

2nd Grade - Elementary Science Bundle # 4

Title	Suggested Dates
Resources	10/26/09 – 11/13/09 (14 days)

Big Idea/Enduring Understanding	Guiding Questions
<p>The Earth provides us with resources that help us meet our needs.</p> <p>Earth’s natural materials each have unique properties that can be identified and classified.</p>	<p>How do resources help us meet our needs?</p> <p>How can you describe the properties of a rock?</p> <p>How can tools, such as a pan balance or hand lens, help us to identify and sort materials?</p> <p>Where on Earth do bodies of salt water and fresh water occur?</p> <p>What are identifying characteristics of fresh and salt water?</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: 2.7 Earth and space. The student knows that the natural world includes earth materials.</p> <p><i>2.7c distinguish between natural and man-made resources</i></p> <p>CURRENT TEKS 2.10 Science concepts. The student knows that the natural world includes rocks, soil, water, and gases of the atmosphere. 2.10b identify uses of natural resources.</p>	<p>Natural resources to focus on: Earth materials (water, soil, rocks)</p>	<p>Resources applied to the entire bundle:</p> <p>Science Notebooks</p> <p>IF I TRY – found on intranet and in Sci Curr Folder in each Campus Share Folder</p> <p>KLEW/ Claims & Evidence</p> <p>PISD Elem Science Homepage</p> <p>PISD K-5 Equipment Alignment – part of Vertical Alignment Document found on curriculum site</p> <p>AIMS 2nd Grade Texas Core Curriculum – Earth Science Book “Made by Nature and Made by Me!” “This Is The House That I Built”</p> <p style="text-align: center;">REQUIRED LESSON</p> <p>GeoScience- Change Over Time “Build It Up!”</p>

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		<p>(Master copy of lesson is found in campus library and in Sci Curr Info folder in each campus share folder)</p> <p>NetTrekker: Use search term: Natural Resources Click on Link: Fresh Water Click on Link: Rivers and Streams Select website: Univ. of Illinois Extension: All-Star River Explorers</p> <p>United Streaming “A First Look: Water” “Learning About Natural Resources” “Uses of Rocks and Minerals” “Geographical Features: Bodies of Water” “Geologist’s Notebook: The Biggest Treasure Chest: Our Natural Resources” “The Importance of Plants”</p> <p>FOSS Kits - Earth Materials <u>Do not</u> need to identify types of rocks</p>
<p>2.8 Science concepts. The student distinguishes between living organisms and nonliving objects. 2.8a identify characteristics of living organisms 2.8b identify characteristics of nonliving objects</p>	<p><i>As connecting piece only: as part of discussions that occur, ask “Is this living or non-living?” “What properties does it have that make us think it is living (or nonliving)?” This thinking occurs on everything as students construct their knowledge and apply it with them more direct lessons in later bundles.</i></p>	
<p>NEW TEKS: 2.7 Earth and space. The student knows that the natural world includes earth materials. 2.7a observe and describe rocks by size, texture, and color</p>		

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<p>NEW TEKS: 2.7 Earth and space. The student knows that the natural world includes earth materials.</p> <p>2.7b identify and compare the properties of natural sources of fresh water and saltwater</p>	<p>EX: What properties are the same with both salt and fresh water? What properties are different? Are there different properties?</p> <p>Are there different properties among different types of fresh water? (pond, lake, stream)</p> <p>Students need to experience (first hand, pictures, video, primary resource interview) various water sources.</p>	
<p>2.7 Earth and space. The student knows that the natural world includes earth materials.</p> <p>2.7c distinguish between natural and man-made resources</p>	<p>Use water as example too – like Pfluger Lake, Lake Travis, Lady Bird Lake, Lake Austin: man made</p> <p>Gulf, ocean, rivers, etc</p> <p>Man-made materials we use as resource: plastic, processing wood as lumber and man-made uses of other natural resources (building with rocks),</p> <p>Focus on: what exactly is a resource and why/how we use them. Then id natural resources and why/how use them and compare to man made resources (such as plastic, clothing, and other products and materials) and why/how we use it. 3rd Grade looks at the characteristics of natural resources that make them useful in products and materials.</p> <p>A resource is something we use for a purpose.</p> <p>Scavenger hunt in / out of building for easily identifiable natural vs man made resources, around house, on field trip, etc</p>	
<p>NEW TEKS: 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, relative temperature, texture, flexibility, and whether material is a solid or liquid</p>	<p>Shape of the resource (rock shape, size, length, texture, mass – is it flexible? Is it solid? (this is about the property not teaching as a state of matter)</p> <p>Body of water shape and size, relative temperature, texture, liquid. Bodies of water comparison based on water properties...basically does the natural water in all of these bodies of water still have these same basic properties: wet, more or less clear (other materials can change that). What makes them different is the location, mixture (salt, sediment, minerals), size, movement, etc.</p> <p>Natural: lakes, ponds, stream...</p> <p>Man Made: pool, water park. (even in Schlitterbahn- uses resource in its natural state (river) and water filtered and recycled through man-made processes)</p>	
<p>NEW TEKS: 2.5 Matter and energy. The student knows</p>	<p>This is not about direct lessons on “matter” and physical changes of matter. This is part of year long inquiry process understanding conceptual ideas to</p>	

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<p>that matter has physical properties and those properties determine how it is described, classified, changed, and used.</p> <p>2.5c demonstrate that things can be done to materials to change their physical properties such as cutting, folding, sanding, and melting</p>	<p>formulate their own learning.</p> <p>Really – the focus is on change. Change can be natural or man-made and we can change things (will tie into forces). The change involved in creating man-made materials from natural resources requires processes such as these. (honor the idea that there are different levels of change involved in these processes, such as creating a natural stack rock wall, cutting and sanding wood to make a chair “sanding” rock material (rock tumbler), melting gold and shaping it into jewelry)</p> <p>Can also tie into the aluminum cans (leads to recycling TEKS)</p>	
<p>NEW TEKS: 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>2.5d combine materials that when put together can do things that they cannot do by themselves such as building a tower or a bridge and justify the selection of those materials based on their physical properties</p>	<p>Use this as a connection between using resources (natural or man-made) and why you would use them.</p> <p>EX: Phase 1: Your group has three materials to choose from to build a tall tower: toothpicks, straws (straight), and cotton balls. Which would you choose and why? (student groups should choose, give reasoning for, attempt to build tower, connect any problems that arise may be related to the physical properties of the materials they choose. Should they re-evaluate their decision based on this evidence? (focus is understanding physical properties of materials) Alternative: assign different groups specific material. At the end of building, compare the end products and evaluate based on physical properties of material (BE SURE to not focus evaluation on student work: success or failure, pretty or not, etc. The students must know, understand, and think about it this way as well. This is a teaching point on evaluation based on objective evidence.</p> <p>Phase 2: Students will combine resources. Students may choose 2 or all three of the original resources as well as choose one newly presented connecting resource (such as tape, sticky tac, glue, playdoh) and repeat engineering process. Students should discuss and document observations in their science notebooks. GOAL: Teacher facilitates conversation to focus on the impact of combining resources FOLLOW UP: buildings just of wood with no nails, building of brick with no mortar, houses without concrete foundations, wood or brick sides, etc. BIG IDEA: How and why we use resources are dependent on their physical properties. Different resources with different physical properties, when combined, create and do things that the resource alone could not do. We justify our choices based on these.</p>	
<p>NEW TEKS: 2.1 Scientific investigation and reasoning. The student conducts classroom and</p>	<p>No tasting or touching unless instructed Safe smelling – wafting Goggles</p>	<p>PISD Safety Website -Safety Contracts, games, etc -Science Safety is Elementary (for teachers)</p>

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<p>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>2.1 Scientific processes. The student conducts classroom and field investigations following home and school safety procedures.</p> <p>2.1a demonstrate safe practices during classroom and field investigations</p> <p>2.1b learn how to use and conserve resources and dispose of materials</p> <p>Health2.2 Health Behaviors. The student understands that safe, unsafe, and/or harmful behaviors result in positive and negative consequences throughout the life span.</p> <p>Health2.2b identify ways to avoid deliberate and accidental injuries</p> <p>Health2.2c explain the need to use protective equipment when engaging in certain recreational activities such as skateboarding, rollerblading, cycling, and swimming</p> <p>2.2d explain the importance of avoiding dangerous substances</p>	<p>Wait for teacher directions</p> <p>No glassware</p> <p>Students do not handle hot water, hot plates or burners.</p> <p>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>Health</p> <ul style="list-style-type: none"> -avoid injuries by being safe in investigations -protective equipment including goggles and other safety equipment -avoiding unknown and dangerous substances during investigations -behaviors include wearing goggles to protect eyes, wearing ear plugs to protect ears, wearing gloves to protect hands, etc -hazards include various materials, equipment, and unknown substances; potential hazards in investigations with tools and surroundings -unsafe requests such as behaviors during a science investigation 	<p>-Safety in the Elementary Classroom (for teachers – found in Sci Curr Info folder in Campus Share Folder)</p> <p>DuPont Science Safety Zone website</p> <p>Texas Science Safety Standards</p>
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<p>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.</p> <p>Health2.3a describe behaviors that protect the body structure and organs such as wearing a seat belt and wearing a bicycle helmet</p> <p>Health2.5 Health information. The student recognizes factors that influence the health of an individual.</p> <p>Health2.5a identify hazards in the environment that affect health and safety such as having loaded guns in the home and drinking untreated water</p> <p>Health2.8 Influencing factors. The student understands how relationships influence personal health.</p> <p>Health2.8b recognize unsafe requests made by friends such as playing in the street</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,</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</p>	

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<p>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>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 students and scientists know about the world</p>	<p>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> <p>Critical Thinking question example: Would we ever melt frozen water in its natural state to use as a liquid?</p>	
<p>NEW TEKS:</p> <p>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>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>	

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<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>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>Health2.11 Personal/interpersonal. The student comprehends the skills necessary for building and maintaining healthy relationships.</p> <p>Health2.11 a explain the steps in the decision-making process and the importance of following the steps</p> <p>Health2.11 c list the steps and describe the importance of task completion and goal setting</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:</p> <p>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</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>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 approximate metric units</p> <p>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.</p> <p>2.4a collect information using tools including rulers, meter sticks, measuring cups, clocks, hand lenses, computers, thermometers, and balances</p> <p>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></p> <p>2.8 Earth and space. The student knows that there are recognizable patterns in the natural world and among objects in the sky.</p> <p><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><i>CURRENT TEKS</i></p> <p>2.7 Science concepts. The student knows that many types of change occur.</p> <p><i>2.7d observe, measure, and record changes in weather, the night sky, and seasons</i></p>	<p><i>On-Going</i></p> <p><i>Keep weather log (as part of morning weather / calendar routine).</i></p> <p><i>This models and provides experience gathering and recording data over time. The data will be used again during Bundle 8 – when discussing factors in the environment – such as weather – that affect organisms</i></p>	