

# INTRODUCTION TO SNAPS LABS

A SNAPS laboratory includes station activities designed to develop students' science skills with hands-on activities and thought-proving exercises. The labs require students to use science, math, literacy, problem-solving and engineering skills so to expand their understanding scientific ideas and apply scientific concepts to the real world.

## Science Skills Station

Students explore a concept using science and math skills. The skills may be procedural that a student must physically do. The skills may be mathematical or require scientific thinking and reasoning.

## Narrative Station

Students employ literacy skills important to understanding scientific text as well as illustrations, tables and graphs. In many labs, students will explore multimedia sources, such as videos, audio files or animations.

## Assessment Station

Students answer multiple choice questions, short answer questions and/or open-ended, thought-provoking questions. The questions progressively get "harder" and require students to employ lower, mid and higher order thinking.

## Problem-Solving Station

Students utilize the engineering design process and problem-solving skills so to identify problems, test solutions and/or make improvements to solutions.

## Synthesis Station

Students compose a CER report as a lab conclusion so to relate the observations, data and other information gathered in the lab to the objective(s) of the lab.

## Synthesis Project

Students complete an activity or project that helps summarize information studied and learned in the lab. This facilitates "bringing it all together" while getting students to think harder and deeper about a concept.

# SNAPs LAB STATIONS ACTIVITY

The image shows a PDF document titled "3-LS4-4 Impact of Environmental Change Stations Lab.pdf" open in a web browser. The document is a grid of lab stations for a science activity. The stations include:

- Science Skills Station:** Focuses on data analysis with two line graphs (SCS400-01 and SCS400-02) showing temperature changes over time.
- Problem Solving Station:** Includes a map of the United States and a diagram of a water cycle.
- Synthesis Station:** Features a table with columns for "Station", "Date", "Time", "Temperature", and "Humidity" for data recording.
- Assessment Station:** Contains several multiple-choice questions (Question 01-04) related to environmental change and its effects.
- Formal Station:** Includes a table for recording data and a section for "Formal Station" with a table for "Station", "Date", "Time", "Temperature", and "Humidity".
- Problem Solving Station:** Includes a table for recording data and a section for "Problem Solving Station" with a table for "Station", "Date", "Time", "Temperature", and "Humidity".
- Synthesis Station:** Includes a table for recording data and a section for "Synthesis Station" with a table for "Station", "Date", "Time", "Temperature", and "Humidity".
- Assessment Station:** Includes a table for recording data and a section for "Assessment Station" with a table for "Station", "Date", "Time", "Temperature", and "Humidity".

## Features:

- ✓ Connects Science, Math, ELA & Engineering (Problem-Solving) Skills
- ✓ Requires easy-to-get and inexpensive materials
- ✓ **Printable lab** for traditional classrooms included
- ✓ Student Recording Sheets, Teacher Guide and Answer Key included

Printable Lab downloaded as a PDF file. Teacher Guide and Key not shown.

# DIGITAL SNAPs LAB STATIONS ACTIVITY

The screenshot displays a digital lab activity titled "3-LS4-4 Impact of Environmental Change Digital Lab - Saved to my Mac". The interface includes a top navigation bar with icons for Home, Insert, Draw, Design, Transitions, Animations, Slide Show, Review, View, Recording, Acrobat, and Tell me. Below the navigation bar, there are 18 numbered stations, each with a title and content. Stations 1-10 are titled "Science Skills Station" and contain text, tables, and line graphs. Stations 11-12 are titled "Narrative Station" and contain text and a line graph. Stations 13-14 are titled "Assessment Station" and contain text and a line graph. Stations 15-16 are titled "Problem Solving Station" and contain text and a line graph. Stations 17-18 are titled "Synthesis Station" and contain text and a line graph. The bottom of the interface shows a slide number "Slide 18 of 18", language "English (United States)", and an "Accessibility: Investigate" button. A search bar and a "66%" zoom level are also visible.

## Features:

- ✓ **Digital lab** for distance learning and paper-free classrooms included
- ✓ Fillable slides (pptx file) compatible with both Microsoft PP and Google Slides
- ✓ Assessment station available as self-grading Google Form (via force copy link)

# EDITABLE SNAPS LAB STATIONS ACTIVITY

AutoSave OFF

Home Insert Draw Design Layout References Mailings Review View Grammarly Acrobat Tell me

Comments Editing Share

### 3-LS4-4 Impact of Environmental Change Editable Lab Stations

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

#### Impact of Environmental Change Lab Overview

**Objectives**

1. Describe how changes in an environment such as water or food availability, technology or temperature affect the organisms living there.
2. Discuss how long-term changes, including human-caused changes, affect environments.
3. Use models to illustrate the effects of environmental change problems that impact an ecosystem.
4. Analyze evidence to propose that some environmental changes do not affect populations equally.
5. Analyze evidence to propose that some environmental changes do not affect all populations equally.

**Background Information**

Students will have read and understand how changes in an environment affect the organisms living there. Students will also understand the impact of environmental change on the organisms living there.

**Scenario #1**

A building in a large area of forest land to build a new neighborhood. The forest is a habitat for a large population of monarch butterflies. The population of monarch butterflies is expected to decrease as a result of the construction of the new neighborhood.

**Scenario #2**

A former green roof project in downtown DC is being revived. The graph compares the green roof area in DC from 2002 to 2018.

**Scenario #3**

The date range was built in the 1980s to attract the Red Sea and the Mediterranean Sea. The population of monarch butterflies is expected to decrease as a result of the construction of the new neighborhood.

**Scenario #4**

A colony of monarch butterflies in a forest. The date range was built in the 1980s to attract the Red Sea and the Mediterranean Sea. The population of monarch butterflies is expected to decrease as a result of the construction of the new neighborhood.

**Activities**

1. Read the scenario and answer the questions.
2. Discuss how the organisms respond to changes in their environment.
3. Use the evidence to propose that some environmental changes do not affect all populations equally.

**Background Information**

Students will have read and understand how changes in an environment affect the organisms living there. Students will also understand the impact of environmental change on the organisms living there.

**Synthesis Questions**

1. What is the main idea of the reading?
2. What are the main ideas of the reading?
3. How are the organisms in the scenario that respond to the changes in their environment?
4. How are the organisms in the scenario that respond to the changes in their environment?
5. How are the organisms in the scenario that respond to the changes in their environment?

**Assessment Questions**

Read the scenario and answer the questions.

**Scenario #1**

What are examples of events that can cause changes to the types of plants or animals that live in an environment?

**Scenario #2**

How will an environmental change impact things that live in that environment?

**Scenario #3**

If a species moves to another area, what factors would limit its ability to survive in that environment?

**Scenario #4**

Impaction is the application of controlled amounts of water to plants. This is helpful in growing crops of water in areas that are dry.

**Scenario #5**

A logging company clears trees from a forested area. The area was a habitat for a large population of black bears. How do you think the removal of the trees would impact the population of bears in the area?

**Scenario #6**

A logging company clears trees from a forested area. The area was a habitat for a large population of black bears. How do you think the removal of the trees would impact the population of bears in the area?

**Scenario #7**

Design an experiment that would investigate how changes in an environment would impact the survival of plants. Determine the variables you will measure. Explain how you will test the experiment and how you will measure the results.

**Scenario #8**

An invasive species is an organism that is introduced into an ecosystem. How do you think the removal of the species would impact the ecosystem?

Features:

- ✓ 100% Editable stations downloaded as a docx file
- ✓ Necessary diagrams, tables and graphs included
- ✓ Illustrative graphics and clipart NOT included

# TEACHER GUIDE

## PRINTABLE LAB SETUP AND PREPARATION

Each “traditional PDF file” includes directions and questions for each station. Print one copy of these materials for each station. Place copies of the letter-sized directions questions in sheet protectors or use self-laminating sheets to protect the documents. Position the materials at each station with the general supplies of that station.

## TEACHING DURATION

Most SNAPS lab activities require **two class periods** or **90 to 120 minutes**. However, the time needed to require one lab can vary with grade level, student autonomy and difficulty of content. Allowing two class periods allows ample time – regardless of these factors – for students to finish the four in-class stations.

Suggestions for shortening the lab:

1. Assign the Narrative Station as pre-lab work. By doing this, you ensure your students have first-order knowledge of the concepts and ideas explored in the lab. If you are using this lab to introduce new concepts, using the narrative station as a pre-lab will increase student success at the other lab stations.
2. Assign the Assessment Station as post-lab work. By doing this, you ensure your students are evaluated on the concepts and ideas in this lab after completing ALL stations.

## DOCUMENT DISTRIBUTION

1. Distribute student copies of the lab overview and pre-lab assignment the night before the laboratory. The pre-lab is a ½ page assignment. Staple the pre-lab to the lab overview before distributing these documents.
2. Distribute student copies of the recording sheet at the beginning of the laboratory.
3. Distribute copies of the post-lab, synthesis station and synthesis project at the end of the lab. The post-lab is a ½ page assignment. Staple the post-lab to the synthesis station and project before distributing these documents.
4. Assign a due date for the synthesis project. The post-lab reflection is a formative assessment and should not require a formal “due date.”

# TEACHER GUIDE

## DIGITAL VERSION OF SNAPs LAB ACTIVITIES

This download includes a digital lab/fillable slides that allow students to complete the laboratory on a computer or tablet. This file was created to work with a variety of online platforms and secure file-sharing platforms. The digital lab has been modified so students record answers directly following questions rather than in a student packet.

### Important Notes

- The answer key is removed from the digital lab.
- The answer key is included in the traditional PDF file.
- The digital laboratory CANNOT be edited; only fillable areas can be manipulated.
- When applicable, videos are included to help students create digital graphs.

The digital laboratory can be used a variety of ways:

- Distribute paper-free laboratories as part of regular instruction
- Use to assign at-home work as part of a remote or distance learning plan
- Send work to acutely or chronically absent students
- Support tutoring or at-home instruction for homebound students

How can you distribute and share the digital laboratory with your students?

- The laboratory CAN be distributed directly to students through email.
- The laboratory CAN be distributed or assigned with Google Classrooms, Microsoft Teams, Blackboard, Canvas, Schoology and other like platforms that are password-protected or require a code to enroll.
- The laboratory CAN be distributed with secure file sharing platforms like Google Drive, OneDrive and DropBox that are password-protected or shared only with students with their email or student account.
- Printable SNAPs labs can be shared or distributed just like the digital labs.

# TEACHER GUIDE

To use the digital laboratory with Microsoft Teams:

1. Upload an assignment to your One Drive.
2. Create a new assignment. Add the file as a "resource."
3. Assign to the appropriate class or students.

To use the digital laboratory with Google Classrooms:

1. Upload the assignment to your Google Drive. Add the file using the upload tool in a web browser or drag and drop the file into your Drive. Watch a demonstration of the process: <https://safesha.re/3h6n>
2. Create a new assignment and add the digital lab to it. Make a copy for each student.
3. Assign to the appropriate class or students.

## GOOGLE FORM ASSESSMENT

To better support digital classrooms, I created a Google Form version of the assessment station. There are two ways the Google Form assessment station can be used:

1. If using the digital lab, you can remove slides for the assessment station and use the Google Form assessment station instead. This makes the assessment station "more formal" since it is separate from the rest of the lab station activities.
2. If looking for a way to shorten the in-class lab, remove the assessment station – including the assessment station student recording pages – and assign the Google Form assessment station as an at-home assessment. Alternatively, you can use the Google Form assessment station as an in-class quiz if students have their own digital personal learning device.

# TEACHER GUIDE

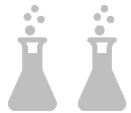
## DISTANCE – INDEPENDENT LEARNING COMPATIBILITY

SNAPs lab activities are rated for their ease with distance – independent learning. Some lab activities are very hands-on and require a lot of materials whereas other lab activities are more thought-provoking and require minimal – or no – additional materials.

This lab has been rated the following:



The lab requires no modification to the required materials for distance – independent learning. All materials important to the lab are included in the digital lab. A calculator, colored pencils or a ruler may be needed.



The lab requires some modification to the required materials for distance – independent learning. Students can use household items, if needed, to complete hands-on activities.



The lab requires significant modification. Teacher should demonstrate or perform activities in a live session or prerecorded video and/or provide materials needed for the science skills or problem-solving station.

## Suggestions

- No suggestions made for this lab.
- Students have everything needed to complete this lab independently.



# TEACHER GUIDE

## EDITABLE COMPONENTS OF SNAPs LAB ACTIVITIES

This download includes an editable word document of all lab components. The stations are available as fully editable DOCX files., Diagrams, illustrations, tables and/or graphs that are essential to lab activities are included in the editable document. Illustrative clipart is NOT included in the editable document.

Some labs have a directed synthesis project. When applicable, the directed synthesis project is available as an editable word document as well. Editable documents and rubrics important to standard synthesis projects are included in the [SNAPs Lab Stations Setup Guide](#).

There are three important reasons for creating editable versions of these stations:

1. Most lab station activities utilize five or more stations with relatively simple and short activities. However, my SNAPs lab activities include four comprehensive stations. The science skills station and problem-solving station could be used independently as single class period laboratories. To better allow for this option, I have made these stations editable. Teachers can use the narrative station as "pre-lab" work and the assessment station as "post-lab" work.
2. The science skills and problem-solving stations are the only stations that will require materials other than computers or calculators. By providing these stations in an editable format, you can manipulate the materials required and/or the directions so the activities work for your classroom.
3. By making the science and problem-solving station editable, you can alter the scope of the activities to suit your students' needs. You can also edit the questions so to evaluate your students in a manner that is best for you and your classroom.

**MAKE SURE YOU DOWNLOAD the FREE [SNAPs Lab Stations Setup Guide](#) for SIGNAGE, BEST PRACTICES & EDITABLE DOCUMENTS (<https://www.teacherspayteachers.com/Product/SNAPs-Lab-Stations-Guide-2953726>)**