

2nd Grade

SCIENCE ZONE

FIELD TRIPS

Theme: Nature of Science
Topic: Scientific Method

DESCRIPTION: In this lesson, students will work collaboratively in partners to complete experiments that let them practice using the scientific method. They will make predictions, conduct experiments, collect data, and analyze results.

OBJECTIVES:

- Students will demonstrate an understanding of the scientific process by conducting an experiment and explaining each step.

NGSS & WY Science Standards:

PHYSICAL SCIENCE: 2nd

- 2-PS1-1
- 2-PS1-4

Theme: Physical Science
Topic: Atomic Structure & Crystals

DESCRIPTION: Everything in the universe is made up of smaller pieces. In this lesson students will explore atoms, the building blocks of matter, and how they combine to make everything around us. We will use crystal growth as a specific example to illustrate how atoms bond together to form the molecules that make up matter.

OBJECTIVES:

- Students will demonstrate an understanding that atoms are the building blocks of matter but are made of even smaller parts - protons, neutrons, and electrons.
- Students will examine crystals to help explain the process of atomic bonding that forms matter.

NGSS & WY Science Standards:

PHYSICAL SCIENCE: 2nd

- 2-PS1-1
- 2-PS1-3
 - 2PS1.A: Structure and Properties of Matter

Theme: Physical Science
Topic: States of Matter

DESCRIPTION: Solid, liquid, and gas make up the three primary states of matter. In this lesson students will participate in activities and complete experiments to understand how matter can move between the three states depending on its molecular energy, which we will describe as the temperature of the matter.

OBJECTIVES:

- Students will be able to explain energy levels of the three primary states of matter after imitating the speed of molecular motion in the different states.
- Students will be able to identify objects in the classroom that are of the three different states of matter.

NGSS & WY Science Standards:

PHYSICAL SCIENCE: 2ND

- 2-PS1-1
- 2-PS1-4

2nd Grade

SCIENCE ZONE

FIELD TRIPS

Theme: Earth Science
Topic: What is Wind?

DESCRIPTION: This engaging lesson explores the concept of air pressure and introduces students to Bernoulli's principle. Hands-on activities show students how airspeed changes air pressure, and how humans have used this principle to help generate power.

OBJECTIVES:

- Students will demonstrate an understanding of changes in air pressure by using their handmade Bernoulli blowers to locate where air pressure changes with airspeed.
- Students will be able to demonstrate and explain one way humans are able to use air speed and air pressure to their advantage by creating a simple windmill

NGSS & WY Science Standards:
EARTH SCIENCE: 2nd

- **2-ESS2-1**
 - **ESS2.A: Earth Materials and Systems**

ENGINEERING: 2ND GRADE

- **K-2-ETS1-2**

Theme: Physical Science
Topic: Chemical Reactions

Description: This exploratory lesson introduces students to physical and chemical reactions. Students will observe demonstrations and complete activities to help them understand that physical reactions involve a change in how something looks while chemical reactions cause irreversible changes to something.

Objectives:

- Students will be able to provide a fundamental description of physical and chemical reactions after participating in demonstrations and activities that describe the two types of changes.

NGSS & WY Science Standards:

PHYSICAL SCIENCE: 2nd

- **2-PS1-4**

Theme: Life Science
Topic: Adaptations & Food Chains

Description: This lesson introduces students to adaptations by taking them through the changes an eagle goes through during its life cycle. Students will also learn the interdependence of species in a food chain.

Objectives:

- Students will demonstrate an understanding of adaptations by identifying changes and purposes or changes during an eagle's life cycle.
- Students will explore the interdependence of species by role-playing a food chain.

NGSS & WY Science Standards:

PHYSICAL SCIENCE: 2nd

- **2-LS4-1**

2nd Grade

SCIENCE ZONE FIELD TRIPS

Theme: Physical Science **Topic:** Simple Machines

DESCRIPTION: Students explore the definition of a machine. This lesson shows students how simple a machine can be and how to create their own.

OBJECTIVES:

- Students will demonstrate an understanding of the 6 most basic machines by identifying them within larger machines.
- Students will explore the use of simple machines by building a catapult.

NGSS & WY Science Standards:

PHYSICAL SCIENCE: 2nd

- 2-PS1-2

ENGINEERING: 2nd

- K-2-ETS1-1
- K-2-ETS1-2
- K-2-ETS1-3

Theme: Life Science **Topic:** Pollination & Seed Dispersal

DESCRIPTION: This lesson takes students through the final stages of a plant's life cycle. Students will learn the importance of pollination and see how the best pollinators get it done. Students will also take a look at how seeds get planted when people aren't doing the planting.

OBJECTIVES:

- Students will explore how pollination works.
- Students will demonstrate an understanding of how seeds are distributed by making their own seed with the goal of animal dispersal.

NGSS & WY Science Standards:

LIFE SCIENCE: 2nd

- 2-LS2-2

PHYSICAL SCIENCE: 2nd

- 2-PS1-2

ENGINEERING: 2nd

- K-2-ETS1-2

Theme: Engineering **Topic:** Rockets

DESCRIPTION: In this lesson, students work through the engineering process to design and build rockets. Students will work with limited supplies and budget as well as problem solve when a passenger is added to their rocket.

OBJECTIVES:

- Students will work through the engineering process by drawing, planning and building a functional rocket.
- Students will effectively use a budget by purchasing the proper amount of supplies for their designs.

NGSS & WY Science Standards:

ENGINEERING: 2nd

- K-2-ETS1-2
- K-2-ETS1-3

2nd Grade

SCIENCE ZONE

FIELD TRIPS

Theme: Life Science
Topic: Insect Adaptations

DESCRIPTION: Students will explore the meaning of adaptations with the world of bugs. This lesson takes students from learning what an adaptation is to creating their own adaptation.

OBJECTIVES:

- Students will demonstrate an understanding of what an adaptation is by designing their own insects with adaptations.
- Students will demonstrate an understanding of the purpose of adaptations by explaining the purpose of their insects' adaptations.

NGSS & WY Science Standards:
LIFE SCIENCE: 2nd

- 2-LS4-1

Theme: Physical Science
Topic: Viscosity & Density

DESCRIPTION: This lesson introduces students to the concept on density by showing how liquids can stack on top of one another. Students will also explore how density can affect the viscosity of a liquid.

OBJECTIVES:

- Students will demonstrate a basic understanding of viscosity by predicting what liquid an object would move the fastest and slowest in.
- Students will observe how temperature and density affect the viscosity of a liquid.

NGSS & WY Sciences Standards:

PHYSICAL SCIENCE: 1st

- 2-PS1-1
- 2-PS1-2

Theme: Physical Science
Topic: Mystery Powders

DESCRIPTION: Students will investigate mystery powders using the scientific method to guide their problem solving process. By making careful observations and conducting experiments with appropriate tools, students will discover that things may be very different even though they look similar.

OBJECTIVES:

- Students will be able to explain the steps of the scientific method after using them to conduct experiments and identify mystery powders.
- Students will understand that molecules can combine to form powders that look similar but have different properties.

NGSS & WY Science Standards:

PHYSICAL SCIENCE: 2ND GRADE

- 2-PS1-1

Connections to Nature of Science:

- Scientific Knowledge is Based on Evidence