Science Curriculum Map

Unit Title:____Earth Science_____ Grade:__3_____

Quarter: [x] 1 [ ] 2 [ ] 3 [ ] 4

Unit Topic: Earth Materials Investigation 1	**Length:**	**Big Idea:** The earth system changes constantly as air, water, soil, and rock interact, and the earth is part of a larger, sun, earth, and moon system.	
Learner Outcomes /Competencies: Communicate through speaking, writing, or drawing predictions, observations, and conclusions. Construct and use models to explain natural phenomena and make predictions and conduct investigations.		**Anchors/Standards:** 3.3.3.A2 - Identify the physical properties of minerals and demonstrate how minerals can be tested for these different physical properties. 3.3.5.A7 - Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories.	**Assessments** Teacher created quiz/tests Assessment Chart for Investigation 1 Response sheet, mock rocks
Science Process Skills Measuring Observing Experimenting Comparing Communicating Advanced Organizing	**Vocabulary:** Geology Geologist Property Circumference Diameter Depth Meter tape Balance Mass	**Math Integration** Problem of the week. Find ranges of measurements Weigh rocks before and after taking them apart **Reading Integration** FOSS Science stories	**Resources** FOSS Earth Materials Module FOSS Science Posters www.fossweb.com **Materials** Investigation 1- see pages 8, 16, 24

Science Curriculum Map

Unit Title:___**Earth Science –** **Grade:**_____**3**_____

Quarter: [x] **1** [ ] **2** [ ] **3** [ ] **4**

Unit Topic: Earth Mat. Mineral Scratch Test #2	**Length:**	**Big Idea:** Matter has observable and measurable physical properties.	
Learner Outcomes /Competencies: 1. Observing minerals – A mineral is a basic earth material that cannot be broken down into smaller pieces. 2. Testing for Hardness – Hardness is a mineral property – the resistance to being scratch, minerals can be put in order by hardness.		**Anchors/Standards:** 3.3.A2: Identify the physical prosperities of minerals and demonstrate how minerals can be tested for these different physical properties 3.3.3A7: Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information. 3.3.3A7: Use status/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge.	**Assessments** 1. Mineral Property Sheet 2. Student sheet no. 15 called Response Sheet—Scratch Test 3. Teacher created quiz/test
Science Process Skills Organization Comparing Communicating Observing	**Vocabulary** Calcite Fluorite Gypsum Hardness Quartz	**Math Integration** Problem of the Week Make a class bar graph to show birthdays in each month, based on birthstones. **Reading Integration** Foss Science stories	**Resources** FOSS Earth Material Module Foss Science Posters www.fossweb.com **Materials** Investigation #2 – see Page 8, Page 14

Science Curriculum Map

Unit Title:____Earth Science_____ **Grade:**__3_____

Quarter: [x] 1 [ ] 2 [ ] 3 [ ] 4

<table>
<tr><td colspan="2">Unit Topic: Earth Materials Investigation 3 Length:</td><td colspan="2">Big Idea: The earth system changes constantly as air, water, soil, and rock interact, and the earth is part of a larger, sun, earth, and moon system.</td></tr>
<tr><td colspan="2">Learner Outcomes /Competencies:

Investigate four rocks to find out if they contain calcite.
Observe fizzing when the mineral calcite is put into vinegar.
Observe and compare the results of evaporation.
Use observations and data to develop evidence to support conclusions.
Use scientific thinking processes to conduct investigations and build explanations: observing, communicating, comparing, and organizing.</td><td>Anchors/Standards:

3.3.3.A2 - Identify the physical properties of minerals and demonstrate how minerals can be tested for these different physical properties.</td><td>Assessments
Students' observation notes.

Response Sheet—Calcite Quest

Teacher created quiz/tests</td></tr>
<tr><td>Science Process Skills

Measuring
Observing
Experimenting
Comparing
Communicating
Advanced Organizing</td><td>Vocabulary:
Basalt
Limestone
Marble
Sandstone
Vinegar
Acid
Evidence</td><td>Math Integration
Problem of the week.

Work in groups to solve logic problems on rock lineup clue cards.

Reading Integration
Foss Science Stories</td><td>Resources

FOSS Earth Materials Module
Students' science notebooks
www.fossweb.com
FOSS science posters
Materials
See pg. 8, Investigation 3 Teacher's manual</td></tr>
</table>

Science Curriculum Map

Unit Title:___Earth Science – **Grade:**_____3_____

Quarter: [ ] 1 [x] 2 [ ] 3 [ ] 4

<table>
<tr><td colspan="2">Unit Topic: Earth Mat.
Identification of minerals in granite- Investigation 4</td><td>Length:</td><td colspan="2">Big Idea: Matter has observable and measurable physical properties.</td></tr>
<tr><td colspan="3">Learner Outcomes /Competencies:
1. Observe and review properties of rocks and minerals
2. Organize a set of samples by sorting rocks and minerals
3. Analyze a granite sample to determine which minerals are present
4. Communicate evidence of the minerals in granite
5. Plan and conduct investigations chosen by the students
6. Communicate results of student investigation to the class
7. Use sci. thinking processes to conduct investigations and build explanation: observing, communicating, comparing and organizing</td><td>Anchors/Standards:
3.3.A2: Identify the physical prosperities of minerals and demonstrate how minerals can be tested for these different physical properties
3.3.3A7: Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information.
3.3.3A7: Use status/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge.</td><td>Assessments

Assessment Chart for Investigation 4
Earth Materials Notebook, pp. 12-14
Teacher created quiz/test</td></tr>
<tr><td>Science Process Skills

Organization
Comparing
Communicating
Observing</td><td>Vocabulary

Granite
Feldspar
Hornblende
Mica
Pink granite
Quartz</td><td>Math Integration

Problem of the week

Reading Integration
Foss science stories</td><td><u>Resources</u>
FOSS Earth Material Kit
www.fossweb.com
FOSS Science Posters
<u>Materials</u>
Investigation #4
See Page 8, Page 14
Assessment Chart
Earth Materials Notebook pp. 12-14</td></tr>
</table>

Science Curriculum Map

Unit Title:_____ **Grade:**_____3_____

Quarter: [ ] 1 [X] 2 [ ] 3 [ ] 4

Unit Topic: Physics of Sound **Investigation 1**	**Length:** 1 week or 5 sessions	**Big Idea:** Energy exists in many forms and can be changed from one form to another (transformed) as it moves through a system	
Learner Outcomes /Competencies: *Observe sounds made by objects when dropped *Compare sounds to develop sound discrimination *Create a code *Communicate with others using a drop code *Identify a variety of sound sources and receivers *Observe the vibrations made by various objects by produce sound *Use scientific thinking processes to conduct investigations and build explanations		**Anchors/Standards:** 3.1.3.C4 Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information. 3.2.4.B5 Demonstrate how vibrating objects make sound and sound can make things vibrate.	**Assessments** *Assessment Charts Investigation 1 *Teacher Observation *Teacher made tests
Science Process Skills Advanced organizing Comparing Communicating Observing	**Vocabulary** Sound discrimination Property	**Math Integration** * Problem of the Week * Create a number drop **Reading Integration** Science Stories	**Resources** *Foss Science Kit *Foss Science Stories *Foss Website www.fossweb.com *Science Notebook **Materials** Investigation 1 – Assessment Chart

Science Curriculum Map

Unit Title:___Physics_____ **Grade:**__3_____

Quarter: [ ] 1 [x] 2 [ ] 3 [ ] 4

Unit Topic: Physics of Sound Investigation 2	**Length:** 4 Sessions	**Big Idea:** Energy exists in many forms and can be changed from one form to another (transformed) as it moves through a system.
Learner Outcomes /Competencies: *Observe that sound originates from vibrating sources *Compare high, low and medium-pitched sounds *Compare the frequency of vibration made by various sound sources producing different pitches *Compare the pitch of a sound to the physical properties of the sound source *Record observations and comparisons of sounds *Use scientific thinking processes to conduct investigations and build explanations *To have a sound you need to have a source, a medium, and a receiver.	**Anchors/Standards:** 9.1.3.A - Know and use the elements and principles of each art form to create works in the arts and humanities. 9.1.3.B - Recognize, know, use and demonstrate a variety of appropriate arts elements and principles to produce, review and revise original works in the arts. 3.3.5.A7 - Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories. 3.1.3.A9 - Distinguish between scientific fact and opinion. Ask questions about objects, organisms, and events. Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their	**Assessments:** *Teacher observations *Teacher created tests *Response sheet – Good Vibrations

		senses to gather information. Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. Communicate procedures and explanations giving priority to evidence and understanding that scientists make their results public, describe their investigations so they can be reproduced, and review and ask questions about the work of other scientists. S4.A.3.1.2 S4.B.3.1.2	
Science Process Skills: Advanced Organizing Comparing Communicating Observing	**Vocabulary:** Pitch Frequency Kalimba Xylophone Tension	**Math Integration:** Problem of the week **Reading Integration** Foss Science Stories	**Resources:** FOSS Physics of Sound Module Science Notebook **Materials** Investigation 2 – see pages 8, 13, 20

Science Curriculum Map

Unit Title:_____ Grade:_____3_____

Quarter: [ ] 1 [ ] 2 [x] 3 [ ] 4

Unit Topic: Physics of Sound – Investigation 3	**Length:** 2 to 3 sessions	**Big Idea:** Energy exists in many forms and can be changed from one form to another (transformed) as it moves through a system	
Learner Outcomes /Competencies: *Observe how sound travels through three states of matter: solid, liquid, and gas *Compare and record how sound travels through different mediums *Observe that the outer ear is designed to receive sounds *Use scientific thinking processes to conduct investigations and build explanations		**Anchors/Standards:** 3.1.3.C4 Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information. 3.2.4.B5 Demonstrate how vibrating objects make sound and sound can make things vibrate.	**Assessments** Assessment Charts Investigation 1 Teacher Observation Teacher created assessments Response sheet- How Sound Travels
Science Process Skills Advanced organizing Comparing Communicating Observing	**Vocabulary** Stethoscope Amplify Megaphone Outer ear Inner ear	**Math Integration** Problem of the Week **Reading Integration** Foss Science Stories	**Resources** *Foss Science Kits *Science Notebooks **Materials** Investigation 1 – Assessment Chart Foss Science Kit Pages 8, 15

Science Curriculum Map

Unit Title:_____ Grade:_____3_____

Quarter: [ ] 1 [ ] 2 [x] 3 [ ] 4

Unit Topic: Physics of Sound – Investigation 4	**Length:** 6 to 8 sessions	**Big Idea:** Energy exists in many forms and can be changed from one form to another (transformed) as it moves through a system	
Learner Outcomes /Competencies: *Compare ways for sounds to be louder, or softer, to travel father, or to change pitch. *Organize and communicate findings *Conduct their own inquiry-based investigations about sound *Use scientific thinking processes to conduct investigations and build explanations:		**Anchors/Standards:** 3.2.3.B7: Distinguish between scientific fact and opinion. Ask questions about objects, organisms, and events. Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information. Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. Communicate procedures and explanations giving priority to evidence and understanding that scientists make their results public, describe their investigations so they can be reproduced, and review and ask questions	**Assessments** *Assessment Charts Investigation 4 *Teacher Observation *Teacher created assessments *Response sheet- Sound Challenge Response Sheets *Performance Assessment #6

<table>
<tr><td colspan="2"></td><td>about the work of other scientists.

.</td><td></td></tr>
<tr><td>Science Process Skills

Advanced organizing
Comparing
Communicating
Observing</td><td>Vocabulary

none</td><td>Math Integration
Problem of the Week

Reading Integration
Foss Science Stories</td><td>Resources
*Foss Science Kits
*Science Notebooks
*Foss Website www.fossweb.com

Materials
Investigation 1 – Assessment Chart
Foss Science Kit Pages 8, 15</td></tr>
</table>

Science Curriculum Map

Unit Title:___**Structures of Life-Investigation 1**_____ **Grade:**_____**3**_____

Quarter: [x] **1** [ ] **2** [ ] **3** [x] **4**

<table>
<tr><td colspan="2">Unit Topic: Origin of Seeds</td><td>Length: 5 sessions</td><td colspan="2">Big Idea: Seeds are found in the plant part called a fruit.</td></tr>
<tr><td colspan="3">Learner Outcomes /Competencies:

*Explore common fruits to find seeds
*Observe and compare properties of seeds and fruits
*Organize and communicate information about seeds
*Set up a seed sprouter and maintain a watering schedule for a week
*Monitor and record changes in seeds over days
*Investigate the effect of water on seeds
*Compare the mass of dry seeds with those soaked in water
*Use the scientific thinking process to conduct investigations and build explanations: observing, communicating, comparing and organizing</td><td>Anchors/Standards:
3.1.3.A1: Describe characteristics of living things that help to identify and classify them.
3.1.6.A1: Describe the similarities and differences of major physical characteristics in plants.
3.1.3.A5: Identify the structures in plants that are responsible for food production, support, water transport, reproduction, growth and protection.</td><td>Assessments
*Assessment charts
*Teacher observation
*Teacher-created assessments</td></tr>
<tr><td>Science Process Skills

Observe
Compare
Organize
Communicate
Monitor/record</td><td>Vocabulary

Estimate
Fruit
Property
Seed
Dormant
Mold
Embryo
Seed coat
cotyledon</td><td colspan="2">Math Integration

Problem of the Week
Estimate the mass of multiple seeds

Reading Integration
Science Stories
Brainstorm idioms based on plants</td><td>Resources

FOSS Science kit
FOSS Science stories
FOSS website: www.fossweb.com
Home/School connection
Science Notebook</td></tr>
</table>

			Materials Materials from FOSS kits: Structures of Life and Measurement Bean or pea pods 4-6 different fruits Paper plates Paper towels Newspaper Flipchart Marking pen White glue Water Bleach Transparent tape

Science Curriculum Map

Unit Title:__Structures of Life-Investigation 2___ Grade:___3_____

Quarter: [x] **1** [ ] **2** [ ] **3** [x] **4**

Unit Topic: Growing Further	**Length:** 3 sessions and informal observations for 8 weeks	**Big Idea:** The life cycle is the process of a seed growing into a mature plant, which in turn produces seeds.	
Learner Outcomes /Competencies: *Describe properties of germinated seeds *Compare different kinds of germinated seeds *Plant bean seedlings in nutrient solution and observe them throughout their life cycle *Observe plant structures as they appear during the plant's life cycle *Use scientific thinking processes to conduct investigations and build explanations		**Anchors/Standards:** 3.1.3.A2: Describe the basic needs of living things and their dependence on light, food, air, water and shelter 3.1.3.A3: Illustrate how plants and animals go through predictable life cycles that include development, reproduction and death 3.1.3.B1: Understand that plants and animals closely resemble their parents 3.1.3.B5: Identify characteristics that appear in both parents and offspring 3.1.3.C1: Recognize that plants survive through adaptations such as stem growth toward light and root growth downward in response to gravity	**Assessments** Assessment Charts Teacher observation Teacher-created assessments
Science Process Skills Observing Communicating Comparing Organizing	**Vocabulary** Germination Organism Growth Seedling Root Stem Leaf	**Math Integration** Problem of the Week	**Resources** FOSS Science kit FOSS Science stories FOSS website: www.fossweb.com Home/School connection

	Nutrient Hydroponics Flower Life cycle	**Reading Integration** Science Stories Keep journals of bean plant growth Play concentration with life-cycle pictures	Science Notebook **Materials** FOSS Science kits: Structure of Life and Measurement Paper towels Germinated bean seeds from Investigation 1 Scissors White glue Unlined paper Water Transparent tape String Masking tape

Science Curriculum Map

Unit Title:___**Structures of Life-Investigation 3**_____ **Grade:**_____**3**_____

Quarter: [x] **1** [ ] **2** [ ] **3** [x]

<table>
<tr><td colspan="2">Unit Topic: Meet the Crayfish</td><td>Length: 5 sessions, with 4 or more 5 minute observations</td><td colspan="2">Big Idea: Crayfish are living creatures with observable structures, behaviors and basic needs.</td></tr>
<tr><td colspan="2">Learner Outcomes /Competencies:
*Care for and feed crayfish
*Observe the structures and behaviors of crayfish
*Record observations and share them with others
*Monitor and record observations of crayfish over several days
*Investigate the territorial behavior of crayfish
*Use scientific thinking processes to conduct investigations and build explanations</td><td colspan="2">Anchors/Standards:
3.1.3.A1: Describe the characteristics of living things that help to identify and classify them
3.1.3.A2: Describe the basic needs of living things and their dependence on light, food, air, water and shelter
3.1.3.C2: Describe animal characteristics that are necessary for survival</td><td>Assessments

Assessment Charts
Teacher observation
Teacher-created assessments</td></tr>
<tr><td>Science Process Skills
Observe
Communicate
Compare
Organize</td><td>Vocabulary
Structures
Crustaceans
Antennae
Bristles
Carapace
Swimmerets
Pincers
Habitat
Elodea
Territory</td><td colspan="2">Math Integration
Problem of the Week
Compare the mass of crayfish
Measure the amount a crayfish eats
Reading Integration
Plan presentations for on the crayfish for other classes
Invent and tell crayfish territorial stories
Label the structures on the crayfish diagrams
Write stories about a day in the life of a crayfish</td><td>Resources
FOSS Science kit
FOSS Science stories
FOSS website: www.fossweb.com
Home/School connection
Science Notebook
Materials
Crayfish
Elodea
Aged water</td></tr>
</table>

Science Curriculum Map

Unit Title:__Structures of Life – Investigation 5_____ Grade:_____3_____

Quarter: [x] **1** [ ] **2** [ ] **3** [x] **4**

<table>
<tr><td colspan="2">Unit Topic: Bess Beetles</td><td>Length: 4 sessions</td><td colspan="2">Big Idea: Bess Beetles are living creatures with observable structures, behaviors and needs.</td></tr>
<tr><td colspan="3">Learner Outcomes /Competencies:
*Observe and describe the structures of bess beetles
*Observe and describe the behaviors of bess beetles
*Investigate the pulling strength of bess beetles
*Record observations and share with others
*Monitor and record observations of bess beetles over time</td><td>Anchors/Standards:
3.1.3.A1: Describe characteristics of living things that help to identify and classify them
3.1.3.A2: Describe the basic needs of living things and their dependence on light, food, air, water and shelter
3.1.3.C2: Describe animal characteristics that are necessary for survival</td><td>Assessments

Assessment Charts
Teacher observation
Teacher-created assessments</td></tr>
<tr><td>Science Process Skills
Observe
Describe
Investigate
Record
Monitor</td><td>Vocabulary
Bess beetle
Insects
Thorax
Abdomen
Head
Mite
Terrarium
Venn diagram
Function
balance</td><td colspan="2">Math Integration
Problem of the Week

Reading Integration
Read The Life of Bess Beetles</td><td>Resources

FOSS Science kit

FOSS Science stories

FOSS website: www.fossweb.com

Home/School connection

Science Notebook</td></tr>
</table>

			Materials Foss Science kits: Structures of Life and Measurement Bess beetles Paper towels Notebook paper Rotting hardwood Chart paper Masking tape Dental floss Scissors