# 3rd Grade - Elementary Science Bundle # 5

| Title | Suggested Dates |
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| Landforms and Rapid Change | 11/16/09 – 12/4/09 (12 days) |

| Big Idea/Enduring Understanding | Guiding Questions |
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| The Earth's surface and its natural resources are constantly changing. | How do rapid changes affect the Earth in a positive-creating way?<br>How do rapid changes affect the Earth in a negative-destroying way?<br>How do rapid changes to the Earth affect our daily life? |

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) |
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| NEW TEKS:<br>**3.7 Earth and space. The student knows that Earth consists of natural resources and its surface is constantly changing.**<br><br>3.7c identify and compare different landforms, including mountains, hills, valleys, and plains | Make connections back to Social Studies – Bundle 2<br>This should be a review, rather than a new concept | Resources listed here apply to the entire bundle.<br><br>Science Notebooks<br><br>IF I TRY (Intranet)<br><br>KLEW/ Claims & Evidence<br><br>PISD Elem Science Homepage<br><br>PISD K-5 Equipment Alignment – found as part of the Vertical Alignment Document on the Curriculum page |
| NEW TEKS:<br>**3.7 Earth and space. The student knows that Earth consists of natural resources and its surface is constantly changing.**<br><br>3.7b investigate rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides<br><br>CURRENT TEKS<br>**3.6 Science concepts. The student knows that force cause change**.<br>3.6b identify that the surface of the Earth can be changed by forces such as earthquakes and glaciers | Forces are at work that change the shape of the Earth.<br>These forces cause change through<br>• Constructive – creating – adding and/or<br>• Destructive – destroying – removing materials<br>EX: A volcano adds new layers to the Earth as lava cools on the surface<br>A volcano destroys materials when gases explode during an eruption<br><br>Relate the forces to the landforms they create / destroy<br><br>Example from current TEKS: Glaciers are a force that create a "u-shaped" valley | Review BrainPOP Jr.: "Landforms"<br><br>TAKSscopes - Earth Forces – 3.6b<br>• The yeast based lava is a good model to show the build-up of land layers, can do several times<br>• The focus of this TEK is rapid changes, therefore the glacier activity could be used as an extension<br><br>AIMS 3rd Grade Texas Core Curriculum Earth Science Book<br>"Shakes and Quakes" pp. 105-114 |

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| | Example from New TEKS (rapid change): Volcanic eruptions can create islands<br><br>New 3.7b – investigate rapid including<br>• hurricanes<br>• floods<br>• tsunamis | "Volcanoes" pp. 115-120<br><br>BrainPOP: Earth Systems<br>Choose videos showing Rapid Changes<br><br>Asking About Avalanches<br>Introduces the strategy of asking questions to learning about avalanches<br><br>United Streaming, Magic School Bus: Blows its Top |
| NEW TEKS:<br>**3.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate practices.**<br><br>3.1a demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including observing a schoolyard habitat<br><br>CURRENT TEKS<br>**3.1 Scientific processes. The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.**<br>3.1a demonstrate safe practices during field and laboratory investigations<br><br>**Health3.2 Health behaviors. The student recognizes and performs behaviors that reduce health risks throughout the life span.**<br><br>Health3.2a explain the need for obeying safety rules at home, school, work, and play such as bike safety and avoidance of weapons<br><br>Health3.2e describe the importance of taking personal responsibility for reducing hazards, avoiding accidents, and preventing accidental injuries<br><br>**Health3.9 Personal/interpersonal skills. The student uses social skills in building and maintaining healthy** | No tasting or touching unless instructed<br>Safe smelling – wafting<br>Goggles<br>Wait for teacher directions<br>No glassware<br>Students do not handle hot water, hot plates or burners.<br>Washing hands after science activities<br><br>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] | PISD Safety Website<br>-Safety Contracts, games, etc<br>-Science Safety is Elementary (for teachers)<br>-Safety in the Elementary Classroom (for teachers)<br><br>DuPont Science Safety Zone website<br><br>Texas Science Safety Standards |

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| **relationships.**<br><br>Health3.9f demonstrate refusal skills | | |
| NEW TEKS:<br>**3.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate practices.**<br><br>3.1b make informed choices in the use and conservation of natural resources by recycling or reusing materials such as paper, aluminum cans, and plastics<br><br>CURRENT TEKS<br>**3.1 Scientific processes. The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.**<br>3.1b make wise choices in the use and conservation of resources and the disposal or recycling of materials | Proper handling of soils:<br>Dispose of soil at the end of each year – recycle soils into proper area of environment<br><br>TAKScopes "glue-flour-sand" soils may need to be disposed of but will decompose in the landfill.<br><br>Make note of and teach use of district-wide recycling resource. | |
| NEW TEKS:<br>**3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.**<br><br>3.2a plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a particular problem in the natural world<br><br>CURRENT TEKS<br>**3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations.**<br>3.2a plan and implement descriptive and simple experimental investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology | These should be guided by / modeled by, and conducted as a group rather than independently.<br><br>Teacher model the investigative / decision making process using the Think-Aloud technique<br><br>The New TEKS do not hold students accountable for "experimental" investigations in 3rd grade, so they do not need to learn the specific terms of the Scientific Method, such as "hypothesis", although the teacher can use them during investigations to introduce/model the vocabulary.<br><br>Formal and informal terms in all areas of science should be used interchangeably for exposure.<br><br>The emphasis in all types of investigations is the systematic approach used: students form questions or define a problem and develop a plan to answer their question or solve the problem using appropriate tools to implement the plan.<br><br>Develop questions using resources such as Science Notebooks, | |

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| | KLEW charts and students sharing with one another<br>EX: How are landslides different from earthquakes? How are they alike?<br><br>Class discussion is a critical element to allow students to elaborate and build understanding<br><br>Record their ideas, the process and discussion points in Science Notebooks | |
| NEW TEKS:<br>**3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.**<br><br>3.2b collect data by observing and measuring using the metric system and recognize differences between observed and measured data<br><br>CURRENT TEKS<br>**3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations**<br>3.2b collect information by observing and measuring | Connections:<br>Math TEK 3.11a: linear measurement using standard units (Metric)<br>Math TEK 3.12 measure temperature using a thermometer (Celsius)<br><br>Also include the following measurements to the nearest whole number:<br>Mass (g.) using double pan balance with gram masses<br>Volume (ml.) using beakers and/or graduated cylinders<br><br>Possibly mass rocks or chalk before and after "weathering" activity. In order to see the change in mass – use gram weights on the double pan balance. Results could be checked on a digital scale. | |
| NEW TEKS:<br>**3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.**<br><br>3.2d analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations<br><br>CURRENT TEKS<br>**3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations.**<br>3.2c analyze and interpret information to construct reasonable explanations from direct and indirect evidence | • Student generated explanations with justifications of reasoning.<br>• This can be whole group, small group, partners or individuals<br>• Both verbal and written in Science Notebook<br><br>The KLEW format is a graphic organizer that allows students to record learning pieces and show the connection to evidence | |
| NEW TEKS:<br>**3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.**<br><br>3.2f communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion | Orally<br>Written , and pictures in science notebook<br><br>Discussion is important here as students compare results and make specific connections between the investigation – the concepts – and the supporting vocabulary<br><br>Labeling of technical drawings, diagrams and pictures is a huge | |

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| CURRENT TEKS<br>**3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations.**<br>3.2d communicate valid conclusions | support for vocabulary development so that students will have a model to connect to the text | |
| NEW TEKS:<br>**3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.**<br><br>3.2c construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data<br><br>CURRENT TEKS<br>**3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations.**<br>3.2e construct simple graphs, tables, maps, and charts using tools including computers to organize, examine and evaluate information | Also connects to:<br>Math TEKS 3.13a: Collect, organize, records, and display data in pictographs and bar graphs<br>Math TEKS 3.15a: Explain and record observations using objects, words, pictures, numbers, and technology.<br><br>Initial support for recording collected information should be more guided in the beginning of the year and move toward students making independent decisions on which type of graphic organizer to use as the year progresses.<br><br>Use Science Notebook to build the skill of constructing ways to record data. | |
| NEW TEKS:<br>**3.3 Scientific investigation and reasoning. The student knows that information, critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions.**<br><br>3.3a 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<br><br>CURRENT TEKS<br>**3.3 Scientific processes. The student knows that information, critical thinking, and scientific problem solving are used in making decisions.**<br>3.3a analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information | Continue to support building understanding of using a systematic approach to solve a problem or answer a question<br><br>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.<br><br>Use the KLEW graphic organizer to support this process.<br><br>Use reflective discussions to develop and answer questions about the scientific concepts studied: EX of Critical Questioning:<br><br>How does the scientific understanding of earthquakes and landslides help people decide how and where to build their homes?<br>OR<br>What type of landform would most likely be impacted by an earthquake or landslide?<br><br>Student should use and reference their Science Notebooks and one another | |
| NEW TEKS:<br>**3.3 Scientific investigation and reasoning. The student knows that information, critical thinking,** | For every model used during the year, ask the following questions:<br><br>• What is the model for? | |

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| **scientific problem solving, and the contributions of scientists are used in making decisions.**<br><br>3.3c represent the natural world using models such as volcanoes or Sun, Earth, and Moon system and identify their limitations, including size, properties, and materials<br><br>CURRENT TEKS<br>**3.3 Scientific processes. The student knows that information, critical thinking, and scientific problem solving are used in making decisions.**<br>3.3c represent the natural world using models and identify their limitations | • What do the parts of the model represent?<br>• How is the model the same as its target – the real thing?<br>• How is the model different from its target – the real thing?<br>• How well does the model represent its target? What can it not show? (limitations)<br><br>Use different models of each concept target where each different model is designed to highlight a different important part of the overall concept. The questions allow you to focus on each part of each model so that when all those parts combine, a better mental model is created for students | |
| CURRENT TEKS<br>**3.3 Scientific processes. The student knows that information, critical thinking, and scientific problem solving are used in making decisions.**<br>3.3d evaluate the impact of research on scientific thought, society, and the environment | Consider this through each unit of the year…it is an open discussion. There is an opportunity during Bundle 12 to focus more directly on this S.E. | |
| NEW TEKS:<br>**3.4 Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry.**<br><br>3.4a collect, record, and analyze information using tools including microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, compasses, magnets, collecting nets, notebooks, sound recorders, and Sun, Earth, and Moon system models, timing devices including clocks and stopwatches and materials to support observation of habitats of organisms such as terrariums and aquariums<br><br>3.4b use safety equipment as appropriate, including safety goggles and gloves<br><br>CURRENT TEKS<br>**3.4 Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry.**<br>3.4a collect and analyze information using tools including calculators, microscopes, cameras, safety | Metric units of measurement only<br>Double pan balance with and without weights, platform scale, beakers, graduated cylinders, hand lenses, magnets, notebooks<br><br>Can include microscopes for further study.<br><br>**TEACHER NOTE**<br>Teaching the proper use of tools should be scaffolded:<br>1. Tools are modeled<br>2. Students are exposed through group interaction and then,<br>3. Individuals develop skills through multiple opportunities for practice during the year.<br><br>Tools and equipment, including senses, should be used in authentic learning settings including during an outside field investigation | |

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| goggles, sound recorders, clocks, computers, thermometers, hand lenses, meter sticks, rulers, balances, magnets, and compasses<br><br>**Health3.9 Personal/Intrapersonal skills. The student uses social skills in building and maintaining healthy relationships.**<br><br>Health3.9a demonstrate effective verbal and nonverbal communication<br><br>Health3.9d demonstrate effective listening skills | | |
| NEW TEKS:<br>**3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.**<br><br>3.2e demonstrate the repeated investigations may increase the reliability of results<br><br>CURRENT TEKS<br>**3.4 Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry.**<br>3.4b demonstrate that repeated investigations may increase the reliability of results | Repeated trials will not need to be done on every hands-on/ minds-on investigation during the year.<br><br>There should be an opportunity to discuss or have a mini-lesson on the reason for repeating investigations during each bundle.<br><br>It is good to remember that many demonstrations and investigations in science do not work in the classroom on a particular day – however, that is a great time to discuss repeating a test to get a more valid result – even if there is no time to actually try the demonstration or investigation again that day. | |
| *NEW TEKS:*<br>***3.8 Earth and Space. The student knows there are recognizable patterns in the natural world and among objects in the sky.***<br><br>*3.8a observe, measure, record, and compare day-to-day weather changes in different locations at the same time that include air temperature, wind direction, and precipitation* | • *Keep weather log of local weather data – develop skills using weather tools introduced in 2nd grade.*<br>• *Gather temperature and rainfall data from selected environments in multiple areas that differ from the local environment.*<br><br>*This also models and provides experience gathering and recording data over time.*<br><br>*The data will be used during* **Bundles 7 and 8** *to make seasonal comparisons and environmental climate comparisons.* | *Weatherbug*<br><br>TAKScopes<br>*Topic: Earth Science*<br>*4th – Patterns of Change: Weather*<br>*Student Journal pp. 2-3 – Weather Data Chart (eliminate Cloud Type)* |