

SWALLOW SCHOOL DISTRICT CURRICULUM GUIDE

Curriculum Area: Science

Course Length: Full Year

Grade: 7th Grade

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

Stage 1: Desired Results

Chemistry - *How Can I Make New Stuff From Old Stuff?* Chemical reactions and conservation of matter. This includes substances and properties and the idea that new substances will have new/different properties from the original materials. Chemical reactions follow the law of conservation of matter in that the total mass of substances in chemical reactions remains the same.

Physical Science - *Why Do Some Things Stop While Others Keep Going?* Transformation and conservation of energy. This includes the idea that there are multiple types of energy in the universe and that energy can be transformed from one type to another. Energy transformations follow the law of conservation of energy in that the total energy in a system remains constant.

Earth Science - *What Makes the Weather Change?* Atmospheric processes in weather and climate. This includes investigating how solar energy is the driving force behind the heating of Earth's surface, which in turn causes various weather phenomena. Students investigate various weather conditions and how location affects weather (latitude, sun angle, heating and temperature).

Life Science - *What is Going On Inside Me?* Body systems and cellular processes. This includes what happens to food and oxygen to enable the body to meet our energy needs, and tracing the transformation of food to energy raises questions about how this happens, leading to the coordination of systems. Students will learn about the various body systems and investigate how the interactions of the various body systems are coordinated.

Enduring Understanding(s):

Matter cannot be created or destroyed. It can be converted from one form to another. (Law of conservation of matter.)

In a chemical reaction, atoms in substances are rearranged to form new substances with new and different properties.

Potential and kinetic energy are two forms of energy that can be converted into each other.

Energy is neither created or destroyed. It can be converted from one form to another. (Law of conservation of energy.)

Weather is caused by heat from the sun and movement of air in the atmosphere.

The six atmospheric conditions that make weather are air pressure, clouds, humidity, precipitation, temperature, and wind.

Cells provide a context for the process of photosynthesis and the movement of matter and energy needed for the cell.

Cell Theory

Essential Question(s):

Unit 1: Chemistry

- a) How are substances the same and different?
- b) How can I make new substances?
- c) Do new substances always come from old substances?

Unit 2: Physical Science

- a) What determines how fast or high an object will go?
- b) Why do some things stop?
- c) Why do some things keep going?

Unit 3 Earth Science: weather

- a) What causes a storm?
- b) Why is weather different from place to place?

Unit 4 Life Science

- a) What is inside me?
- b) How do cells get the things they need?
- c) How are the interactions of the various body systems coordinated?

Learning Targets:

1. Students can plan, implement and evaluate investigations utilizing the scientific process. (Skill/Reasoning)
2. Students can apply mathematics and computational -thinking. (Skill)
3. Students can assess the relationship between structure and function. (Skill/Reasoning)
4. Students can assess key issues in nonfiction texts. (Skill/Reasoning)
5. Students can develop and analyze models. (Skill/Reasoning)
6. Students can analyze scientific issues and communicate and support their claims with evidence. (Reasoning)

Stage 2: Learning Plan**I. Unit 1: Chemistry****Standards Referenced:** Each activity is tied to relevant:

- NGSS standards
- Disciplinary core ideas
- Science & Engineering practices
- Crosscutting concepts

Learning Targets Addressed: All 6**Key Unit Resources:**

- IQWST Science program from Activate Learning
- IXL Science

Assessment Map:

Type	Level	Assessment Detail
Practice	Knowledge	<ul style="list-style-type: none"> • Lab implementation and write-ups • applying math and computational thinking • assessing the relationship between form and function • analyzing and assessing key issues in nonfiction science text • creating and analyzing 2D, 3D, and digital models • analyzing scientific issues in the Claim, Evidence, Reasoning (CER) format.
Formative	Skills/ Reasoning	<ul style="list-style-type: none"> • Lab implementation and write-ups • applying math and computational thinking • assessing the relationship between form and function • analyzing and assessing key issues in nonfiction science text • creating and analyzing 2D, 3D, and digital models • analyzing scientific issues in the Claim, Evidence, Reasoning (CER) format • Exit tickets • responses in the online science book • written & digital assessments.
Summative	Product	<ul style="list-style-type: none"> • Lab implementation and write-ups • applying math and computational thinking

- A. How are substances the same and different?
- B. How can I make new substances?
- C. Do new substances always come from old substances?

- assessing the relationship between form and function
- analyzing and assessing key issues in nonfiction science text
- creating and analyzing 2D, 3D, and digital models
- analyzing scientific issues in the Claim, Evidence, Reasoning (CER) format
- Responses in the online science book
- written & digital assessments.

II. Unit 2: Physical Science, Physics

- A. What determines how fast or high an object will go?
- B. Why do some things stop?
- C. Why do some things keep going?

Standards Referenced: Each activity is tied to relevant:

- NGSS standards
- Disciplinary core ideas
- Science & Engineering practices
- Crosscutting concepts

Learning Targets Addressed: All 6

Key Unit Resources:

- IQWST Science program from Activate Learning
- IXL Science

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III. Unit 3, Earth Science: Weather

A. What causes a storm?
 B. Why is weather different from place to place?

Standards Referenced: Each activity is tied to relevant:

- NGSS standards
- Disciplinary core ideas
- Science & Engineering practices
- Crosscutting concepts

Learning Targets Addressed: All 6

Key Unit Resources:

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		<ul style="list-style-type: none"> written & digital assessments.
	Summative Product	<ul style="list-style-type: none"> Lab implementation and write-ups applying math and computational thinking assessing the relationship between form and function analyzing and assessing key issues in nonfiction science text creating and analyzing 2D, 3D, and digital models analyzing scientific issues in the Claim, Evidence, Reasoning (CER) format Responses in the online science book written & digital assessments

IV. Unit 4, Life Science: Human Body

A. What is inside me/the human body?

B. How do cells get the things they need?

C. How are the interactions of the various body systems coordinated?

Standards Referenced: Each activity is tied to relevant:

- NGSS standards
- Disciplinary core ideas
- Science & Engineering practices
- Crosscutting concepts

Learning Targets Addressed: All 6

Key Unit Resources:

<ul style="list-style-type: none"> IQWST Science program from Activate Learning IXL Science

Assessment Map:

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Practice	Knowledge	<ul style="list-style-type: none"> Lab implementation and write-ups applying math and computational thinking assessing the relationship between form and function analyzing and assessing key issues in nonfiction science text creating and analyzing 2D, 3D, and digital models analyzing scientific issues in the Claim, Evidence, Reasoning (CER) format.
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