Pearson Custom for School Science

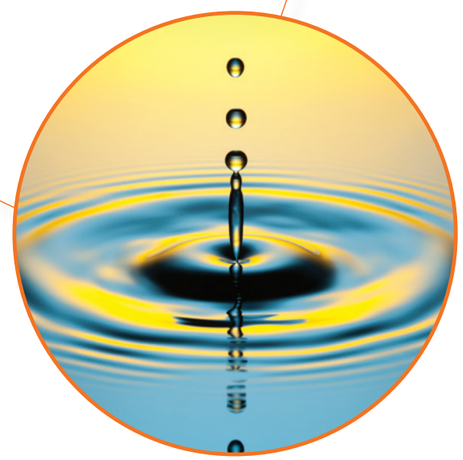
Design Your Own Science Lab Manuals with *Pearson Custom for School Science*

Featuring labs drawn from Pearson's research-based Interactive Science program

Developing supplemental lab material for middle school science classes on your own can be an expensive and time-consuming process. The result? Less time spent on quality teaching.

Building your own science lab manuals is an effective and affordable way to bring interactive learning experiences into your curriculum. With more than 1,000 labs to choose from across 12 neatly-organized modules, Pearson gives you high-quality content up-front, so you need only think about which labs will be most meaningful in your classroom.

With *Pearson Custom for School Science,* the emphasis is on hands-on, interactive and engaging learning experiences, and on providing the most stimulating learning environment possible for your students. Build unique lab manuals for your middle school science class that complement the engaging content found in the Pearson Interactive Science program.



How Does *Pearson Custom for School Science* Work?

With *Pearson Custom for School Science*, you can build your lab manual in just 3 easy steps:

1. PREPARE

Browse through the Pearson Custom Library, which features more than 1,000 Pearson Interactive Science labs, easily searchable by Module, Chapter, or Lab Type. Then select which content you'd like to include and upload it into your document. You will even have the option to select which cover to include on your perfect-bound manual.

2. CONFIRM

Review your customized content, ensuring everything is in the right order and meets the needs of your class, before confirming that you are satisfied with your lab manual.

3. PRODUCE

Once you have confirmed your selections, you will receive your custom ISBN. This is the ISBN you will use to place your order. Once your order is placed, Pearson handles the remainder of the process.

Why Use *Pearson Custom for School Science?*

SAVE TIME

With three simple steps, we've provided a streamlined, time-efficient way for you to build, and instantly preview your lab manuals. Pearson provides you with premium content that's easily-searchable, and customizable to the needs of your class.

DO IT YOUR WAY

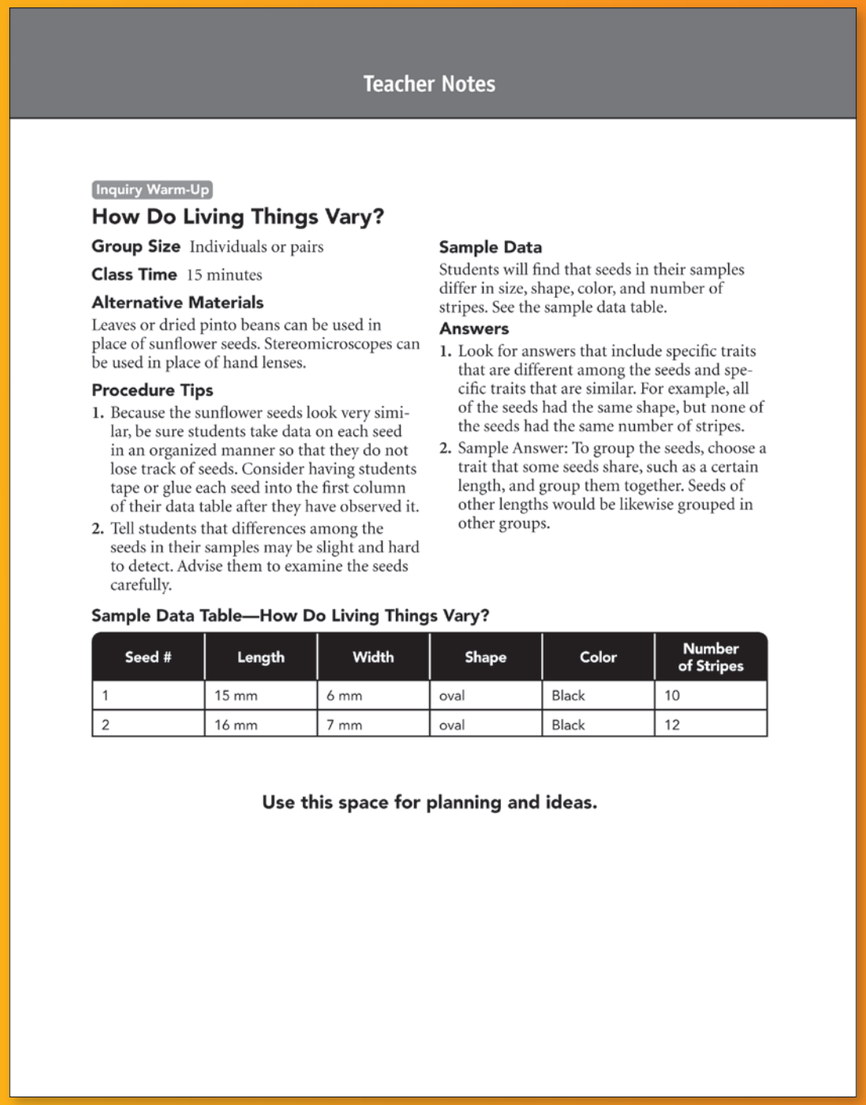
From selecting your content and cover design, to choosing how you would like to bind your manual, you maintain control of the process. If you're unsure how your lab manual will look, Pearson allows you to instantly preview your custom manual.

CONTROL COSTS

Creating custom lab manuals for the topics you want allows you to keep costs in check.

In-Class Lab Support for Teachers

For extra tips and information on using your lab manual and implementing lab activities into your classes, Pearson offers convenient Teacher Notes for each lab included in the manual you publish. These are available to view or download online.



Teacher Notes

Inquiry Warm-Up

How Do Living Things Vary?

Group Size Individuals or pairs

Class Time 15 minutes

Alternative Materials

Leaves or dried pinto beans can be used in place of sunflower seeds. Stereomicroscopes can be used in place of hand lenses.

Procedure Tips

1. Because the sunflower seeds look very similar, be sure students take data on each seed in an organized manner so that they do not lose track of seeds. Consider having students tape or glue each seed into the first column of their data table after they have observed it.
2. Tell students that differences among the seeds in their samples may be slight and hard to detect. Advise them to examine the seeds carefully.

Sample Data

Students will find that seeds in their samples differ in size, shape, color, and number of stripes. See the sample data table.

Answers

1. Look for answers that include specific traits that are different among the seeds and specific traits that are similar. For example, all of the seeds had the same shape, but none of the seeds had the same number of stripes.
2. Sample Answer: To group the seeds, choose a trait that some seeds share, such as a certain length, and group them together. Seeds of other lengths would be likewise grouped in other groups.

Sample Data Table—How Do Living Things Vary?

Seed #	Length	Width	Shape	Color	Number of Stripes
1	15 mm	6 mm	oval	Black	10
2	16 mm	7 mm	oval	Black	12

Use this space for planning and ideas.

Before You Start

Pearson Custom for School Science lab manuals are designed to safely guide you through the process of scientific inquiry with your class, from start to finish. Each lab contains a materials list, as well as an optional Laboratory Safety Rules section, which includes:

- A Laboratory Safety Contract for each student to sign
- A list of Safety Symbols to help with recognition of potential hazards in the lab environment
- A laboratory safety skills Checkup and Assessment

Lab Types

Pearson Custom for School Science lab manuals cover a diverse array of modules and learning areas, catered to suit various learning styles. Teacher Notes are available online to guide you through the lab process, and keep you on track as you lead your students to scientific discovery.

Manuals feature:

- Inquiry Warm-Ups: Short, focused, hands-on activities that focus on one specific skill related to the scientific process, and are designed to spark the curiosity of students.
- Quick Labs: Engaging, 20-minute, hands-on segments in which students use basic laboratory equipment and materials to develop one or more skills related to the scientific process.
- Lab Investigations: Longer (full class period or more) investigations that include directed inquiries and open inquiries, as well as pre-lab and post-lab activities, which often require students to answer specific questions and report on their findings. These investigations focus on two or more skills related to the scientific process.

Laboratory Safety Section (Optional)

Safety Symbol List

Name _____ Date_____ Class_____

Student Safety Test: Recognizing Laboratory Safety

Pre-Lab Discussion

An important part of your study of science will be working in a laboratory. In the laboratory, you and your classmates will learn about the natural world by conducting experiments. Working directly with household objects, laboratory equipment, and even living things will help you to better understand the concepts you read about in your textbook or in class.

Most of the laboratory work you will do is quite safe. However, some laboratory equipment, chemicals, and specimens can be dangerous if handled improperly. Laboratory accidents do not just happen. They are caused by carelessness, improper handling of equipment, or inappropriate behavior.

In this investigation, you will learn how to prevent accidents and thus work safely in a laboratory. You will review some safety guidelines and become acquainted with the location and proper use of safety equipment in your classroom laboratory.

Problem

What are the proper practices for working safely in a science laboratory?

Materials (per group)

Science textbook
Laboratory safety equipment (for demonstration)

Procedure

Part 1. Reviewing Laboratory Safety Rules and Symbols

1. Carefully read the list of laboratory safety rules.
2. Special symbols are used throughout this resource to call attention to investigations that require extra caution. Use the previous pages as a reference to describe what each symbol means in numbers 1 through 8 in Part 1 under Observations.

Part 2. Location of Safety Equipment in Your Science Laboratory

1. The teacher will point out the location of the safety equipment in your classroom laboratory. Pay special attention to instructions for using such equipment as fire extinguishers, eyewash fountains, fire blankets, safety showers, and items in first-aid kits. Use the space provided in Part 2 under Observations to list the location of all safety equipment in your laboratory.

SAFETY SYMBOLS

These symbols warn of possible dangers in the laboratory and remind you to work carefully.

Safety Goggles Wear safety goggles to protect your eyes in any activity involving chemicals, flames or heating, or glassware.

Lab Apron Wear a laboratory apron to protect your skin and clothing from damage.

Breakage Handle breakable materials, such as glassware, with care. Do not touch broken glassware.

Heat-Resistant Gloves Use an oven mitt or other hand protection when handling hot materials, such as hot plates or hot glassware.

Plastic Gloves Wear disposable plastic gloves when working with harmful chemicals and organisms. Keep your hands away from your face, and dispose of the gloves according to your teacher's instructions.

Heating Use a clamp or tongs to pick up hot glassware. Do not touch hot objects with your bare hands.

Flames Before you work with flames, tie back loose hair and clothing. Follow instructions from your teacher about lighting and extinguishing flames.

No Flames When using flammable materials, make sure there are no flames, sparks, or other exposed heat sources present.

Corrosive Chemical Avoid getting acid or other corrosive chemicals on your skin or clothing or in your eyes. Do not inhale the vapors. Wash your hands after the activity.

Poison Do not let any poisonous chemical come into contact with your skin, and do not inhale its vapors. Wash your hands when you are finished with the activity.

Inquiry Warm-Up

Name _____ Date _____ Class _____

Inquiry Warm-Up — 15 min

How Do Living Things Vary?

Variety exists in populations of daffodils, bluebirds, and even amoebas. In this activity, you will investigate how a population of living organisms can vary, even when they appear to be identical at first glance.

INQUIRY FOCUS Classify

Procedure

1. In this activity, you will make observations of 10 sunflower seeds. On a separate paper, make a data table that will hold all of the observations outlined in Steps 2 and 3.
2. Use a ruler to measure and record the length and width of each sunflower seed.
3. Use a hand lens to record the shape, color, and number of stripes for each sunflower seed.

Materials

- 10 sunflower seeds
- ruler
- hand lens

Think It Over

1. In what ways are the seeds in your sample different from one another? In what ways are they similar?

2. How could you group the seeds based on their similarities and differences?

Quick Lab

Name _____ Date _____ Class _____

Quick Lab — 10 min

Bird Beak Adaptations

An adaptation is a trait that increases an organism's ability to survive and reproduce. In this activity, you will model and compare different types of bird beaks in order to make inferences about the birds' habitats.

INQUIRY FOCUS Infer

Procedure

1. Scatter a small amount of birdseed on a paper plate. Scatter some raisins on the plate to represent insects.
2. Obtain a variety of objects such as paper clips, hair clips, and clothespins. Pick one object to use as a "beak."
3. Have your partner time you for 10 seconds while you pick up as many seeds as you can with your "beak" and drop them into a cup.
4. Now see how many "insects" you can pick up and drop into a cup in 10 seconds using the same beak.
5. Choose a different "beak" and repeat Steps 3 and 4.

Materials

- paper plate
- plastic cup
- raisins
- birdseed
- paper clips
- forceps
- clothespins
- stopwatch

Thinking It Over

1. Before you started the activity, what type of beak did you think would work well for seeds? For insects?

2. When would a beak that is good at picking up insects be considered an adaptation?

3. What can you infer about a bird's habitat given the shape of its beak? Give an example.

Name _____ Date _____ Class _____

DIRECTED Inquiry — 30 min

Nature At Work

Problem

How do species change over time?

INQUIRY FOCUS
Predict, Make Models

Materials

- scissors
- marking pen
- construction paper, 2 colors
- graph paper

Procedure

Part 1: A White Sand Environment

1. One student should choose construction paper of one color and make 50 "mouse" cards, as described in Table 1. The second student should choose a different color of construction paper and make 25 "event" cards, as described in Table 2. The third student should record all the data in the data table.

Table 1: Mouse Cards

Number	Label	Meaning
25	*W*	Dominant allele for white fur
25	*w*	Recessive allele for brown fur

Table 2: Event Cards

Number	Label	Meaning
5	S	Mouse survives.
1	D	Disease kills mouse.
1	P	Predator kills mice of all colors.
18	C	Predator kills mice that contrast with the environment.

Data Table

Type of Environment:

Generation	Population		Deaths	
	White Mice	Brown Mice	White Mice	Brown Mice
1				
2				
3				

Lab Investigation

Name _____ Date _____ Class _____

2. Mix up the mouse cards.
3. Begin by using the cards to model what might happen to a group of mice in an environment of white sand dunes. Record the environment in the data table.
4. Randomly choose two mouse cards. Allele pairs *WW* and *Ww* produce a white mouse. Allele pair *ww* produces a brown mouse. Record the color of the mouse with a tally mark in the data table under "Population" for generation one.
5. Randomly choose an event card. An "S" card means the mouse survives. A "D" or a "P" card means the mouse dies. A "C" card means the mouse dies if its color contrasts with the white sand dunes. (Only brown mice will die when a "C" card is drawn.) Record each death with a tally mark in the data table.
6. If the mouse lives, put the two mouse cards in a "live mice" pile. If the mouse dies, put the cards in a "dead mice" pile. Put the event card at the bottom of its pack.
7. Repeat Steps 4 through 6 with the remaining mouse cards to study what happens to the first generation of mice. Record your results.
8. Leave the dead mice cards untouched. Mix up the cards from the live mice pile. Mix up the event cards.
9. Repeat Steps 4 through 8 for the second generation. Then repeat Steps 4 through 7 for the third generation.

Part 2: A Forest Floor Environment

10. Predict how the data would differ if the mice in this model lived on a dark brown forest floor.

_____

11. Make a new copy of the data table. Then use the cards to test your prediction. Remember that a "C" card now means that any mouse with white fur will die.

Data Table

TOPICS

Pearson Custom for School Science lab manuals compliment the Interactive Science program as well as any middle school science program. They are designed around the following, middle-school appropriate subject areas:

- Astronomy and Space
- Cells and Heredity
- Earth's Structure
- Earth's Surface
- Ecology and the Environment
- Forces and Energy
- Human Body Systems
- Introduction to Chemistry
- Science and Technology
- Sound and Light
- The Diversity of Life
- Water and the Atmosphere