



Pine Grove Area

SCHOOL DISTRICT

SCIENCE

KINDERGARTEN SCIENCE

April 15, 2009

I. PHILOSOPHY

The Kindergarten Science course of the Pine Grove Area School District has been structured to introduce and expose children to the natural world around them. The Kindergarten Science course begins the process at the basic level. The course will allow for the accommodation of many learning styles, motivational levels, and academic abilities. The Kindergarten Science course is integrated throughout our reading themes.

II. CORE CONCEPTS

1. Seasons - Identify and discuss the seasons of the year.
2. Five Senses- Identify and compare the five senses. Match senses with body parts. (Use Scientific Method)
3. Matter- Discuss solids, liquids, gases. (Physical properties of matter.)
4. Hibernating Animals- Discuss hibernation and identify animals that hibernate. (Bears, squirrels, etc.)
5. Living and Non-living Things- Identify the characteristics of living and non-living things.
6. Plants and Seeds- Identify parts of a plant. (Use Scientific Method)
7. Earth Day/ Ecology- Recognize what happens when people do not care for their world.
8. Farms- Discuss farm life and farm animals. Identify the purpose of farms and the roles in daily life.
9. Movement- Identify, observe, and experience types of movement.
10. Insects and Bugs- Identify the characteristics of insects and bugs.

III. COURSE OF STUDY

A. Course Name: Science

B. Grade Level: Kindergarten

C. Length of Course: Full Year

1. Frequency: 3 times per week

2. Duration: 30 minutes

D. Academic Level: Kindergarten

E. Credits: none

F. Prerequisites: None

G. Course Description: This course is designed to actively engaged kindergarten children in the science curriculum. Accommodations and modifications will be made for those students who need additional assistance and/or remediation in specific areas.

IV. CONTENT: Kindergarten Science

CORE CONCEPT 1: Seasons

MAJOR OBJECTIVE: Identify and discuss apple trees during the various seasons of the year.

CURRICULUM STANDARD:			
PA Early Childhood Learning Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.1.4.E Recognize change in natural and physical systems.</p> <p>PAECL Standard 3.1.D <ul style="list-style-type: none"> Explore patterns that regularly occur in nature. </p> <p>PAECL Standard 3.1.F <ul style="list-style-type: none"> Develop beginning understanding of natural patterns </p> <p>PAECL Standard 3.1.E <ul style="list-style-type: none"> Identify observable patterns </p> <p>PAECL Standard 3.1.J <ul style="list-style-type: none"> Recognize change </p> <p>PAECL Standard 3.1.K <ul style="list-style-type: none"> Examine and recognize change through simple observation and recording </p>	<p>Teacher will guide students to:</p> <p>Discuss and identify spring, summer, fall, and winter</p> <p>Use models to explore patterns in nature. For example, leaves changing in fall.</p> <p>Ask thought provoking questions such as “Why do the leaves change in fall?”</p> <p>Take a nature walk to observe and discuss changes in the local plants and wildlife.</p> <p>Listen to and explore books about the cycle of the season.</p>	<p>Teacher evaluation of:</p> <p>Students during classroom interaction</p> <p>Class discussions</p> <p>Student written response</p> <p>Student produced projects</p> <p>Quiz</p> <p>Journal and writing activities</p>	<p>Picture Books</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p>

CONTENT: Kindergarten Science

CORE CONCEPT 1: Seasons

MAJOR OBJECTIVE: Identify and discuss apple trees during the various seasons of the year.

CURRICULUM STANDARD:

PA Early Childhood Learning Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.3.4.D Identify changes in living things over time.</p> <p>PAECL Standard 3.3.B</p> <ul style="list-style-type: none">▪ Identify the life processes of living things. <p>PAECL Standard 3.3.E</p> <ul style="list-style-type: none">▪ Describe basic needs of plants and animals. <p>PAECL Standard 3.3.J</p> <ul style="list-style-type: none">▪ Describe changes in living things over time.	<p>Teacher will guide students to:</p> <p>Understand the transitions of an apple tree during the four seasons.</p> <p>Demonstrate an understanding of the different seasons of a maple tree.</p> <p>Document the changes from observations by drawing, writing, or in photographs.</p> <p>Recognize the changes of trees during each season.</p>	<p>Teacher evaluation of:</p> <p>Students during classroom interaction</p> <p>Class discussions</p> <p>Student written response</p> <p>Student produced projects</p> <p>Quiz</p> <p>Journal and writing activities</p>	<p>Picture Books</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p>

CONTENT: Kindergarten Science

CORE CONCEPT 2: Five Senses

MAJOR OBJECTIVE: Identify and compare the five senses.

CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.2.4B Describe objects in the world using the five senses.</p> <p>PAECL Standard 3.2.E</p> <ul style="list-style-type: none">Use the five senses as tools with which to: observe, collect information, classify, and describe.	<p>Teacher will guide students to:</p> <p>Investigate the five senses by exploring the different functions and uses of these senses</p> <p>Identify the five senses and use these senses to explore the objects around them.</p> <p>Explore and match which parts of their body they use to use the five senses.</p> <p>Discuss the importance of the five senses.</p> <p>Sing songs about the five senses.</p>	<p>Teacher evaluation of:</p> <p>Students during classroom interaction</p> <p>Class discussions</p> <p>Student written response</p> <p>Student produced projects</p> <p>Quiz</p> <p>Journal and writing activities</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p>

CONTENT: Kindergarten Science

CORE CONCEPT 3: Matter

MAJOR OBJECTIVE: Discuss solids, liquids, and gases. (Physical properties of matter.)

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.4.4.A Recognize basic concepts about structure and properties of matter.</p> <p>PAECL Standard 3.4.A</p> <ul style="list-style-type: none">Understand what the meaning of matter is. <p>PAECL Standard 3.4.B</p> <ul style="list-style-type: none">Describe the properties of matter. <p>PAECL Standard 3.4.D</p> <ul style="list-style-type: none">Demonstrate an understanding that combining two or more properties can make new materials with different properties	<p>Teacher will guide students to:</p> <p>Sort and classify common classroom or household items by solid, liquid, or gas.</p> <p>Work with materials to explore properties of solids and liquids.</p> <p>Conduct an experiment to convert different common liquids into solids by freezing them and recording results.</p>	<p>Teacher evaluation of:</p> <p>Students during classroom interaction</p> <p>Class discussions</p> <p>Student written response</p> <p>Student produced projects</p> <p>Quiz</p> <p>Journal and writing activities</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p>

CONTENT: Kindergarten Science

CORE CONCEPT 5: Living and Non-living Things

MAJOR OBJECTIVE: Identify the characteristics of living and non-living things.

CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.3.4.A Know the similarities and differences of living things.</p> <p>PAECL Standard 3.3.A</p> <ul style="list-style-type: none">▪ Identify the similarities and differences of living things. <p>PAECL Standard 3.3.B</p> <ul style="list-style-type: none">▪ Identify life processes of living things. <p>PAECL Standard 3.3.E</p> <ul style="list-style-type: none">▪ Describe the basic needs of plants and animals	<p>Teacher will guide students to:</p> <p>Investigate several materials found in or around the classroom. (rocks, toys, plants, etc.)</p> <p>Document by drawing changes over time of tree or plants. (apple trees, plants)</p> <p>Listen to nonfiction text to illustrate the concept of change over time.</p> <p>Explore the life process of living things. (Frogs, chicks)</p> <p>Recognize from illustrations the process of changes in some living things. (frogs, plants from seeds)</p> <p>Identify the basic needs necessary for animals to survive.</p> <p>Identify physical characteristics that appear in parents and their off-spring using pictures.</p>	<p>Teacher evaluation of:</p> <p>Students during classroom interaction</p> <p>Class discussions</p> <p>Student written response</p> <p>Student produced projects</p> <p>Quiz</p> <p>Journal and writing activities</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p>

CONTENT: Kindergarten Science

CORE CONCEPT 5: Living and Non-living Things

MAJOR OBJECTIVE: Identify the characteristics of living and non-living things.

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 3.3.4. Know that living things are made up of parts that have specific functions. PAECL Standard 3.3.G ▪ Understand that living things are made up of parts that have specific functions.	Teacher will guide students to: Investigate parts of plants.	Teacher evaluation of: Students during classroom interaction Class discussions Student written response Student produced projects Quiz Journal and writing activities	Textbook resources Computer programs/web sites Journal or notebook Supplemental materials

CONTENT: Kindergarten Science
CORE CONCEPT 6: Plants and Seeds
MAJOR OBJECTIVE: Identify the parts of a plant

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 3.1.4.A Know that natural and human-made objects are made up of parts. PAECL Standard 3.1.A <ul style="list-style-type: none"> ▪ Identify and describe what parts make up a whole. PAECL Standard 3.1.B <ul style="list-style-type: none"> ▪ Identify how a part relates to the whole in both natural and human-made objects. 	Teacher will guide students to: Investigate the parts of plants. Illustrate the parts of the plant. Document changes of plants over time.	Teacher evaluation of: Students during classroom interaction Class discussions Student written response Student produced projects Quiz Journal and writing activities	Textbook resources Computer programs/web sites Journal or notebook Supplemental materials

CONTENT: Kindergarten Science

CORE CONCEPT 6: Plants and Seeds

MAJOR OBJECTIVE: Identify the parts of a plant

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 3.3.4.A Know the similarities and differences of living things. PAECL Standard 3.3.B <ul style="list-style-type: none">Identify life processes of living things (e.g. growth, digestion, react to environment) PAECL Standard 3.3.E <ul style="list-style-type: none">Describe the basic needs of plants and animals.	Teacher will guide students to: Tell what is necessary for a plant to grow (water, soil, sunlight) Tell how the seasons affect plant growth. Describe purpose of plants (clean the air we breathe, provide food and shelter for people and animals, keep soil in place)	Teacher evaluation of: Students during classroom interaction Class discussions Student written response Student produced projects Quiz Journal and writing activities	Textbook resources Computer programs/web sites Journal or notebook Supplemental materials
PA Standard 3.3.4.B Know that living things are made up of parts that have specific functions. PAECL Standard 3.3.G <ul style="list-style-type: none">Understand that living things are made up of parts that have specific functions.	Teacher will guide students to: Identify the basic parts of a plant, and tell what their function is.	Teacher evaluation of: Students during classroom interaction Class discussions Student written response Student produced projects Quiz Journal and writing activities	Textbook resources Computer programs/web sites Journal or notebook Supplemental materials

CONTENT: Kindergarten Science

CORE CONCEPT 6: Plants and Seeds

MAJOR OBJECTIVE: Identify the parts of a plant

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 3.3.4.D Identify changes in living things over time. PAECL Standard 3.3.K <ul style="list-style-type: none">▪ Record changes in life processes.	Teacher will guide students to: Observe living things over different time periods.	Teacher evaluation of: Students during classroom interaction Class discussions Student written response Student produced projects Quiz Journal and writing activities	Textbook resources Computer programs/web sites Journal or notebook Supplemental materials

CONTENT: Kindergarten Science

CORE CONCEPT 7: Earth Day/ Ecology

MAJOR OBJECTIVE: Recognize what happens when people do not care for their world.

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 4.2.4.C Know that some natural resources have limited life spans. PAECL Standard 4.2.C ▪ Identify ways to conserve	Teacher will guide students to: Generate ways to conserve water at home and school. Create posters, illustrations, and/or murals showing ways to save water. Describe effects of pollution. (cars' pollution on air, water pollution on fish, etc.) Sort objects into those things that can be recycled and those that cannot.	Teacher evaluation of: Students during classroom interaction Class discussions Student written response Student produced projects Quiz Journal and writing activities	Textbook resources Computer programs/web sites Journal or notebook Supplemental materials

CONTENT: Kindergarten Science

CORE CONCEPT 7: Earth Day/ Ecology

MAJOR OBJECTIVE: Recognize what happens when people do not care for their world.

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.3.4.B Environmental Health- Identify how human actions affect environmental health.</p> <p>PAECL Standard 4.3.B</p> <ul style="list-style-type: none">Identify litter and its effect on the environment.	<p>Teacher will guide students to:</p> <p>Observe and describe plants growing in different experimental conditions.</p> <p>Create a list of things that litter the local environment.</p> <p>Take a walk around the school or playground and pick up any litter.</p> <p>Participate in a discussion about the effects of litter on the environment.</p>	<p>Teacher evaluation of:</p> <p>Students during classroom interaction</p> <p>Class discussions</p> <p>Student written response</p> <p>Student produced projects</p> <p>Quiz</p> <p>Journal and writing activities</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p>
<p>PA Standard 4.9.4.A Know that there are laws and regulations for the environment.</p> <p>PAECL Standard 4.9.A</p> <ul style="list-style-type: none">Understand how laws and regulations can protect the environment.	<p>Teacher will guide students to:</p> <p>Discuss good environmental practice.</p> <p>Describe how polluting waterways or air will impact natural resources. (fish, crops, air)</p>	<p>Teacher evaluation of:</p> <p>Students during classroom interaction</p> <p>Class discussions</p> <p>Student written response</p> <p>Student produced projects</p> <p>Quiz</p> <p>Journal and writing activities</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p>

CONTENT: Kindergarten Science

CORE CONCEPT 8: Farms

MAJOR OBJECTIVE: Discuss farm life and farm animals.

CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.4.4.A Know the importance of agriculture to humans</p> <p>PAECL Standard 4.4.A</p> <ul style="list-style-type: none">Understand the importance of agriculture.	<p>Teacher will guide students to:</p> <p>Illustrate and describe a farm and the animals that live there.</p> <p>Identify activities done on a farm such as planting, milking, etc.</p> <p>Identify products that come from a farm such as milk, eggs, corn, etc.</p>	<p>Teacher evaluation of:</p> <p>Students during classroom interaction</p> <p>Class discussions</p> <p>Student written response</p> <p>Student produced projects</p> <p>Quiz</p> <p>Journal and writing activities</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p>
<p>PA Standard 4.4.4.B Identify the role of the sciences in Pennsylvania agriculture</p> <p>PAECL Standard 4.4.B</p> <ul style="list-style-type: none">Identify the components of the farming system. (farmer's role, animals, buildings, land)	<p>Teacher will guide students to:</p> <p>Create and label illustrations that show farm products.</p> <p>Interview a visiting farmer about what they do.</p>	<p>Teacher evaluation of:</p> <p>Students during classroom interaction</p> <p>Class discussions</p> <p>Student written response</p> <p>Student produced projects</p> <p>Quiz</p> <p>Journal and writing activities</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p>

CONTENT: Kindergarten Science

CORE CONCEPT 9: Movement

MAJOR OBJECTIVE: Identify, observe, and experience types of movement.

CURRICULUM STANDARD:			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
PA Standard 3.4.4.C Explore and describe the different types of force and motion. PAECL Standard 3.4.I ▪ Develop a directional vocabulary.	Teacher will guide students to: Describe his/her wheeled toys, wind-up toys, and boats using directional words such as forward, backwards, sideways, etc. Identify and use various position words such as left, right, above, below using objects in the classroom.	Teacher evaluation of: Students during classroom interaction Class discussions Student written response Student produced projects Quiz Journal and writing activities	Textbook resources Computer programs/web sites Journal or notebook Supplemental materials

CONTENT: Kindergarten Science

CORE CONCEPT 10: Insects and Bugs

MAJOR OBJECTIVE: Identify the characteristics of bugs and insects.

CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.3.4.A Know the similarities and differences of living things.</p> <p>PAECL Standard 3.3.A</p> <ul style="list-style-type: none">Identify the similarities and differences of living things. <p>PAECL Standard 3.3.C</p> <ul style="list-style-type: none">Sort organisms according to their shared characteristics. <p>PAECL Standard 3.3.D</p> <ul style="list-style-type: none">Demonstrate a basic understanding of similarities and differences that relate to environmental habitat. <p>PAECL Standard 3.3.F</p> <ul style="list-style-type: none">Know that some organisms have similar external characteristics.	<p>Teacher will guide students to:</p> <p>Investigate several bugs and insects found outside using magnifying glasses, bug collection kits, etc.</p> <p>Sort bugs and insects according to habitats.</p> <p>Listen to nonfiction text to illustrate the concept different insect habitats. (ant hills, hives, etc.)</p> <p>Recognize from illustrations the parts of a bug and/or insect.</p> <p>Describe bugs and insects through writing, drawing, and pictures.</p> <p>Identify physical characteristics that appear in parents and their off-spring using pictures.</p>	<p>Teacher evaluation of:</p> <p>Students during classroom interaction</p> <p>Class discussions</p> <p>Student written response</p> <p>Student produced projects</p> <p>Quiz</p> <p>Journal and writing activities</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p>

CONTENT: Kindergarten Science

CORE CONCEPT 10: Insects and Bugs

MAJOR OBJECTIVE: Identify the characteristics of insects and bugs.

CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.3.4.B Know that living things are made up of parts that have specific functions.</p> <p>PAECL Standard 3.3.G</p> <ul style="list-style-type: none">Understand that living things are made up of parts that have specific functions.	<p>Teacher will guide students to:</p> <p>Investigate the body parts of bugs and insects.</p> <p>Observe living things over time. (ant farm)</p>	<p>Teacher evaluation of:</p> <p>Students during classroom interaction</p> <p>Class discussions</p> <p>Student written response</p> <p>Student produced projects</p> <p>Quiz</p> <p>Journal and writing activities</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p>

V. EXPECTED LEVELS OF ACHIEVEMENT

A. Students are expected to reach the kindergarten level of achievement in science. These skills include all of those noted in the specific content area of this curriculum.

B. Grading system for all kindergarten technology classes is as follows:

Grading Scale	
S	Satisfactory
N	Needs Improvement
O	Outstanding

C. Each student's grade will be determined at the conclusion of each marking period.