

Sixth Grade Science Curriculum Bundle # 2

Title	Suggested Dates
Science Processes/Scientific Method	Sept. 13-Oct. 1

Big Idea/Enduring Understanding	Guiding Questions
Problem solving involves the scientific method	<p>How is the scientific method used in everyday life?</p> <p>Are all parts of the scientific method always used?</p> <p>Why is the metric system used in science?</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	Specificity & Examples	Suggested Resources (Read the note above)
To access additional resources, go to: S:\!PISD Public\Science Curriculum Resources\6th Grade Resource Activities		
<p>6.1 The student, for at least 40% of instructional time, conducts laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.</p> <p>6.1A Demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standard</p>	<p>Including:</p> <ul style="list-style-type: none"> ---Chemical use and disposal ---Electrical and heat safety ---Safe practices with lab equipment ---Implement District safety Contract ---Operate in accordance with the Texas Safety Standards <p><u>Teacher Note:</u> Safety skills and process TEKS should be embedded and reinforced throughout the year.</p>	<p>Texas Safety Standards</p> <p>Vocabulary: independent variable, dependent variable, controlled variable, hypothesis, conclusion, scientific method, physical model, conceptual model, mathematical model, limitations, quantitative/qualitative observations, x/y axis, bar/line graph</p>
<p>6.1 The student, for at least 40% of instructional time, conducts laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.</p> <p>6.1B Practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials</p>	<p>---Recycle lab material</p>	
<p>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>6.2A Plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and</p>	<p>Including:</p> <ul style="list-style-type: none"> ---Introducing scientific method <p><u>Teacher Note:</u> Emphasize that not all parts of scientific method may be used for every investigation and the ones that are used depends on the task</p>	<p>CORE ACTIVITY: Exploring the Unseen Lab pg. 26 (Holt-Holt Science & Technology Grade 6) *More labs located in Share Drive</p> <p>PRE-AP: Penny Test Lab pg.39 (AP Strategies-Laying the Foundation Chemistry & Physics)</p> <p>AVID Activity- Writing in Science pages 55-94</p>

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technology;		““Experimental Design Lab Report Activities” Uncovering Student Ideas in Science , Keeley, Vol. 3, #12, “Doing Science”
<p>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>6.2B design and implement experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology;</p>	<p>Including:</p> <ul style="list-style-type: none"> ---Independent and dependent Variables ---Controls ---Procedures ---Materials ---Using a standard lab report format <p>Teacher Note: Emphasize that not all parts of scientific method may be used for every investigation and the ones that are used depends on the task</p>	<p>*See 6.2A</p> <p>Example lab found at: http://misterguch.brinkster.net/pplane.pdf</p> <p>Scientific method resource: http://www.sciencebuddies.org/mentoring/project_scientific_method.shtml www.brainpop.com ; Search Scientific Method</p> <p>AVID Activity- Writing in Science pages 26-28 “ Observation Narrative”</p>
<p>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>6.2C collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;</p>	<p>Including:</p> <ul style="list-style-type: none"> ---Introduction to data charts and tables ---use of labeled drawings, and graphic organizers within lab and journal writings ---Introduce metric system (DO NOT TEACH CONVERSION) ---Collect Information using metric system ---PreAP: emphasis on using probeware in a variety of situations 	<p>Any lab involving students observing and recording observations into data charts</p> <p>Mini Metric Olympics Lab http://www.uark.edu/~k12info/teacher/workshops/AIMS-lessons/mini-metrics.pdf</p>
<p>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>6.2D construct tables and graphs, using repeated trials and means, to organize data and identify patterns;</p>	<p>Including:</p> <ul style="list-style-type: none"> ---Organization of data in form of data chart ---Graphing data-bar graph and line graph ---Reinforce Math’s Bundle 1:graphing ---Label independent and dependent variables on x-axis/y-axis 	<ul style="list-style-type: none"> - Any activities involving collecting and graphing data - Graphing Data Lab pg. 602 (Holt-Holt Science & Technology Grade 6)
<p>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>6.2E analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Look for trends and/or patterns specific in the data and/or graph --- Enforce direct and indirect evidence --- Relate conclusion to hypothesis/problem --- Identify sources of error/ways to improve investigation --- Communicate conclusion effectively in writing 	
<p>6.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed</p>	<p>Teacher Note: Emphasize the nature of scientific explanations: testability, repeatability, evidence,</p>	

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<p>decisions and knows the contributions of relevant scientists.</p> <p>6.3A in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;</p>	<p>predictive nature.</p>	
<p>6.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> <p>6.3B use models to represent aspects of the natural world such as a model of Earth's layers;</p>	<p>Including: ---Introduce the following types of models and include advantages/limitations of each</p> <ul style="list-style-type: none"> • Conceptual • Mathematical • Physical 	
<p>6.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> <p>6.3C identify advantages and limitations of models such as size, scale, properties, and materials;</p>	<p>Including: ---Introduce the following types of models and include advantages/limitations of each</p> <ul style="list-style-type: none"> • Conceptual • Mathematical • Physical 	
<p>6.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> <p>6.3D relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content</p>	<p>Including: --- Introduce desired format for current event</p> <p>Such as: --- Galileo → Father of Scientific Method</p>	<p><u>AVID Activity</u>: Writing in Science page 24 “Brief Autobiography”</p> <p>http://www.scientificmethod.com/sm5_smhistory.html History of the scientific method</p>
<p>6.4 The student knows how to use a variety of tools and safety equipment to conduct science inquiry.</p> <p>6.4A use appropriate tools to collect, record, and analyze information, including journals/notebooks, beakers, Petri dishes, meter sticks, graduated cylinders, hot plates, test tubes, triple beam balances, microscopes, thermometers, calculators, computers, timing devices, and other equipment as needed to teach the curriculum;</p>		<p>http://www.pflugervilleisd.net/curriculum/science/elem.cfm How to use Science Notebooks in the classroom</p>

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<p>6.4 The student knows how to use a variety of tools and safety equipment to conduct science inquiry.</p> <p>6.4B use preventative safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher.</p>		
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