

SWALLOW SCHOOL DISTRICT CURRICULUM GUIDE

Curriculum Area: Science

Course Length: Full Year

Grade: 2nd Grade

Date Last Approved:

Reviewed:

Stage 1: Desired Results

Course Description and Purpose:

In second-grade science, students will be studying two Full Option Science System (FOSS) units and two Project Lead the Way Launch (PLTW) Units. In the first unit, *Matter* and its interactions, students will learn about the structures, properties, and states of matter. In the corresponding Launch Unit, *Properties of Matter*, students will analyze data from materials testing and designing an insulating cover. In the second Launch Unit, *Grids and Games*, students will explore how mathematics is used in animation by using addition and subtraction to move characters on a number grid. The third unit, in Foss, is *Insects and Plants*. Students will see the life cycle of insects unfold. Students observe butterflies change from larvae to pupa to adult. The fourth unit is a Foss Unit, *Solids and Liquids*. Students explore solid objects, such as pieces of wood, plastic, and metal. Students observe, describe, and sort the objects according to their properties. Students investigate liquids in a variety of settings to become familiar with their properties. They learn and use precise liquid vocabulary terms.

Enduring Understanding(s):

1. Matter can be described and classified by its observable properties. Different properties are suited for different purposes.
2. Living things have predictable and observable stages in their life cycle.
3. Plants depend on water and light to grow and animals for pollination or to move their seeds around. The stability and shape of plants and seeds are related to their function and needs.
4. People control computers to help them do things that they could not do without a computer
5. Animals disperse seeds and pollinate plants in a variety of ways.

Essential Question(s):

1. How do properties of materials influence their uses?
2. Why can some changes caused by heating or cooling not be reversed?
3. How do humans use computers to solve problems?
4. How does the function of an object influence its form?
5. What are the behaviors of insects at different stages of their life cycle?
6. How does nature influence design?

Learning Targets:

1. Students can apply the scientific process to evaluate investigations or the design process to create design solutions to solve a problem. (Skill/Product)
2. Students can organize and communicate information. (Skill)
3. Students can develop and interpret models. (Skill/Product)
4. Students can support a claim with evidence. (Skill/Product/Reasoning)

Stage 2: Learning Plan

I. Matter

- A. States of Matter
- B. Properties of Matter
- C. Changes in States of Matter

Standards Referenced: NGSS: 2PS11, 2PS12, 2PS13, 2PS14

Learning Targets Addressed: Target 1, Target 2, Target 4

Key Resources Used:

- FOSS

Assessment Map:

| Type | Level | Assessment Detail |
|-----------|-------------------|---|
| Practice | Knowledge | <ul style="list-style-type: none"> • Label objects as solid, liquid or gas |
| Formative | Skills/ Reasoning | <ul style="list-style-type: none"> • Draw an object then tell what state of matter it is and list the properties to describe it. |
| Summative | Product | <ul style="list-style-type: none"> • Build the tallest, most stable tower with the objects provided. |

II. PLTW Launch -Material Science

Properties of Matter

- A. Young Inventors
- B. Properties of Matter: Color and Texture
- C. States of Matter
- D. Project: The Heat is On
- E. Problem: Save the Ice Pop

Standards: Next Generation Science Standards

K-2-ETS1-1, K-2-ETS1-2
2-PS1-1, 2-PS1-2 ,2-PS1-4, PS1.A, PS1.B,

Learning Targets Addressed:

Learning Target 3
Learning Target 5

Key Resources Used:

- Launch

Assessment Map:

| Type | Level | Assessment Detail |
|-----------|-------------------|--|
| Practice | Knowledge | <ul style="list-style-type: none"> • Draw and describe the changes between states of matter as a result of temperature change. |
| Formative | Skills/ Reasoning | <ul style="list-style-type: none"> • Use a thermometer to test temperature of variety of materials. Use data to create a bar graph to show temperature of different materials |
| Summative | Product | <ul style="list-style-type: none"> • PLTW Check for Understanding • Design and build a prototype and test a product to insulate a frozen desert. |

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III. Computer Programming - Grids and Games

- A. Repeating Rosie
- B. Moving With Math
- C. Computer Science Explorers
- D. Project: Sweep the Grid
- E. Problem: Game Makers

Standards: 1A-CS-01, 1A-AP-10, 1A-AP-14,1A-AP-15
Computer Science Teachers Association K-12 Computer Science Standards

Learning Targets Addressed:
Learning Target 2
Learning Target 3

Key Resources Used:

- Launch
- Scratch Jr or Tynker

Assessment Map:

| Type | Level | Assessment Detail |
|-----------|----------------------|--|
| Practice | Knowledge | <ul style="list-style-type: none">• Teacher observation of student's participation in group problem solving. |
| Formative | Skills/ Reasoning | <ul style="list-style-type: none">• Launch Log conclusion questions• Successful completion of working animation (character sweeps the grid) |
| Summative | Product | <ul style="list-style-type: none">• Grids and Games Check for Understanding• Summative Assessment• Create a working game with required specifications. |

IV. Insects and Plants

- A. What makes an animal an insect?
- B. Butterfly Metamorphosis
- C. Life Cycle of Insects & Plants
- D. Brassica Plants

Standards: NGSS performance expectations for grade 2.

LS1.A (Structure and Function), LS1.B (Life Cycle),

Learning Targets Addressed:

Targets 2 & 3

Key Resources Used:

- FOSS

Assessment Map:

| Type | Level | Assessment Detail |
|-----------|----------------------|---|
| Practice | Knowledge | <ul style="list-style-type: none">• Foss Investigation 1 Check Insects and Plants• Foss Investigation 2 Check Insects and Plants• Foss Investigation 5 Check Insects and Plants |
| Formative | Skills/ Reasoning | <ul style="list-style-type: none">• Draw an insect and label the parts• Draw and Label the Life Cycle of a butterfly• Draw a plant and label the parts. |
| Summative | Product | <ul style="list-style-type: none">• Write a short story that tells about the life cycle of a butterfly. |

