

Wilson Area School District Planned Course Guide

Title of planned course: Science Grade 3

Subject Area: Science

Grade Level: 3

Course Description: The science curriculum will allow students to be young scientists and explore their world through a variety of guided inquiry activities. Students will gain an understanding of systems and models along with determining similarities and difference through the study of earth materials, physics of sound, and structures of life.

Time/Credit for this course: One Academic Year

Curriculum Writing Committee: Patti Moser, Amanda Powell

Wilson Area School District Planned Course Guide

Course Title: Science Grade 3

Textbook: Foss Science Stories:

- Earth Materials
- Physics of Sound
- Structures of Life

Delta Education

Supplemental Books: Scott Foresman Science Series

Teacher Resources:

- Foss Teaching Kit
- Foss Supplemental Books
- Foss Teaching Module Notes
- Foss Teaching Preparation Videos
- www.Fossweb.com

Curriculum Map

Earth Materials: 12 Weeks

Physics of Sound 12 Weeks

Structures of Life 12 Weeks

Curriculum Scope and Sequence

Planned Course: Science Grade 3

Unit: Earth Materials

Time Frame: 12 weeks

State Standards: 3.1.4, 3.2.4, 3.4.4, 3.5.4, 3.7.4, 3.8.4

Anchor (s) or adopted anchor: S4.A.1.1, S4.A.1.3, S4.A.2.1, S4.A.2.2, S4.A.3.1, S4.A.3.2, S4.A.3.3, S4.B.3.3, S4.C.1.1, S4.D.1.1, S4.D.1.2

Essential content/objectives: At the end of the unit, students will be able to:

- Develop an interest in earth materials.
- Gain experiences with rocks and minerals.
- Understand the process of taking apart and putting together to find out about materials.
- Use measuring tools to gather data about rocks.
- Collect and organize data about rocks.
- Observe, describe, and record properties of minerals.
- Organize minerals on the basis of the property of hardness.
- Investigate the effect of vinegar (acid) on a specific mineral, calcite.
- Use evaporation to investigate rock composition.
- Learn that rocks are composed of minerals and that minerals cannot be physically separated into other materials.
- Compare their activities to the work of a geologist.
- Acquire vocabulary used in earth science.
- Exercise language and math skills in the context of science.
- Use scientific thinking processes to conduct investigations and build explanations: observing, communicating, comparing, and organizing.

Core Activities: Students will complete/participate in the following:

- Mock Rocks
 - Investigate Mock Rocks
 - Take Apart Mock Rocks
 - Observe Crystals
 - Stories: Written in Stone and Postcards from the Ledge
- Scratch Test
 - Observe Minerals
 - Test Minerals for Hardness
 - Stories: Treasure Underfoot, X Marks the Spot, Digging It Up: Mining for Minerals, and Birthstones: A Mineral for Each Month

- Calcite Quest
 - Detecting Calcite
 - Looking for More Evidence
 - Stories: Rock Tales, Old Man and the Rock: A native American Tale, and The Two Boys: An Aborigine Story from Australia
- Take It For Granite
 - Identifying Minerals in Granite
 - Choosing Your Own Investigation
 - Stories: Rock of Ages, Identifying materials, and Where Do Rocks Come From?

Extensions:

- Mock Rocks
 - Language Arts Extension
 - Make rules for starting a class rock collection.
 - Math Extensions
 - Problem of the week.
 - Find ranges of measurements.
 - Weigh mock rocks.
 - Science Extensions
 - Describe properties of rocks.
 - Make a class rock collection.
 - Contact USGS for information.
 - Invite a geologist to class.
- Scratch Test
 - Language Arts Extension
 - Research Mohs' scale.
 - Math Extensions
 - Problem of the week.
 - Make a class bar graph of birthstones.
 - Seriate rocks.
 - Science Extensions
 - Use a tumbler to polish rocks.
- Calcite Quest
 - Language Arts Extension
 - Write legends about rocks.
 - Research questions on rocks and landforms.
 - List idioms and metaphors.
 - Math Extensions
 - Problem of the week.
 - Group rock logic problems.
 - Science Extensions
 - Research uses of Portland cement.
 - Find out how limestone is used in farming.

- Take It for Granite
 - Language Arts Extension
 - Play word games using earth materials vocabulary.
 - Research use of stones as tools.
 - Math Extensions
 - Problem of the week.
 - Art Extensions
 - Research use of earth materials for decoration.
 - Practice bon-seki, Japanese rock art.

Remediation:

- Mock Rocks
 - If students need basic instruction in measurement, use the FPSS Measurement kit to help them develop measuring skills.
 - To help them develop an intuitive sense of metric measures, have a 1-minute estimation exercise several times a week.
 - (Response Sheet) – If students are having trouble with an analogy such as this one, practice analogies from time to time.
- Scratch Test
 - Prearrange and number the mineral samples according to hardness; allow students to test using Scratch Test method again, making sure they start with the softest and compare it to the hardest.
- Calcite Quest
 - If descriptions aren't detailed enough, provide students with a word bank to use for added detail.
 - Have students write descriptions, trade with another student, and see if it can be identified.
- Take It for Granite
 - Provide assistance to students who need help creating their own investigation.
 - Provide a checklist to students on what is necessary for a good presentation.

Instructional Methods:

- Inquiry Based Learning:
 - Motivation
 - Discussion – Scaffolding
 - Hands on Learning Opportunities - Pairs/Cooperative Grouping
 - Discussion as a whole class
 - Read Aloud – Guided/Whole Group

Materials & Resources:

- FOSS Kit
- FOSS Website
- Magazines
- Internet – Multimedia/United Streaming

Assessments

- Formative Assessments
 - Teacher Observation
 - Student Sheets
 - Response Sheets
 - Performance Assessments
- Summative Assessments
 - End-Of-Module Assessment
 - Portfolio Assessment
 - Scoring Assessment

Curriculum Scope and Sequence

Planned Course: Science Grade 3

Unit: Physics of Sound

Time Frame: 12 weeks

State Standards: 3.1.4, 3.2.4, 3.4.4, 3.6.4, 3.8.4

Anchor (s) or adopted anchor: S4.A.1.1, S4.A.1, S4.A.2.2, S4.A.3.1, S4.A.3.2
S4.A.3.3, S4.B.3.3, S4.C.2.1, S4.C.3.1

Essential content/objectives: At the end of the unit, students will be able to:

- Observe and compare sounds to develop discrimination ability.
- Communicate with others using a drop code.
- Learn that sound originates from a source that is vibrating and is detected at a receiver such as the human ear.
- Understand the relationship between the pitch of a sound and the physical properties of the sound source (i.e. length of vibrating object, frequency of vibrations, and tension of vibrating string).
- Compare methods to amplify sound at the source and at the receiver.
- Observe and compare how sound travels through solids, liquids, and air.
- Use knowledge of the physics of sound to solve simple sound challenges.
- Acquire vocabulary associated with the physics of sound.
- Exercise language, social studies, and math skills in the context of the physics of sound.
- Develop and refine the manipulative skills required for investigating sound.
- Use scientific thinking processes to conduct investigations and build explanations: observing, communicating, comparing, and organizing.

Core Activities: Students will complete/participate in the following:

- Dropping In
 - Drop Challenge
 - Drop Codes
 - Sound and Vibrations
 - Stories: “Seeing” the World through Sound, Listen to This, Animal Babble, and Your Source and Receiver
- Good Vibrations
 - Vibration and Pitch
 - Length and Pitch
 - Tension and Pitch
 - Stories: Highs and Lows, Making Waves, Sound Off!, and Scoping Out Sound
- How Sound Travels
 - Sounds through Air and Water
 - Sounds through Solids
 - Stories: Moving Along, Bouncing Back, and Energy

- Sound Challenges
 - Sound Challenges
 - Choosing Your Own Investigation
 - Stories: Lights! Camera! Action!, and Grandmother's Hearing Test

Extensions:

- Dropping In
 - Language Arts Extension
 - Drop multiple-letter objects.
 - Send mystery letters.
 - Create whole-word codes.
 - Drop in other languages.
 - Write sound stories with feeling.
 - Explore onomatopoeia.
 - Math Extensions
 - Problem of the week.
 - Create a number drop.
 - Science Extensions
 - Create a sound-matching game.
 - Start a learning center.
 - Play Where's That Sound?

- Good Vibrations
 - Language Arts Extension
 - Research animal sounds.
 - Research the Adam's apple.
 - Math Extensions
 - Problem of the week.
 - Notate string-beam music.
 - Science Extensions
 - Make a duck flute or rubber-band guitar.

- How Sound Travels
 - Language Arts Extension
 - Research whale and dolphin communication.
 - Research bat navigation.
 - Compare animal ears.
 - Math Extensions
 - Problem of the week.
 - Science Extensions
 - Observe speed of sound through air.
 - Investigate string telephones.
 - Compare sound mufflers.
 - Make an air cannon.
 - Art Extension
 - Hold a fabulous ear contest.

- Sound Challenges
 - Language Arts Extension
 - Research hearing aids.
 - Describe the group experience.
 - Math Extensions
 - Problem of the week.
 - Social Studies and Science Extensions
 - Imagine life without phones and stereos.
 - Discuss disability awareness.
 - Investigate sound-making toys.
 - Make animal quackers.

Remediation:

- Dropping In
 - Spend more time with students who are having trouble discriminating sounds. Set up an investigation using objects made of metal versus objects made of different materials.
 - Set up a separate investigation for students who are having trouble identifying that vibrations cause sound.
- Good Vibrations
 - First make sure students know the difference between high and low pitch. Then turn it back to the each of the 4 instruments in the investigation and look for the relationship between length and pitch.
 - Review with students the relationship between length, tension, and pitch.
- How Sound Travels
 - Allow students more observation with their current investigation.
- Sound Challenges
 - If they are still having trouble provide some teacher assistance in successfully completing another activity.

Instructional Methods:

- Inquiry Based Learning:
 - Motivation
 - Discussion – Scaffolding
 - Hands on Learning Opportunities - Pairs/Cooperative Grouping
 - Discussion as a whole class
 - Read Aloud – Guided/Whole Group

Materials & Resources:

- FOSS Kit
- FOSS Website
- Magazines

Assessments:

- Formative Assessments
 - Teacher Observation
 - Student Sheets
 - Response Sheets
 - Performance Assessments
- Summative Assessments
 - End-Of-Module Assessment
 - Portfolio Assessment
 - Scoring Assessment

Curriculum Scope and Sequence

Planned Course: Science Grade 3

Unit: Structures of Life

Time Frame: 12 weeks

State Standards: 3.1.4, 3.2.4, 3.3.4

Anchor (s) or adopted anchor: S4.A.1.3, S4.A.2.1, S4.A.2.2, S4.A.3.1, S4.A.3.3, S4.B.1.1, S4.B.2.1, S4.B.3.2

Essential content/objectives: At the end of the unit, students will be able to:

- Develop an attitude of respect for life.
- Gain experience with organisms, both plants and animals.
- Observe and compare properties of seeds and fruits.
- Investigate the effect of water on seeds.
- Observe, describe, and record properties of germinated seeds.
- Compare different kinds of germinated seeds.
- Grow plants hydroponically and observe the life cycle of a bean plant.
- Observe and record crayfish and land snail structures and behavior.
- Use knowledge of crayfish and snail life requirements to maintain the organisms in the classroom.
- Organize data about crayfish territorial behavior.
- Develop responsibility for the care of organisms.
- Exercise language, art, social studies, and math skills in the context of life science.
- Use scientific thinking processes to conduct investigations and build explanations: observing, communicating, comparing, and organizing.

Core Activities: Students will complete/participate in the following:

- Origin Of Seeds
 - Seed Search
 - The Sprouting Seed
 - Seed Soak
 - Stories: Seeds Are Everywhere, the Most Important Seed, and Barbara McClintock
- Growing Further
 - Germination
 - Hydroponics
 - Life Cycle of the Bean
 - Stories: Hydro-growing, and Seeding Space

- Meet the Crayfish
 - Meet the Crayfish
 - Crayfish Habitat
 - Crayfish at Home
 - Crayfish Territory
 - Stories: Answering Kids' Questions: Crayfish, Crawfish, Crawdaddy, Life Cycle of a Crayfish, Life on Earth, and A Change in the Environment
- Meet The Land Snail
 - Land Snails at Home
 - Comparing Crayfish and Snails
 - The Snail Pull
 - Choosing Your Own Investigation
 - Stories: A Snail's Journey, Crayfish, Snails, and Kids, The Food Web, A chance Encounter, and Life in Los Angeles
- Bess Beetles
 - Bess Beetles at Home
 - Comparing Crayfish and Beetles
 - The Beetle Pull
 - Choosing Your Own Investigation
 - Stories: A Snail's Journey, Crayfish, Snails, and Kids, The Food Web, A chance Encounter, and Life in Los Angeles

Extensions:

- Origin Of Seeds
 - Language Arts Extension
 - Think about plant idioms.
 - Math Extensions
 - Problem of the week.
 - Estimate the mass of multiple seeds
 - Social Studies and Art Extensions
 - Research fruits in grocery stores.
 - Make seed art.
 - Science Extensions
 - Research seed dispersal.
 - Plant seeds in soil.
 - Hold a sprout taste test.
- Growing Further
 - Language Arts Extension
 - Keep journals of the growth of plants.
 - Play Concentration with life-cycle pictures.
 - Math Extensions
 - Problem of the week.
 - Science Extensions
 - Take home hydroponics.
 - Explore other conditions for plant growth.
 - Compare flower structures.
 - Compare plants grown in soil.
 - Social Studies Extension
 - Research staple crops around the world.

- Meet The Crayfish
 - Language Arts Extension
 - Prepare oral presentations on crayfish.
 - Invent and tell crayfish territorial stories.
 - Label crayfish structures.
 - Write about a day in the life of a crayfish.
 - Math Extensions
 - Problem of the week.
 - Compare the masses of crayfish.
 - Measure the Elodea a crayfish eats.
 - Science Extensions
 - Investigate crayfish food preferences.
 - Investigate crayfish territory.

- Meet The Land Snail OR Bess Beetles
 - Language Arts Extension
 - Read The Life of Bess Beetles.
 - Prepare a short oral presentation.
 - Math Extensions
 - Problem of the week.
 - Art Extensions
 - Design effective presentation posters.
 - Science Extensions
 - Shine some light on snails.
 - Set up a snail terrarium.
 - Find out what a snail will eat.
 - Investigate surfaces for snail travel.

Remediation:

- Origin Of Seeds
 - Use the FOSS Measurement kit to help them develop measuring skills if more basic instruction is needed.
- Growing Further
 - Work with students in small groups to compare a variety of sprouting seeds, reviewing the names of individual plant parts.
 - Continue to observe sprouting seeds on a regular basis to determine that the root emerges first.
 - Use pictures to work with small groups of students who cannot fully understand the life cycle of plants.

- Meet The Crayfish
 - Provide more one on one instruction with students who are having difficulty when observations are taking place.

- Meet The Land Snail OR Bess Beetles
 - Review the worksheet with small groups to go over habitat conditions and behaviors to draw conclusions.

Instructional Methods:

- Inquiry Based Learning:
 - Motivation
 - Discussion – Scaffolding
 - Hands on Learning Opportunities - Pairs/Cooperative Grouping
 - Discussion as a whole class
 - Read Aloud – Guided/Whole Group

Materials & Resources:

- FOSS Kit
- FOSS Website
- Magazines

Assessments:

- Formative Assessments
 - Teacher Observation
 - Student Sheets
 - Response Sheets
 - Performance Assessments

- Summative Assessments
 - End-Of-Module Assessment
 - Portfolio Assessment
 - Scoring Assessment