describing characteristics of weathering.

1. Roots grow into cracks of rocks
2. Oxidation produces rust on iron
3. Breaks rocks by ice freezing or
4. Wind particles wear away rock
5. Plants produce weak acid that
6. Frost disintegrates with water in
7. Ground uncovers away by animals
8. Carbon dioxide dissolves in water

Name _____ Date _____

CHAPTER TEST DATES TO TURN IN

Directions: Choose the answer that best completes each statement.

1. The theory that reflects the idea that there have been changes in characteristics of species over time is _____.
 - A. earth's white diversity
 - B. environmental
 - C. evolution
 - D. preexisting
2. Ideas that are the parts and concepts about biology are _____.
 - A. themes
 - B. concepts
 - C. theories
 - D. preexisting
3. Living things _____.
 - A. grow and develop
 - B. grow and increase
 - C. increase and respond
 - D. respond
4. The part of biology that studies the structure and function of living things is _____.
 - A. All living things _____ to make more living things.
 - B. diversity
 - C. structure
 - D. growth
5. The study of biology is learning about the _____.
 - A. it's a plant
 - B. elements
 - C. all of the above
 - D. all of the above
6. The information gathered from experiments is called the _____.
 - A. data
 - B. research
 - C. hypothesis
 - D. theory
7. The three commonly used methods of research are _____.
 - A. descriptive research
 - B. part-whole method
 - C. comparative method
 - D. repeated controls
8. Descriptive research is used to _____.
 - A. find the similarities
 - B. find the differences
 - C. determine the relationships
 - D. all of the above
9. In the first three and a half hours of the test, you should _____.
 - A. find the similarities
 - B. find the differences
 - C. be the most efficient
 - D. clean out the test
10. Stating one or more of your _____ is a hypothesis.
 - A. theory
 - B. evidence
 - C. prediction
 - D. control group

EDITABLE CHAPTER TEST INCLUDES MULTIPLE CHOICE, FILL IN THE BLANK, INTERPRETING DIAGRAMS, & SHORT ANSWERS QUESTIONS

Directions: Fill in the blank with the correct vocabulary term.

11. When scientists put things into categories or group together items that are alike in some way, they are _____.

- A. data
- B. diversity
- C. grouping
- D. making models

12. If a student needs to find the first thing they should do is _____.

- A. clean out the test
- B. use a dictionary for help
- C. read the directions for the test
- D. notify your teacher

13. _____ is used to make small details of an object visible to a scientist.

- A. _____
- B. _____
- C. _____
- D. _____

14. _____ help you to possible dangers and identify a country's government by its symbols.

- A. _____
- B. _____
- C. _____
- D. _____

15. The smallest functional unit of life is called _____.

ANSWER KEY INCLUDED — IMAGES ARE BLURRED FOR COPYRIGHT REASONS

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Contact Information:

Email: admin@nittygrittyscience.com

Website: www.NGSmagnified.com

TPT: <https://www.teacherspayteachers.com/Store/Nitty-Gritty-Science>

