3rd Grade - Elementary Science Bundle # 9

Title	Suggested Dates
Interdependence	2/22/10 – 3/12/10 (15 days)

Big Idea/Enduring Understanding	Guiding Questions
An organism and the environment it is found in function as a system and the parts of that system depend on one another.	How does an organism depend on its environment? How does an environment depend on organisms? How would one change in a food chain affect an ecosystem? What organisms/how do organisms compete for resources?

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)
NEW TEKS: **3.9 Organisms and environments. The student knows that organisms have characteristics that help them survive and can describe patterns, cycles, systems, and relationships within the environments.** 3.9b identify and describe the flow of energy in a food chain and predict how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field CURRENT TEKS **3.8 Science concepts. The student knows that living organisms need food, water, light, air, a way to dispose of waste, and an environment in which to live.** 3.8b observe and identify organisms with similar needs that compete with one another for resources such as oxygen, water, food, or space	The interaction of organisms within their environment is driven by the organism's effort to meet basic needs. Organisms may compete for the same resources: • Trees and smaller plants compete for light, nutrients and water • Animals competing for the same food This idea can also be connected back to the structures and functions and instinctive and learned behaviors that an organism uses to compete for food or meet their needs. EX: • Seed structures help plants broadcast seeds to lessen the competition for resources and support survival • Buffalo travel in herds which helps to protect them from predators • Root structures differ between desert environments and rain forests, due to the availability and frequency of precipitation A food chain or web is a system of interdependence. Removing a part from this system (ties back to the current 3.5b Observe a simple system and describe the role of various parts such as yo-yo and string) impacts the system as a whole.	Resources listed here apply to the entire bundle. Science Notebooks IF I TRY (Intranet) KLEW/ Claims & Evidence PISD Elem Science Homepage PISD K-5 Equipment Alignment TAKScopes Food Webs • Explore: The purpose of this activity is to demonstrate the transfer of energy (sun→ animal). You could give one circle to each student, to focus a chain Food Chain Websites www.vtaide.com/png/foodchains.htm - students can build a food chain and food web

3rd Grade - Elementary Science Bundle # 9

NEW TEKS: **3.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate practices.** 3.1a demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including observing a schoolyard habitat CURRENT TEKS **3.1 Scientific processes. The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.** 3.1a demonstrate safe practices during field and laboratory investigations	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 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 -Safety Contracts, games, etc -Science Safety is Elementary (for teachers) -Safety in the Elementary Classroom (for teachers) DuPont Science Safety Zone website Texas Science Safety Standards
NEW TEKS: **3.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate practices.** 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 CURRENT TEKS **3.1 Scientific processes. The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.** 3.1b make wise choices in the use and conservation of resources and the disposal or recycling of materials		
NEW TEKS: **3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during**	These should be guided by / modeled by, and conducted as a group rather than independently.	

laboratory and outdoor investigations. 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 CURRENT TEKS **3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations.** 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	Teacher model the investigative / decision making process using the Think-Aloud technique 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. Formal and informal terms in all areas of science should be used interchangeably for exposure. 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. Develop questions using resources such as Science Notebooks, KLEW charts and students sharing with one another EX: How do flowers in a field compete for resources? Class discussion is a critical element to allow students to elaborate and build understanding Record their ideas, the process and discussion points in Science Notebooks	
NEW TEKS: **3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.** 3.2b collect data by observing and measuring using the metric system and recognize differences between observed and measured data CURRENT TEKS **3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations.** 3.2b collect information by observing and measuring	Connections: Math TEK 3.11a: linear measurement using standard units (Metric) Math TEK 3.12 measure temperature using a thermometer (Celsius) Measure the following to the nearest whole number: Mass (g.) using double pan balance with gram masses Volume (ml.) using beakers and/or graduated cylinders	
NEW TEKS: **3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.** 3.2d analyze and interpret patterns in data to	• Student generated explanations with justifications of reasoning. • This can be whole group, small group, partners or individuals • Both verbal and written in Science Notebook The KLEW format is a graphic organizer that allows students to record learning pieces and show the connection to evidence	

construct reasonable explanations based on evidence from investigations CURRENT TEKS **3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations**. 3.2c analyze and interpret information to construct reasonable explanations from direct and indirect evidence		
NEW TEKS: **3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.** 3.2f communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion CURRENT TEKS **3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations.** 3.2d communicate valid conclusions	Orally Written , and pictures in science notebook Discussion is important here as students compare results and make specific connections between the investigation – the concepts – and the supporting vocabulary Labeling of technical drawings, diagrams and pictures is a huge support for vocabulary development so that students will have a model to connect to the text	
NEW TEKS: **3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.** 3.2c construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data CURRENT TEKS **3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations.** 3.2e construct simple graphs, tables, maps, and charts using tools including computers to organize, examine and evaluate information	Also connects to: Math TEKS 3.13a: Collect, organize, records, and display data in pictographs and bar graphs Math TEKS 3.15a: Explain and record observations using objects, words, pictures, numbers, and technology. 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. Use Science Notebook to build the skill of constructing ways to record data.	

3rd Grade - Elementary Science Bundle # 9

NEW TEKS: **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.** 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 CURRENT TEKS **3.3 Scientific processes. The student knows that information, critical thinking, and scientific problem solving are used in making decisions.** 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 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. Use the KLEW graphic organizer to support this process. Use reflective discussions to develop and answer questions about the scientific concepts studied: **EX of Critical Questioning:** What can happen to an environment when humans bring a new organism into the environment that has not been part of that environment before? Student should use and reference their Science Notebooks and one another	
NEW TEKS: **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**. 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 CURRENT TEKS **3.3 Scientific processes. The student knows that information, critical thinking, and scientific problem solving are used in making decisions.** 3.3c represent the natural world using models and identify their limitations	For every model used during the year, ask the following questions: • What is the model for? • What do the parts of the model represent? • How is the model the same as its target – the real thing? • How is the model different from its target – the real thing? • How well does the model represent its target? What can it not show? (limitations) 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 **3.3 Scientific processes. The student knows that information, critical thinking, and scientific problem solving are used in making decisions.** 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.	

	Metric units of measurement only Double pan balance with and without weights, platform scale, beakers, graduated cylinders, hand lenses, magnets, notebooks Can include microscopes for further study. **TEACHER NOTE**: Teaching the proper use of tools should be scaffolded: 1. Tools are modeled 2. Students are exposed through group interaction and then, 3. Individuals develop skills through multiple opportunities for practice during the year. Tools and equipment, including senses, should be used in authentic learning settings including during an outside field investigation	
NEW TEKS: **3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.** 3.2e demonstrate the repeated investigations may increase the reliability of results CURRENT TEKS **3.4 Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry.** 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. There should be an opportunity to discuss or have a mini-lesson on the reason for repeating investigations during each bundle. 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.	