


## 2<sup>nd</sup> Grade - Elementary Science Bundle # 6

<b>Title</b>		<b>Suggested Dates</b>
Scientific Investigation and Reasoning		12/7/09 – 12/18/09 (10 days)

<b>Big Idea/Enduring Understanding</b>	<b>Guiding Questions</b>
Science is an ongoing cycle of questioning and problem solving. We ask certain questions to find out certain information.	<p>How can I learn new things on my own?</p> <p>How can I use my senses and other tools to help me learn things?</p> <p>How can I gather information and organize it?</p> <p>How can asking questions and finding the answers look differently depending on what I want to know?</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.

<b>Knowledge &amp; Skills with Student Expectations</b>	<b>District Specificity/Examples</b>	<b>Suggested Resources</b> (See note above)
<p>This bundle allows time to review and revisit the science process skills; spiraling.</p> <p>While the class science projects are done in accordance to the campus plan (See Science Project / Science Fair guide), this bundle allows the opportunity to work on or complete a science project (classification, or class research and display), and other investigations of choice focusing on tools, equipment, systematic process, critical thinking, and questioning skills.</p> <p>This is also time build in to focus on the skill of questioning. Students need to be taught matching questions with the type of information they seek.</p>		
<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>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>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><a href="#">PISD Safety Website</a></p> <p>-Safety Contracts, games, etc                      -Science Safety is Elementary (for teachers)                      -Safety in the Elementary Classroom (for teachers)</p>

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<p><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><b>Health2.2 Health Behaviors. The student understands that safe, unsafe, and/or harmful behaviors result in positive and negative consequences throughout the life span.</b></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>Health2.2d explain the importance of avoiding dangerous substances</p> <p><b>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.</b></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><b>Health2.5 Health information. The student recognizes factors that influence the health of an individual.</b></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><b>Health2.8 Influencing factors. The student understands how relationships influence personal health.</b></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><a href="#">DuPont Science Safety Zone website</a></p> <p><a href="#">Texas Science Safety Standards</a></p> <p>PISD Science Project / Science Fair Guide: 2009-2010 (Science Curriculum Information folder inside of the campus share folder or see your Campus Science Fair Contact)</p> <p><a href="#">TAKScopes</a> Can be used for project ideas</p> <p><a href="#">Using Science Notebooks in Elementary Classrooms</a> by Michael Klentschy (Chapter: Questioning). This book can be found in your campus professional development collection (library).</p> <p>PISD Science Project / Science Fair Guide: 2009-2010 (Science Curriculum Information folder inside of the campus share folder or see your Campus Science Fair Contact)</p> <p>Investigations / concepts previously conducted can be expanded here; students can design a new investigation by altering the question to a previous investigation.</p> <p>Investigations setting the stage for upcoming expansion and ideas can be conducted here.</p> <p><b>AIMS</b> – Texas Core Curriculum Nature of Science (2nd) or other related AIMS resources including <a href="#">AIMS E-Activities</a> such as: Eggsploration Stations</p> <p><b>Vernier Probeware</b> / Logger Lite for data collection. Probeware can be found on each laptop cart (Go Temp!). Logger Lite software allows real time data collection. Elementary computer images already have this software loaded. Lessons are in the campus library as well as in the Sci Curriculum Info folder in each campus share folder.</p>
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<p>Health2.8b recognize unsafe requests</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, 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>2.2 Scientific processes. The student develops abilities necessary to do scientific inquiry in the field and the classroom.</b></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>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>2.2c compare results of investigations with what students and scientists know about the world</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 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><b>2.3 Scientific processes. The student knows that information and critical thinking are used in making decisions.</b></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><b>NEW TEKS:</b>  <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><b>2.4 Scientific processes. The student uses age-</b></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><b>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><i>NEW TEKS:</i></p> <p><b>2.8 Earth and space. The student knows that there are recognizable patterns in the natural world and among objects in the sky.</b></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><b>2.7 Science concepts. The student knows that many types of change occur.</b></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 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>	