DELAWARE VALLEY SCHOOL DISTRICT

PLANNED INSTRUCTION

A PLANNED COURSE FOR:

Science

_____

Grade Level: Kindergarten

Date of Board Approval: _____2019_____

DELAWARE VALLEY SCHOOL DISTRICT

Planned Instruction

Title of Planned Instruction: Kindergarten Science Curriculum

Subject Area: Science Grade(s): Kindergarten

Course Description: Through hands-on investigation and informational literature, students will develop an elementary understanding of the areas of biology, physical science, chemistry, physics, earth science, technology, engineering, the environment, ecology, and agriculture.

Time/Credit for the Course: 1 full year

Curriculum Writing Committee: Kris Zamborsky, Kim Fountain, Dana Niemotka, Katie Hunt

Curriculum Map

1. **Unit One: Biology: Plants, Animals, Pennsylvania Ecosystems and Agriculture**

    - **Overview based on 15 weeks:**

    - **Goals:**

        Goal #1: The students will understand the differences between living and nonliving things.
        Goal #2: The students will describe the stages of life cycles, and how animals develop and change.
        Goal #3: The students will demonstrate their understanding of Pennsylvania ecosystems through visual representations.

2. **Unit Two: Earth Science: Weather and Natural Resources**

    - **Overview based on 10 weeks:**

    - **Goals:**

        Goal #1: The students will observe weather patterns, and describe changes and effects of climate and seasons.
        Goal #2: The students will explore earth materials, identify the stages of the water cycle, and the importance of water to all life.
        Goal #3: The students will describe ways they can help the environment.

3. **Unit Three: Physical Science: Force and Matter**

    - **Overview based on 12 weeks:**

    - **Goals:**

        Goal #1: Identify types of matter and how they change in our world.
        Goal #2: The students will understand the concept of force, and describe the relationship between force and motion in their environment.

Curriculum Plan

Unit: 1 Biology: Plants, Animals, Pennsylvania Ecosystems and Agriculture

Standard(s):
PA Academic Standards https://static.pdesas.org/content/documents/PreK-2_Science_and_Technology_Standards.pdf

Next Generation Science Standards
www.nextgenscience.org

Overview: Students will investigate and communicate observations made about different kinds of plants and animals, their environments, and Pennsylvania ecosystems.

Goals/Objectives

Topic 1: Living and Nonliving Things

- Identify the similarities and differences of living and non-living things
- Identify similarities and differences of living/non-living within the immediate and surrounding environment
- Observe and describe what happens to living things
- Recognize that light from the sun is an important source of energy for living and nonliving systems and some source of energy is needed for all organisms to stay alive and grow

Goal #1: The students will understand the differences between living and nonliving things.

Core Activities and Corresponding Instructional Methods:

- **Mystery Science: "Plants and Animal Secrets":** Mystery 1- Animal Needs
- **Mystery Science: "Plants and Animal Secrets":** Mystery 2- Animal Homes
- **Mystery Science:" Plants and Animal Secrets":** Mystery 3- Animal Needs: Safety
- www.Gynzy.com "Living vs. Nonliving" Activity

Assessments:

- **Diagnostic:** Observation, questions and answers
- **Formative:** Observation, questions and answers, student response to Mystery discussion questions

- **Summative:** Mystery Science: "Plants and Animals Secrets": Mystery 1 Assessment: "Draw an animal eating its food?" Worksheet

Extensions: Mystery Science: Additional "Recommended" Activities

Correctives: Mystery Science: Additional "Recommended" Activities

Materials and Resources:

www.MysteryScience.com "Plants and Animal Secrets"
Paper / Pencils / Crayons
Clipboard (for nature walks)
www.Gynzy.com

Topic 2: Life Cycles

- Observe, compare, and describe the stages of life cycles for plants and/or animals
- Observe and describe structures and behaviors of a variety of common animals
- Observe and describe how young animals resemble their parents and other animals of the same kind

Goal #2: The students will describe the stages of life cycles, and how animals develop and change.

Core Activities and Corresponding Instructional Methods:

- **Mystery Science: "Plants and Animal Secrets":** Mystery 5- Plant Needs: Sunlight
- **Mystery Science: "Plants and Animal Secrets":** Mystery 6- Animal Needs & Changing the Environment
- www.Gynzy.com "Plant Parts" Activity
- www.Gynzy.com "Plant Life Cycle" Activity
- www.Gynzy.com "How Plants Make Food" Activity
- www.Gynzy.com "Traits and Offspring" Activity

Assessments:

- **Diagnostic:** Observation, questions and answers
- **Formative:** Observation, questions and answers, student response to Mystery discussion questions
- **Summative:** Mystery Science: "Plants and Animals Secrets": Mystery 5 Assessment: "What do seeds need to grow?" Worksheet

Extensions: Mystery Science: Additional "Recommended" Activities

Correctives: Mystery Science: Additional "Recommended" Activities

Materials and Resources:

www.MysteryScience.com "Plants and Animal Secrets"
Paper / Pencils / Crayons
Clipboard (for nature walks)
Radish Seeds
Dixie Cups
Potting Soil
Paper Plates
Dark & Covered Container
Baking Soda
Teaspoon Measure
Cup Measure
Spray Bottle
Student Science Notebooks
www.Gynzy.com

Topic 3: Pennsylvania Ecosystems

- Terrestrial, aquatic, and wetland ecosystems in PA
- There are living and nonliving components in an aquatic habitat
- Identify common plants and animals found in PA
- Identify common plants and animals used by people
- Identify tools and machinery used in agriculture

Goal #3: The students will demonstrate their understanding of Pennsylvania ecosystems through visual representations.

Core Activities and Corresponding Instructional Methods:

- **Mystery Science: "Plants and Animal Secrets"** Mystery 4- Changing the Environment
- Take a class walk to determine evidence of plant and animal life in PA ecosystems.
- Create a bulletin board (showing plants, animals and nonliving things) to compare and contrast terrestrial and aquatic environments. (e.g. a meadow and a pond or a forest and a river)
- Observe and discover evidence of animals in a one-foot square area of a PA ecosystem. (forest, meadow, school yard)

- Take a virtual field trip to explore different habitats.
- www.Gynzy.com "Animals and Where they Live" Activity
- www.Gynzy.com "Habitats" Activity

Assessments:

- **Diagnostic:** Observation, questions and answers
- **Formative:** Observation, questions and answers, student response to Mystery discussion questions
- **Summative:** Bulletin Board craft and/or Student Notebook

Extensions: Mystery Science: Additional "Recommended" Activities

Correctives: Mystery Science: Additional "Recommended" Activities

Materials and Resources:

www.MysteryScience.com "Plants and Animal Secrets"
Student Notebooks
Paper / Pencil / Crayons
Glue / Scissors
www.Gynzy.com

Unit 2: Earth Science: Weather and Natural Resources

Standard(s):

PA Academic Standards https://static.pdesas.org/content/documents/PreK-2_Science_and_Technology_Standards.pdf

Next Generation Science Standards
www.nextgenscience.org

Overview: Students will investigate seasons, natural resources, and how to care for the environment.

Goals/Objectives:

Topic 1: Seasons

- Describe changes animals and plants undergo throughout the seasons
- Describe changes that occur as a result of climate
- Describe how temperature can affect the body
- Record daily weather conditions using simple charts and graphs. Identify seasonal changes in the environment
- Identify how the changes of seasons affect local environment

Goal #1: Students will observe weather patterns, and describe changes and effects of climate and seasons.

Core Activities and Corresponding Instructional Methods:

- **Mystery Science: "Weather Watching"** Mystery 1: Weather Conditions & Tracking
- **Mystery Science: "Weather Watching"** Mystery 2: Weather Conditions & Preparation
- **Mystery Science: "Weather Watching"** Mystery 3: Seasons and Patterns
- **Mystery Science: "Weather Watching"** Mystery 4: Weather & Daily Patterns
- **Mystery Science: "Weather Watching"** Mystery 5: Sun, Heat, & Engineering
- **Mystery Science: "Weather Watching"** Mystery 6: Sun & Heat
- www.Gynzy.com "Seasonal Behavior" Activity
- www.Gynzy.com "Weather" Activity
- **FOSS "Trees and Weather"** Investigations 1-4

Assessments:

- **Diagnostic:** Observation, questions and answers

- **Formative:** Observation, questions and answers, tree journals
- **Summative: Summative:** Mystery Science: "Weather Watching": Mystery 3 Assessment: "Cut and Glue the Seasons in Order" Worksheet

Extensions: Mystery Science: Additional "Recommended" Activities

Correctives: Mystery Science: Additional "Recommended" Activities

Materials and Resources:

Student Notebooks
www.MysteryScience.com "Weather Watching"
www.Gynzy.com
Paper / Pencils / Crayons
Clipboard
Glue / Scissors
Tape
Big Envelopes
Index Cards
Foil
Clear Plastic Report Covers
Construction Paper

Topic 2: Natural Resources

- Distinguish between three types of earth materials - rock, soil, and sand
- Identify sources of water for human consumption and use
- Identify renewable resources used in the classroom
- Identify the importance of conserving natural resources
- Identify what people use in their everyday life

Goal #2: Students will explore earth materials, identify the stages of the water cycle, and the importance of water to all life.

Core Activities and Corresponding Instructional Methods:

- www.Gynzy.com "Water Cycle" Activity
- www.Gynzy.com "Soil" Activity
- Observe the similarities and differences of soil, sand, and rock at a hands-on discovery table

Assessments:

- **Diagnostic:** Observation, questions and answers

- **Formative:** Observation, questions and answers, student responses to Gynzy quiz "Soil" Activity
- **Summative:** Through observation during the discovery table, students will be able to accurately identify soil, sand, and rock

Extensions: Water Cycle Activity/Project

Correctives: Give students additional time to explore the discovery table.

Materials and Resources:

Student Notebooks
Sand
Soil
Rock
www.Gynzy.com

Topic 3: Caring for the Environment

- Identify common pests in our homes, gardens, and neighborhoods
- Identify different types of pollution and their sources
- Identify waste and practice ways to reduce, reuse, and recycle

Goal #3: Students will describe ways they can help care for the environment.

Core Activities and Corresponding Instructional Methods:

- www.Gynzy.com "Reduce, Reuse, Recycle" Activity
- Earth Day discussion, followed by www.Starfall.com Activity

Assessments:

- **Diagnostic:** Observation, questions and answers
- **Formative:** Observation, questions and answers, student responses to Gynzy quiz "Reduce, Reuse, Recycle" Activity
- **Summative:** Students will correctly sort trash into the appropriate containers during the Starfall Earth Day Activity

Extensions: Environmental Earth Day Activities

Correctives: Give students additional opportunities to explore Starfall's Earth Day activity.

Materials and Resources:
www.Gynzy.com
www.starfall.com

Unit 3: Physical Science: Force and Matter

Standard(s):

PA Academic Standards https://static.pdesas.org/content/documents/PreK-2_Science_and_Technology_Standards.pdf

Next Generation Science Standards
www.nextgenscience.org

Overview: Students will investigate types of matter, how matter changes, and forces.

Goals/Objectives:

Topic 1: Matter

- Identify and classify objects by properties of matter. Compare different kinds of materials and discuss their uses
- Describe the way matter can change
- Recognize that everything is made of matter

Goal #1: Identify types of matter and how they change in our world.

Core Activities and Corresponding Instructional Methods:

- **FOSS: Materials In Our World**: Investigations 1 and 2

Assessments:

- **Diagnostic:** Observation, questions and answers
- **Formative:** Observation, questions and answers, student notebook responses to "What happens when wood gets wet?"
- **Summative:** Student responses to journal entries: "How is particle board made?" and "How is plywood made?"

Extensions: FOSS: Materials in Our World: Investigations 3 & 4

Correctives: FOSS Teacher Manual: Materials in Our World

Materials and Resources:

FOSS: Materials in Our World Teacher Manual
Student Notebooks
5 Basins

Basswood samples
Particleboard samples
Pine samples
Plywood Samples
Cedar Samples
Tree Posters
Gluesticks
Chart Paper
Pens /Pencils/ Crayons
Tape
Droppers
Plastic Cups
Sponges
Water
Pitcher
Paper towels
Newspaper
Paperclips
Rubberbands
Sandpaper
Paper Plates
Bag
Stick
Craft Stick
Screen
Plastic Spoon
Bag of Sawdust
Bag of Wood Shavings
Plastic Cups with Lids
Cornstarch
Saucepan
Long-handled Spoon
Thin Wood Pieces
Thin Plywood Pieces
Glue

Topic 2: Forces

- Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.

- Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull
- Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem
- Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs

Goal #2: Students will understand the concept of force, and describe the relationship between force and motion in their environment.

Core Activities and Corresponding Instructional Methods:

- **Mystery Science: "Force Olympics"** Mystery 1: Pushes, Pulls, & "Work Words"
- **Mystery Science: "Force Olympics"** Mystery 2: Pushes Pulls & "Work Words"
- **Mystery Science: "Force Olympics"** Mystery 3: Strength & Direction of Force
- **Mystery Science: "Force Olympics"** Mystery 4: Strength & Direction of Force
- **Mystery Science: "Force Olympics"** Mystery 5: Forces & Engineering
- **Mystery Science: "Force Olympics"** Mystery 6: Forces & Engineering
- www.Gynzy.com "Forces" Activity

Assessments:

- **Diagnostic:** Observation, questions and answers
- **Formative:** Observation, questions and answers, and answers to Mystery 4's comprehension question "Stop & Talk: Why do you think the ball didn't go all the way down the lane?"
- **Summative:** Mystery Science: "Force Olympics": Mystery 5 Assessment: "Draw something I pull and something I push" Worksheet

Extensions: Mystery Science: Additional "Recommended" Activities

Correctives: Mystery Science: Additional "Recommended" Activities

Materials and Resources:

Student Notebooks
www.MysertyScience.com "Force Olympics"
Yardstick or Meter stick
Ribbon, Yarn, or String

2 Large Binder Clips
9 Solo Cups
Tape
1 Tennis Ball
Small Ball
2 Dixie Cups
5 Pushpins
Scissors
Clipboard or Book
www.Gynzy.com

APPENDIX

Kindergarten Materials Needed

Needed for all Units: Student Notebooks

Unit One: Biology: Plants, Animals, Pennsylvania Ecosystems and Agriculture

Paper / Pencils / Crayons
Clipboard (for nature walks)
Radish Seeds
Dixie Cups
Potting Soil
Paper Plates
Dark & Covered Container
Baking Soda
Teaspoon Measure
Cup Measure
Spray Bottle

Unit 2: Earth Science: Weather and Natural Resources

Tape
Big Envelopes
Index Cards
Foil
Clear Plastic Report Covers
Sand
Soil
Rock

Unit 3: Physical Science: Force and Matter

5 Basins
Basswood samples (currently included in FOSS Kits)
Particleboard samples (currently included in FOSS Kits)
Pine samples (currently included in FOSS Kits)
Plywood Samples (currently included in FOSS Kits)
Cedar Samples (currently included in FOSS Kits)
Tree Posters (currently included in FOSS Kits)
Gluesticks
Chart Paper

Plastic Cups
Sponges
Pitcher
Paper towels
Newspaper
Paperclips
Rubberbands
Sandpaper
Craft Sticks
Screen
Plastic Spoons
Bag of Sawdust (currently included in FOSS Kits)
Bag of Wood Shavings (currently included in FOSS Kits)
Plastic Cups with Lids
Cornstarch
Long-handled Spoons
Thin Wood Pieces (currently included in FOSS Kits)
Thin Plywood Pieces (currently included in FOSS Kits)
Droppers
Yardsticks
Ribbon, Yarn, or String
2 Large Binder Clips
9 Solo Cups
1 Tennis Ball
Small Ball
Pushpins

Checklist to Complete and Submit:

(Scan and email)

_____ Copy of the curriculum using the template entitled "Planned Instruction," available on the district website.

_____ The appropriate payment form, in compliance with the maximum curriculum writing hours noted on the first page of this document.

Each principal and/or department chair has a schedule of First and Second Readers/Reviewers. Each Reader/Reviewer must sign & date below.

First Reader/Reviewer Printed Name_____

First Reader/Reviewer Signature_____ Date_____

Second Reader/Reviewer Printed Name_____

Second Reader/Reviewer Signature _____ Date_____

WRITE IN INK ONLY

CURRICULUM

DELAWARE VALLEY SCHOOL DISTRICT
AUTHORIZATION FOR PAYMENT

Name:	**Building:**
Grade Level (Elementary Only):	**Subject Area (Secondary Only):**
Account Code:	**Date:**

Date	Service Provided (If Sub, Note Who Was Out)	No. of Hours (If Applicable)	Per Diem Hourly Rate	Total

Total Payment _____

I have completed all activities described above and have returned all equipment and materials for which I am responsible.

*This form must be submitted by an employee for payment for the following services:
(1) Substitute teacher, instructional assistant, clerical, etc.
(2) Homebound instruction
(3) Extra Curricular work i.e., coaching, intramural, club or class advisor, director for band, chorus, drama, etc., Approved Activities

This form must be submitted to the Business Office eight days prior to the payroll date.

Signature of Employee	Date
Athletic Director (if applicable)	Date
Principal/Supervisor (if applicable)	Date
Business Administrator	Date
Superintendent or Designee	Date

Revised: August 20, 2001