


## 2nd Grade - Elementary Science Bundle # 10

<b>Title</b>		<b>Suggested Dates</b>
Energy (light, sound, magnetic)		3/22/10 – 4/16/10 (19 days)

<b>Big Idea/Enduring Understanding</b>	<b>Guiding Questions</b>
There are many forms of energy that cause change.	<p>How can you describe sound?</p> <p>How do different energies change or interact with matter (light, sound, magnetism)?</p> <p>How do we use magnets in everyday life?</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><b>NEW TEKS:</b>  <b>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.</b></p> <p>2.5b compare changes in materials caused by heating and cooling</p> <p><b>CURRENT TEKS</b>  <b>2.7 The student knows that many types of change occur.</b>            2.7b identify, predict, and test uses of heat to cause change, including melting and evaporation</p>	<p><b>Including</b></p> <ul style="list-style-type: none"> <li>• Melting –ex: ice cubes</li> <li>• Evaporation</li> </ul> <p><b>TEACHER NOTE:</b> Uses of heat (addition and removal of) to cause change: cooking, boiling, warming (warm water, food, dry clothes), freezing, evaporation and condensation.</p> <p>Heat can be removed or added</p> <ul style="list-style-type: none"> <li>• Candles melt when heat is added</li> <li>• Candle wax hardens when heat is removed</li> </ul> <p>Heat can be produced from burning and rubbing/friction.</p>	<p>Resources listed here apply to the entire bundle.</p> <p><a href="#">Science Notebooks</a></p> <p>IF I TRY (Intranet)</p> <p><a href="#">KLEW/ Claims &amp; Evidence</a></p> <p><a href="#">PISD Elem Science Homepage</a></p> <p>PISD K-5 Equipment Alignment</p> <p style="background-color: yellow;"><b>REQUIRED SIGNATURE LESSON</b></p> <p>Bridging to TAKS- Matter            “Units Matter”</p> <ul style="list-style-type: none"> <li>• Only section 5E on temperature</li> </ul> <p><a href="#">BrainPopJr.</a>            Light            Magnets            Sound</p> <p><a href="#">AIMS 2<sup>nd</sup> Grade Texas Core Curriculum</a> –            Physical Science Book            Musical Bottles            Amplicups</p>
<p><b>CURRENT TEKS</b>  <b>2.7 The student knows that many types of change occur.</b>            2.7a observe, measure, record, analyze, predict, and illustrate changes in size, mass, temperature, color, position, quantity, sound, and movement</p>	<ul style="list-style-type: none"> <li>• Size –for example: ruler, unifix cubes</li> <li>• Mass – for example: primary balance, double pan balance</li> <li>• Temperature – Celsius thermometer</li> <li>• Color –for example: shades, tint, and primary colors</li> <li>• Position –for example: right, left, up, down, under</li> <li>• Quantity – for example: number</li> <li>• Sound               <ul style="list-style-type: none"> <li>○ Volume- Loudness</li> <li>○ Pitch</li> <li>○ Vibration</li> </ul> </li> <li>• Movement – forward / backward / side to side/ up and down/</li> </ul>	

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	<p style="text-align: center;">spinning</p> <ul style="list-style-type: none"> <li>• Time – night/day, afternoon/morning, before lunch /after lunch, hour, half hour</li> </ul>	<p>FOSS Kit – The Physics of Sound</p>
<p><b>NEW TEKS:</b>  <b>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.</b></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><b>CURRENT TEKS</b>  <b>2.6 The student knows that systems have parts and are composed of organisms and objects.</b>          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 a flashlight without batteries or plants without leaves          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 style="text-align: center;">Introduce that friction causes change in temperature due to movement.</p> <p style="text-align: center;">SUCH AS: missing parts of model cars, sunglasses without lenses, missing parts of plants/animals and its function.</p> <ul style="list-style-type: none"> <li>• Students must predict what will happen if parts are removed or stop working-</li> <li>• Teacher demonstration of consequences of removal of a part or non-functioning – such as removing roots from a living plant and observe for several days</li> </ul> <p><b>TEACHER NOTE:</b> apply to <u>anything</u> that has parts and “what would happen”</p> <p style="text-align: center;">Combine objects to create a new system such as: building a model car/mouse trap/rockets.</p>	<p><a href="#">United Streaming</a>          A First Look: Magnets          The Magic of Magnetism          Junior Electrician: Magnetism</p> <p>Stage One Science: Light and Color          A First Look: Sound          The Wonder of Sound          Stage One Science: Sounds OK</p> <p>NetTrekker          BBC – School Science Clips- Sound and Hearing  <a href="http://www.bbc.co.uk/schools/scienceclips/ages/5_6/sound_and_hearing.shtml">www.bbc.co.uk/schools/scienceclips/ages/5_6/sound_and_hearing.shtml</a></p> <p>Magic School Bus Gets an Earful- A Game about Sounds  <a href="http://www.scholastic.com/magicschoolbus/games/sound/index.htm">www.scholastic.com/magicschoolbus/games/sound/index.htm</a></p> <p>Sound and Hearing- Identifying Sounds  <a href="http://www.crickweb.co.uk/assets/resources/flash.php?&amp;file+sound1f">www.crickweb.co.uk/assets/resources/flash.php?&amp;file+sound1f</a></p>
<p><b>CURRENT TEKS</b>  <b>2.5 The student knows that organisms, objects, and events have properties and patterns.</b>          2.5b identify, predict, replicate, and create patterns including those seen in charts, graphs, and numbers</p>	<ul style="list-style-type: none"> <li>• Numbers             <ul style="list-style-type: none"> <li>○ Metric measurement including                 <ul style="list-style-type: none"> <li>▪ Length</li> <li>▪ Temperature (Celsius)</li> <li>▪ Mass</li> <li>▪ Capacity</li> </ul> </li> </ul> </li> </ul> <p>Whenever possible do both charts and graphs.  <b>REPLICATE</b> using different materials such as: picture cards, dictation, yarn/string, math manipulatives, paperclips, clay, labeled drawings, science notebooks.</p> <p><b>TEACHER NOTE:</b> Combine with Math TEKS to use the same types of graphs in both subjects.</p>	

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<p><b>NEW TEKS:</b>  <b>2.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures.</b></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><b>CURRENT TEKS</b>  <b>2.1 Scientific processes. The student conducts classroom and field investigations following home and school safety procedures.</b></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>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><b>TEACHER NOTE:</b> 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><b>NEW TEKS:</b>  <b>2.2 Scientific investigation and reasoning. The student develops abilities necessary to do scientific inquiry in classroom and outdoor investigations.</b></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,</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</p>	

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<p>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><b>CURRENT TEKS</b>  <b>2.2 Scientific processes. The student develops abilities necessary to do scientific inquiry in the field and the classroom.</b>          2.2a ask questions about organisms, objects, and events          2.2b plan and conduct simple descriptive investigations          2.2d gather information using simple equipment and tools to extend the senses          2.2e construct reasonable explanations and draw conclusions using information and prior knowledge          2.2f communicate explanations about investigations          2.2c compare results of investigations with what students and scientists know about the world</p>	<p>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><b>CURRENT TEKS</b>  <b>2.3 Scientific processes. The student knows that information and critical thinking are used in making decisions.</b>          2.3c explain a problem in his/her own words and identify a task and solution related to the problem          2.3a make decisions using information          2.3b discuss and justify the merits of decisions</p> <p><b>NEW TEKS:</b>  <b>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.</b></p> <p>2.3a identify and explain a problem in his/her own words and propose a task and solution for the</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>EX of Critical Questioning (Decision making/ Problem Solving):          Student should use their Science Notebooks and one another as a</p>	

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<p>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>reference, a resource and a place to record ideas, learning, questions, etc.</p>	
<p>NEW TEKS:  <b>2.4 Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world.</b></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 approximate metric units</p> <p>CURRENT TEKS  <b>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.</b></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>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>	