

1st Grade Science

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Elementary Science 1st Grade Curriculum Preface

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 1st 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 1, the study of science includes simple classroom and field investigations to help students develop the skills of asking questions, gathering information, making measurements using non-standard units, with tools such as a thermometer to extend their senses, constructing explanations, and drawing conclusions. Students also use computers and information technology tools to support their investigations.

Objectives (TEKS)		Kit Scope and Sequence		
		Solids and Liquids 1 st and 2 nd Six Weeks	Pebbles, Sand, and Silt 3 rd and 4 th Six Weeks	New Plants 5 th and 6 th Six Weeks
	Scientific processes. The student conducts classroom and field investigations following home and school safety procedures.			
1.1	(A) demonstrate safe practices during classroom and field investigations; and			Act. 1 Pt. 2

Texas Essential Knowledge and Skill (TEK)

FOSS program kit title

Six Weeks that the kit will be taught

Activity and Part of FOSS program that teaches a TEK
(Note that in grades 3-5 the Activities are called Investigations)
In this example, it is Activity 1, Part 2 that teaches TEK 1.1

Number of TEK as per TEA

Science Scope and Sequence Chart Timeline for 1st Grade

Introduction (From the Texas Essential Knowledge and Skills)

- (1) In Grade 1, the study of science includes simple classroom and field investigations to help students develop the skills of asking questions, gathering information, making measurements using non-standard units, with tools such as a thermometer to extend their senses, constructing explanations, and drawing conclusions. Students also use computers and information technology tools to support their investigations.
- (2) As students learn science skills, they identify components of the natural world including rocks, soil, and natural resources. Students observe that heat from the Sun or friction, is an example of something that causes change. In addition, students identify basic needs of living things, explore ways that living things depend on each other, and separate living organisms and nonliving things into groups. Students identify parts that can be put together with other parts to do new things.
- (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		
		Solids and Liquids 1 st and 2 nd Six Weeks	Pebbles, Sand and Silt 3 rd and 4 th Six Weeks	New Plants 5 th and 6 th Six Weeks
	Scientific processes. The student conducts classroom and field investigations following home and school safety procedures.			
1.1	(A) demonstrate safe practices during classroom and field investigations; and			Act. 1 Pt. 2
1.1	(B) learn how to use and conserve resources and materials.			Act. 1 Pt. 3

	Scientific processes. The student develops abilities necessary to do scientific inquiry in the field and the classroom.			
1.2	(A) ask questions about organisms, objects, and events;	Act. 1 Pt. 1 – 3 Act. 2 Pt. 1 – 3 Act. 3 Pt. 1 Act. 4 Pt. 1	Act. 1 Pt. 1 & 2 Act. 4 Pt. 3	Act. 1 Pt. 2 Act. 2 Pt. 2 & 3 Act. 3 Pt. 1 & 2 Act. 4 Pt. 2
1.2	(B) plan and conduct simple descriptive investigations;	Act. 3 Pt. 1 Act. 2 Pt. 1 – 3 Act. 1 Pt. 1 – 3 Act. 4 Pt. 1 – 4	Act. 1 Pt. 1 Act. 4 Pt. 3	Act. 2 Pt. 1 Act. 1 Pt. 2 & 3 Act. 3 Pt. 2
1.2	(C) gather information using simple equipment and tools to extend the senses;	Act. 2 Pt. 1	Act. 1 Pt. 1	Act. 2 Pt. 3 Act. 3 Pt. 2
1.2	(D) construct reasonable explanations and draw conclusions; and	Act. 1 Pt. 3	Act. 1 Pt. 1 Act. 4 Pt. 4	Act. 2 Pt. 2 Act. 4 Pt. 1 – 2
	(E) communicate explanations about investigations.	Act. 1 Pt. 3 Act. Pt. 1 – 3 Act. 3 Pt. 1 – 3		
	Scientific processes. The student knows that information and critical thinking are used in making decisions. The student is expected to:			
1.3	(A) make decisions using information;	Act. 1 Pt. 1 – 3 Act. 3 Pt. 1 – 3 Act. 2 Pt. 1 – 3 Act. 4 Pt. 1 – 3	Act. 1 Pt. 1 – 3 Act. 4 Pt. 2 & 3	Act. Pt. 2 Act. 3 Pt. 1 – 3
1.3	(B) discuss and justify the merits of decisions; and	Act. 1 Pt. 1 – 2 Act. 3 Pt. 1 – 3 Act. 2 Pt. 1 – 3 Act. 4 Pt. 1 – 3	Act. 4 Pt. 2 & 3 Act. 1 Pt. 3 & 4 Act. 3 Pt. 4	Act. 3 Pt. 2
1.3	(C) explain a problem in his/her own words and identify a task and solution related to the problem.	Act. 1 Pt. 3 Act. 2 Pt. 1 – 3 Act. 3 Pt. 1 – 3 Act. 4 Pt. 1	Act. 1 Pt. 1 & 3 Act. 3 Pt. 1	Act. 2 Pt. 2
	Scientific processes. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured.			

1.4	(A) collect information using tools including hand lenses, clocks, computers, thermometers, and balances;	Act. 1 Pt. 1 Act. 4 Pt. 1 Ext. Act. 4 Pt. 1 Ext.	Act. 1 Pt. 1	Act. 3 Pt. 1 – 3 Pt. 1 Extension
1.4	(B) record and compare collected information; and	Act. 3 Pt. 3 Act. 4 Pt. 1 Act. 1 Pt 1 – 2 Act. 2 Pt. 1 - 2	Act. 1 Pt. 1 & 3 Act. 4 Pt. 3 – 4	Act. 2 Pt. 3
1.4	(C) measure organisms and objects and parts of organisms and objects, using non-standard units such as paper clips, hands, and pencils.	Act. 2 Pt. 1 Act. 3 Pt. 3 Act. 4 Pt. 1		Act. 1 Pt. 2 Act. 2 Pt. 1 & 3
	Science concepts. The student knows that organisms, objects, and events have properties and patterns.			
1.5	(A) sort objects and events based on properties and patterns; and	Act. 3 Pt 1 & 2 Act. 1 Pt. 1 & 2	Act. 1 Pt. 3	Act. 1 Pt. 1 – 3
1.5	(B) identify, predict, and create patterns including those seen in charts, graphs, and numbers.	Act. 1 Pt. 1 – 3 Ext. 2,4,7 Act. 2 Pt. 3	Act. 1 Pt. 4	Act. 2 Pt. 1 – 3 Act. 3 Pt. 2 Act. 4 Pt. 1
	Science concepts. The student knows that systems have parts and are composed of organisms and objects.			
1.6	(A) sort organisms and objects according to their parts and characteristics;	Act. 1 Pt. 1 & 2 Act. 2 Pt. 2 & 4	Act. 1 Pt. 1 & 2 Act. 2 Pt. 2	Act. 2 Pt. 1 & 3 Act. 4 Pt. 1
1.6	(B) observe and describe the parts of plants and animals;			Act. 1 Pt. 3 Act. 5 Pt. 1 & 2
1.6	(C) manipulate objects such as toys, vehicles, or construction sets so that the parts are separated from the whole which may result in the part or the whole not working; and	Act. 1 Pt. 2 & 3		
1.6	(D) identify parts that, when put together, can do things they cannot do by themselves, such as a working camera with film, a car moving with a motor, and an airplane flying with fuel.	Act.1 Pt. 3 Act. 2 Pt. 3	Act.. 3 Pt. 4	
	Science concepts. The student knows that many types of change occur.			

1.7	(A) observe, measure, and record changes in size, mass, color, position, quantity, sound, and movement;	Act. 1 Pt. 2 Act. 2 Pt. 2 & 4	Act. 1 Pt. 1 & 2 Act. 2 Pt. 2	Act. 2 Pt. 1 & 3 Act. 4 Pt. 1
1.7	(B) identify and test ways that heat may cause change such as when ice melts;			Act. 4 Pt. 1
1.7	(C) observe and record changes in weather from day to day and over seasons; and			Act. 1 Pt. 1 - 3
1.7	(D) observe and record changes in the life cycle of organisms.			Act. 1 Pt. 1 - 3
	Science concepts. The student distinguishes between living organisms and nonliving objects.			
1.8	(A) group living organisms and nonliving objects; and			Act. 1 Pt. 1 Act. 3 Pt. 1 & 2
1.8	(B) compare living organisms and nonliving objects.	Act. 1 Pt. 2		Act. 1 Pt. 1 Act. 4 Pt. 2
	Science concepts. The student knows that living organisms have basic needs. The student is expected to:			
1.9	(A) identify characteristics of living organisms that allow their basic needs to be met; and			Act. 1 Pt. 2 Act. 2 Pt. 3 Act. 1 Pt. 3 Act. 4 Pt. 1
1.9	(B) compare and give examples of the ways living organisms depend on each other for their basic needs.			Act. 1 Pt. 3
	Science concepts. The student knows that the natural world includes rocks, soil, and water. The student is expected to:			
1.10	(A) identify and describe a variety of natural sources of water including streams, lakes, and oceans;		Act. 4 Extension	
1.10	(B) observe and describe differences in rocks and soil samples; and		Act. 1 Pt. 1 – 5 Act. 4 Pt. 1 -3	
1.10	(C) identify how rocks, soil, and water are used and how they can be recycled.		Act. 3 Pt. 1 – 5 Act. 4 Pt. 3	

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

1st 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.

Solids and Liquids

- Do not touch your face while you are working with the liquids.
- Wash your hands after you finish working with the liquids.

Pebbles, Sand, and Silt

- This can get messy. Let your teacher know if you have a spill. Someone could slip and fall on spilled soil.
- Mix materials carefully and try not to make dust. When you open bags, do not shake the soil fast. You might stir some mold into the air.

New Plants

- Most flowering plants produce pollen. If you think you have allergies, tell your teacher.

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