


2nd Grade - Elementary Science Bundle # 5

Title		Suggested Dates
Plants		11/16/09 – 12/4/09 (12 days)

Big Idea/Enduring Understanding	Guiding Questions
Plants have characteristics that help them meet their needs and survive in their environments.	<p>How do the parts of a plant help it survive?</p> <p>How does a plant use its environment to meet its basic needs?</p> <p>Does the absence or removal of plant parts affect the plant’s health and survival?</p> <p>How can you use your knowledge of life cycles to predict what a young plant will look like when compared to an adult plant?</p>

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)
<p>NEW TEKS</p> <p>2.9 Organisms and environments. The student knows that living organisms have basic needs that must be met for them to survive within their environment</p> <p>2.9a identify the basic needs of plants and animals</p> <p>2.10 Organisms and environments. The student knows that organisms resemble their parents and have structures and processes that help them survive within their environments</p> <p>2.10b observe, record, and compare how the physical characteristics of plants help them meet their basic needs such as stems carry water throughout the plant</p> <p>CURRENT TEKS</p> <p>2.9 The student knows that living organisms have basic needs.</p> <p>2.9a identify the external characteristics of different kinds of plants and animals that allow</p>	<p>1st grade identifies and compares parts only touching on what they do for the organism. 2nd Grade focus is on the function, in particular function related to meeting basic needs. Use a variety of examples.</p> <p>External characteristics of plants</p> <p>Roots: obtain nutrients and water from ground; hold plant in ground</p> <p>Leaves: food factory (needed components, such as sunlight, for the plant to make its own food come together here) Leaf structures (thin, wide, thick or dense, etc) allow plants to absorb the sun’s light energy. They also help the water in the most efficient manner. Leaf structures provide protection from the environment as well as animals.</p> <p>Stem: provide structure and support (holding plant up) EX:(hard woody stem such as a tree trunk, softer bendable stems such as many flower transports nutrients, water all over plant (think of a highway system)</p> <p>Flower: where seeds develop for future plants attracts insects</p>	<p>Resources listed here apply to the entire bundle.</p> <p>Science Notebooks</p> <p>IF I TRY (Intranet)</p> <p>KLEW/ Claims & Evidence</p> <p>PISD Elem Science Homepage</p> <p>PISD K-5 Equipment Alignment – part of the Vertical Alignment Document found on the Curriculum website</p> <p>TAKScopes</p> <p>Scope: 2.9a: “Plant and Animal Characteristics” - At this point, use EXPLORE PART 2. Use remaining Scope in Bundle 7 - Animals.</p> <p>AIMS 2nd Grade Texas Core Curriculum</p> <p>The Nature of Science Book</p> <p>“A Seed Grows”</p> <p>“Inside a Seed”</p> <p>“Root Study”</p> <p>“Stem Study”</p>

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<p>their needs to be met</p> <p>2.6 The student knows that systems have parts and are composed of organisms and objects</p> <p>2.6c observe and record the functions of plant parts</p>	<p>Plants also have external features for protection (such as bark, thorns, coloring)</p>	<p>“Leaf Safari” “This Is My Flower” “Plant Part Mark Up” “Where Do We Belong”</p> <p>United Streaming</p>
<p>CURRENT TEKS</p> <p>2.6 The student knows that systems have parts and are composed of organisms and objects.</p> <p>2.6a manipulate, predict, and identify parts that, when separated from the whole, may result in the part or the whole not working, such as flashlights without batteries and plants without leaves</p> <p>2.6b manipulate, predict, and identify parts that, when put together, can do things they cannot do by themselves, such as a guitar and guitar strings</p>	<p>Connecting idea: Look at the plant parts connected into a system – example: water comes from the ground through the roots, stem and up to leaves to be used by the plant to survive. Then discuss what would happen to the plant if one of these parts of the system was removed</p>	<p>Growing Plants: Science in a School Garden The Blue Dragon: Roots and Fruits The Magic School Bus Gets Planted Play and Discover with Digger and Splat: Green and Growing Plants: A First Look How Plants Grow Plant Lifecycles Magic School Bus Goes to Seed Growing Plants: Science in a School Garden TEAMS: Life Cycles: Plants and Seeds Debbie Greenthumb: How Plants Grow Debbie Greenthumb: Plants Can Be Found Everywhere</p>
<p>NEW TEKS</p> <p>2.5 Matter and energy. The student knows that matter has physical properties and those properties determine how it is described, classified, changed, and used</p> <p>2.5a classify matter by physical properties including shape, relative mass and temperature, texture</p> <p>CURRENT TEKS</p> <p>2.7 The student knows that many types of change occur.</p> <p>2.7a observe, measure, record, analyze, predict, and illustrate changes in size, mass, temperature, color, position, quantity, sound and movement</p>	<p>Refer to Math TEKS 2.9a, 2.9b, 2.9c</p> <ul style="list-style-type: none"> • Length – bridge from nonstandard units such as cubes, paper clips, and hands to reading a ruler to the nearest centimeter (compare non standard items directly to ruler to build conceptual understanding of length and function of a ruler) First semester is teacher modeled and guided through direct instruction giving students ample opportunity to apply and practice this skill. 2nd semester is an independent skill. • Mass – primary balance, double pan balance. Introduce platform scale through 1st semester (reading to whole number) with teacher direction, modeling, and guidance • Temperature – Celsius thermometer, Introduce thermometer: how it is used, why it is used, how do we read it and what does it mean. Direct teach through 1st semester with teacher modeling and guidance to the nearest whole number. Math specificity states “include reading to nearest 2 degrees...” 2nd semester build toward reading to nearest 2 degrees Celsius independently. This is the same skill set as reading a Fahrenheit thermometer and a ruler. • Color –for example: shades, brightness, color combinations, color patterns • Position – where is the plant? Water plant. Garden plant, etc\ 	<p>Plant Parts and their Uses The Importance of Plants Plant Habitats Around the World</p> <p>BrainPop Jr Parts of a Plant</p> <p>Net Trekker Resources:</p> <ul style="list-style-type: none"> • National Geographic: Plant Power: • Plant Explorer- Parts of a Plant: • BBC: Growing Plants: • Cool Science for Curious Kids - Plant Parts Salad:

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	<ul style="list-style-type: none"> • Sound • Movement – make note: plant movement is not a purposeful and decided action. To change its position, plants must be moved by other means. Plants, in their stationary position, may “move” as a response to a need (such as light) or environmental factors (such as wind). 	
<p>NEW TEKS: 2.2 Scientific investigation and reasoning. The student develops abilities necessary to do scientific inquiry in classroom and outdoor investigations</p> <p>2.2d record and organize data using pictures, numbers, and words</p> <p>CURRENT TEKS 2.5 The student knows that organisms, objects, and events have properties and patterns. 2.5b identify, predict, replicate, and create patterns Including those seen in charts, graphs, and numbers</p>	<p>Look for properties and patterns of plant growth:</p> <ul style="list-style-type: none"> • Create growth charts/graphs <ul style="list-style-type: none"> ○ Metric measurement including <ul style="list-style-type: none"> ▪ Length ▪ Temperature (Celsius) ▪ Mass ▪ Capacity <p>See notes above with 2.7a on measurement</p> <p>Include charts, graphs and labeled drawings using science notebooks.</p> <p>TEACHER NOTE: Combine with Math TEKS to use the same types of graphs in both subjects.</p>	
<p>NEW TEKS: 2.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures</p> <p>2.1a identify and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately</p> <p>2.1b describe the importance of safe practices</p> <p>2.1c identify and demonstrate how to use, conserve, and dispose of natural resources and materials such as conserving water and reuse or recycling of paper, plastic, and metal</p> <p>CURRENT TEKS 2.1 Scientific processes. The student conducts classroom and field investigations following</p>	<p>No tasting or touching unless instructed Safe smelling – wafting Goggles Wait for teacher directions No glassware Students do not handle hot water, hot plates or burners. Washing hands after science activities</p> <p>Review investigation safety procedures [directly point out precautions, possible safety risks, specific guidelines for the lesson] for both indoor and outdoor activities, as applicable. In addition, encourage students to identify these on their own throughout the year [document in science notebooks via words and/or pictures]</p> <p>TEACHER NOTE: When possible, return natural items to their environment (i.e. rocks back to garden)</p> <p>Make note of and teach use of district-wide recycling resource.</p>	<p>PISD Safety Website -Safety Contracts, games, etc -Science Safety is Elementary (for teachers) -Safety in the Elementary Classroom (for teachers)</p> <p>DuPont Science Safety Zone website</p> <p>Texas Science Safety Standards</p>

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home and school safety procedures.

2.1a demonstrate safe practices during classroom and field investigations

2.1b learn how to use and conserve resources and dispose of materials

Health2.2 Health Behaviors. The student understands that safe, unsafe, and/or harmful behaviors result in positive and negative consequences throughout the life span.

Health2.2b identify ways to avoid deliberate and accidental injuries

Health2.2c explain the need to use protective equipment when engaging in certain recreational activities such as skateboarding, rollerblading, cycling, and swimming

Health2.2d explain the importance of avoiding dangerous substances

Health2.3 Health Information. The student understands the basic structures and functions of the human body and how they relate to personal health throughout the life span.

Health2.3a describe behaviors that protect the body structure and organs such as wearing a seat belt and wearing a bicycle helmet

Health2.5 Health information. The student recognizes factors that influence the health of an individual.

Health2.5a identify hazards in the environment that affect health and safety such as having loaded guns in the home and drinking untreated water

Health2.8 Influencing factors. The student understands how relationships influence personal health.

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<p>Health2.8b recognize unsafe requests</p>		
<p>NEW TEKS: 2.2 Scientific investigation and reasoning. The student develops abilities necessary to do scientific inquiry in classroom and outdoor investigations</p> <p>2.2a ask questions about organisms, objects, and events during observations and investigations</p> <p>2.2b plan and conduct descriptive investigations such as how organisms grow</p> <p>2.2c collect data from observations using simple equipment such as hand lenses, primary balances, thermometers, and non-standard measurement tools</p> <p>2.2d record and organize data using pictures, numbers, and words</p> <p>2.2e communicate observations and justify explanations using student-generated data from simple descriptive investigations</p> <p>2.2f compare results of investigations with what students and scientists know about the world</p> <p>CURRENT TEKS 2.2 Scientific processes. The student develops abilities necessary to do scientific inquiry in the field and the classroom.</p> <p>2.2a ask questions about organisms, objects, and events</p> <p>2.2b plan and conduct simple descriptive investigations</p> <p>2.2d gather information using simple equipment and tools to extend the senses</p> <p>2.2e construct reasonable explanations and draw conclusions using information and prior knowledge</p> <p>2.2f communicate explanations about investigations</p> <p>2.2c compare results of investigations with what</p>	<p>Should be modeled and guided by teacher – Think-Aloud technique Should be oral and/or written Should occur both indoors and outdoors.</p> <p>Tools and equipment, including senses, should be used in authentic learning settings including during an outside field investigation</p> <p>Communicate both verbally and in science notebook (pictures, words, copying information from class discussion and teacher modeled big book science notebook entry)</p> <p>Develop questions using resources such as Science Notebooks, KLEW charts and students sharing with one another</p> <p>Class discussion of observations is a critical element to allow students to elaborate and build understanding</p> <p>Model student recording of data (pictures, words) – with more support initially as students copy information compiled in class discussion by the teacher on a chart.</p> <p>Include a mini-lesson, as appropriate to model the use of a chosen graphic organizer as a tool to record data and enter into science notebooks</p>	

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<p>students and scientists know about the world</p> <p>NEW TEKS: 2.3 Scientific investigation and reasoning. The student knows that information and critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions</p> <p>2.3a identify and explain a problem in his/her own words and propose a task and solution for the problem such as lack of water in a habitat</p> <p>2.3b make predictions based on observable patterns</p> <p>2.3c identify what a scientist is and explore what different scientists do</p> <p>CURRENT TEKS 2.3 Scientific processes. The student knows that information and critical thinking are used in making decisions.</p> <p>2.3c explain a problem in his/her own words and identify a task and solution related to the problem</p> <p>2.3a make decisions using information</p> <p>2.3b discuss and justify the merits of decisions</p>	<p>Introduce the fact that you can solve a problem or answer a question <u>through a systematic approach</u></p> <p>Model using the Think-Aloud technique (processes and steps to decision-making)</p> <p>The key here is to support students as they observe the world and the results of their investigations and build their critical thinking by looking at those results as evidence that supports a concept.</p> <p>Use the KLEW graphic organizer to support this process.</p> <p>Use reflective discussions to develop and answer questions about the scientific concepts studied. Student entries should be their elaboration based on class discussion:</p> <p>Student should use their Science Notebooks and one another as a reference, a resource and a place to record ideas, learning, questions, etc.</p>	
<p>NEW TEKS: 2.4 Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world</p> <p>2.4a collect, record, and compare information using tools, including computers, hand lenses, rulers, primary balances, plastic beakers, magnets, collecting nets, notebooks, and safety goggles; timing devices, including clocks and stopwatches; weather instruments such as thermometers, wind vanes, and rain gauges; and materials to support observations of habitats of organisms such as terrariums and aquariums</p> <p>2.4b measure and compare organisms and objects using non-standard units that</p>	<p>Tools that support hands-on investigation must be taught, modeled, guided and used.</p> <p>Students will use science notebooks to record information and draw pictures of shadows, etc. Science notebooks need to be set-up early in the bundle to allow proper use. This should not be the initial lesson on notebook entries.</p> <p>Linear measurement using non-standard units of measure using pictures and shadows of different objects.</p> <p>Additional tools should be utilized as appropriate (i.e. digital cameras for documentation, pictures of primary source (shadows))</p>	

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<p>approximate metric units</p> <p>CURRENT TEKS 2.4 Scientific processes. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. 2.4a collect information using tools including rulers, meter sticks, measuring cups, clocks, hand lenses, computers, thermometers, and balances 2.4b measure and compare organisms and objects and parts of organisms and objects, using standard and nonstandard units</p>		
<p><i>NEW TEKS:</i> 2.8 Earth and space. The student knows that there are recognizable patterns in the natural world and among objects in the sky <i>2.8a measure, record, and graph weather information including temperature, wind conditions, precipitation, and cloud coverage, in order to identify patterns in the data</i></p> <p>CURRENT TEKS 2.7 Science concepts. The student knows that many types of change occur. 2.7d observe, measure, and record changes in weather, the night sky, and seasons</p>	<p><i>Keep daily weather log (as part of morning weather / calendar routine).</i></p> <p><i>This models and provides experience gathering and recording data over time.</i></p> <p><i>The data will be used again during Bundle 8 – when discussing factors in the environment – such as weather – that affect organisms</i></p>	