

SWALLOW SCHOOL DISTRICT CURRICULUM GUIDE

Curriculum Area: Science

Course Length: Full Year

Grade: 3rd Grade

Date Last Approved: March 15, 2018; **Reviewed** Spring 2021

Stage 1: Desired Results

Course Description and Purpose:

In third grade science, students will study five units in Full Option Science System (FOSS) and Project Lead the Way (PLTW). In *Structures of Life* (FOSS), students will observe, compare, categorize, and care for a selection of organisms. They will learn to identify properties of plants and animals and to sort and group organisms on the basis of observable properties. *Motion and Matter* (FOSS) provides students with experiences around physical sciences core ideas dealing with forces and interactions, matter and its interactions, and with engineering design. With *Programming Patterns*, (PLTW) students create digital interactive stories using events, loops, and conditional statements. Through hands-on activities both with and without a computer, students explore the sequential nature of computer programs. In *Stability and Motion: Science of Flight*, (PLTW) students design, build, and test an experimental model glider as they learn about the forces involved in flight. *Variations of Traits* (PLTW) has students investigate the differences between genetic traits that are inherited and traits that are influenced by the environment.

Enduring Understanding(s):

1. Identify properties of plants and animals and to sort and group organisms on the basis of observable properties.
2. Patterns of motion can be observed.
3. Cause and effect relationships can be identified, tested, and used to explain change.
4. A force is a push or pull on an object. Forces can have different strengths and directions.
5. A trait is a quality or characteristic of an organism. Traits are passed to offspring from their parents. Some inherited traits may be influenced by the environment.

Essential Question(s):

1. How do organisms vary in their traits?
2. How do organisms survive over time?
3. How do environmental changes impact organisms?
4. How do life cycle patterns apply to all living organisms?
5. How do forces affect an object?

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. Structures of Life (FOSS)

- A. Origin of Seeds
- B. Growing Further
- C. Human Body

Standards Referenced: 3-LS1-1; 3-LS3-1; 3-LS3-2; 3-LS4-1; 3-LS4-2; 3-LS4-3; 3-LS4-4

Learning Targets Addressed: 2, 3, 4

Key Resources Used:

- FOSS

Assessment Map:

Type	Level	Assessment Detail
Practice	Knowledge	<ul style="list-style-type: none">• Identify parts of a plant• Identify stages of a Life Cycle
Formative	Skills/ Reasoning	<ul style="list-style-type: none">• Describe the functions of different parts of a plant• Arrange pictures of an organism's life cycle into the correct order
Summative	Product	<ul style="list-style-type: none">• Describe how plant parts work together to produce life• Create and explain a model of an organism's life cycle

II. Motion and Matter (FOSS)

- A. Forces
- B. Patterns of Motion
- C. Engineering
- D. Mixtures

Standards: 3-PS2-1; 3-PS2-2; 3-PS2-3; 3-PS2-4

Learning Targets Addressed: 1, 2, 3, 4

Key Resources Used:

- FOSS

Assessment Map:

Type	Level	Assessment Detail
Practice	Knowledge	<ul style="list-style-type: none">• What happens when magnets interact with other magnets and paper clips• How is the magnetic field affected when more magnets are added
Formative	Skills/ Reasoning	<ul style="list-style-type: none">• What causes change of motion.• What happens when you mix two materials
Summative	Product	<ul style="list-style-type: none">• Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object• Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion

III. Programming Patterns (PLTW)

- A. How does technology impact our lives?
- B. How can a step-by-step process help you design or improve a solution to a problem?

Standards: 3-5-ETS1-1; 3-5-ETS1-2; 3-5-ETS1-3; 1B-CS-02; 1B-AP-10; 1B-AP-11; 1B-AP-13; 1B-AP-15; 1B-AP-16; 1B-IC-19

Learning Targets Addressed: 1, 2, 4

Key Resources Used:

- PLTW

Assessment Map:

Type	Level	Assessment Detail
Practice	Knowledge	<ul style="list-style-type: none">• Apply computational thinking to solve problems• Apply mathematical thinking to solve problems
Formative	Skills/ Reasoning	<ul style="list-style-type: none">• How does technology impact our lives• How can a step-by-step process help you design or improve a solution to a problem

	Summative	Product	<ul style="list-style-type: none"> • Rewrite the program using a loop to make it more efficient. Then draw a box around the code you want to loop. • How is using the strategy “pair programming beneficial to technology
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IV. Stability and Motion: Science of Flight (PLTW)

A. In what ways do forces impact our world?

B. How do balanced and unbalanced forces affect aircraft flight?

C. How can a step-by-step process help you design or improve a solution to a problem?

Standards: 3-PS2-1; 3-PS2-2; 3-5-ETS1-1; 3-5-ET1-2; 3-5-ETS1-3

Learning Targets Addressed: 1, 2, 3

Key Resources Used:

<ul style="list-style-type: none"> • PLTW
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Assessment Map:

Type	Level	Assessment Detail
Practice	Knowledge	<ul style="list-style-type: none"> • Apply a step-by-step design process to solve a problem • Predict the effects of balanced and unbalanced forces on the motion of an object
Formative	Skills/ Reasoning	<ul style="list-style-type: none"> • In what ways do forces impact our world • How can a step-by-step process help you design or improve a solution to a problem
Summative	Product	<ul style="list-style-type: none"> • How do you know when forces are balanced or unbalanced? Provide an example of a balanced force and an unbalanced force • Explain whether the lift and weight forces are balanced or unbalanced

V. Variation of Traits (PLTW)

- A. Why do some offspring look like their parents while others do not?
- B. How are traits of one generation passed to the next?
- C. How can a step-by-step process help you design or improve a solution to a problem?

Standards: 3-LS3-1; 3-LS3-2; 3-LS4-2; 3-5-ETS1-1; 3-5-ETA1-2**Learning Targets Addressed:** 2, 4**Key Resources Used:**

- PLTW

Assessment Map:

Type	Level	Assessment Detail
Practice	Knowledge	<ul style="list-style-type: none">• Apply a step-by-step design process to solve a problem• Analyze how traits are passed through generations
Formative	Skills/ Reasoning	<ul style="list-style-type: none">• Why do some offspring look like their parents while others do not• How are traits of one generation passed to the next
Summative	Product	<ul style="list-style-type: none">• Give one example of how inherited traits help organisms survive in their environment• Give one example of how traits can be influenced by the environment