

# 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 screenshot displays a PDF document titled "5-ESS3-1 Human Activities and Impact Stations Lab.pdf" in a web browser. The document is a grid of 24 pages, each representing a different station or recording sheet. The stations include:

- Science Skills Station:** Focuses on skills like observing, measuring, and recording data.
- Formative Station:** Includes a "HUMAN ACTIVITIES AND IMPACT RECORDING SHEET" with columns for "Station Name", "Description", "What Happened at the Station?", and "What I Learned".
- Assessment Station:** Contains multiple-choice and short-answer questions about human activities and their impacts.
- Problem-Solving Station:** Features a "PROBLEM-SOLVING SHEET" with a table for "Problem", "Cause", "Effect", and "Solution".
- System Station:** Includes a "SYSTEM STATION" with a table for "System Name", "Description", "What Happened at the Station?", and "What I Learned".

The recording sheets are designed for students to document their observations, answers to questions, and reflections during the activity.

## 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

5-ESS3-1 Human Activities and Impact Digital Lab — Saved to my Mac

Home Insert Draw Design Transitions Animations Slide Show Review View Recording Acrobat Tell me

Comments Share

**Home Activities & Negative Impact Lab Overview**

**Objectives**

- Define transportation, agriculture, mining, manufacturing and urbanization.
- Describe how human activities can negatively impact the environment and health.
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**NGSS Science and Engineering Practices**

Define and use the engineering practices:

- Asking questions for problem-solving (HS-ETS1-1)
- Defining a problem for engineering (HS-ETS1-2)
- Designing solutions (HS-ETS1-3)
- Assembling, evaluating, and communicating a design (HS-ETS1-4)

**Science Skills Station**

Students will investigate how significant uses of nonrenewable and other resources. Students will study the consequences (such as focus on air, water, and land) associated with the extraction, use, and disposal of these resources.

**Narrative Station**

Students will read an informational text on this station. The first discussion focuses on activities that have a major impact on the environment. The second text discusses the negative impacts these activities have on the environment.

**Assessment Station**

Students will answer questions about key terms and ideas while thinking for 30 seconds. Then, we will explore resources and their impact on the environment. Students will identify the negative impacts of these resources.

**Problem-Solving Station**

Students will identify the problems associated with the human activities (agriculture, manufacturing, mining, and urbanization). They will work together to identify and propose ways to help reduce or avoid the problems. Then they will assess the cost, benefit and practicality of solving the problems.

**Home Activities & Negative Impact Pre-CaB Alignment**

**Directions**

- Read through the Lab Overview.
- Review the Learning Goals.
- Review the Learning Goals.

**Other Learning Goals**

Topic	Learning Goal
Identification	Identify
Agriculture	Identify
Manufacturing	Identify
Mining	Identify
Urbanization	Identify
Nonrenewable resources	Identify
Renewable resources	Identify
Extraction	Identify

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**Assessment Station**

**Directions**

- Answer the following questions. Questions 7 and 8 are bonus questions.
- What is manufacturing? How are natural resources used and transformed in manufacturing?
- What is pollution? What problem does it cause?
- Compare and contrast air quality and urbanization. Consider how they relate to the environment. How are they expected to change and how should they change?
- Why is it important to have non-renewable resources, such as fossil fuels?
- What are the pros and cons to agriculture? Why is agriculture important to society? What negative effects does it have on the environment?

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**Problem-Solving Station**

**Background Information**

- Identify the problem: The problem is that human activities (agriculture, manufacturing, mining, and urbanization) are causing environmental damage.
- Identify the resources: The resources are the natural resources (fossil fuels, water, and land) that are being used.
- Identify the stakeholders: The stakeholders are the people who are affected by the problem (the general public, farmers, and miners).
- Identify the solutions: The solutions are the ways to reduce or avoid the problem (renewable energy, recycling, and conservation).

**Directions**

- Choose one of the human activities listed above.
- Identify the problem associated with this activity.
- Identify the resources that are being used.
- Identify the stakeholders who are affected by this activity.
- Identify the solutions that can be implemented to reduce or avoid the problem.
- Assess the cost, benefit and practicality of the solution.

**Problem-Solving Station**

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**System Station**

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**Home Activities & Negative Impact Post-CaB Reflection**

**Directions**

- Write a 5 sentence summary about what you learned this lab.

**Assessment Station**

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**Problem-Solving Station**

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Slide 8 of 15 English (United States) Accessibility: Investigate

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## 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)



# 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

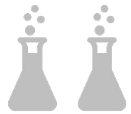
## DISTANCE – INDEPENDENT LEARNING COMPATIBILITY

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

- 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>)**