

## 1<sup>st</sup> Grade - Elementary Science Bundle #6

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

Big Idea/Enduring Understanding	Guiding Questions
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.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (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>1.1 Scientific Investigation and Reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate and responsible practices.</b></p> <p>1.1a recognize 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>1.1b recognize the importance of safe practices to keep self and others safe and healthy</p> <p><b>CURRENT TEKS</b>  <b>1.1 Conducts classroom and field investigations</b></p>	<p>No tasting or touching unless instructed</p> <p>Safe smelling – wafting</p> <p>Goggles</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>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</p> <p>-Science Safety is Elementary (for teachers)</p> <p>-Safety in the Elementary Classroom (for teachers)</p> <p><a href="#">DuPont Science Safety Zone website</a></p>

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<p><b>following home and school safety procedures.</b> 1.1a demonstrate safe practices during classroom and field investigations</p> <p><b>Health1.2 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>Health1.2a identify and use protective equipment to prevent injury</p> <p>Health 1.2d identify ways to avoid weapons and drugs or harming oneself or another person by staying away from dangerous situations and reporting to an adult</p> <p>Health1.2e identify safety rules that help to prevent poisoning</p> <p><b>Health1.10 Personal/Intrapersonal skills. The student comprehends the skills necessary for building and maintaining healthy relationships.</b></p> <p>Health1/10b practice refusal skills to avoid and resolve conflicts</p>		<p><a href="#">Texas Science Safety Standards</a></p> <p><a href="#">NetTrekker</a>: keyword – Science Fair Projects</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>NEW TEKS</b> <b>1.2 Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations.</b></p> <p>1.2a ask questions about organisms, objects, and events observed in the natural world</p> <p><b>CURRENT TEKS</b> <b>1.2 Develops abilities necessary to do scientific inquiry in the field and in the classrooms.</b> 1.2a ask questions about organisms, objects, and events</p>	<p>Teacher guide and model the process using the Think-Aloud technique</p> <p>Variety of question types should be explored: closed and open ended</p> <p>Develop questions using resources such as Science Notebooks, KLEW charts and students sharing with one another</p> <ul style="list-style-type: none"> <li>• Should primarily be oral – model writing</li> <li>• Conduct as a group rather than independently</li> </ul> <p><b>EX:</b> “I wonder which rock weighs more...” OR “Do these soils feel differently when they are wet...” (student then observes and documents verbally and through notebook)</p>	<p><b>AIMS</b> – Texas Core Curriculum Nature of Science (1<sup>st</sup>) or other related AIMS resources including <a href="#">AIMS E-Activities</a> such as: “Scientific Inquiry Planning” to show project planning steps</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>
<p><b>NEW TEKS</b> <b>1.2 Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations.</b></p>	<p>Should occur both indoors and outdoors. Students are not held accountable for Scientific Method and do not need to know the terms, although teachers can use them interchangeably.</p>	

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<p>1.2b plan and conduct simple descriptive investigations such as ways objects move</p> <p><b>CURRENT TEKS</b>  <b>1.2 Develops abilities necessary to do scientific inquiry in the field and in the classroom.</b>          1.2b Plan and conduct simple descriptive investigations</p>	<p>Formal and informal terms in all areas of science should be used interchangeably for exposure.</p> <p>Teacher explicitly model the relationship between the question and the materials and steps used in the investigation:  <b>EX: Question on which rock weighs more –</b></p> <ul style="list-style-type: none"> <li>• Materials – need the rocks and a tool to compare their weight</li> <li>• Steps – show the order of steps used in comparing the rocks on the balance</li> <li>• Model writing the materials and steps on a chart</li> </ul> <p>Whole group setting:          As the year progresses, facilitate students in helping choose the materials, tools and steps they would take to answer their questions</p>	
<p><b>NEW TEKS</b>  <b>1.2 Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations.</b></p> <p>1.2c collect data and make observations using simple equipment such as hand lenses, primary balances, and non-standard measurement tools</p> <p><b>CURRENT TEKS</b>  <b>1.2 Develops abilities necessary to do scientific inquiry in the field and in the classroom.</b>          1.2c gather information using simple equipment and tools to extend the senses</p>	<p>Tools and equipment, including senses, should be used in authentic learning settings including outside field investigations</p> <p>Teacher model student recording of data (pictures, words)</p> <ul style="list-style-type: none"> <li>• Create a big book of the science notebook to model recording             <ul style="list-style-type: none"> <li>○ Investigation steps</li> <li>○ Materials</li> <li>○ Ideas</li> </ul> </li> </ul> <p>Support students as they move from initially copying compiled information into making their own authentic entries into their notebooks</p>	
<p><b>NEW TEKS</b>  <b>1.2 Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations.</b></p> <p>1.2d record and organize data using pictures, numbers, and words</p> <p>1.2e communicate observations and provide reasons for explanations using student-generated data from simple descriptive investigations</p> <p><b>CURRENT TEKS</b>  <b>1.2 Develops abilities necessary to do scientific inquiry</b></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>Mini-lessons can be used to model specific graphic organizers as they are needed. Students begin to record into their science notebooks by copying and authentic entries</p> <p>Can use KLEW charts to model connections between What they <b>LEARNED</b> – and the <b>EVIDENCE</b> for what they learned – or what was observed that supports their new ideas</p> <p>Encourage students to always support their ideas with evidence – from activities, observations, reading, etc.</p>	

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<p><b>in the field and in the classroom.</b>          1.2d construct reasonable explanations and draw conclusions          1.2e communicate explanations about investigations</p>		
<p><b>NEW TEKS</b>  <b>1.3 Scientific investigation and reasoning. The student knows that information and critical thinking are used in scientific problem solving.</b></p> <p>1.3a identify and explain a problem such as finding a home for a classroom pet and propose a solution in his/her own words</p> <p><b>CURRENT TEKS</b>  <b>1.3 Knows that information and critical thinking are used in making decisions.</b>          1.3a make decisions using information          1.3b discuss and justify the merits of decisions          1.3c explain a problem in his/her own words and identify a task and solution related to the problem</p> <p><b>Health1.3 Health behaviors. The student demonstrates basic critical-thinking, decision-making, goal-setting, and problem-solving skills for making health-promoting decisions</b></p> <p>Health1.3a explain ways to seek the help of parents/guardians and other trusted adults in making decisions and solving problems</p> <p>Health1.3b describe how decisions can be reached and problems can be solved</p> <p>Health1.3c explain the importance of goal setting and task completion</p>	<p>Introduce the fact that you can solve a problem or answer a question <u>through a systematic approach</u></p> <p>Student should use and reference their Science Notebooks and one another</p> <p>Student entries should be their elaboration based on class discussion          EX: From field experience: What do we do if we see a broken swing? How do we best observe the small insect we are looking at?</p> <p>Model using the Think-Aloud technique (processes and steps to decision-making)</p>	
<p><b>NEW TEKS</b>  <b>1.4 Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world.</b></p> <p>1.4a collect, record, and compare information using tools, including cameras; computers; hand lenses; non-standard measuring items such as paper clips and clothespins,</p>	<p>Tools that support hands-on investigation must be taught (modeled and guided) and used.          Focus on use and develop understanding for use of hand lens;</p> <p>Students gain enough experience to independently use hand lens when appropriate</p>	

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<p>weather tools such as classroom demonstration thermometers and weather vanes; primary balances; cups; bowls, timing devices including clocks and timers; magnets; collecting nets; notebooks; materials to support observations of habitats of organisms such as aquariums and terrariums; and safety goggles</p> <p><b>1.4b</b> measure and compare organisms and objects using non-standard units</p> <p><b>CURRENT TEKS</b>  <b>1.4 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>  1.4a collect information using tools including hand lenses, clocks, computers, thermometers, and balances  <b>1.4b</b> record and compare collected information  <b>1.4c</b> measure organisms and objects and parts of organisms an objects, using non-standard units such as paperclips, hands, and pencils</p>		
<p><b>NEW TEKS</b>  <b>1.8 Earth and space. The student knows that the natural world includes the air around us and objects in the sky.</b></p> <p><i>1.8a record weather information, including relative temperature, such as hot or cold, clear or cloudy, calm or windy, and rainy or icy</i></p> <p><i>1.8c identify characteristics of the seasons of the year</i></p> <p><b>CURRENT TEKS</b>  1.7 Science concepts. The student knows that many types of change occur.  1.7c observe and record changes in weather from day to day and over seasons</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. The data will be used during a later bundle when there is more of a direct focus on weather.</i></p>	