

## SWALLOW SCHOOL DISTRICT CURRICULUM GUIDE

Curriculum Area: **Science**

Course Length: Full Year

Grade: **5th**

Date Last Approved: June 2015

### Stage 1: Desired Results

**Course Description and Purpose:**

In fifth grade science, we will be studying eight topics. We will study the phases and conservation of matter. We will cover the force of gravitation. We will study energy in chemical processes and its flow between organisms. We will learn the cycle of, and the relationships within, ecosystems. In earth science we will study the role of water, earth's systems and the impact humans have on earth.

**Enduring Understanding(s):**

1. Standard units are used to describe quantities in order to make comparisons.
2. Earth's systems interact and impact one another.
3. Energy can be transferred in various ways and between objects.
4. Cause and effect relationships are identified to explain change.
5. Objects exist from the very small to the immensely large.
6. Similarities and differences in patterns can be used to communicate change for natural phenomenon.

**Essential Question(s):**

1. How much water can be found in different places on earth?
2. How does matter cycle through ecosystems?
3. How can phase changes be explained?
4. How do earth's systems interact?
5. How does the position of the earth explain patterns on our planet?
6. What evidence proves matter exists?
7. How do forces impact earth?
8. How do plants get the material they need to grow?
9. How do humans impact the earth?

**Learning Targets:**

1. Students can plan, implement and evaluate investigations utilizing the scientific process. (skill)
3. Students can evaluate and communicate information. (skill)
6. Students can develop and interpret models. (product)
7. Students can analyze scientific issues and support their claims with evidence. (reasoning)

### Stage 2: Learning Plan

**I. Matter**

- a. Structure and Properties of Matter
- b. Chemical Reactions

**Standards**

NGSS: 5-PS1-1, 5-PS1-2, 5-PS1-3, 5-PS1-4

**Learning Targets Addressed:**

Learning Target - 1  
 Learning Target - 3  
 Learning Target - 6

**Assessment Map:**

Type	Level	Assessment Detail
Practice	Knowledge	<ul style="list-style-type: none"> <li>• Students are provided with lab packets that guide them</li> </ul>

			through labs, text and videos that will help them attain the basic knowledge needed in order to evaluate information, interpret models and support claims with evidence.
	Formative	Skill Performance	<ul style="list-style-type: none"> <li>Carry through an experiment in order to determine whether a chemical reaction has occurred and support it with evidence.</li> <li>Given diagrams that communicate the structure and properties of matter students will match them with the states of matter.</li> </ul>
	Summative	Skill Reasoning	<ul style="list-style-type: none"> <li>Carry through an experiment in order to determine whether a chemical reaction has occurred and support it with evidence.</li> <li>Represent the states of matter by drawing models for each.</li> <li>Given a selected response question students can apply their knowledge of chemical reactions and matter to evaluate and choose the best answer and then provide support for their choice.</li> </ul>

<p><b>II. Motion, Forces and Interactions</b> a. Gravitational Force</p>	<p><b>Standards:</b> NGSS: 5-PS2-1</p> <p><b>Learning Targets Addressed:</b> Learning Target - 7</p> <p><b>Assessment Map:</b></p> <table border="1"> <thead> <tr> <th>Type</th> <th>Level</th> <th>Assessment Detail</th> </tr> </thead> <tbody> <tr> <td>Practice</td> <td>Knowledge</td> <td> <ul style="list-style-type: none"> <li>Students will participate in a series of labs, read texts, and watch videos that demonstrate earth's gravitational on objects.</li> </ul> </td> </tr> <tr> <td>Formative</td> <td>Skill</td> <td> <ul style="list-style-type: none"> <li>Interpret graphs that display data on the effects of</li> </ul> </td> </tr> </tbody> </table>			Type	Level	Assessment Detail	Practice	Knowledge	<ul style="list-style-type: none"> <li>Students will participate in a series of labs, read texts, and watch videos that demonstrate earth's gravitational on objects.</li> </ul>	Formative	Skill	<ul style="list-style-type: none"> <li>Interpret graphs that display data on the effects of</li> </ul>
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		gravitational force on objects with different masses. Provide evidence to support conclusions.
Summative	Skill Reasoning Product	<ul style="list-style-type: none"> <li>• Create a graph that displays the effect of gravitational force on objects of different masses and provide an interpretation of the graph to support a claim.</li> </ul>

### III. Energy

#### a. Energy in chemical processes

**Standards:** NGSS: 5-PS3-1

**Learning Targets Addressed:**

Learning Target - 1

Learning Target - 3

Learning Target - 6

Learning Target - 7

**Assessment Map:**

Type	Level	Assessment Detail
Practice	Knowledge	<ul style="list-style-type: none"> <li>• Students are provided with lab packets that guide them through labs, text and videos that will help them attain the basic knowledge needed in order to evaluate information, interpret models and support claims with evidence.</li> </ul>
Formative	Skill Reasoning	<ul style="list-style-type: none"> <li>• Given a list of the steps in photosynthesis, students will place those steps in order.</li> <li>• Carry through an experiment utilizing the scientific process in order to determine the effect of the sun on a plant's ability to produce food. They will summarize their evidence.</li> <li>• Given a selected response question students can apply their knowledge of living systems to evaluate and choose the best answer and then provide support for their choice.</li> </ul>
Summative	Reasoning Product	<ul style="list-style-type: none"> <li>• Given a selected response question students can apply</li> </ul>

			<p>knowledge of living systems to evaluate and choose the best answer and then provide support for their choice.</p> <ul style="list-style-type: none"> <li>• Develop a model that communicates the chemical process of photosynthesis.</li> </ul>
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**IV. Molecules in Organisms**  
a. Matter and energy flow in organisms

**Standards:** NGSS: 5-LS1-1

**Learning Targets Addressed:**  
Learning Target - 6

**Assessment Map:**

Type	Level	Assessment Detail
Practice	Knowledge	<ul style="list-style-type: none"> <li>• *Through a series of labs, reading texts and videos students will be able to identify producer, consumers and decomposers with a food chain and food web.</li> </ul>
Formative	Skill Reasoning	<ul style="list-style-type: none"> <li>• Given pictures of organisms students will create models of food chains.</li> <li>• Given a selected response question students can apply their knowledge of living systems to evaluate and choose the best answer and then provide support for their choice.</li> </ul>
Summative	Product Reasoning	<ul style="list-style-type: none"> <li>• Given organisms in a food web, create a web to show how energy flows between organisms.</li> <li>• Given a selected response question students can apply their knowledge of living systems to evaluate and choose the best answer and then provide support for their choice.</li> </ul>

**V. Ecosystems**  
a. Relationships in Ecosystems  
b. Cycles in Ecosystems (matter and energy)

**Standards:** NGSS:5-LS2-1

**Learning Targets Addressed:**  
Target 3  
Target 6

Target 7  
**Assessment Map:**

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Practice	Knowledge	<ul style="list-style-type: none"> <li>Students are provided with lab packets that guide them through labs, text and videos that will help them attain the basic knowledge needed in order to evaluate information, interpret models and support claims with evidence.</li> </ul>
Formative	Skill Performance	<ul style="list-style-type: none"> <li>Given a list of the steps in photosynthesis, students will place those steps in order.</li> <li>Carry through an experiment utilizing the scientific process in order to determine the effect of the sun on a plant's ability to produce food. They will summarize their evidence.</li> </ul>
Summative	Reasoning Product	<ul style="list-style-type: none"> <li>Given a selected response question students can apply their knowledge of living systems to evaluate and choose the best answer and then provide support for their choice.</li> <li>Develop a model that communicates the chemical process of photosynthesis.</li> </ul>

**VI. Earth's Place in the Universe**

- a. The universe and Stars
- b. Earth and Solar System

**Standards:** NGSS: 5-ESS1-1, 5-ESS1-2

**Learning Targets Addressed:**

- Target 3
- Target 6
- Target 7

**Assessment Map:**

Type	Level	Assessment Detail
Practice	Knowledge	<ul style="list-style-type: none"> <li>Students are provided with lab packets that guide them through labs, text and videos that will help</li> </ul>

		them attain the basic knowledge needed in order to evaluate information, interpret models and support claims with evidence.
Formative	Product Skill	<ul style="list-style-type: none"> <li>Complete a series of labs to develop models that communicate the patterns that are created due to the Earth orbiting around the sun and the moon orbiting around the Earth.</li> </ul>
Summative	Product Reasoning	<ul style="list-style-type: none"> <li>Develop a model that explains why certain constellations can be seen during the summer versus the winter.</li> <li>Given a selected response question students can apply their knowledge of the sun, moon and planets to evaluate and choose the best answer and then provide support for their choice.</li> </ul>

<p><b>VII. Earth's Systems</b></p> <p>a. Earth Materials</p> <p>b. Earth Systems</p> <p>c. Roles of Water</p>	<p><b>Standards:</b> NGSS: 5-ESS2-1, 5-ESS2-2</p> <p><b>Learning Targets Addressed:</b></p> <p>Target 3</p> <p>Target 6</p> <p>Target 7</p> <p><b>Assessment Map:</b></p> <table border="1"> <thead> <tr> <th>Type</th> <th>Level</th> <th>Assessment Detail</th> </tr> </thead> <tbody> <tr> <td>Practice</td> <td>Knowledge</td> <td> <ul style="list-style-type: none"> <li>Students are provided with lab packets that guide them through labs, text and videos that will help them attain the basic knowledge needed in order to evaluate information, interpret models and support claims with evidence related to the rain cycle and its role on earth's systems.</li> </ul> </td> </tr> <tr> <td>Formative</td> <td>Skill Performance Reasoning</td> <td> <ul style="list-style-type: none"> <li>*Given a list of the steps in the rain cycle students will place those steps in order.</li> <li>Implement labs that demonstrate each step in the rain cycle and summarize their finding in the form of graphs and written responses.</li> <li>Given a selected response question students can apply their knowledge of the various stages of</li> </ul> </td> </tr> </tbody> </table>	Type	Level	Assessment Detail	Practice	Knowledge	<ul style="list-style-type: none"> <li>Students are provided with lab packets that guide them through labs, text and videos that will help them attain the basic knowledge needed in order to evaluate information, interpret models and support claims with evidence related to the rain cycle and its role on earth's systems.</li> </ul>	Formative	Skill Performance Reasoning	<ul style="list-style-type: none"> <li>*Given a list of the steps in the rain cycle students will place those steps in order.</li> <li>Implement labs that demonstrate each step in the rain cycle and summarize their finding in the form of graphs and written responses.</li> <li>Given a selected response question students can apply their knowledge of the various stages of</li> </ul>
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		the rain cycle to evaluate and choose the best answer.
Summative	Reasoning Product	<ul style="list-style-type: none"> <li>• Create a model of the rain cycle and use it to justify how our weather is impacted and impacts the cycle.</li> <li>• Given a selected response question students can apply their knowledge of water and weather to evaluate and choose the best answer and then provide support for their choice.</li> </ul>

<p><b>VIII. Earth and Human Activity</b> a. Human Impact on Earth</p>	<p><b>Standards:</b> NGSS:5-ESS3-1</p> <p><b>Learning Targets Addressed:</b> Target 3 Target 6 Target 7</p> <p><b>Assessment Map:</b></p> <table border="1"> <thead> <tr> <th>Type</th> <th>Level</th> <th>Assessment Detail</th> </tr> </thead> <tbody> <tr> <td>Practice</td> <td>Knowledge</td> <td> <ul style="list-style-type: none"> <li>• Students will read numerous relevant nonfiction text on the impact humans have on earth's water and what is being done to help protect this resource.</li> </ul> </td> </tr> <tr> <td>Formative</td> <td>Reasoning</td> <td> <ul style="list-style-type: none"> <li>• Develop cause and effect statements that communicate the role humans play in affecting earth's water sources and provide evidence for those statements.</li> </ul> </td> </tr> <tr> <td>Summative</td> <td>Product</td> <td> <ul style="list-style-type: none"> <li>• Given materials students will develop a working system/model that successfully cleans a contaminated local water sample.</li> </ul> </td> </tr> </tbody> </table>	Type	Level	Assessment Detail	Practice	Knowledge	<ul style="list-style-type: none"> <li>• Students will read numerous relevant nonfiction text on the impact humans have on earth's water and what is being done to help protect this resource.</li> </ul>	Formative	Reasoning	<ul style="list-style-type: none"> <li>• Develop cause and effect statements that communicate the role humans play in affecting earth's water sources and provide evidence for those statements.</li> </ul>	Summative	Product	<ul style="list-style-type: none"> <li>• Given materials students will develop a working system/model that successfully cleans a contaminated local water sample.</li> </ul>
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