

Make it Matter

Grade Level: 2
Duration: 60 min

Design a robust learning experience by selecting resources from this guide that fit the needs of your students. Reinforce learning before, after, and even during your visit by diving deeper into some of the science and engineering concepts.

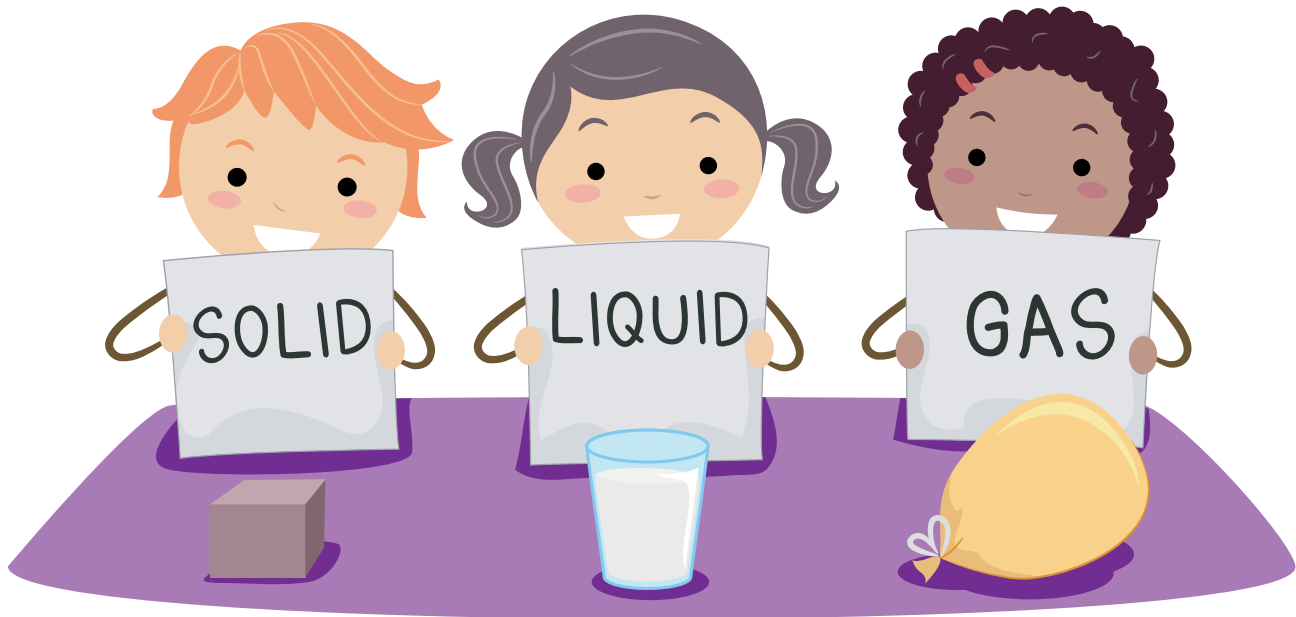


Table of Contents	Page
Vocabulary	2
Related Texts	2-3
Exhibit Connections	3
Lab-Related Activities	4
Writing Prompts	4
Standards Connections	5

When to implement

The following icons indicate when resources should be implemented for the greatest benefit to your students' experience in the lab.



Grade Level: 2

Duration: 60 min

Concepts/Skills

Atoms and molecules, phase changes, properties of matter, energy and matter

Objectives

Students will:

- Identify the three phases of matter.
- Demonstrate that matter is made up of many small particles that can be rearranged to form new products.
- Observe physical characteristics of unidentified products.

Vocabulary

These are words and concepts that we will discuss in the lab. Your students' experience will be enhanced if they are familiar with these terms prior to your visit. If you need inspiration for vocabulary activities, please see our Vocabulary Choice Board activity.

Term	Definition
Gas	A state of matter that does not have its own defined shape, mass or volume. Examples: air, helium and oxygen.
Liquid	A state of matter that does not have its own shape but takes the shape of the container it is in. It has its own defined weight and volume. Examples: water, milk, and juice.
Matter	Everything that takes up space.
Observation	Something that can be described using the five senses (sight, smell, touch, sound, taste).
Particles	Tiny parts that make up a larger item
Properties	Physical characteristics of an object that can be observed using the five senses.
Solid	A state of matter that has its own defined shape, weight and volume. Examples: wood, metal and plastic.

Related Texts

The following titles may provide students with a greater contextual understanding of the field of matter and give greater opportunity to incorporate science and engineering into Language Arts lessons. We are not endorsing the following authors, but feel that the information presented in these texts may be of benefit to your students and enhance their learning experience.

Age Range	Title and author	Text Type	Description
Grades K-2	"Change it! Solids, Liquids, Gases, and You." By Adrienne Mason	Reference	This book is a tool to teach physical sciences to young children. It takes the physics of matter— solids, liquids, and gasses — and transforms it to an easy to understand science book for little ones.
Grades K-3	"Matter: Physical Science for Kids." By Andi Diehn	Reference	Everything you can touch and hold is made up of matter! This book explores the definition of matter and the different states of matter, plus the things in our world that are not matter. Children are introduced to physical science through detailed illustrations and fun language to convey familiar examples of real-world science connections.
Grades K-3	"What is the world made of? All about solids, liquids, and gases." By Kathleen Weidner Zoehfeld	Reference	This book is a fascinating exploration of the three states of matter, featuring rich vocabulary and simple, fun diagrams to explain the differences between solids, liquids, and gas

Grades K-4	"Matter: See it, Touch it, Taste it, Smell it." By Darlene R. Stille	Reference	In this book, the states of matter are explained and demonstrated. Includes an experiment for you to try at home.
Grades 1-3	Many Kinds of Matter: A Look at Solids, Liquids, and Gases." By Jennifer Boothroyd	Reference	Solids, liquids, and gasses are all around you. This book teaches all about the different states of matter and how to tell them apart!
Grades 1-4	"What's the Matter in Mr. Whisker's Room?" By Michael Elsohn Ross	Reference	Everyone is a scientist in Mr. Whisker's class where hands-on mini-experiments lead to big ideas. This book even includes supplemental projects for young learners.
Grades 2-5	"Super Science: Matter Matters!" By Tom Adams	Reference	This book explores the elements of the science of matter in a fun, straightforward way. It includes comic book style illustrations and explores atoms, molecules, reactions, elements, radioactivity and other aspects of chemistry.

Exhibit Connections

Make connections between learning from the lab and the exhibits and programs found in The Tech Interactive's galleries.



Reboot Reality: Animaker

Use building blocks to create animals demonstrating the power to rearrange small pieces to create a whole new object. Using the powers of observations students can build, test, and explore different iterations of animals.

Challenge your students to...	Connection to the lab
Make different animals with the same set of building blocks.	Matter can be made up of the same number and types of atoms, only arranged differently to create different objects. For example, graphite (pencil lead) and diamonds are made up of the same number and types of atoms, but they are connected very differently giving us two very different objects.



The Tech Studio





Students can design, build, tinker, and test with different materials to solve a given problem. Students will use the powers of observation and knowledge of physical properties to determine which materials and designs are the best fit for their ideas. This is a practical example of the observation powers and ideas presented in the lab.



Lab-Related Activities



The following activities can be implemented either before or after the lab and are meant to bridge the learning from the lab to the classroom.

Activity	Description	Time
Molecule Madness 	Students will use their own bodies to experience and demonstrate how molecules are arranged and move within the three states of matter: solid, liquid, and gas.	 20-30 minutes
Property Investigator 	Students will learn how to investigate and analyze the properties of a set of materials to determine which materials are best suited for given tasks.	 45-60 minutes



Looking for other hands-on activities and resources to use in your classroom? Check out our [education resources](#) page!



Writing Prompts



The following writing prompts and questions are just a few examples of journal topics you can use to incorporate writing into your students' lab experience. These prompts can be used in conjunction with any classroom writing journal.

Pre-visit prompts



- We will be attending Make it Matter at The Tech Interactive; what are you looking most forward to in this lab? Why?
- Describe the differences between the three phases of matter: liquid, solid, and gas. Draw an example of each.

Post-visit prompts



- The principal is very excited to hear about your lab experience! Explain what you did and learned about in the lab since they were unable to attend the lab.
- The root beer float is a yummy, magical drink that includes all three phases of matter. Tell a short story about drinking a root beer float, making sure to include all of the matter vocabulary (solid, liquid, and gas).
- Scientists use their senses to describe and investigate the properties of matter all the time. Pick one item in your classroom to investigate and use your senses to investigate the item and write a description of the item's properties in detail. (Use your senses of sight, smell, touch, and hearing — no tasting!).

Next Generation Science Standards

Make it Matter supports the following NGSS:

Grades	Physical Sciences	Disciplinary Core Ideas	Crosscutting Concepts	Science and Engineering Practices
Grade 2	2-PS1-1 2-PS1-2 2-PS1-3	PS1.A	Cause and Effect Patterns Energy and Matter	1, 2, 3, 4, 6



Visit thetech.org/fieldtrips for more information on field trip offerings, booking information, and more!

