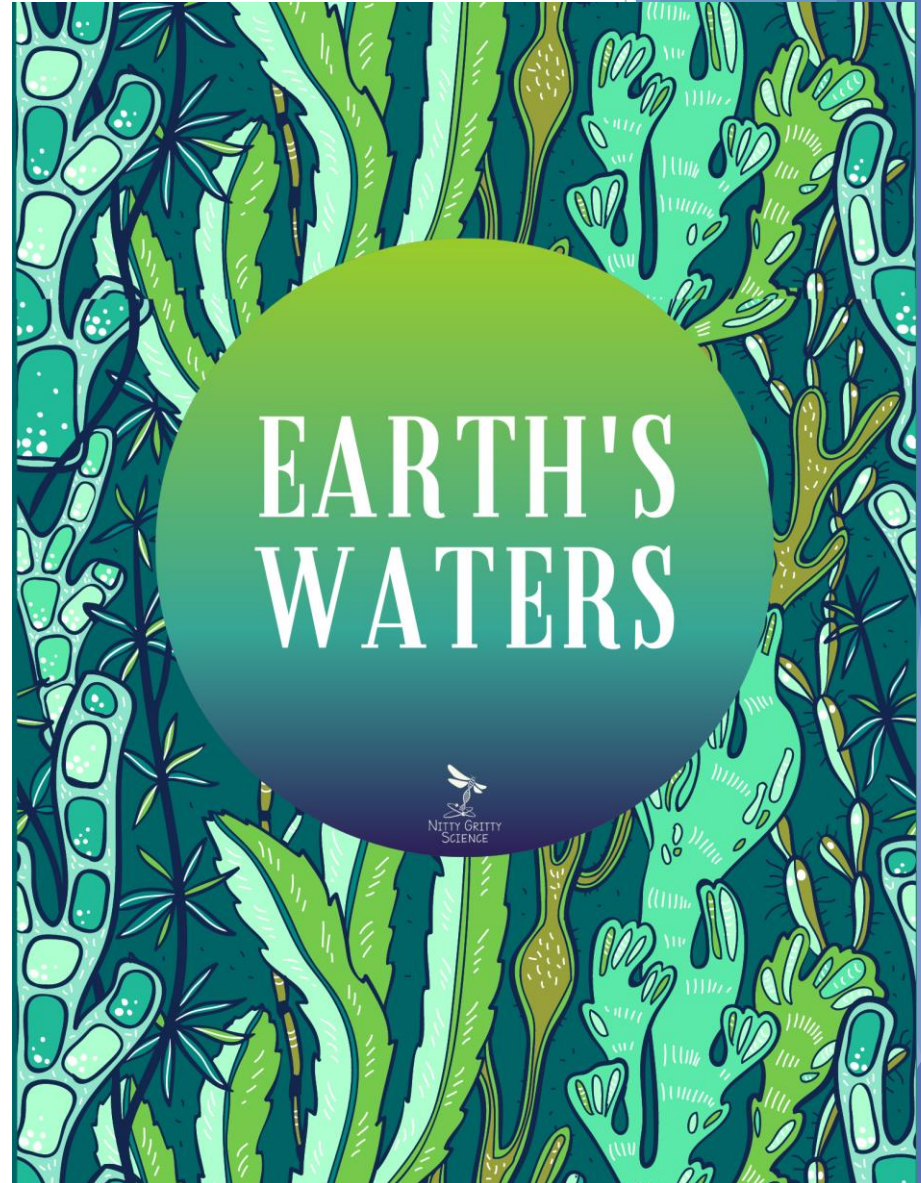




# Earth's Waters

Earth's Waters 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 • INB Activity		x	x		
3	• Mini-quiz					x
	• Guided Inquiry Lab – Student Led			x		
4	• 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
	• Science Stations				x	
7	• Science Stations				x	
8	• Final draft and testing for Creation Station (STEM)				x	x
9	• Task Card Review (game-style, full class, partner)				x	
10	• 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.

**Table of Contents: Earth's Waters**

Description

Introduction

Section 1: Earth: The Water Planet

Water Cycle Vocabulary Terms

Water Cycle Printable

Water Cycle Answer Key

Quiz: Earth: The Water Planet

Section 2: Fresh Water

Water Concept Map Activity

Water Concept Map - Color

Water Concept Map - Black and White

Quiz: Fresh Water

Section 3: Composition and Characteristics of Oceans

Section 3: Composition and Characteristics of Oceans

Ocean Zones

Directions:

1. Cut out the triangle that features the different depths of the ocean. Continue to cut the dashed lines to make strips that fold back on the back.
2. Cut out the scrambled strips that feature ocean organisms and place them into the correct ocean zones starting with the epipelagic zone at the top.
3. Paste each strip under the correct ocean zone tab of the triangle and then under each triangle flap, write a brief description of the ocean zone.
4. Finally, using the animal word bank, try to identify and label each of the different ocean zones. Color your page and paste into your Science Interactive Notebook.

**Ocean Zones**

Ocean Zone	Depth
Epipelagic Zone	0-650 Ft
Twilight Zone	650 - 3,300 Ft
Dark Zone	3,300 - 10,000 Ft
Abyss	10,000 - 20,000 Ft
Trenches	over 20,000 Ft

**Organisms**

shark	striped fish
crustacean	sea cucumber
anglerfish	holothurian
hermit crab	fish
bottom fish	sea spider
giant squid	halibut
green sea urchin	sea slug

**Section 1: Earth: The Water Planet**

**The Water Cycle**

Directions:

1. Color them out on the "vocab windows" on the Water Cycle diagram being cut on dashed lines only so windows fold up to reveal word.
2. Cut and paste the vocabulary terms below in the correct position on the back of the Water Cycle diagram so that the vocabulary term shows through the "window" opened. Paste entire page into your Science Interactive Notebook.

**Vocabulary Terms:**

Precipitation	Delta	Lake
Ocean	Evaporation	Stream
Glacier	River	Condensation

**Section 3: Composition and Characteristics of Oceans**

Students will understand the breakdown of the ocean's characteristics and organisms that inhabit those zones to organize the zones, and color, label and write a description. Printables, cut-outs, teacher answer key and a mini-quiz concept.

**Mini-Quiz: Blue Fresh Water**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Answer the questions with the correct vocabulary word.

1. glacier
2. sea
3. delta
4. hermit crab
5. river
6. marine zoning
7. wellback
8. lake

**Mini-Quiz: Blue Fresh Water**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Answer the questions with the correct vocabulary word.

1. glacier
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4. hermit crab
5. river
6. marine zoning
7. wellback
8. lake

# 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.

Hyperlinked tabs so student can easily move through chapter for review

Students watch video < 6 min to complete notes.

The screenshot shows a digital notebook interface. On the left, there is a 'Directions' box with instructions to click and drag vocabulary terms to label a water cycle diagram. Below the directions is a list of terms: condensation, evaporation, precipitation, transpiration, and heat. A red arrow points from the 'Directions' box to the notebook page. The main notebook page is split into two sections. The left section is titled 'THE WATER CYCLE' and features a detailed diagram of the water cycle with labels for 'Precipitation', 'Run Off', 'Water Table', and 'Groundwater flow'. Below the diagram are three bullet points for student activities. The right section is titled 'EARTH: THE WATER PLANET' and contains text about freshwater, the chemical formula for water ( $H_2O$ ), and a list of water properties and processes. A vertical sidebar on the right side of the notebook page has tabs for 'THE WATER CYCLE', 'FRESH WATER', 'CONDENSATION OR PRECIPITATION', 'OCEANIC WATER & WAVES', 'CURRENTS & CLIMATE', and 'CLIMATE CHANGE'. A red arrow points from the 'Hyperlinked tabs' text to these tabs. To the right of the notebook page is a video player titled 'Earth The Water Planet' with a play button. Below the video player is a 'Digital Textbook' button and a section titled 'For further exploration, click button(s) below:' with a button labeled 'The Water Cycle'. A red arrow points from the 'Students watch video < 6 min to complete notes.' text to the video player. Another red arrow points from the 'Notes are chunked into manageable sections with large spaces for textboxes' text to the notebook page.

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.

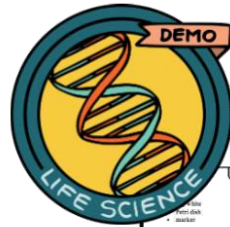
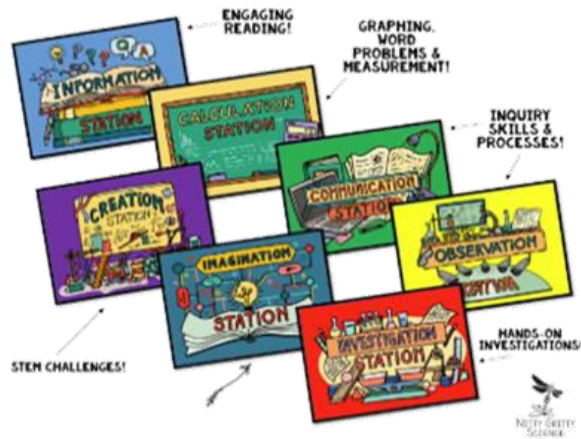
# Demos, Labs, & Science Stations

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

Materials:

- projector
- strong acid (HCl or acetic acid)
- eye dropper
- water

Procedure:

1. Draw an eye on the underside of the Post-It and display for class using the projector.
2. Cook over the egg and place the egg white only in the front dish.
3. Explain that the proteins in egg whites are similar to those found in the protective layer of the eye.
4. Tell them that someone was not 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. Have students make observations.

What's Happening?

The proteins in the egg white become cloudy when the acid is causing a denaturation of the proteins. This can't be reversed chemically, so you and students need to understand that a chemical can cause severe damage to their eyes or skin if not used properly. Students must be made aware of the safety procedures associated with such as wearing goggles, gloves and aprons. Make sure they are aware of safety equipment - eye wash station, shower, fire blanket, etc.

Discussion:

Q: What happened to the "eye"?

A: The protective layer became cloudy and damaged the eye.

Q: What type of safety equipment must be worn when doing Lab?

A: goggles, apron, hot tin gloves

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Discussion questions and teacher set-up included!

Teacher guide and answer key offered for every lab!

Easy-to-get materials!



Name \_\_\_\_\_ Date \_\_\_\_\_

**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, which is abbreviated as SI. SI units are easy to use because they are based on multiples of 10. Each unit is ten times larger than the next smallest unit and one-tenth the size of the next largest unit. The following table lists the prefixes used to name the most common SI units.

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

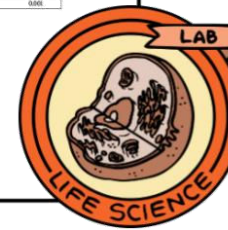
Materials:

- measured words
- tape
- balance
- postage scale
- paper/straw/empty small milk cartons
- fertilizer solution
- metric ruler
- 10-mL graduated cylinder
- colored pencils

Safety:

Wear eye protection.

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## USER-FRIENDLY PAGES:

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

**Drip, Drop, Splat!**

How does the density of a liquid and drop height affect the height 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 splatters.
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 increasing height of drop.
4. Use the eye dropper to drop 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?

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

Name \_\_\_\_\_ Date \_\_\_\_\_

**Hypothesis**

Drop Height (cm)

	3	25	50	75	100
Colored Water					
Colored Syrup					

Height of Drop vs. Splatter Size

Number of Drops (mm)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
--	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----

Size of Splatter (mm)

Legend:

- Water
- Syrup

Analyze and Conclude:

1. \_\_\_\_\_
2. \_\_\_\_\_

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# Instructional Videos

The Intro to Life Science 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 focus
- 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 Nitty Gritty Science 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

Digital Task Cards



# Study Guides: Includes *print* or *digital* options

Nitty Gritty Science Study Guides are directly aligned to the notes and assessments offered by Nitty Gritty Science and include a variety of review strategies which 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 displays a stack of six study guide pages, each with a different section:

- SECTION 2:** Includes a matching activity with words like H<sub>2</sub>O, Surface Tension, Capillary Action, Changing State, and Polar Molecule.
- SECTION 3:** Features a drawing and explanation activity for water runoff.
- SECTION 4:** Contains a word bank activity with terms like saturated zone, water table, unsaturated zone, glaciers, iceberg, and runoff, accompanied by a diagram of the water table.
- SECTION 5:** Shows a diagram of ocean waves and a table for recording temperature and salinity changes at different depths (Surface, Middle, Deep).
- SECTION 6:** Includes a diagram of a tsunami wave and a question about how and why tsunamis occur.
- SECTION 8:** Features a diagram of ocean currents and a list of five questions about surface and deep currents, with a flowchart for identifying causes.



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

