

# **Kindergarten Science**

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# Elementary Science Kindergarten 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 Kindergarten”)

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 Kindergarten, science introduces the use of simple classroom and field investigations to help students develop the skills of asking questions, gathering information, communicating findings, and making informed decisions. Using their own senses and common tools such as a hand lens, students make observations and collect information. Students also use computers and information technology tools to support their investigations.

Objectives (TEKS)		Kit Scope and Sequence			
		Paper 1 <sup>st</sup> Six Weeks	Wood 2 <sup>nd</sup> and 3 <sup>rd</sup> Six Weeks	Animals 2 X 2 4 <sup>th</sup> & 5 <sup>th</sup> Six Wks.	Fabric 6 <sup>th</sup> Six Weeks
	<b>Scientific processes.</b> The student conducts classroom and field investigations following home and school safety procedures.				
K.1	(A) demonstrate safe practices during classroom and field investigations; and	Act. 3 Pt. 1 -4	Act. 2 Pt. 5	Act. 1 Pt. 1 Act. 2 Pt. 1	Act. 1 Pt. 2,3,5,6 Act. 2 Pt. 1, 3

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, Activities are called investigations) In this example, it is Activity 2, Part 5 that teach TEK K.1

Number of TEK as per TEA

## Science Scope and Sequence Chart

### Timeline for Kindergarten

#### Introduction (From the Texas Essential Knowledge and Skills)

- (1) In Kindergarten, science introduces the use of simple classroom and field investigations to help students develop the skills of asking questions, gathering information, communicating findings, and making informed decisions. Using their own senses and common tools such as a hand lens, students make observations and collect information. 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 water. Students observe the seasons and growth as examples of change. In addition, Kindergarten science includes the identification of organisms and objects and their parts. Students learn how to group living organisms and nonliving objects and explore the basic needs of living organisms.
- (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			
		Paper 1 <sup>st</sup> Six Wks.	Wood 2 <sup>nd</sup> & 3 <sup>rd</sup> Six Wks	Animals 4 <sup>th</sup> & 5 <sup>th</sup> Six Wks.	Fabric 6 <sup>th</sup> Six Wks.
	<b>Scientific Processes.</b> The student participates in classroom and field investigations following home and school safety procedures.				
K.1	(A) demonstrate safe practices during classroom and field investigations: and	Act. 3 Pt. 1 – 4	Act. 2 Pt. 5	Act. 1 Pt. 1 Act. 2 Pt. 1	Act. 1 Pt. 2,3,5,6 Act. 2 Pt. 1,3
K.1	(B) learn how to use and conserve resources and materials.	Act. 2 Pt. 2 Act. 3 Pt. 1, 3	Act. 1 Pt. 5 Act. 2 Pt. 4,5	Act. 1 Pt. 1,2,4 Act. 3 Pt. 1	Act. 1 Pt. 1 – 6 Act. 2 Pt. 2 – 4

	<b>Scientific processes.</b> The student develops abilities necessary to do scientific inquiry in the field and in the classroom.				
K.2	(A) ask questions about organisms, objects, and materials.	Act. 1 Pt. 2 & 3 Act. 2 Pt. 1 – 3 Act. 3 Pt. 1 – 4	Act. 1 Pt. 3 & 4 Act. 1 Pt. 3 Act. 4 Pt. 1	Act. 1 Pt. 1 & 2 Act. 3 Pt. 2	Act. 1 Pt. 1 – 6 Act. 2 Pt. 2 – 4
K.2	(B) plan and conduct simple descriptive investigations;	Act. 1 Pt. 2,3,4 Act. 2 Pt. 1 – 3 Act. 3 Pt. 1 – 4	Act. 1 Pt. 3 & 4 Act. 1 Pt. 3	Act. 2 Pt. 2 Act. 1 Pt. 1 & 3 Act. 4 Pt. 1	Act. 1 Pt. 1- 6 Act. 2 Pt. 1 – 4
K.2	(C) gather information using simple equipment and tools to extend the senses;	Act. 1 Pt. 1 – 4 Act. Pt. 1 – 3 Act. 3 Pt. 1 – 4	Act. 1 Pt. 3 & 4 Act. 1 Pt. 4 Act. 10 Pt. 7	Act. 2 Pt. 2 & 3 Act. 4 Pt. 2 & 4	Act. 1 Pt. 1,2,4,5,6 Act. 2 Pt. 1 – 4
K.2	(D) construct reasonable explanations using information; and	Act. 1 Pt. 1 & 4 Act. 2 Pt. 1 – 3 Act. 3 Pt. 1 – 4	Act. 1 Pt. 3 & 4 Act. 2 Pt. 3	Act. 2 Pt. 1 – 3 Act. 4 Pt. 2	Act. 1 Pt. 1 – 6 Act. 2 Pt. 1 – 4
K.2	(E) communicate findings about simple investigations.	Act. 1 Pt. 1 & 2 Act. 2 Pt. 1 – 3 Act. 3 Pt. 1 – 4	Act. 1 Pt. 3 & 4	Act. 1 Pt. 1 & 4 Act. 2 Pt. 2 Act. 3 Pt. 1	Act. 1 Pt. 1,2,4,5,6 Act. 2 Pt. 1 – 4
	<b>Scientific processes.</b> The student knows that information and critical thinking are used in making decisions.				
K.3	(A) make decisions using information;	Act. Pt. 1 – 4 Act. 2 Pt. 1 – 3	Act. 1 Pt. 5 Act. 2 Pt. 2	Act. 1 Pt. 1 Act. 3 Pt. 1	Act. 1 Pt. 2 – 6 Act. 2 Pt. 1 – 4
K.3	(B) discuss and justify the merits of decisions: and	Act. 1 Pt. 1 – 3 Act. 2 Pt. 1 – 3		Act. Pt. 1	Act. 1 Pt. 2 & 3 Act. 2 Pt. 2 & 3
K.3	(C) explain a problem in his/her own words and purpose or solution	Act. 2 Pt. 1 – 3 Act. Pt. 4 Act. 3 Pt. 1 – 4	Act. 1 Pt. 5 Act. 2 Pt. 6	Act. Pt. 2	Act. 1 Pt. 2,5,6 Act. 2 Pt. 2,3,4
	<b>Scientific processes.</b> The student uses age - appropriate tools and models to verify that organisms and object and parts of organisms and objects can be observed, described, and measured.				
K.4	(A) identify and use senses as tools of observation; and	Act. Pt. 1 – 4 Act. 2 Pt. 1 & 2 Act. 3 Pt. 1 & 2	Act. 1 Pt. 2 Act. 2 Pt. 5	Act. 1 Pt. 1 Act. 2 Pt. 1 & 5 Act. 3 Pt. 2 Act. 1 Pt. 1	Act. 1 Pt. 1 – 6 Act. 2 Pt. 1,3,4
K.4	(B) make observations using tools including hand lenses, balances, cups, bowls, and computers.	Act. 3 Pt. 1 – 3 Act. 1 Pt. 2 Act. 2 Pt. 1 & 2	Act. 1 Pt. 3 & 5 Act. 2 Pt. 5 & 7	Act. 2 Pt. 1,3,5 Act. 2 Pt. 1	Act. 1 Pt. 1,2,3,5,6 Act. 2 Pt. 1 – 4

	<b>Science concepts.</b> The student knows that organisms, objects, and events have properties and patterns.				
K.5	(A) describe properties of objects and characteristics of organisms;	Act. 3 Pt. 3 Act. 1 Pt. 1 & 3 Act. 2 Pt. 2	Act. 1 Pt. 1 Act. 2 Pt. 3 & 7 Act. 2 Pt. 3 – 7	Act. 2 Pt. 1,3,7 Act. 4 Pt. 1 Act. 2 Pt. 1	Act. 1 Pt. 1,2,4 Act. 2 Pt. 2 & 3
K.5	(B) observe and identify patterns including seasons, growth, and day and night and predict what happens next; and	Act. Pt. 1 – 3 Act.1 Pt. 2 Act. 2 Pt. 1 & 2	Act. 1 Pt. 3 & 5 Act. 2 Pt. 5 & 7	Act. 2 Pt. 1,3,5 Act. 2 Pt. 1	Act. 1 Pt. 1,2,3,5,6 Act. 2 Pt. 1 - 4
K.5	(C) recognize and copy patterns see in charts and graphs.	Act. 1 Pt. 1,2,4 Act. 3 Pt. 3	Act. 1 Pt. 4 & 5 Act. 4 Pt. 1	Act. 2 Pt. 4	Act. 1 Pt. 3 – 6 Act. 2 Pt. 3
	<b>Science concepts.</b> The student knows that systems have parts and are composed of organisms and objects.				
K.6	(A) sort organisms and objects into groups according to their parts and describe how the groups are formed;	Act. 1 Pt. 1 & 4 Act. 2 Pt. 1 Act. 3 Pt. 4	Act. 1 Pt. 3 Act. 2 Pt. 1 & 7	Act. 1 Pt. 1 Act. 4 Pt. 1	Act. 1 Pt. 2,3,5,6 Act. 2 Pt. 4
K.6	(B) record observations about parts of plants including leaves, roots, stems, and flowers;			Act. 1 Pt. 2 & 3	
K.6	(C) record observations about parts of animals including wings, feet , heads and tails;	Act. 1 Pt. 2		Act. 1 Pt. 1 & 2 Act. 3 Pt. 1	
K.6	(D) identify parts that, when separated from the whole, may result in the part of the whole not working, such as cars without wheels and plants without roots; and	Act. 1 Pt. 2 Act. 3 Pt. 1 Act. 7 Pt. 1	Act. 2 Pt. 1 Act. 2 Pt. 1	Act. 3 Pt. 1 Act. 2 Pt. 1 Act. 2 Pt. 4	Act. Pt. 1,4,5,6 Act. 2 Pt. 2 & 3
K.6	(E) manipulate parts of objects such as toys, vehicles, or construction sets that, when put together, can do things they cannot do by themselves.	Activity 3 Pt. 1-4			Activity 3 Pt. 6
	<b>Science concepts.</b> The student knows that many types of change occur.				
K.7	(A) observe, describe and record changes in size, mass, color, position, quantity, time, temperature, sound, and movement;	Act. 2 Pt. 1 & 2 Act. 1 Pt. 4 Act. 5 Pt. 2 Act. 3 Pt. 4	Act. 1 Pt. 1,2,3,7 Act. 2 Pt. 1 – 4	Act. 1 Pt. 1 Act.2 Pt. 2 Act. 3 Pt. 2	Act. 1 Pt. 4 – 6 Act. 2 Pt. 1 - 3

K.7	(B) identify that heat causes change, such as ice melting or the Sun warming the air and compare objects according to temperature.	Act. 3 Pt. 4		Act. 5 Pt. 1 & 2 Act. 3 Pt. 2	Act. 2 Pt. 1
K.7	(C) observe and record weather changes from day to day and over seasons; and	Act. 3 Pt. 3		Act. 5 Pt. 1	Act. 2 Pt. 4
K.7	(D) observe and record stages in the life cycle of organisms I their natural environment.	Act. 3 Pt. 3		Act. 2 Pt. 2 Act. 3 Pt. 4 Act. 5 Pt. 1	Act. 1 Pt. 2
	<b>Science concepts.</b> The student knows the difference between living organisms and nonliving objects.				
K.8	(A) identify a particular organism or object as living or nonliving; and			Act. 2 Pt. 4 Act. 1 Pt. 1 Act. 1 Pt. 1	Act. 1 Pt. 2
K.8	(B) group organisms and objects as living or nonliving.			Act. 2 Pt. 4 Act. 1 Pt. 1 Act. 1 Pt.1	Act. 1 Pt. 2
	<b>Science concepts.</b> The student knows that living organisms have basic needs.				
K.9	(A) identify basic needs of living organisms;			Act. 1 Pt 1	
K.9	(B) give examples of how living organisms depend on each other; and			Act. 1 Pt. 2	Act. 2 Pt. 1 & 2
K.9	(C) identify ways that the Earth can provide resources for life.		Act. 1 Pt. 3		Act 2 Pt. 1 & 2
	<b>Science concept.</b> The student knows that the natural world includes rock, soil and water.				
K.10	(A) observe and describe properties of rocks, soil, and water; and	Act. 2 Pt. 1 & 2	Act. 2 Pt.5	Act. 1 Pt. 1	Act. 2 Pt. 1 & 2
K.10	(B) give examples of ways that rocks, soil , and water are useful.				Act. 2 Pt. 1 & 2

# 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?

Self-talk

Yes, I can do this task—what strategies do I need?

## **Safety Guidelines for the Brownsville Independent School District Elementary Science Program**

### **Kindergarten**

- 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.

### **Paper**

- Remember: small objects are not for playing. Use them the way your teacher says.
- Use your science materials only for the science lesson. Do not play with things like scissors, paper clips, or pencils. Someone might get hurt.
- Wash your hands after papermaking activities. The pulp can dry your hands.

### **Wood**

- Remember: small objects are not for playing. Use them the way your teacher says.
- Use your science materials only for the science lesson. Do not play with things like scissors, hammers, nails, paper clips, or pencils. Someone might get hurt.

### **Animals 2x2**

- Do not put anything in your mouth, even if animals like to eat it.

### **Fabric**

- Remember: small objects are not for playing. Use them the way your teacher says.
- Use your science materials only for the science lesson. Do not play with things like scissors, paper clips, or pencils. Someone might get hurt.

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