

3rd Grade Science

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Elementary Science Curriculum Guide for 3rd Grade

The state of Texas has identified science as a core subject area to be taught at each grade level. Students are to become proficient in the Texas standards known as the Texas Essential Knowledge and Skills (TEKS). The Brownsville Independent School District’s Elementary Science Scope and Sequence Chart is based on the TEKS. Each grade level timeline includes the introduction for the TEKS from the Texas Education Agency.

The Brownsville Independent School District has adopted the Full Option Science System (FOSS) program as the primary instructional resource to deliver science instruction in grades kindergarten through fifth grade. The FOSS program is a hands-on, inquiry-based science kit program developed by the Lawrence Hall of Science. The program is designed to deliver a high level of content and science skill to elementary children. In the chart that follows the introduction, the sequence for the FOSS program kits is listed across the top and the TEKS are listed along the left-hand side. In the columns to the left of each TEK the activity and investigation are listed. When using the FOSS program, teachers should refer to the chart to make sure that the appropriate TEK is reinforced in each investigation and activity.

Example:

(Taken from Brownsville ISD “Timeline for 3rd Grade”)

Introduction is from the Texas Essential Knowledge and Skills published by the Texas Education Agency.

Introduction (From the Texas Essential Knowledge and Skills)

- (1) In Grade 3, the study of science includes planning and implementing simple classroom and field investigations to develop the skills of collecting information using tools such as a microscope, making inferences, communicating conclusions, and making informed decisions. Students also use computers and information technology tools to support scientific investigations.

	Texas Essential Knowledge and Skill (TEK)	FOSS program kit title	Kit Scope and Sequence			
			Measurement 1 st & 2 nd Six Weeks (9 weeks)	Air and Weather 2 nd and 3 rd Six Weeks (9 weeks)	Insects 4 th & 5 th Six Weeks (9 weeks)	Balance and Motion 5 th & 6 th Six Weeks (9 weeks)
	Number of TEK as per TEA			Six Weeks that the kit will be taught		
	Objectives (TEKS)					Activity and Part of FOSS program that teaches a TEK (Note that in grades K-2 the Investigations are called Activities) In this example, it is Investigation 1, Pt. 1 that teach TEK 3.1
	Scientific processes. The student conducts classroom and field investigations following home and school safety procedures and environmentally appropriate and ethical practices.					
3.1	(A) demonstrate safe practices during classroom and field investigations; and	Inv. 1 All Parts Inv. 2 Inv. 3 Inv 4	Inv. 1 Pt. 5 & 6 Inv. 3 Ext. FOSS Stories	Inv. 1 Pt. 1 Inv. 2 Pt. 1 & 2	Inv. 2 Pt. 2 Inv. 2 Pt. 1 Inv. 4 Pt. 2	

Science Scope and Sequence Chart Timeline for 3rd Grade

Introduction (From the Texas Essential Knowledge and Skills)

- (1) In Grade 3, the study of science includes planning and implementing simple classroom and field investigations to develop the skills of collecting information using tools such as a microscope, making inferences, communicating conclusions, and making informed decisions. Students also use computers and information technology tools to support scientific investigations.
- (2) As students learn science skills, they identify the importance of components of the natural world including rocks, soils, water, and atmospheric gases. They observe the direction and position of objects as they are pushed and pulled, and movement of the Earth's surface as examples of change caused by a force. Students investigate magnetism and gravity. In addition, students explore organisms' needs, habitats, and competition with other organisms within their ecosystem.
- (3) Science is a way of learning about the natural world. Students should know how science has built a vast body of changing and increasing knowledge described by physical, mathematical, and conceptual models, and also should know that science may not answer all questions.
- (4) A system is a collection of cycles, structures, and processes that interact. Students should understand a whole in terms of its components and how these components relate to each other and to the whole. All systems have basic properties that can be described in terms of space, time, energy, and matter. Change and constancy occur in systems and can be observed and measured as patterns. These patterns help to predict what will happen next and can change over time.
- (5) Investigations are used to learn about the natural world. Students should understand that certain types of questions can be answered by investigations, and that methods, models, and conclusions built from these investigations change as new observations are made. Models of objects and events are tools for understanding the natural world and can show how systems work. They have limitations and based on new discoveries are constantly being modified to more closely reflect the natural world.

Objectives (TEKS)		Kit Scope and Sequence			
		Measurement 1 st & 2 nd Six Weeks (9 weeks)	Earth Materials 2 nd & 3 rd Six Weeks (9 weeks)	Structures of Life 4 th & 5 th Six Weeks (9 weeks)	Electricity & Magnetic 5 th & 6 th Six Weeks (9 weeks)
	Scientific processes. The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.				
3.1	(A) demonstrate safe practices during field and appropriate and ethical practices.	Inv. 1 All Parts Inv. 2 Inv. 3 Inv. 4	Inv. 1 Pt. 5 & 6 Inv. 3 Pt. 1	Inv. 1 Pt. 1 Inv. 2 Pt. 1 & 2	Inv. 1 Pt. 1 Inv. 2 Pt. 1 Inv. 4 Pt. 2
3.1	(B) make wise choices in the use and conservation of resources and the disposal or recycling of materials.	Inv. 3 Pt 1 – 3 Inv. 1 Pt. 1,2 Inv. 2 Pt. 1 – 4	Inv. 1 Pt. 2 Inv. 3 Ext. FOSS Stories	Inv. 1 Pt. 1 – 3 Inv. 2 Pt. 1	Inv. 2 Pt. 2 Inv. 3 Pt. 3 Inv. 4 Pt. 1

	Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations.				
3.2	(A) plan and implement descriptive investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology;	Inv. 2 Pt. 3 Inv. 4 Pt. 1 – ,3	Inv. 4 Pt. 2	Inv. 1 Pt. 1 – 3 Inv. 2 Pt. 1 – 3 Inv. 3 Pt. 1 – 4 Inv. 4 Pt. 1 – 4	Inv. 5 Pat. 3 & 4
3.2	(B) collect information by observing and measuring;	Inv. 1 Pt. 1 – 3 Inv. 2 Pt. 1 – 3 Inv. 3 Pt. 1 – 3	Inv. 2 Pt. 1 Inv. 3 Pt. 1	Inv. 2 Pt. 2	Inv. 1 Pt 2 & 3
3.2	(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence;	Inv. 1 Pt. 1 – 3 Inv. 2 Pt. 1 – 3 Inv. 3 Pt 1 – 3	Inv. 2 Pt 1& 2 Inv. 3 Pt. 2	Inv. 1 Pt. 3	Inv. 1 Pt. 3 & 4
3.2	(D) communicate valid conclusions; and	Inv. 1 – 4 Pt. 1 – 3	Inv. 2 Pt. 3 Inv. 4 Pt. 3	Inv. 1 Extension	Inv. 2 Pt. 4 Inv. 3 Pt. 3
3.2	(E) construct simple graphs, tables, maps, and charts to organize, examine and evaluate information.	Inv. 1 Pt. 1 Inv. 4 Pt. 2	Inv. 2 Pt. 1 Inv. 2 Pt. 2 Inv. 3 Pt. 1	Inv. Pt. 3	
	Scientific processes. The student knows that information, critical thinking, and scientific problem solving are used in making decisions.				
3.3	(A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information;	Inv. 3 Pt. 2 Inv. 4 Pt. 2	Inv. 3 Pt. 1	Inv. 4 Pt. 4	Inv. 3 Pt. 1 – 3 Inv. 4 Pt. 1 – 3 Inv. 5 Pt. 3
3.3	(B) draw inferences based on information related to promotional materials for products and services;	Inv. 1 Pt. 1 & 2 Inv. 3 Pt. 2 & 3	Inv. 2 Pt. 2 & 3 Inv.3 pt. 1		Inv. 1 pt. 3
3.3	(C) represent the natural world using models and identify their limitations;	Inv. 1 Pt. 1 Extension	Inv. 1 Pt. 1	Inv. Pt. 1	Inv. 1 FOSS Stories Inv. 3 Pt. 1 & 2 Inv. 4 Pt. 1 – 3
3.3	(D) evaluate the impact of research on scientific thought, society, and the environment; and	Inv. 1 Pt.2	Inv. 3 Pt. 2	Inv. 1 FOSS Stories	Inv. 3 & 4 FOSS Stories Inv. 1 Pt. 1 – 4
3.3	(E) connect Grade 3 science concepts with the history of science and contributions of scientists.	Inv. 1 Pt. 1 & 2 FOSS Stories	Inv. 3 Pt. 1 & 2 Inv. 2 Pt. 1	Inv. 1 FOSS Stories	Inv. 2 FOSS Stories Inv. 1 Pt. 1 – 4

	Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry.				
3.4	(A) collect and analyze information using tools including calculators, microscopes, cameras, safety goggles, sound recorders, clocks, computers, thermometers, hand lenses, meter sticks, rulers, balances, magnets, and compasses; and	Inv. 1 Pt. 2 Inv. 3 Pt. 2 Inv. 2 Pt. 1 – 3 Inv. 4 Pt. 1 – 3	Inv. 2 Pt. 1 & 2 Inv. 4 Pt. 1 & 2 Inv. 1 Pt. 1 & 2	Inv. 4 Extension	Inv.1 Pt. 1 – 4 Inv. 5 Pt. 3
3.4	(B) demonstrate that repeated investigations may increase the reliability of results.	Inv. 1 – 4 Pt. 1 – 3	Inv. 2 Pt. 1	Inv. 3 Extension	Inv. 1 Pt. 3 Inv. 3 Pt. 1 – 3
	Science concepts. The student knows that systems exist in the world.				
3.5	(A) observe and identify simple systems such as a sprouted seed and a wooden toy car; and	Inv. 4 Pt. 3		Inv. 2 Extension	Inv. 2 Pt. 1 & 3
3.5	(B) observe a simple system and describe the role of various parts such as a yo-yo and string.	Inv. 2 Pt. 1			Inv. 2 Pt. 2
	Science concepts. The student knows that forces cause change.				
3.6	(A) measure and record changes in the position and direction of the motion of an object to which a force such as a push or pull has been applied; and		Inv. 4 Pt. 3		Inv. 1 Pt. 3
3.6	(B) identify that the surface of the Earth can be changed by forces such as earthquakes and glaciers.		Inv. 1 Pt. 2		Inv. 1 Pt. 3 FOSS Stories
	Science concepts. The student knows that matter has physical properties. The student is expected to:				
3.7	(A) gather information including temperature, magnetism, hardness, and mass using appropriate tools to identify physical properties of matter; and	Inv. 4 Pt. 1 & 2 Inv. 2 Pt. 1 – 3	Inv. 2 Pt. 1,2 & 5		Inv. 1 Pt. 2,3 & 4 Inv. 4 Extension
3.7	(B) identify matter as liquids, solids, and gases.	Inv. 4 Pt. 2	Inv. 2 Pt. 2		
	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.				

3.8	(A) observe and describe the habitats of organisms within an ecosystem;			Inv. 3 Pt. 2	
3.8	(B) observe and identify organisms with similar needs that compete with one another for resources such as oxygen, water, food, or space.			Inv. 3 Pt. 3	
3.8	(C) describe environmental changes in which some organisms would thrive, become ill, or perish; and			Inv. 3 Pt. 4	
3.8	(D) describe how living organisms modify their physical environment to meet their needs such as beavers building a dam or humans building a home.			Inv. 4 Pt. 1	Inv. 2 FOSS Stories
	Science concepts. The student knows that species have different adaptations that help them survive and reproduce in their environment.				
3.9	(A) observe and identify characteristics among species that allow each to survive and reproduce; and			Inv. 3 Extension	
3.9	(B) analyze how adaptive characteristics help individuals within a species to survive and reproduce.			Inv. 4 Pt. 2	
	Science concepts. The student knows that many likenesses between offspring and parents are inherited from the parents.				
3.10	(A) identify some inherited traits of plants; and			Inv. 2 Extension	Inv. 1 Pt. 3 Ext. Inv. 4
3.10	(B) identify some inherited traits of animals.			Inv. 4 Pt. 3	
	Science concepts. The student knows that the natural world includes earth materials and objects in the sky. The student is expected to:				
3.11	(A) identify and describe the importance of earth materials including rocks, soil, water, and gases of the atmosphere in the local area and classify them as renewable, nonrenewable, or inexhaustible resources;		Inv. 1 Pt. 1 Inv. 4 Pt. 1 & 2		Inv. 2 Pt. 1 Inv. 1 FOSS STORIES Inv. 3 Pt. 3 Inv. 4 Pt. 3
3.11	(B) identify and record properties of soils such as color and texture, capacity to retain water, and ability to support the growth of plants;			Inv. 1 Pt. 1	

Appendices

ESL Learning Strategies for Science

Metacognitive Strategies:

Advance Organization

Students plan, monitor, and evaluate their learning of science concepts and skills.

What's my purpose for solving this problem or doing this experiment? What is the question? What will I use the information for?

Selective Attention

What is the most important information to pay attention to?

Organizational Planning

What are the steps of the scientific method I will need to follow?

Self-monitoring

Does the plan seem to be working? Am I getting the answer?

Self-assessment

Did I solve the problem/answer the question? How did I solve it? Is it a good solution? If not, what could I do differently?

Cognitive Strategies:

Elaborating Prior Knowledge

Students interact with the information to be learned, changing or organizing it either mentally or physically.

What do I already know about this topic or type of problem? What experiences have I had that are related to this? How does this information relate to other information?

Taking Notes

What's the best way to write down a plan to solve the problem? Table? Chart? List? Diagram?

Grouping

How can I classify this information? What is the same and what is different?

Making Inferences

Are there words I don't know that I must understand to solve the problem?

Using Images

What can I draw to help me understand and solve the problem? Can I make a mental picture or visualize this problem?

Social/Affective Strategies:

Students interact with others to assist learning, or use attitudes and feelings to help their learning.

Questioning for Clarification

What help do I need? Who can I ask? How should I ask?

Cooperating

How can I work with others to answer the question or solve the problem?

Safety Guidelines for the Brownsville Independent School District Elementary Science Program

3rd Grade

- Always follow the safety procedures outlined by your teacher.
- Never put any materials in your mouth. Do not taste any chemicals unless your teacher specifically tells you to. Investigate with your other senses (touch, smell, sight, hearing).
- Do not smell any unknown material. If your teacher asks you to smell a material, wave a hand over the material to draw the scent toward your nose.
- Do not touch your face, mouth, ears, or eyes while working with chemicals, plants, or animals. There might be something on your hands that should not get in your eyes.
- Do not mix unknown chemicals just to see what might happen.
- Always wash your hands immediately after using chemicals.
- If something gets spilled or broken, tell your teacher. Do not clean up broken or spilled things unless your teacher tells you it is okay.
- Clean up your work space after each investigation.
- Be careful when using sharp or pointed tools. Always make sure that you protect your eyes and those of your neighbors.
- Report all accidents, even small ones, to your teacher.
- Follow directions and ask questions if you're unsure of what to do.
- Behave responsibly during science investigations.

Measurement

- Remember: the small objects are not for playing. Use them the way your teacher says.

Earth Materials

- This unit can get messy. Avoid spills and keep work areas as neat as you can.
- Try not to stir up dust when you are working with the materials.
- Do not pour any earth materials down the drain. It might plug up the pipes.

Structures of Life

- Do not stir up dust when you prepare the terrarium.
- Wash your hands after working with the organisms

Electricity and Magnetism

- Do not ever try the activities in this unit with electricity from wall sockets. Use only batteries.
- The batteries should not give you a harmful shock, but the batteries do contain acid that could hurt your skin or damage clothing. If you see a leaky battery, tell your teacher. A leaky battery must be discarded.
- Do not leave a wire connected from one end of a battery to another. This short circuit will create a lot of heat and will run down the battery.

Safety rules adapted from
Full Option Science System
(FOSS) Modules