Los Fresnos C.I.S.D.

What We Do Here Shapes the World

Science Curriculum 5th Grade

Created: 2021

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DISTRICT MISSION AND GOALS

District Mission:

Our mission is to provide a quality educational experience that results in the development of socially responsible life-long learners.

District Goals:

Goal 1: Environment and Culture

The District will maintain a safe and positive school environment where students, parents, employees, and community members feel welcomed and engaged.

Goal 2: Academics

The District's academic programs will take the learning experience beyond state and federal standards in an effort to provide college and career readiness for all students.

Goal 3: Professional Learning

The District will provide professional learning opportunities that allow staff to achieve a higher level of proficiency.

Goal 4: Resources and Operations

The District will effectively manage its resources and operations to maximize the learning potential for all students.

PROFILE OF A GRADUATE

LOS FRESNOS CONSOLIDATED INDEPENDENT SCHOOL DISTRICT

PROFILE of a GRADUATE

Future-ready innovative thinkers and leaders

- Evaluate various sources of information and use sound reasoning when making decisions.
- Solve problems using logic, critical thinking, and deductive reasoning.
- Collaborate with others to build consensus and solve problems.
- Demonstrate perseverance and resilience.
- Embrace technology and creative solutions to everyday problems.

Effective communicators

- Listen and respond respectfully and empathetically.
- Confidently adapt their communication style to the audience.
- Use various medias to engage in productive and positive dialogue.
- Collaborate with others to engage in courageous conversations.

Conscientious citizens

- Exhibit self-discipline, honesty, kindness, and integrity.
- Serve the community as role models and through volunteerism.
- Embrace diversity and cultural awareness.
- Value and participate in the democratic process.

Life-long learners

- Commit to continuous improvement.
- Demonstrate mastery of required curriculum and skills.
- Prepare for college and workforce opportunities.
- Develop personal and professional goals that lead to a healthy, balanced lifestyle.

CONTENT VISION AND CHARACTERISTICS

Content Vision:

Our LFCISD science curriculum will spark curiosity, encourage higher level thinking, and foster problem solving skills. Our curriculum will allow learners the opportunity to gain an appreciation and understanding of science while learning about real world scenarios and applying their science knowledge to the local and global community. Our students will conduct a variety of labs and experiments, both qualitative (observed) and quantitative (measured), in order to predict patterns or trends, collect and analyze data, draw conclusions, and present their findings through a variety of ways. Through these diverse, challenging, and interdisciplinary learning experiences our students will explore and discover the world around them. We hope to prepare these young scientists to be successful in the future while igniting and fostering their natural curiosity and love of science.

Content Characteristics:

Teacher Behaviors: Teachers are lifelong learners and will strive to better their craft in various dimensions including planning, instruction, and professional responsibilities. Teachers will be expected to:

- Establish, communicate, and maintain clear expectations for student behavior and academic success with all stakeholders
- Get to know their students' strengths and weaknesses to build strong, healthy relationships throughout the school year in order to better advocate for their students
- Plan clear, well-organized, and sequential lessons that reflect best practices, are aligned to state standards, and keep students engaged
- Integrate various forms of technology and media regularly into their lessons
- Provide differentiated and challenging lessons for both struggling and advanced students with opportunities for all students to achieve academic success
- Continuously provide consistency, support, and guidance throughout the student's learning journey through scaffolding techniques and probing questions
- Emphasize the scientific method and lab safety during hands-on lab experiences

CONTENT VISION AND CHARACTERISTICS

- Create collaborative opportunities for students to learn through problem/project-based learning and/or interdisciplinary units where students research and evaluate various sources of information to make informed decisions
- Regularly measure student progress both informally and formally and use the data to adjust and provided scaffolded instruction
- Provide students with various opportunities to show evidence of their learning in both written and oral forms through individual and cooperative grouping
- Take ownership of their own learning by actively seeking new research-based strategies, searching for new learning opportunities, collaborating with peers and colleagues, and reflecting on their own practice

Student Behaviors: Students are active participants in their learning of science. Students will learn science content, vocabulary, and process skills through engaging, practical, hands-on experiences that encourage curiosity, questioning, higher-level thinking, and problem solving. Students will be expected to:

- Use scientific practices to conduct laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices
- Safely and effectively use a variety of tools and science equipment
- Collect data, analyze their findings, make inferences, and form conclusions about their lab investigations
- Communicate science information and lab results effectively as they apply socioemotional skills
- Collaborate thoughtfully with peers in pairs, small groups, and large groups
- Actively broaden their scientific knowledge through exploration and discovery
- Unite with the teacher in shared learning experiences
- Solve problems using logic, critical thinking, and deductive reasoning
- Ask questions when a topic is unclear
- Develop personal goals that lead to a healthy, balanced lifestyle

Environment: The science classroom environment should foster a welcoming space where students feel safe to exercise their curiosity and take risks while asking questions that lead to a pursuit of answers and thoughts about what has been discovered. The science classroom environment will be expected to:

- Emphasize safety first

CONTENT VISION AND CHARACTERISTICS

- Be dynamic and engaging for all learners
- Involve student-centered hands-on activities, labs, project-based learning, and stations
- Stress vocabulary through a variety of instructional strategies including word walls, interactive notebooks, visuals, prefixes/suffixes, cognates
- Embrace equity and be inclusive of all learners
- Be organized
- Incorporate digital technology
- Welcome flexible seating as students work both cooperatively with others and individually
- Include cross-curricular connections through investigations and assignments that give students deep conceptual understandings

COURSE OVERVIEW DOCUMENTS

Course Overview: In Grade 5, scientific 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. Within the physical environment, students learn about the physical properties of matter, including magnetism, mass, physical states of matter, relative density, solubility in water, and the ability to conduct or insulate electrical and thermal energy. Students explore the uses of light, thermal, electrical, mechanical, and sound energies. Within the natural environment, students learn how changes occur on Earth's surface and that predictable patterns occur in the sky. Students learn that the natural world consists of resources, including nonrenewable and renewable. Within the living environment, students learn that structure and function of organisms can improve the survival of members of a species. Students learn to differentiate between inherited traits and learned behaviors. The study of elementary science includes planning and safely implementing classroom and outdoor investigations using scientific processes, including inquiry methods, analyzing information, making informed decisions, and using tools to collect and record information, while addressing the major concepts and vocabulary, in the context of physical, earth, and life sciences. The district encourages the facilitation of classroom and outdoor investigations for at least 50% of instructional time.

TEA Documents:

- **TEA Texas Essential Knowledge and Skills (TEKS)**: This TEA webpage provides information on the state standards for what students should know and be able to do for this course.

- **STAAR Assessed Curriculum** **English | Spanish:** This TEA document identifies TEKS eligible for testing and identifies them by Reporting Category and as Readiness or Supporting Standards.

- **STAAR Blueprint** **English | Spanish:** This TEA document identifies the number of STAAR questions asked per Reporting Category.

- **STAAR Released Questions** **English | Spanish:** This TEA webpage provides sample test questions from the STAAR Item Bank that may or may not have previously been administered. Also included are test forms, which is a set of released questions, previously administered together which reflects the STAAR test blueprints.

COURSE OVERVIEW DOCUMENTS

Lead4ward Documents:

- **Lead4ward TEKS Snapshot**: This is a PDF file that color coordinates and divides the readiness, supporting, and process standards for each grade level and content area. (Click on grade level/content under Snapshot)

- **Lead4ward TEKS Scaffold**: This document shows all of the related TEKS that build up to and extend the learning clustered by concept. (Click on grade level/content under Scaffold)

- **Lead4ward Academic Vocabulary**: This document shows important vocabulary for concept development, including new and previously introduced words. (Click on grade level/content under Academic Vocab)

- **Lead4ward Instructional Strategies Playlist**: This document provides descriptions of instructional strategies to engage learners, provide practice without penalty, encourage interaction among students, and see and hear students' thinking across contents. (Located on the Instructional Tools tab)

- **Lead4ward Frequency Distribution**: This document provides the number of times a TEKS was tested over the past four test administrations. (Click on the Data Tools tab)

- **Lead4ward IQ Released Item Analysis Tool:** This document breaks down STAAR Released questions and helps teachers to conduct error analysis based on state and local data. (Click on IQ Button on top of Content Builder Resources tab)

- **Lead4ward Field Guides:** The Field Guides for Teachers succinctly organizes the information teachers and PLCs need to effectively plan meaningful instruction for students. These are purchased for every campus by the district and require login information. Please do not print, as documents are frequently updated.

- **Lead4ward Learning Videos:** These are short videos that explain how to use the resources listed above. (Click on the Learning Videos tab)

YEAR-AT-A-GLANCE (YAG)

The YAG informs all stakeholders of the learning concepts presented throughout this course. Teachers use this overview to create daily lessons that meet the unique needs of their students.

Units	Modules
1 Organisms & Environments	**1** Lab Safety and Tools
	2 Ecosystems (Populations & Communities)
	3 Organisms & Environmental Interactions
	4 Food Webs
	5 Changes in Ecosystems
	6 Adaptations
	7 Inherited Traits & Learned Behaviors
	8 Plant & Animal Life Cycles
	9 Fossils & Soil
	10 Organisms & Environments Unit Review
2 Earth & Space	**1** PLTW-Earth: Past, Present, & Future
	2 Formation of Sedimentary Rocks & Fossil Fuels
	3 Energy Resources
	4 Weather & Climate
	5 Water Cycle
	6 Earth's Solar System
	7 Predictable Patterns in Nature
	8 Rotation of Earth
	9 Physical Characteristics of Sun, Earth, & Moon
	10 Earth & Space Unit Review
3 Force, Motion, & Energy	**1** Energy
	2 Electricity
	3 Light
	4 Force
	5 Force, Motion, & Energy Unit Review
4 Matter & Energy	**1** Physical Properties
	2 Changes in Matter
	3 Mixtures
	4 Matter & Energy Unit Review
5 Anchoring Our Learning	**1** Spiral Countdown
	2 PLTW-Infection: Detection

SCOPE AND SEQUENCE

The recommended duration of lessons is less than the number of days in the school year in order to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the LFCISD Curriculum documents. *One day is equivalent to the number of minutes [on the LFCISD Instructional Schedule]*.

Units	Modules	TEKS	Duration
1 Organisms & Environments	**1** Lab Safety and Tools	5.1A, 5.4A	5 days
	2 Ecosystems (Populations & Communities)	3.9A	3 days
	3 Organisms & Environmental Interactions	5.9A	5 days
	4 Food Webs	5.9B	5 days
	5 Changes in Ecosystems	5.9C	4 days
	6 Adaptations	5.10A	6 days
	7 Inherited Traits & Learned Behaviors	5.10B	4 days
	8 Plant & Animal Life Cycles	3.10B	3 days
	9 Fossils & Soil	5.9D, 4.7A	6 days
	10 Organisms & Environments Unit Review	Spiral	2 days
2 Earth & Space	**1** PLTW-Earth: Past, Present, & Future	5.7B, 3.7B, 5.9D	10 days
	2 Formation of Sedimentary Rocks & Fossil Fuels	5.7A	5 days
	3 Energy Resources	4.7C	2 days
	4 Weather & Climate	5.8A, 4.8A	3 days
	5 Water Cycle	5.8B, 4.8B	2 days
	6 Earth's Solar System	3.8D	3 days
	7 Predictable Patterns in Nature	4.8C	5 days
	8 Rotation of Earth	5.8C	5 days
	9 Physical Characteristics of Sun, Earth, & Moon	5.8D	5 days
	10 Earth & Space Unit Review	Spiral	2 days
3 Force, Motion, & Energy	**1** Energy	5.6A	5 days
	2 Electricity	5.6B	6 days
	3 Light	5.6C	4 days
	4 Force	5.6D, 3.6B	4 days
	5 Force, Motion, & Energy Unit Review	Spiral	2 days
4 Matter & Energy	**1** Physical Properties	5.5A	12 days
	2 Changes in Matter	3.5C	2 days
	3 Mixtures	5.5B, 5.5C	3 days
	4 Matter & Energy Unit Review	Spiral	2 days
5 Anchoring Our Learning	**1** Spiral Countdown	Spiral	15 days
	2 PLTW-Infection: Detection	5.9A	10 days

INSTRUCTIONAL UNITS

Unit I: Organisms & Environments (9 Weeks)

Unit Description:

In Unit I, students will learn about organisms and environments. Students will demonstrate an understanding of the structures and functions of living organisms and their interdependence on each other and on their environment. Students need to understand that physical characteristics of environments, both living and nonliving components, help support populations and communities within ecosystems. Students learn how living organisms (plants and animals) survive and interact with one another. Additionally, they learn about how nonliving components impact living organisms. Students build and explore the flow of energy within a food web. Students learn that the Sun is the major source of energy for plants (producers) to make their own food and how consumers and decomposers play an important role. Students learn how actions have consequences in ecosystems and predict the impacts and outcomes of these changes. Students need to observe and create models which will allow them to identify that fossils are evidence of past living organisms and the nature of the environments at the time. Students need to know that species of living organisms have special features that help them survive in specific environments. Students need to explore a variety of environments and observe and compare how species are unique in appearance and movement, how they find food, and how they protect themselves. Students focus on how characteristics are either inherited or shaped by the environment. Students explore how animals have learned behaviors. Students investigate and compare the life cycles of plants and animals.

Mastery Learning Objectives:

- **Understand** that there are relationships, systems, and cycles within environments
- **Understand** that organisms have structures and behaviors that help them survive within their environments
- ELPS: The students will develop their receptive and expressive skills. (reading, writing, speaking, and listening)

Essential Questions:

- How is interdependency vital in ecosystems?
- How do environmental changes affect organisms?
- How do roles of organisms affect ecosystems?
- How does energy move and not move through ecosystems?
- How do organisms' structures affect survival in ecosystems?
- How do organisms' behaviors affect survival in ecosystems?

INSTRUCTIONAL UNITS

Real World/Cross-Curricular Connections:

- **Writing Connection:** STEMscopes Writing Science (Clever Login required)
- Social Studies Connection:Texas Science Fusion, p. 520A- Investigate a Culture (Clever Login required)
- Art Connection, Texas Science Fusion, p. 572A- Two Different Faces (Clever Login required)

INSTRUCTIONAL UNITS

Module 1 of 10 (5 Days): Lab Safety and Tools	
TEKS (R) Readiness, (S) Supporting, (P) Process	5.1A **demonstrate** safe practices and the use of safety equipment as described in the Texas Education Agency-approved safety standards during classroom and outdoor investigations using safety equipment, including safety goggles or chemical splash goggles, as appropriate, and gloves, as appropriate 5.4A **collect, record,** and **analyze** information using tools, including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, prisms, mirrors, balances, spring scales, graduated cylinders, beakers, hot plates, meter sticks, magnets, collecting nets, and notebooks; timing devices; and materials to support observations of habitats or organisms such as terrariums and aquariums
Content and Language Objectives	*The Learner Will:* • demonstrate safe practices and the use of safety equipment • describe tools used to collect, record, and analyze information • explain the importance of accuracy in measurements
Misconceptions	• Students may not understand how to design an investigation. • Students may not recognize the need to collect a variety of data (numbers, images, and written text). • Students may not create questions that cannot be answered by the investigation. • Students may not use science tools inappropriately, unsafely, or inaccurately. • Students may not understand the difference between data and evidence. • Students may not think a hypothesis is a guess or prediction. • Students may not think a hypothesis is required for all investigations.

INSTRUCTIONAL UNITS

Content Connections	**Key Concepts** • Read all directions carefully. • Always follow teacher directions. • Follow safety procedures at all times. • Dress appropriately for investigations. • Dispose of waste carefully. • Report spills or accidents immediately to teacher. • Keep your work area clean. • Wash hands after completing investigations. • Our senses of sight, smell, touch, hearing, and taste allow us to observe the world around us. **Instructional Implications** • Focus on how to design investigations, scaffolding previous learning and use of evidence to create explanations for natural phenomena. • Present a variety of investigation opportunities where students are active participants. • Minimize teacher demonstrations. • Move beyond "recipe" labs. • Have students collaborate to generate questions, determine a method to investigate and make observations, collect data, and analyze results. • Provide access to grade-appropriate scientific tools. • Provide regular opportunities for students to choose science tools to collect data. • Use instructional strategies that help students understand content. • Model thinking for students and encourage wonder. • Provide daily opportunities for student-to-student discourse to process new learning.
Materials/Resources: * available in Spanish	• TX Fusion* • STEMscopes* • Interactive notebook • Lead4Ward

INSTRUCTIONAL UNITS

Academic Vocabulary *new to grade level	• Aquariums • Beaker • Calculators • Cameras • Celsius thermometers • Clocks • Collecting net • Compass • Computers • Gloves • Graduated cylinders • Hand lenses • Hot plates • Magnets • Meter stick • Metric rulers • Microscopes • Mirrors • Notebooks • Pan balances • Prisms* • Rain gauge • Safety • Safety goggles • Spring scales • Stopwatches • Terrariums • Timing devices • Wind vanes

INSTRUCTIONAL UNITS

Instruction and Student Engagement	• TX Fusion Safety in Science o Teacher and students will read pp. xxiii-xxiv and review both indoor and outdoor safety rules. Teacher and students will read TE/SE pp. 40-50. o Teacher can refer to discussion points noted on the sidebars of the TE. • STEMscopes Tool Cards o Teacher will show students pictures of tools and give short descriptions of uses. o Teacher can create one or two anchor chart(s) with the pictures and descriptions as students are led through different examples. o EL-Pictures and titles are available in Spanish for those students who need support. (STEMscopes Teacher Toolbox → Process Skills → Tool Cards) • Interactive Notebook on Tools o Teacher will guide students in creating interactive notebook page on tools. o Students will determine a tool's position based on descriptions of each tool's job/purpose. o Teacher can discuss tools further before having students glue pieces into position. • STEMscopes Process Skills Primer-Safe Practices o Students will perform skits that demonstrate safe practices given a particular situation. o Teachers can guide students in brainstorming other ways to demonstrate safe practices for each situation. o Additional information found STEMscopes Teacher Toolbox → Process Skills → Process Skills Primer 5th Grade Teacher • Lead4Ward Instructional Strategies-Anchor Chart & Justified True/False o Students will help teacher to create an authentic anchor chart about lab safety with terms and visuals. Students can also be guided to re-create the anchor chart in their science notebook. (Anchor Chart) o Teacher will present statements to students and ask them to decide whether the statement is true or false. Students will share their thoughts as well as justifications with a partner. (Justified True/False)

Evidence of Learning	

Checking for Understanding

1. What information can be collected with a thermometer?
   (A thermometer can collect…)
2. How do safety goggles keep us safe during science investigations?
   (Safety goggles keep us safe by…)
3. Why should you wash your hands during science investigations?
   (You should wash your hands because…)
4. How are an aquarium and terrarium different?
   (An aquarium is different than a terrarium because…)
5. What science tool would help us observe an object closely?
   (I could use a _____ to observe an object closely.)
6. What is the most important safety rule?
   (I think the most important safety rule is _____ because…)
7. What should you do if you observe someone not being safe in science?
   (If I observed someone not being safe in science, I would…)

Sample Subunit Assessment Items

- TX Fusion Inquiry Flipcharts 8-12
  - Students will practice using different science tools.
  - TX Fusion TE 54B-55A provides teacher support in how to make use of inquiry flip charts. (Clever Login required)
  - Students can be divided into 6 groups and rotate between flip charts.

- STEMscopes Assessment Questions
  - Students will answer open-ended questions about lab safety.
  - Students will provide justification (why?) to open-ended lab safety questions.
  - Answer key found STEMscopes Teacher Toolbox → Process Skills → Process Skills Primer 5th Grade Teacher

INSTRUCTIONAL UNITS

Module 2 of 10 (3 Days): Ecosystems (Populations & Communities)	
TEKS (R) Readiness, (S) Supporting, (P) Process	3.9A **observe** and **describe** the physical characteristics of environments and how they support populations and communities within an ecosystem (S)
Content and Language Objectives	*The Learner Will:* • **explain** what an ecosystem is • **describe** the way organisms live and survive in their ecosystem by interacting with the living and nonliving elements • **identify** factors that affect diversity • Student outcomes should reflect listening, speaking, reading, and writing.
Misconceptions	• Students often confuse populations and communities. • Students may not understand how the nonliving physical characteristics of an environment play a role in supporting life within an ecosystem. • Students may believe individual organisms can change their structures in response to the environment. • Students may think all deserts are hot and are home to very few organisms. • Students may believe environments and ecosystems are the same.

INSTRUCTIONAL UNITS

Content Connections	**Key Concepts** • Environments have specific physical characteristics that provide food, water, air, and protection to populations and communities of plants and animals in an ecosystem. • Populations are a group of animals that are the same species. • A community consists of two or more populations of different species occupying the same space. • An ecosystem is a system combining all the living organisms and physical (abiotic) factors in an environment. **Instructional Implications** • Plan/choose activities and investigations where students can learn about the physical characteristics of a variety of environments. Perhaps start with ecosystems near you. • Provide opportunities for students to connect academic vocabulary, real-world examples, and classroom activities. • Provide opportunities for students to be able to compare/contrast between populations (i.e. same species living in the same area/ecosystem) and communities (i.e. different species living in the same area/ecosystem). • Show a variety of visuals where students can observe and describe the living and nonliving components of environments/ecosystems.
Materials/Resources: * available in Spanish	• Houghton Mifflin Harcourt-Texas Science Fusion* • STEMscopes* • Carson Dellosa • BrainPop • Study Jams • *ThinkUp!* (if available at campus)*

INSTRUCTIONAL UNITS

Academic Vocabulary *new to grade level	• Community • Ecosystem • Environment • Habitat • Individual • Interactions • Living/Nonliving • Organisms • Physical Characteristics • Population • Species
Instruction and Student Engagement	• **Texas Science Fusion Book pp. 459-469** pages overlap 3.9A & 5.9A **(**Must be logged into Clever-Think Central to access lessons, copy the link and paste on a new tab.) o Teacher will model and guide **active reading** so that students are aware of the importance of using Text Structures (Bold and italicized print, photographs, graphic organizers, tables, graphs and other visual aids). Students should also record important information found in the textbook, especially key concepts and academic vocabulary into their Science Notebook. o Show students a picture of an aquarium and a terrarium before you start the lesson. Ask students if they think they are examples of an Ecosystem. Have them answer what they think, and revisit the question after you finish the lesson. Guide students to read and discuss pp. 460-461, and to circle the biotic parts of the environment and to draw a box around the abiotic parts. Have students focus on the photographs to help them identify the living and nonliving components in each. Make sure to have students write the key vocabulary words in their Science Notebook using the definition or examples from the text. Also ask students to name some examples of organisms that would not be found in each environment and to explain their reasoning. o Focus on the Development Science Vocabulary page 463, and tell students that one way to remember the definition of population is to think of the population of a city or of Earth itself. When we discuss the population of a place, we are generally talking only about the number of one species: humans. Similarly, when scientists discuss a population, they are talking about only one species of organisms. Continue to discuss how to make sense of the term "Community" as it is suggested in the TE on page 463.

- Continue to model and guide active reading on pp. 464-465. As students continue to build their vocabulary, challenge them to give you an example of an organism's population that shares a habitat, and describe their niche in a specific Ecosystem. Students can discuss what the organism eats, where it finds shelter and other details about its niche. Students can write a brief essay or have them discuss orally. Remind students that knowing an organism's habitat helps scientists locate an organism and provide clues as to how the organism lives.
- When reading about ecosystems, have students identify other species, populations and communities from a variety of ecosystems (Ocean, desert, forest, tundra, etc.) Use the Anchor Chart and the Study Guide to obtain additional information on Environments and Ecosystems.

- **Texas Science Fusion What is an Ecosystem Digital Lesson and the Digital Lesson Companion /(PDF)**
  - To Access this lesson, log on to Think Central, Scroll to the Texas Science Fusion section. Choose the **Fifth** grade Lessons. Click on Teacher Resources. Look for Unit 11, Energy in Ecosystems, then locate Lesson 1. "What is an Ecosystem".
  - Have students access the digital lesson. You may present the digital lesson for the students as a whole group, or have them access the lesson themselves. You may also have them work in small groups using the Google Classroom Breakout rooms. Play the digital lesson. It focuses on different parts of an ecosystem and how living things work together in each habitat. The lesson will stop at key points to allow for discussion. Have students record the vocabulary with their definitions as well as any pertinent information about different ecosystems and parts that make them unique in their notebooks. The Digital Tracker Answer Key /(PDF) will guide you through the lesson.
  - You may also assign the Digital Lesson Companion. This resource has students answer comprehension questions based on the Digital Lesson. It can also be used as a tool to assess students' academic progress of the learning objective.(Digital Lesson Companion Answer Key /PDF)

- **Carson & Dellosa Science Interactive Notebook**- Ecosystems pp. 12-13.
  - Teacher will use the Guided Instructions found on the activity to complete the interactive lesson.

- **Video Links**: The following video links can be used to review and/or introduce key concepts. They may be used as lesson starters in your opening or as a review at the closure of your lesson.

- **Stemscopes Content Connections Video: Environmental** 4:35 minutes (This video has a Student handout / (PDF) that can be used to assess students comprehension of the concepts covered in the video. An Answer key /(PDF) is available.)
- Brainpop Ecosystems 6:48 minutes
- Study Jams Ecosystems 2:52 minutes
- Brainpop Droughts 6:40 minutes

- ***ThinkUp! Science pp. 211, & 214 (if available at campus)***
  - *On page 211, the Concept Practice and pp. 213-214, the Concept Check in the student edition, guide students as they practice STAAR formatted questions.*
  - *On page 212, have students complete the Concept Application activity to relate the concept to real world applications. Ask students to imagine that a flamingo and a giraffe went to live in a new environment. Have students design a diorama representing one of the new environments. Then instruct students to complete the selected-response questions in student editions.*

SPED- SeeSaw Activity Organism, Population, Community, Ecosystems, Biome by Ms Burke. Students will watch a video and complete the activity by creating a graphic organizer which sequences the hierarchy of organisms living within an Ecosystem.

EL- Use **Texas Science Fusion TE, p.463** to help students develop a Scientific meaning and understanding of the key academic terms. The example in the TE gives suggestions on how to develop a broader understanding of these terms which can then be used to elaborate on how all the unit terms are interconnected. (Clever Login required)

GT- STEMscopes Science Art State Park Model (Clever Login required) Students will make a model based on a Texas State Park ecosystem using a Styrofoam meat tray, flour clay, popsicle sticks and paint. Think about how the system would change if there is a flood, drought, or fire. List the outcome and any positive and/or negative changes. (Student Handout) /(PDF)

Evidence of Learning	**Check for Understanding:** 1. What is an environment? (An environment is an area where...) 2. What is an organism? (An organism is...) 3. What are the basic needs of an organism? (Some organisms needs are...) 4. How can environmental changes like droughts and floods affect an organism's survival? (An organism's survival can be affected by a drought by...) 5. What do we call a group of organisms of the same kind or species? (An organism of the same kind is called a...) 6. What is a community of organisms? (A community of organisms is ...) **Sample Assessment Items:** • Stemscopes ReTEKS: Environments (Clever Login required) o As a class, review the components of ecosystems, including populations and communities. o Pass out the Environments Wheel Handout to each student. Discuss the slideshow and have students complete the Environments Wheel Handout /(PDF) as you go. o Once competed, have students present their Environments Wheel. The teacher can assess their finished product. • Habitat Interactive (Click and Drag Activity) o Students will complete the activity by creating visual representations for each vocabulary word: species, community, population, and ecosystem.

INSTRUCTIONAL UNITS

Module 3 of 10 (5 Days): Organisms & Environmental Interactions	
TEKS (R) Readiness, (S) Supporting, (P) Process	5.9A **observe** the way organisms live and survive in their ecosystem by interacting with the living and nonliving components (R)
Content and Language Objectives	• **explain** what an ecosystem is • **describe** the way organisms live and survive in their ecosystem by interacting with the living and nonliving elements
Misconceptions	• Students may not understand that living organisms rely on each other for survival or how that relationship maintains a healthy ecosystem. • Students may not be able to identify living and nonliving components within an ecosystem and how their interactions maintain balance within an ecosystem. • Students may think nonliving components do not impact living organisms in an ecosystem. • Students often misidentify water as living because it is a basic need for survival. • Students may not recognize that dead organisms were once living organisms. • Students may mistake any object that moves as living (e.g., clouds, wind, sun).

INSTRUCTIONAL UNITS

Content Connections	**Key Concepts** • Organisms interact with both living and nonliving things to survive in their ecosystems. • Plants interact with living things such as animals and other plants in complex ways that also require nonliving things, such as carbon dioxide, water, and sunlight. • Animals depend on other living things, such as plants and other animals, and nonliving things, such as air and water, to survive. **Instructional Implications** • Provide opportunities for students to observe various ecosystems and the relationships among living organisms and nonliving components. • Choose activities where students observe and describe physical characteristics of environments and how these characteristics impact survival of living organisms. • Provide scenarios where students determine what plants and animals need for survival. • Vary visuals (e.g., tables, informational text/lists, and photographs) during instruction of this concept.
Materials/Resources: * available in Spanish	• TX Fusion* • STEMscopes* • YouTube • Lead4Ward • Carson Dellosa • Nearpod • Edpuzzle • Kahoot! • *Think Up!* (if available at campus)*
Academic Vocabulary *new to grade level	• Competition* • Ecosystem* • Environment* • Interactions* • Interdependency* • Living Components • Niche* • Nonliving Components • Organism*

INSTRUCTIONAL UNITS

Instruction and Student Engagement	• **Introduce Academic Vocabulary-STEMscopes Picture Slideshow** (Clever Login required) and Texas Science Fusion, pp 462-463. o Present the academic vocabulary from STEMscopes and actively read the bold academic vocabulary found in the Texas Science Fusion. Have students write down the words and definitions in their Science Notebook. o Help students create flash cards (digital version) using Google Slides, select Flash card template. o Using the Flash card template, students can search for actual photos that represent the meaning of each vocabulary term. They can use the definitions written in their Science Notebooks if necessary o Have students share their flash card creations. (Whole class or Small groups) • **Texas Science Fusion Book, pp-462-463.** (Clever Login required) pages overlap 3.9A & 5.9A **(**Must be logged into Think Central to access lessons, copy link and paste on a new tab) o Teacher will model and guide **active reading** so that students are aware of the importance of using Text Structures (Bold and italicized print, photographs, graphic organizers, tables, graphs and other visual aids). Students should also record important information found in the textbook into their Science Notebook. o Read from the Science Fusion book about Interdependency (Student book pp. 462-463) and the specifics about interactions between living and nonliving components found within an environment or ecosystem. Bring attention to the photographs that are examples of these interactions. Have students identify specific interactions they can identify from the photographs on these two pages and have them write them down in their Science Journal. For example, The zebras drink water from a river. Have the students identify which type of components are the organisms interacting with, living or nonliving. For example: The zebras are interacting with a nonliving component, water. o Use the Interpret Visuals on page 462 of the TE. Have students answer the question about the moray eel and what factors or components help it to survive in its environment. o If more practice is needed to help students master the concept of Interdependency, use the photographs from pp 464-465. Have students identify interactions they are able to observe with the organism and their environment. Use an Anchor Chart or the Study Guide for additional information.

- **Read STEMscopes Reading Science- Interdependency** (Clever Login required)
  - Guide students to read about Interdependency. Have students recall what their definition of the Interdependency is. Students can work in partnerships or in small groups to read and discuss the information taken from this literary piece. Students will also answer the comprehension questions.
  - Summarize the activity by reviewing the questions and key vocabulary that was used in the literary piece.
  - As an extension, students can write examples of interdependent examples that were mentioned in the informational text into their Science Journal. For example, the fawn and its mother depend on cactus for food. This would be an example of a living with living interaction.

- **Video Links**: The video links can be used to introduce or review key concepts. They may be used in your opening activities or as a review to summarize or wrap up your lesson. You may also want to pause the video and have students record information on Interdependency and/or academic vocabulary that is well defined in the videos.
  - STEMscopes Content Connection- Interdependency 1:07 minutes (This video has a Student handout that can be used to assess students comprehension of the concepts covered in the video. An Answer Key is available.)
  - STEMscopes Content Connection- Dependency Between Species 3:40 minutes (This video has a Student handout that can be used to assess students comprehension of the concepts covered in the video. An Answer Key is available.)
  - **STEMscopes Elaborate Video: Science Today Watch It! Bees and Blueberries** 1:59 minutes (This video has a Student handout /(PDF) that can be used to assess students comprehension of the concepts covered in the video.)
  - Interactions Between Biotic and Abiotic Factors 3:56 minutes

- ***ThinkUp! Science, pp- 143, Student Edition*** *(if available at campus)*
  Have the students watch the video: Biotic (Living) Interactions. Guide students to record some of these interactions on page 143 in their ThinkUp Science book. Have students complete the page which includes the identification of Living and Nonliving components that could also be found in the video. Students can work in small groups and/or partnerships should it be more conducive. Students can share their interactions with the whole class or in small groups.

SPED- Use Seesaw Activity, Interdependency, by Audrey Leppke. Students will watch a video and then use photographs to determine the interactions being depicted

	in each photo. The photographs will ultimately create a slideshow demonstrating the interdependency each organism is exhibiting. **EL-** Use Texas Science Fusion TE, p.463 to help students develop a Scientific meaning and understanding of the key academic terms. The example in the TE gives suggestions on how to develop a broader understanding of these terms which can then be used to elaborate on how all the unit terms are interconnected. Follow the guided direction in this section. (Clever Login required) **GT-** STEMscopes Extensions Activity: Danger, Danger… Students will research an endangered or extinct animal or plant. Students then describe what happened in order for the organism to become endangered or extinct. Was something on which they were dependent taken away? Did their environment change so much that they couldn't get the things they needed? Was the extinction or endangerment caused by human interaction? These are the questions the student will answer in their research. (Clever Login required)
Evidence of Learning	**Check for Understanding:** 1. What is an ecosystem? (An ecosystem is an area where...) 2. Do the living components in an ecosystem depend on both living and nonliving components? (I think that living components depend on...) 3. Interdependency is the interactions between whom in an ecosystem? (Interdependency occurs when an organism in an ecosystem depends on...) 4. Give an example of an interaction between two living components in an ecosystem. (A bee interacting with a...) 5. Give an example of an interaction between a living component and nonliving component in an ecosystem. (A mud wasp interacts with the...) 6. Explain the function of the living and nonliving components in your environment. (Living things depend on the...) 7. What would happen if you removed one of the nonliving components from an ecosystem? (The living things in that ecosystem may...) 8. Create a new species of animal. What would it need to survive in its ecosystem? (My animal would need...)

Sample Subunit Assessment Items

- **STEMscopes Extension Activity: Brainstorm!**
  - Have students work in small groups. Assign an animal to each group. Each group is to research their animal's environment.
  - Students are to form two lists:
    1. Who/What depends on this animal?
    2. Who/What does this animal depend on?
  - Students will answer the questions and present their information.
  - The Biosphere near Tucson, Arizona was built in 1981 to be a large self-contained ecosystem that humans could live in for years and not need outside air, food, or water. It didn't work. Students can research why it failed. Space colonies will need to be self-contained in the future. Students can find out what NASA has learned about the needs of a space colony to be self-sustaining. Teams could design their own biosphere and draw a layout on large paper showing the sections that will meet the basic needs of a crew of 10 humans and the needs of the plants and animals they are bringing with them.

- **STEMscopes ReTEKS Science Challenge**
  - Science Challenge is a short set of activities modeled after released STAAR questions for these particular TEKS (5.9A).
  - Students complete the Science Challenge after the Concept Exploration.
  - They will then use what they have learned to complete the Interactions in Ecosystems Student Handout.

- STEMscopes ReTEKS: Interactions in Ecosystems

  Students explore the interactions of organisms with their environments as they independently classify the parts of a pond as living or nonliving. Students then select one animal/habitat combination from the chart provided on the second page of the Interactions in Ecosystems Handout /(PDF).

INSTRUCTIONAL UNITS

Module 4 of 10 (5 Days): Food Webs	
TEKS (R) Readiness, (S) Supporting, (P) Process	5.9B **describe** the flow of energy within a food web, including the roles of the Sun, producers, consumers, and decomposers (R)
Content and Language Objectives	• **identify** food chains and food webs • **describe** how the flow of energy derived from the sun is transferred through a food chain and food web to consumers and decomposers • **observe** and **describe** the decomposition process • **explain** why decomposers are important to an ecosystem
Misconceptions	• Students may have difficulty classifying producers, consumers, and decomposers and understanding their roles in food webs. • Students may not understand that producers are photosynthetic and rely on the Sun to make their own food. • Students may not understand how organisms obtain energy or how that energy travels through the food web. • Students may not understand how decomposers contribute to the flow of energy through the food web. • Students may not understand that food webs are interconnected food chains in the same ecosystem. • Students may misinterpret the flow of energy as designated by the arrows in food chains and food webs.

INSTRUCTIONAL UNITS

Content Connections	**Key Concepts** • All energy transferred through food webs is derived from the Sun. • Producers use the Sun's energy to create their own food through photosynthesis. • Consumers and decomposers get their energy from producers or other consumers. • The different parts of a food web are producers, consumers, and decomposers. **Instructional Implications** • Choose/plan opportunities for students to interpret a variety of food webs. • Plan activities where students conceptualize how the flow of energy takes place in food webs. • Use the terms energy, Sun, producer, consumer, and decomposer consistently when describing food webs. • Provide students with opportunities to illustrate food webs and describe the flow of energy. • Provide opportunities for students to differentiate between food webs and food chains.
Materials/Resources: * available in Spanish	• TX Fusion* • STEMscopes* • Carson Dellosa • Study Jams • TeacherTube • Seesaw

INSTRUCTIONAL UNITS

Academic Vocabulary *new to grade level	• Bacteria* • Carnivore • Consumers • Decomposers • Energy Transfer • Flow of Energy • Food Chain • Food Webs • Fungi* • Herbivore • Omnivore • Predator • Prey • Producers • Sun

Instruction and Student Engagement	• **Texas Science Fusion Book pp. 476-493.** **(**Must be logged into Think Central to access lessons, copy the link and paste on a new tab.) o Teacher will model and guide **active reading** so that students are aware of the importance of using Text Structures (Bold and italicized print, photographs, graphic organizers, tables, graphs and other visual aids). Students should also record important information found in the textbook, especially key concepts and academic vocabulary into their Science Notebook. o Guide students to read pp. 476-477. Focus on the introductory text, and discuss with students, "If you don't eat plants, you still depend on them for food". Discuss with students the meaning of this phrase. As you read and discuss the roles of producers and consumers, have students circle the clue words or phrases that signal a detail such as an example or an added fact. In addition, have students record the academic vocabulary (*producers and consumers*) and their definitions into their Science Notebooks. Also include examples of each which can be found on these pages as well as. o Have students complete the Interactive activity on page 477 that has students distinguish between producers and consumers. Revisit the photos, ask the students to comment on each, using the terms "producer" and "consumer". o On pp. 478-479, students will underline the definitions of herbivore, carnivore, and omnivore. Students will also record this information into their Science Notebook. They will include examples for each type of consumer that can be found on these pages of the textbook. Students will also revisit the terms *predator* and *prey*. Lead students to include these terms and their definitions into the notebooks. Elaborate on the prefixes of each of these terms. For example: "herb" means plant, "carni' means meat and, "omni" means all. Add that the root word "vore" means eating. Have students develop this understanding so they can make sense of the origin of these terms. Students should include this information in their Science Notebook. Have students use the terms, herbivore, carnivore and omnivore as they look at the photos on these pages. You may also have them classify them as being predators, prey or both. o Direct students to pp. 480-481. On these pages, students will read, record, and discuss information on decomposers. Students will be asked to underline the main roles of scavengers and decomposers. Have students record the academic vocabulary and their definitions in their notebooks. Have students focus on the photographs on these pages, ask students to write examples of decomposers in their notebooks. Make note of the differences between a scavenger and a decomposer. o Have students create a food web in their Science Notebook and label each organism beginning with the sun giving energy to the producer, to understand the flow of energy moving through each organism in the food web. Review the

flow of energy by drawing an arrow between each organism and label the arrow GET (Gives EnergyTo) or TOE (Transfer of Energy) to help understand the process. Use the Roles of in an Ecosystem Anchor Chart, Food Web Anchor Chart and the Study Guide for additional information.
  - Have students complete the *Sum It Up!* and *Brain Check* to check for comprehension and understanding of the key concepts addressed in this subunit.

- **Texas Science Fusion What Are Roles of Organisms in an Ecosystem Digital Lesson and the Digital Lesson Companion/(PDF) (**Must be logged into Think Central to access lessons, copy the link and paste on a new tab.)
  - To Access this lesson, log on to Think Central, Scroll to the Texas Science Fusion section. Choose the **Fifth** grade Lessons. Click on Teacher Resources. Look for Unit 11 Energy in Ecosystems, then locate Lesson 2, "What Are Roles of Organisms in Ecosystems?".
  - Have students access the digital lesson. You may present the digital lesson for the students as a whole group, or have them access the lesson themselves. You may also have them work in small groups using the Google Classroom Breakout rooms. Play the digital lesson. It focuses on the roles of organisms in an ecosystem and how different organisms obtain nutrients. The lesson will stop at key points to allow for discussion. Have students record the vocabulary with their definitions as well as any pertinent information about the different roles organisms play in each ecosystem and how they interact with one another in their notebooks. The Digital Tracker Answer Key /(PDF)will guide you through the lesson.
  - You may also assign the Digital Lesson Companion. This resource has students answer comprehension questions based on the Digital Lesson. It can also be used as a tool to assess students' academic progress of the learning objective. (Digital Lesson Companion Answer Key) /PDF
  - There are additional Digital Lessons in this unit that may also be used to reinforce the TEKS on different parts of ecosystems, Lesson 4 "*How Does Energy Move Through Ecosystems?*", and Lesson 5 " *What Role Do Decomposers Play?*" are important lessons you have the option to use. They all have the Digital Tracker Answer Keys, as well as the Digital Lesson Companion with the Answer Key.

- **Carson & Dellosa Science Interactive Notebook Food Chains, pp. 24-25.**
  - Introduction: Have students make a list of what they like to eat. Ask them to identify the type of consumer Humans are categorized as. As a class, have students discuss where each food that they listed comes from. Elaborate by pointing out that our food comes from another organism. Ask the students,

"How does each food item or organism get the nutrients and energy it passes on to us?

- Guide students through the steps listed on the Teacher page 24. Make sure students are using the right side of their notebook to cut and organize the pieces.
- Students will be writing down the definitions for each of the academic vocabulary words that are included in this activity. Make sure students write the definitions under each flap.
- When constructing the Food Chain, advise the students to position the pieces that construct the food chain in place before gluing them down. The order for each piece is listed on the page.
- Once the arrows have been correctly positioned and then glued down. You may have students write **"GET"** on each of the arrows so they can remember how the flow of energy is being transferred from one organism to the next. GET stands for: "Gives Energy To".
- Extension: You can have students brainstorm what would happen if you added a new animal to the food chain, such as an owl or mouse. This would lead into Food Webs, which are multiple food chains interconnected by the organisms that create it, causing the transfer of energy to move through multiple pathways.

- **Video Links**: The video links can be used to introduce or review key concepts. They may be used in your opening activities or as a review to summarize or wrap up your lesson. You may also want to pause the video and have students record information on Interdependency and/or academic vocabulary that is well defined in the videos.
  - **STEMscopes Content Connection: Food Webs** 2:00 minutes (This video has a Student handout /(PDF) that can be used to assess students comprehension of the concepts covered in the video. An Answer key/(PDF) is available.)
  - **STEMscopes - Content Connection Video:Ecosystems Webs** 4:18 minutes (This video has a student handout /(PDF) that can be used to assess students comprehension of the concepts covered in the video. An Answer key/(PDF) is available.)
  - **Food chains, food webs, energy pyramid in Ecosystems video** 0:42-2:50
  - **Study Jams - Food Webs** 3:19 minutes
  - **Study Jams-Food Chains** 4:02 minutes

SPED-STEMscopes ReTEKS: Review It - Food Webs Using slideshow review what the arrow represents in a food web and the differences between a producer, consumer, and decomposer. Students complete their Food Web Organisms Handout /(PDF).

INSTRUCTIONAL UNITS

	STEMscopes - Acceleration - Science Art - Food Chain Mobile - Students will make a food chain mobile to demonstrate the concept of the flow of energy. Discuss connections of the different chains and how they could make a food web. (Student Handout /(PDF) **EL-** Use Texas Science Fusion TE, page 476 and have students demonstrate the difference between producers and consumers. Invite pairs to draw five pictures of living things and label them producer or consumer. Have volunteers act as if they are one of the organisms they have drawn. Encourage students to ask questions of the actors without using the words; producer or consumer, guess which one each student is based on the answer. **GT- STEMscopes Acceleration Project Based Learning Attracting Wildlife Landscaping Plan** Students will design landscaping plans that will attract insects, plants, and animal wildlife, while discouraging invasive species that will unbalance the ecosystem. The students will create prototypes of landscape plans and include three native plants and the animals that use those plants for food and shelter. They will include all animals and plants in the same food web and present their plans and food webs to the Homestead Preservation Committee in a three-minute presentation.

Evidence of Learning

Checking for Understanding (with sentence starters)

- **Name examples of organisms found in an ecosystem.**
  (The name of an organism found in an ecosystem is...)
- **What are the three types of organisms found in an ecosystem?**
  (Three types of organisms are...)
- **What are producers and what is their role in an ecosystem?**
  (The producers are the _____ and their role is to...)
- **What are consumers and what is their role in an ecosystem?**
  (Consumers are the _____ and their role in an ecosystem is….)
- **What are decomposers and what is their role in an ecosystem?**
  (The decomposers are the ____ and their role is to…)
- **What do these organisms need for survival?**
  (Organisms need _____ to survive.)
- **What is a food chain and what is being transferred from one organism to the next in the food chain?**
  (A food chain is _____ and _____ is being transferred from one organism to the next.)
- **What is the difference between a food chain and a food web?**
  (The difference between a food chain and a food web is....)
- **Who is the only non-living component in a food chain or food web?**
  (The only non-living component in a food chain or food web is...)
- **Who is the first organism in every food chain?**
  (The first organism is the...)
- **What type of organisms can follow the producers in a food chain or food web?**
  (A ____ or an_____ can follow the producer in the food chain or food web.)

Sample Subunit Assessment Items

- STEMscopes ReTEKS Engage
  - Students will use the Food Web Handout /(PDF) provided to answer questions regarding the food web, food chains, and how to classify organisms within a food web.
- STEMscopes ReTEKS Concept Exploration
  - Students build a model to show how energy flows from a producer to a high-level consumer within an ecosystem. Students then roll a die to build a food web. A Student Handout /(PDF) and Answer Key /(PDF) is available
- 5.9A Food Webs: Science Today-Read It!
  - Students will explore connections and applications of science content through interactions with authentic, real world-media provided by Associated Press. A Student Handout /(PDF) is available.

INSTRUCTIONAL UNITS

Module 5 of 10 (4 Days): Changes in Ecosystems	
TEKS (R) Readiness, (S) Supporting, (P) Process	5.9C **predict** the effects of changes in ecosystems caused by living organisms, including humans, such as the overpopulation of grazers or the building of highways (S)
Content and Language Objectives	• **recognize** succession as a change of the organisms living in an ecosystem • **describe** how changing ecosystems affect the organisms living there • **predict** the effect of changes to ecosystems caused by living organisms
Misconceptions	• Students may not understand the role humans play in various ecosystems. • Students may not understand that changes impact living organisms and the balance within the ecosystem.
Content Connections	**Key Concepts** • Living organisms, including humans, can change their environment. • Changes to the environment made by organisms can affect other organisms. • We can predict the effects of changes to the environment caused by organisms. **Instructional Implications** • Provide opportunities for students to explore a variety of interactions that occur between living organisms within an ecosystem in order to make predictions (orally, written, or through illustrations) about the changes that may affect the ecosystem. • Provide scenarios or simulations where students can predict the outcome of the changes in an ecosystem. • Vary stimuli with charts, tables, visuals, and graphs for students to interpret data and make predictions.

INSTRUCTIONAL UNITS

Materials/Resources: * available in Spanish	• TX Fusion* • STEMscopes* • YouTube • Seesaw • Nearpod • *Think Up!* (if available at campus)*
Academic Vocabulary *new to grade level	• carrying capacity* • conservation • construction • deforestation • ecosystems • grazers • human impact • invasive species* • loss of habitat • native species* • non-native species* • overfishing • overpopulation* • perish • poaching* • thrive

INSTRUCTIONAL UNITS

Instruction and Student Engagement	• **Texas Science Fusion Book, pp-508-515. (**Must be logged into Think Central to access lessons, copy link and paste on a new tab) o Teacher will model and guide **active reading** so that students are aware of the importance of using Text Structures (Bold and italicized print, photographs, graphic organizers, tables, graphs and other visual aids). Students should also record important information found in the textbook, especially key concepts and academic vocabulary into their Science Notebook. o Guide students as they read from pp. 508-509. On these pages students draw boxes around clue words that signal examples of how Ecosystems can change. Have students write these examples down in their Science Notebook. Emphasize the photographs on these pages, have students notice the ecological changes that are occurring. Help students fill out the information on the table on page 509 so they can understand how some ecological changes can be beneficial to an ecosystem, as well as harmful. o On pp. 510-511 in the Student book, guide students as they read information about Invasive Species. Have students write the academic terms, *invasive species* and *native species* in their Science Notebook along with their definitions. They can also write down examples taken from the text or photographs on those two pages. The brown anole and the Japanese honeysuckle are two examples of invasive species that are found here in our area. Students can include these in their Science Notebook. As an extension, students can use the Internet to find other Invasive Species in Texas. o On pp. 512-513 in their textbook, Students will read about the impacts humans have on Ecosystems. As you guide students through the reading, have them circle or draw brackets around sentences that describe ways in which people harm the environment. Then, have them underline sentences that describe ways people help the environment. Students can write the key sentences that describe the harmful and beneficial ways humans impact the environment in their Science Notebook. Lastly, have students write the term, *conservation* into their notebooks with a definition and examples that can be found on page 513. o Direct students to pp. 514-515. On these pages, students will read how some species have become extinct because of environmental changes. Have students write down the names of these species and the cause that made them become extinct in their Science Notebook. Use Anchor Charts and the Study Guide for additional information. o Students can complete the *Sum It Up* and *Brain Check* in Student Edition, pp. 516-517 to reinforce key concepts and academic vocabulary.

INSTRUCTIONAL UNITS

- **Texas Science Fusion Digital Lesson and the Digital Lesson Companion** (Must be logged into Think Central to access lessons, copy link and paste on a new tab)
  - Have students access the digital lesson" How Do Environmental Changes Affect Organisms?". You may present the digital lesson for the students as a whole group, or have them access the lesson themselves. You may also have them work in small groups using the Google Classroom Breakout rooms. Play the digital lesson. It focuses on the different environmental changes that can affect an ecosystem and the organisms that inhabit it. The lesson will stop at key points to allow for discussion. Use the Digital Lesson Tracker Answer Key (PDF) to help guide you through the lesson.
  - You may also assign the Digital Lesson Companion (PDF). This resource has students answer comprehension questions based on the Digital Lesson. It can also be used as a tool to assess students' academic progress of the learning objective. (Digital Lesson Companion Answer Key)

- **STEMscopes 5.9C Environmental Changes Engage Activity**
  - In this activity, students predict the changes in certain ecosystems caused by humans or other organisms. Read the section of this lesson that mentions the materials that will be needed for this activity. Read the section "Procedure and Facilitation" for an in depth, step-by-step listing of how to present this lesson. As mentioned in this section, the teacher will present a scenario and lead students in a class discussion on how environmental changes are arising because of human activity.
  - Following the discussion, place students into groups of 3-4. Distribute one of the environmental change illustrations to each group. Lead students to understanding with the following questions: What created the change in this environment? How is this change helpful? How is this change harmful? Explain your answer. What might happen to the organisms living in this environment? Students should look at the information they recorded in their student journals and think about what would happen to certain organisms if one or two others were removed from the food web. Students should include what is the largest impact that could occur in the ecosystem they have chosen and what could be done to help the ecosystem recover. (Student Handout & Slideshow)

- **STEMscopes 5.9B Communicate Science - Sliding Scale Dialogue**
  - Students argue what scenario they think would have the worst impact on the food web. Read the section of this lesson that mentions the materials that will be needed for this activity. Read the section "Procedure and Facilitation" for an in depth, step-by-step listing of how to present this lesson. Students will be

answering the Driving Question: What would have the largest impact on the food web in our ecosystem? Give each student a copy of the student handout. Make copies of the scenario cards and hang them on the walls around the room, making sure to leave room between each one for students to gather around (Student Handout)

- **Video Links**: The video links can be used to introduce or review key concepts. They may be used in your opening activities or as a review to summarize or wrap up your lesson. You may also want to pause the video and have students record information on Environmental Changes and/or academic vocabulary that is well defined in the videos.
  - STEMscopes Content Connection- Environmental Changes and Effects 2:17 minutes (This video has a Student handout that can be used to assess students' comprehension of the concepts covered in the video.)
  - STEMscopes Content Connection- Environmental Changes 3:40 minutes (This video has a Student handout that can be used to assess students' comprehension of the concepts covered in the video.)
  - Interactions Between Biotic and Abiotic Factors 3:56 minutes

- ***ThinkUp! Science pp. 181, & 183, Student Edition (if available at campus)***
  - *Use page 181, the Science Vocabulary Builder in the student edition and the vocabulary activity to review and practice the unit vocabulary terms. Have students use the glossary of their ThinkUp! book to find the definition for each of the vocabulary words listed on page 181. Activity suggestion: Which Definition Is True? Give each student a different vocabulary term. Have students write three definitions for the vocabulary term. Instruct students to write one definition that is correct and two that are distractors. Collect all definition sets. Call on a student and ask him or her to read the term and the definitions. Have the class guess the true definition.*
  - *On page 183, the Concept Application Activity is geared to have students relate the concept to real-world applications. Have students follow the instructions in the student edition to complete the tables. Assist students in completing the assignment by having them use the Internet for examples and possible changes that can occur for each real-world application. You may also wish to have students complete this assignment in groups, if using Google Classroom, you may want to use the Breakout Rooms function to group students. You would be able to monitor their progress.*

INSTRUCTIONAL UNITS

	SPED- STEMscopes ReTEKs Environmental Changes Sciencecabulary- The students start with the Sciencecabulary activity, and then they review their vocabulary words and definitions in a variety of ways. This section is designed to help students practice the key vocabulary words and terms used with this content. This section is divided into two parts. The first part is a vocabulary activity for the students to complete and the second part is various worksheets. Both activities are geared to assist students in identifying key academic vocabulary while playing games. **EL- Texas Science Fusion Writing Connection- TE p. 508,** Have students use the internet to research both the negative and positive effects of changes made to an ecosystem by organisms You may also have students research an organism described on pp. 508-509 (beavers, red algae, or grazers). Encourage them to include before and after images of an area affected by their chosen organism. Students may present their findings to the class. **GT- STEMscopes Science Applied- Save Our Forests!-** In this activity, students will be trying to resolve a current problem with an Invasive species here in Texas. Students will be given facts about the Wild Hogs that are invading certain subdivisions and asked to develop a plan on how to reduce the number or problems housing developments are having with these wild hogs. They will also create a list of ideas that housing developments can have a positive effect on these animals. Students can work in small groups if necessary.
Evidence of Learning	**Checking for Understanding (with sentence starters)** • **What are environmental changes?** (Environmental Changes are...) • **How do environmental changes affect the organisms in the environment?** (Environmental Changes can cause organisms to...) • **How do some organisms cause changes that are damaging to the environment or ecosystem?** (Some organisms can cause_____ which can lead to ...) • **How do some organisms cause changes that are beneficial to the environment or ecosystem?** (Some organisms can cause_____ which can lead to...) • **How do humans affect environments?** (Humans can....)

- **What is an example of humans damaging an environment?**
  (Humans can harm an environment by...)
- **What is an example of humans damaging an environment?**
  (Humans can help the environment by....)
- **What are grazers?**
  (Grazers are...)
- **Give examples of how grazers can damage or destroy an environment.**
  (Grazers can...)

Sample Subunit Assessment Items

- STEMscopes ReTEKS Environmental Changes: Science Challenge
  - Science Challenge is a short set of activities modeled after released STAAR questions for these particular TEKS. Students complete the Science Challenge after the Concept Exploration. Students use what they have learned to complete the Environmental Changes Handout.
  - The teacher will print one copy of the Environmental Changes Handout per student.
  - Students can work in groups, in pairs, or individually to work through the provided activities.
  - When students complete the pages, go over the answers and look for any misunderstandings still present. (Student Handout & Answer Key)

- STEMscopes ReTEKS Environmental Changes: Readiness Assessment
  - A multiple-choice assessment based on the module Key Concepts including dual-coded Scientific Investigation and Reasoning questions.

- STEMscopes 5.9C Environmental Changes: Evaluate Open-Ended Assessment
  - Students will answer questions on inherited traits and learned behaviors. They will list some examples of each from a photo of a Seeing-eye dog. (Student Handout/PDF is available)

INSTRUCTIONAL UNITS

Module 6 of 10 (6 Days): Adaptations	
TEKS (R) Readiness, (S) Supporting, (P) Process	5.10A **compare** the structures and functions of different species that help them live and survive in a specific environment such as hooves on prairie animals or webbed feet in aquatic animals (R)
Content and Language Objectives	• **define** adaptation • **describe** physical and behavioral adaptations • **compare** the structures and functions of different species that help them live and survive
Misconceptions	• Students may confuse structure and function. • Students may misunderstand the relationship among animals and their environments. • Students may think that all species can easily adapt to new environments.

Content Connections	**Key Concepts** • Plants and animals have specific structures and functions that enable them to be successful in specific environments. • Examples of structures that enable animals to survive in their environments are the hooves of bison, the webbed feet of ducks, and the claws of squirrels. • The thumb is an important structure that enables human beings to survive. **Instructional Implications** • Help students understand that structures are the parts of living organisms and functions are the jobs that these parts do to help the organism survive. • Plan/design activities where students can observe a variety of environments and study how animals use their special features to help them move, find food, and protect themselves. • Have students compare and contrast structures and predict which environment a species would best survive in. • Have students compare and contrast living organisms within the same species and different species. • Facilitate discussions on the advantages and limitations of structure and function in different environments.
Materials/Resources: * available in Spanish	• TX Fusion* • STEMscopes* • Study Jams • YouTube • Carson Dellosa • Lead4Ward • *Think Up!* (if available at campus)*

INSTRUCTIONAL UNITS

Academic Vocabulary *new to grade level	• Adaptation • Aquatic • Behavioral Adaptation* • Blubber • Body Structure • Camouflage • Dormant • Environment/Ecosystem • Hibernation • Hooves • Instinct/Instinctive Behavior* • Migration • Mimicry • Nocturnal* • Organism • Prairie • Species • Structural Adaptation* • Structural Function* • Survival/Survive • Terrestrial • Webbed Feet

Instruction and Student Engagement	• **Texas Science Fusion Book, pp. 528-543. (**Must be logged into Think Central to access lessons, copy the link and paste on a new tab.) o Teacher will model and guide **active reading** so that students are aware of the importance of using Text Structures (Bold and italicized print, photographs, graphic organizers, tables, graphs and other visual aids). Students should also record important information found in the textbook, especially key concepts and academic vocabulary into their Science Notebook. o On pp. 530-531 in the Student book, guide students as they read information about Adaptations. Have students write the academic term *adaptation* in their Science Notebook along with its definition. Make sure students understand an adaptation can be physical, such as a long tongue to catch insects, or behavioral, such as a bird calling out a warning when it sees a predator. They can also write down examples of their own adaptations. Then ask students "What adaptation do you have that helps you pick up things, comb your hair or tie your shoelaces?" (Their thumb) They can also write down examples taken from the text or photographs on those two pages. Discuss with students that animals living in different habitats have to adapt to be able to survive the conditions found in their habitat. The arctic hare and jackrabbit have very different habitats, along with the ostriches, rheas and emus that live in different continents. Discuss the different habits these animals live in and have students write in their Science Notebooks adaptations that help each of them survive. Discuss how plants also have adaptations for living and surviving in different habitats. o On pp. 532-533 in the Student book, guide students as they read information about the *Structures and Functions* of some plants and animals. Ask students to underline words and phrases that describe animal and plant adaptations. Have students write the academic terms, *structures and functions*. They can write down examples from their text, photographs from those pages, or write down some of their own. Tell students that an animal's feet, limbs, mouth/beak, body covering and camouflage are examples of structures. Their function would be how they use them to help them survive. Direct students to construct a 2-column chart with their headings: *Structures and Functions*. Have them list four or five physical adaptations of plants or animals and describe them in terms of structures and functions. o On pp.534-535 Before students read the text, have them examine the pictures in their Student book. Instruct them to identify at least one physical adaptation displayed by the organisms in each picture. Guide students as they read information and ask them to underline words and phrases that describe animal and plant adaptations on these two pages. Then have the students discuss how they think that physical adaptations may help the organism survive. Have students google images of camouflage, mimicry, warning coloration, or other

	physical adaptations that are important for some animals to survive. Record their findings in their Science Notebook. o On pp. 536-537 in the Student book, remind students that a behavior is a way that an animal acts. Behaviors can help animals survive and stay healthy. Guide students as they read information about Instinctive and Learned Behaviors. Have students underline examples of instinctive behavior and circle examples of learned behaviors. Students can then write the key sentences in their Science Notebook to make sure they understand the differences. Instincts are behaviors that animals are born knowing how to do such as spider spinning a web, whereas learned behaviors must be taught to an animal in some way, even if it's through observing other animals engaging in a similar behavior. o Direct students to pp. 538-539. On these pages, students will learn how different life cycles can be the result of plants' and animals' adaptations. Have students circle two different examples of organisms whose life cycles keep adults and young from competing for food. Lead students in a class discussion in which you have them compare and contrast some life cycle adaptation with physical and behavioral adaptations. Create a Venn diagram that summarizes the main point of the discussion in their Science Notebook. o Brainstorm with students to answer the question in the introduction about why the two snakes on page 540 are the same kind of snake but different colors. As students continue reading page 541, invite students to imagine if they were hawks flying overhead in a cornfield, which snake do they think is least likely to become lunch, the golden-brown snake or the bright orange snake? ((The golden-brown snake because it blends in with the wheat field.) Have students summarize by sequencing how differences in individual organisms can lead to changes in a population. Students may summarize orally or in writing. Use the Anchor Charts and the Study Guide for additional information. o Students can complete the *Sum It Up* and *Brain Check* in Student Edition, pp. 542-543 to reinforce key concepts and academic vocabulary. • **Texas Science Fusion Digital Lesson and the Digital Lesson Companion** /(PDF) **(**Must be logged into Think Central to access lessons, copy link and paste on a new tab.) o To Access this lesson, log on to Think Central, Scroll to the Texas Science Fusion section. Choose the **Fifth** grade Lessons. Click on Teacher Resources. Look for Unit 12 Heredity and Adaptations, then locate Lesson 1, "What Are Physical and Behavioral Adaptations?". o Have students access the digital lesson. You may present the digital lesson for the students as a whole group, or have them access the lesson themselves. You may also have them work in small groups using the Google Classroom Breakout rooms. Play the digital lesson. It focuses on adaptations of different

animals and plants and how they are able to survive in different environments. The lesson will stop at key points to allow for discussion. Have students record the vocabulary with their definitions as well as any pertinent information about the different physical and behavioral adaptations of plants and animals in their notebooks. The Digital Tracker Answer Key /(PDF) will guide you through the lesson.
  - You may also assign the Digital Lesson Companion. This resource has students answer comprehension questions based on the Digital Lesson. It can also be used as a tool to assess students' academic progress of the learning objective.(Digital Lesson Companion Answer Key /PDF)

- **STEMscopes 5.10A ReTEKS Concept Exploration Structure and Function Activity**
  - In this activity, students can work in groups or teams to sort plant and animal structural adaptations according to the function that helps the organism perform.
  - Students will use the handout/pictures /(PDF) to discuss and match the organism's structure with the appropriate function.
  - Write the name of the organism and the structure that matches its function in the correct column.
  - Go over student responses, and review vocabulary.

- **Video Links**: The video links can be used to introduce or review key concepts. They may be used in your opening activities or as a review to summarize or wrap up your lesson. You may also want to pause the video and have students record information on plant and animal adaptations and/or academic vocabulary that is well defined in the videos.
  - Study Jams Video 3:06 minutes Animals Adaptations
  - Study Jams Video 3:22 minutes Plant Adaptations
  - Animal and Plant Adaptations Video 4:00
  - Animal Adaptations Video 2:20

- ***ThinkUp! Science pp. 196 & 197 (if available at campus)***
  - *Use page 196, the Concept Development in the student edition. Discuss how structures and functions of organisms help them live and survive in their specific environments. In table 1, students will compare two organisms that live in the same environment. In table 2 they will compare two organisms that live in different environments.*
  - *Students will also complete the Apply the Concept activity at the bottom of page 196. Students may use the internet to name and illustrate an organism that fits each classification (fish, bird, desert plant). Have groups add three*

	more organisms to their list if time permits. You may also wish to have students complete this assignment in groups, if using Google Classroom, you may want to use the Breakout Rooms function to group students. You would be able to monitor their progress. Have students name and illustrate a special structure for each of the organisms. For each structure, have students explain the purpose or function of the structure and how it helps the organisms live and survive in its environment. Allow students to share their classification with class. **SPED- STEMscopes ReTEKS:Adaptations Sciencecabulary -** Students start with the Sciencecabulary Concentration Card Game /(PDF). Next, they review their vocabulary words and definitions in a variety of ways. This section is designed to help students practice the key vocabulary words and terms used with this content. **EL- Texas Science Fusion- p. 532,** Have students write the word adaptation and underline adapt. Explain that the word adapt means "to adjust to conditions." Draw two lines under the suffix -ation. Share that this suffix means "action or process." So an adaptation is the process of adjusting to changes in the environment. Explain that the process they are going through to learn a new language is an adaptation. **GT- STEMscopes Concept Builder - Animals Past and Present** Students research a current living animal and its prehistoric counterpart to compare and contrast the adaptations of animals. Students may use Animal Past and Present Handout /(PDF) for guidance.

Evidence of Learning	

Checking for Understanding (with sentence starters)

- **What is an adaptation?**
  (An adaptation is...)
- **What are two types of adaptations?**
  (The two types of adaptations are...)
- **What are structural adaptations?**
  (Structural adaptations are....)
- **What are behavioral adaptations?**
  (Behavioral adaptations are...)
- **Why are adaptations important?**
  (Adaptations are important ...)
- **Give examples of the structural adaptations of a bird.**
  (A bird has these structural adaptations...)
- **Give examples of the behavioral adaptations of a bird.**
  (A bird has behavioral adaptations...)
- **Do plants have adaptations?**
  (Plants _____ adaptations because...)
- **Give examples of some plant adaptations.**
  (Some examples of plant adaptations are...)
- **What adaptations do humans have for survival?**
  (Humans have...)

Sample Subunit Assessment Items

- STEMscopes ReTeks: Adaptations Science Challenge -
  - Science Challenge is a short set of activities modeled after released STAAR questions for these particular TEKS (5.10A). Students Adaptations Handout /(PDF).

- STEMscopes ReTeks: Adaptations: Review It
  - Students identify structures on animals that serve certain functions in specific environments.
  - Have students think of something they are good at or do well.
  - Show and discuss the slideshow, and have students complete the handout /(PDF)as you go.
  - After giving time for student pairs to list animals and their structures, review their responses and lead into the reflection questions.

INSTRUCTIONAL UNITS

Module 7 of 10 (4 Days): Inherited Traits & Learned Behaviors	
TEKS (R) Readiness, (S) Supporting, (P) Process	5.10B **differentiate** between inherited traits of plants and animals such as spines on a cactus or shape of a beak and learned behaviors such as an animal learning tricks or a child riding a bicycle (R)
Content and Language Objectives	• **differentiate** between inherited traits of plants and animals • **explain** what inherited traits are • **identify** inherited traits of plants and animals • **describe** how animals and plants inherit traits and some behaviors, and how animals learn other behaviors
Misconceptions	• Students may have difficulty differentiating between learned behaviors and inherited traits. • Students may not understand that plants have inherited traits. • Students may think that all behaviors must be learned rather than inherited or instinctive.

INSTRUCTIONAL UNITS

Content Connections	**Key Concepts** • Some traits are inherited from parent to offspring, while other behaviors are learned during an organism's lifetime. • Inherited characteristics are things such as hair color, the shape of a beak, and spines on a cactus. • Acquired characteristics can include learned behaviors such as a child riding a bicycle or animals learning tricks. They can also include physical characteristics such as a scar. **Instructional Implications** • Plan/design instruction to include pictures, videos, and examples of inherited traits in plants and animals. • Plan/design instruction to include a variety of media to show examples of learned behaviors of animals. • Provide scenarios or examples where students have to differentiate between traits and behaviors and justify their thinking. • Show a variety of stimuli (e.g., tables, informational text, lists, illustrations, and photographs) where students analyze and interpret data to make informed decisions.
Materials/Resources: * available in Spanish	• TX Fusion* • STEMscopes* • YouTube • Carson Dellosa • Lead4Ward • Seesaw • Quizizz • *Think Up!* (if available at campus)*

INSTRUCTIONAL UNITS

Academic Vocabulary *new to grade level	• acquired traits • adaptations • behavioral instincts* • dominant trait* • generation • heredity • inherited traits • innate* • instinct/instinctive behavior* • learned behavior • offspring • parent • recessive trait* • structural adaptations • taught • trait
Instruction and Student Engagement	• **Texas Science Fusion Book, pp- 559-569. (**Must be logged into Think Central to access lessons, copy link and paste on a new tab) o Teacher will model and guide **active reading** so that students are aware of the importance of using Text Structures (Bold and italicized print, photographs, graphic organizers, tables, graphs and other visual aids). Students should also record important information found in the textbook, especially key concepts and academic vocabulary into their Science Notebook. o Guide students as they read from pp. 559-569 (Student Textbook). On these pages students draw boxes around clue words that signal examples of inherited traits. Have students write down examples of the inherited traits in their Science Notebook. Have students take notice of the inherited traits represented in the photographs on these pages and have students notice the additional information on DNA, chromosomes and genes. Students can be exposed to these terms but they are not required to master this academic vocabulary. Help students answer the question on page 561, where students are differentiating between the inherited traits of plants and animals. Guide them to understand how some inherited traits are similar to plants and animals like skin color could also be a plant's bark or stem color. A person's eye color could be compared to a plant's flower color. Students need to make note of these characteristics as examples of inherited traits.

- On pp. 566-567 in the Student book, guide students as they read information about Innate Behaviors. Help students write the academic term, *innate behaviors in* their Science Notebook along with their definitions. They can also write down examples taken from the text or photographs on those two pages. Guide students in developing Science concepts on innate behavior as opposed to an inherited trait, use the section of the TE on page 566 to help you lead this discussion. Ask students to name things they like to do such as sing, run, play games, or draw. State that these are examples of learned behaviors which are different from innate behaviors. Elaborate on innate behaviors as behaviors that offspring are born knowing how to do. Some examples are crying, eating, or even breathing.
- On pp. 568-569 in their textbook, Students will read about learned behaviors which were mentioned on the previous page. Have students write down the vocabulary words and definitions in their Science Notebook. Use the photographs to assist with the students making meaning and comparisons between learned behaviors and innate behaviors. Assist students complete the table on page 669, where students list their own innate and learned behaviors on p. 569. Use Anchor Charts and the Study Guide to obtain additional information.
- Students can complete the *Sum It Up* in the Student Edition, pp. 570, to reinforce key concepts and academic vocabulary.

- **Texas Science Fusion Digital Lesson and the Digital Lesson Companion** (Must be logged into Think Central to access lessons, copy link and paste on a new tab)
  - Have students access the digital lesson. You may present the digital lesson for the students as a whole group, or have them access the lesson themselves. You may also have them work in small groups using the Google Classroom Breakout rooms. Play the digital lesson or have student groups present the lesson. It focuses on Inherited Traits, Innate Behaviors and Learned Behaviors. The lesson will stop at key points to allow for discussion. There is an Answer Key (pdf) available for you to help you guide students through the digital lesson. The Digital Lesson Companion is another component you may wish to assign to students. This resource has students answer comprehension questions based on the Digital Lesson. It can also be used as a tool to assess students' academic progress of the learning objective. Information on genes, chromosomes, dominant, and recessive traits are also included in the digital lesson. These concepts can help students grasp the key concepts but students do not need to master these vocabulary words. There is an Answer Key (pdf) to the Digital Lesson Companion.

- **Video Links**: The video links can be used to introduce or review key concepts. They may be used in your opening activities or as a review to summarize or wrap up your lesson. You may also want to pause the video and have students record information on Inherited Traits, Innate Behaviors, and Learned Behaviors as these concepts are presented in each video.
  - Inherited Plants Traits- 3:47 minutes
  - Inherited Traits and Learned Behaviors 3:53 minutes
  - Interactions Between Biotic and Abiotic Factors 3:56 minutes
  - STEMscopes Content Connections Video: Inheritance and Variation of Traits 2.21 minutes (This video has a Student handout that can be used to assess students comprehension of the concepts covered in the video. An Answer Key is available.)

- ***ThinkUp! Science pp. 203, & 205, Student Edition*** *(if available at campus)*
  - *Use page 203, the Science Concept Exploration: Inherited Traits. Guide the class through the inherited traits survey to see how many students possess each trait. Have the students circle the characteristics they have, and record class results with tally marks. Discuss the outcomes of the survey and pose the following question. "Which traits occurred most frequently? Emphasize that just because a trait occurred frequently with the groups surveyed, it does not mean that trait is the dominant trait. After completing the survey, have students choose an ecosystem, then select one plant and one animal from the chosen ecosystem to research. For each organism, have students list five examples of inherited traits. Allow students to share examples with the class.*
  - *On page 205, the Concept Development and Science Vocabulary Builder will have students practice STAAR formatted questions and practice the unit vocabulary words. Guide students as they complete the graphic organizer at the bottom of page 205. Lead a discussion on examples of inherited traits and learned behaviors. Help them differentiate with non-examples of each. Students can use the internet to help them find more examples of both inherited traits and learned behaviors.*

SPED- STEMscopes 5.10B Traits: Guided Practice

Students identify a picture card as an Inherited Trait, Learned Behavior, or Acquired Characteristic, then sort these cards into categories. Remind students that Inherited traits come from parents and are passed onto offspring. Some inherited behaviors include birds migrating or fish returning to spawning grounds. Learned characteristics are not the result of genetics but rather due to the environment. Be sure students understand that a parent and child both playing piano is learned behavior. It just so happens both parent and offspring learned how to play. Acquired

	characteristics are also a result of the environment, such as a torn ear, new haircut, or broken leg. **EL- STEMscopes ReTEKS: Inherited Traits and Learned Behaviors Engage** Students show their agreement or disagreement with their teacher's statements about characteristics that are inherited or learned by stepping into and out of a large circle. Read the section "Procedure and Facilitation" for an in depth, step-by-step listing of how to present this lesson. If students missed the first statement, they may need help with recognizing statements with NOT in them. Instruct students that they must think the opposite of what the statement is saying. Students might think that anything physical is an inherited trait. Guide students' understanding by clarifying the difference between inherited traits and learned behaviors. **GT- STEMscopes ReTEKS: Inherited Traits and Learned Behaviors Science Challenge-** The Science Challenge is a short set of activities modeled after released STAAR questions for these particular TEKS. Students complete the Science Challenge after the Concept Exploration. Students use what they have learned to complete the Inherited Traits and Learned Behaviors Handout. Students create their planning sheet for a poster displaying both inherited traits and learned behaviors for a zoo display. Print one copy of the Inherited Traits and Learned Behaviors Handout for each student. Based on the answers to the questions, students show their understanding of learned behaviors and inherited/acquired physical traits.

Evidence of Learning	

Checking for Understanding (with sentence starters)

- **What are traits?**
  (Traits are...)
- **What are inherited traits?**
  (Inherited Traits are those characteristics that..)
- **Give examples of your inherited traits.**
  (Some of my inherited traits are...)
- **Where do these inherited traits come from?**
  (Inherited traits come from...)
- **What are innate behaviors?**
  (Innate behaviors are those behaviors that...)
- **Give examples of innate behaviors?**
  (An innate behavior is one that...)
- **How are inherited traits and innate behaviors different?**
  (Inherited traits are _____ and innate behaviors are different because they...)
- **What are acquired traits?**
  (Acquired traits are those traits that...)
- **Give examples of acquired traits.**
  (Acquired traits are those traits are those traits...)
- **Differentiate between inherited and acquired traits?**
  (The difference between inherited and acquired traits is...)
- **What are learned behaviors?**
  (Learned behaviors are those behaviors that..)
- **Give examples of learned behaviors?**
  (An example of learned behavior is...)
- **What is the difference between innate behaviors and learned behaviors?**
  (Innate behaviors are _____ and learned behaviors are _____)
- **What are instinctive behaviors?**
  (Instinctive behaviors are...)
- **What are some inherited traits of your favorite animal??**
  (Some inherited traits are...)
- **Birds fly south for the winter. Tell why this behavior is inherited.?**
  (Migration is inherited because...)

Sample Subunit Assessment Items

- Stemscopes 5.10B Traits: Evaluate Open-Ended Response Assessment
  - Students will answer questions on inherited traits and learned behaviors. They will list some examples of each from a photo of a Seeing-eye dog. (Student Handout/PDF is available)

INSTRUCTIONAL UNITS

- STEMscopes 5.10B Traits: Writing Science-
  - Students are asked to write about the physical and behavioral traits lions inherit. Students should include: What behaviors necessary to survival do lions acquire through experience or by watching other lions? Write about and explain a situation for the lion where you think the two types of traits work together. The information that is gathered by each student can be used to assess their mastery of inherited traits and learned behaviors. (Student Handout/PDF)

- 5.10B Traits: Science Today- Watch It!
  - Students will explore connections and applications of science content through interactions with authentic, real world-media provided by Associated Press. Student Handout (PDF).

- ***ThinkUp! Science, p. 204*** *(if available at campus)*
  - *Guide students as they read the section, Examine the Concept. Lead a discussion on the differences between Inherited Traits and Learned Behaviors. Have students write examples for each on white boards to check for understanding. Students can work individually or in table groups to record these examples.*
  - *Have students complete the bottom portion of p. 204, Apply the Concept. Have students complete the star graphic organizer to record their inherited traits and learned behaviors. Explain that many of the learned behaviors listed on the star can be considered strengths. Have students focus on the inherited traits they listed from their parents, grandparents and other family members. See if they possess any of those traits. Remind students that inherited traits can come from parents, grandparents, great-grandparents, etc.*

INSTRUCTIONAL UNITS

Module 8 of 10 (3 Days): Plant & Animal Life Cycles	
TEKS (R) Readiness, (S) Supporting, (P) Process	3.10B **investigate** and **compare** how animals and plants undergo a series of orderly changes in their diverse life cycles such as tomato plants, frogs, and lady beetles (S)
Content and Language Objectives	• **recognize** that animal and plant growth involves life cycles • **identify** the stages of complete and incomplete metamorphosis
Misconceptions	• Students may not understand that life cycles are unique to particular living organisms. • Students may not understand that an organism is still the same organism even though its appearance may change during different stages of the life cycle (e.g., a tadpole and an adult frog).
Content Connections	**Key Concepts** • Organisms undergo observable changes during their life cycles, including birth, growth, development, reproduction, and death. • We can compare the life cycles of various plants and animals. • Some animals, such as frogs and lady beetles, pass through distinctly different life stages with very different appearances. Most plants, such as tomato plants, develop from seeds into small plants that resemble the adult form. **Instructional Implications** • Provide examples of the stages of plant and animal life cycles for students to compare and contrast. • Plan/design instruction to show plant and animal life cycles through a variety of media.

INSTRUCTIONAL UNITS

Materials/Resources: * available in Spanish	• TX Fusion* • STEMscopes* • YouTube
Academic Vocabulary *new to grade level	• Adult (Insect, Frog, Plant) • Lady Beetle • Butterfly • Egg (Insect & Frog) • ELPA • ENA • Flower • Froglet • Frog • Fruit • Germinate • Larva • Leaf/Leaves • Life Cycle • Metamorphosis (Complete & Incomplete) • Nymph • Pupa • Seed • Seedling • Similar • Sprout • Stage • Tadpole

INSTRUCTIONAL UNITS

Instruction and Student Engagement	• **Texas Science Fusion Book, pp-547-555.** **(**Must be logged into Think Central to access lessons, copy the link and paste on a new tab.) o Teacher will model and guide **active reading** so that students are aware of the importance of using Text Structures (Bold and italicized print, photographs, graphic organizers, tables, graphs and other visual aids). Students should also record important information found in the textbook, especially key concepts and academic vocabulary into their Science Notebook. o Use STEMscopes ReTEKS: "Life Cycles or Not" Handout /(PDF) to introduce the lesson. Students complete a justified list of the organisms they believe go through a life cycle. Some students may think of a life cycle as a complete change in the organism, as in metamorphosis, so they may not have chosen humans or animals such as cows. Some students may not think of plants having a life cycle, so they may not have chosen the plants in the list. o Guide students as they read from pp. 548-549 in the Student book. On these pages have students draw two underlines under a main idea. Discuss other animals that students know are mammals. Brainstorm a list of these such as cats, dogs, horses, sheep and elephants. What do the animals on the list have in common? (They develop inside their mothers' bodies; they start life as a single cell; they look similar to their parents when they are young.) Have students record their answers in their Science Notebook. Explain that a cycle is a process, usually one that repeats often in the same order. For example, an animal's life cycle is repeated in each generation of that animal. o On pp. 550-551 in the Student book, guide students as they read information about animal development. Discuss with students that not all animals develop within the mother's body. As students read these two pages, have them underline the phrases that give details or examples to the development of each animal they read about. Review with students that the Animal Kingdom is divided into many categories (phyla), two of which are informally called vertebrates and invertebrates. Discuss how vertebrates are divided into 5 groups which are mammals, fish, amphibians, reptiles, and birds. Have students think about each group's life cycle and discuss how they are similar and different. Have students record the 5 groups in the Science Notebook. Students can also list the stages of the fish and the chicken's development and/or draw their life cycle. Students can now compare and record similarities and differences of each of these two life cycles. o On pp. 552-553 in their textbook, Students will read about reptiles and amphibians. Students will continue to record information in their Science Notebook comparing reptiles and amphibians. Students may also create a Venn diagram to compare and contrast the two animals with the information they learned on these two pages.

- On pp 554-555 have students preview complete and incomplete metamorphosis life cycles. Point out that unlike the life cycle on the previous pages, the stages of these life cycles are very different looking. As you guide students through the reading, have them draw boxes around clue words that signal things are being compared. Have students draw the stages in their Science Notebook and note any differences between the two graphics, and encourage them to write or draw notes detailing these differences. Include stages of reproduction and death when discussing life cycles. (Note: Complete Metamorphosis 4 stages and Incomplete Metamorphosis 3 stages; discuss with students that some examples might add extra pictures in each stage.) Use Life Cycle Graphic Organizer, Anchor Chart, and the Study Guide for additional information.
- Students can complete the *Sum It Up*, *Brain Check, and Apply Concept* in Student Edition, pp. 556-558 to reinforce key concepts and academic vocabulary.

- **Texas Science Fusion Digital Lesson and the Digital Lesson Companion** /(PDF) **(**Must be logged into Think Central to access lessons.)
  - To Access this lesson, log on to Think Central, Scroll to the Texas Science Fusion section. Choose the **Fifth** grade Lessons. Click on Teacher Resources. Look for Unit 12 Heredity and Adaptations, then locate Lesson 1, "How Do Animals Grow and Reproduce?".
  - Have students access the digital lesson. You may present the digital lesson for the students as a whole group, or have them access the lesson themselves. You may also have them work in small groups using the Google Classroom Breakout rooms. Play the digital lesson. It focuses on plant and animal life cycles. The lesson will stop at key points to allow for discussion. Have students record the vocabulary with their definitions as well as any pertinent information about how plants and animals grow and reproduce in their notebooks. The Digital Tracker Answer Key /(PDF) will guide you through the lesson.
  - You may also assign the Digital Lesson Companion. This resource has students answer comprehension questions based on the Digital Lesson. It can also be used as a tool to assess students' academic progress of the learning objective.(Digital Lesson Companion Answer Key /PDF)

- **Video Links**: The video links can be used to introduce or review key concepts. They may be used in your opening activities or as a review to summarize or wrap up your lesson. You may also want to pause the video and have students record information on life cycles of plants and animals and/or academic vocabulary that is well defined in the videos.

	o Metamorphosis 2:16 minutes o SciShow Kids How a Seed Becomes a Plant? 3:46 minutes o STEMscopes Content Connection- 3.10B Life Cycle 2:42 minutes (This video has a Student handout /(PDF)that can be used to assess students comprehension of the concepts covered in the video.) o STEMscopes Content Connection- 3.10B Cycles of Life 5:00 minutes (This video has a Student handout /(PDF) that can be used to assess students comprehension of the concepts covered in the video.) **SPED-**STEMscopes 3.10B Life Cycles - Guided Practice: Play Doh Organism Model - Students create life cycle models of various organisms and describe the similarities and differences observed. (Life Cycle Model Examples /PDF) **EL-**STEMscopes 3.10B Life Cycles - Concept Builder Life Cycle View Finder - Students make a viewfinder wheel to review each stage of the life cycle. (Student Handout /PDF) **GT-**STEMscopes 4.10C Life Cycles - Project-Based Learning - Discovering a New Species - This project-based learning (PBL) allows students to tap into their creative sides to "discover new plant species and new insect species. Students illustrate and compare the life cycles of their new species to those of the beetle and the lima bean. They design exhibits to display at Big Bend National Park that will showcase their new species. Students also have to create advertisements that draw visitors to the park to see their exhibits. They present their advertisements and exhibits to an audience in three-minute presentations.

Evidence of Learning

Checking for Understanding (with sentence starters)

- **What is a life cycle?**
  (A life cycle is...)
- **Are all life cycles similar?**
  (All life cycles are _____.)
- **What are the stages of a beetle's life cycle?**
  (The stages of a beetle's life cycle….)
- **What are the stages of a grasshopper's life cycle?**
  (The stages of a grasshopper's life cycle ...)
- **What are the stages in a tomato's life cycle?**
  (The stages in a tomato's life cycle...)
- **What other organisms have a life cycle similar to that of a beetle?**
  (_____ has a similar life cycle to a beetle's life cycle.)
- **What other organisms have a life cycle similar to that of a cricket?**
  (_____ has a life cycle similar to the cricket's life cycle.)
- **How are an egg and seed alike?**
  (An egg and seed are alike _____.)
- **Compare the life cycle of a beetle to a cricket's life cycle.**
  (The life cycle of a beetle and cricket ….)
- **Compare the life cycle of a beetle to a tomato plant's life cycle.**
  (The beetle and the tomato's life cycle ….)

Sample Subunit Assessment Items

- STEMscopes ReTEKS: Life Cycles - Review It
  - Students review the life cycles of three common organisms using the Life Cycle Slideshow and complete a graphic organizer. Students compare the characteristics of the three organisms as they fill out the Life Cycles Handout /(PDF).
- STEMscopes ReTEKS: Life Cycles - Science Challenge
  - Science Challenge is a short set of activities modeled after released STAAR questions for these particular TEKS. Students complete the Science Challenge after the Concept Exploration. Students use what they have learned to complete the Life Cycles Handout /PDF).

INSTRUCTIONAL UNITS

Module 9 of 10 (6 Days): Fossils & Soil	
TEKS (R) Readiness, (S) Supporting, (P) Process	5.9D **identify** fossils as evidence of past living organisms and the nature of the environments at the time using models (S) 4.7A **examine** properties of soils, including color and texture, capacity to retain water, and ability to support the growth of plants (S)
Content and Language Objectives	• **identify** fossils as evidence of past living things • **explain** how soil forms • **examine** properties of soils, including color and texture, capacity to retain water, and ability to support the growth of plants • **recognize** that soils form layers, and differentiate between a soil profile and a soil horizon
Misconceptions	• Students may not understand that fossils are evidence of ancient plants/animals rather than dead plants/animals themselves. • Students may not understand how fossils can explain what the ecosystem was like previously • Students may think all soils are the same or that the only component that differentiates them is color. • Students may think that all types of soil support growth.

INSTRUCTIONAL UNITS

Content Connections	**Key Concepts** • Fossils are traces or preserved parts of organisms that lived in the past. • Fossils can be used to interpret past events and environments. • Models can be used to represent the passage of time and past organisms and environments. • Soils differ in their observable properties. • Soils can be sorted based on particle size, texture, color, and capacity to retain water. • Soils differ in their ability to support the growth of plants. **Instructional Implications** • Provide opportunities for students to discuss the benefits and limitations of models. • Emphasize the components of soil. • Show visuals with investigations where students compare samples of soil and determine which soil has the best composition to support plant growth.
Materials/Resources: * available in Spanish	• TX Fusion* • STEMscopes* • YouTube • BrainPop • Seesaw • Carson Dellosa • Nearpod • *Think Up!* (if available at campus)*

INSTRUCTIONAL UNITS

Academic Vocabulary *new to grade level	• ancient • cast • clay • color • decomposition • drained/released • evidence • extinct • fossil* • fossilization • humus • imprint* • loam • model • mold • organism • paleontologist • particle size • past environment • properties of soil • remains • retain/retention • rock layers • sand • sedimentary rocks • silky • silty • soil • texture • topsoil

INSTRUCTIONAL UNITS

Instruction and Student Engagement	• **Texas Science Fusion Book, pp-318-345.** **(**Must be logged into Think Central to access lessons, copy link and paste on a new tab) o Teacher will model and guide **active reading** so that students are aware of the importance of using Text Structures (Bold and italicized print, photographs, graphic organizers, tables, graphs and other visual aids). Students should also record important information found in the textbook, especially key concepts and academic vocabulary into their Science Notebook. o To generate ideas, have students brainstorm answers to the question: "What Happens to living things when they die? Find fossils images online to help guide students to understand that fossils are the remains of living organisms that were buried, decomposed but were preserved in layers of sediment. Guide students as they read from pp. 318-310 in their student books. On these pages students will underline each type of fossil discussed on these pages. Have students write these examples down in their Science Notebook. Students may be able to cut some of the photographs on these pages and glue them into their notebook. Have students draw or cut-out the sequence of how fossils form on p. 319 to help students understand the processes involved. Point out how fossils are found in Sedimentary Rocks. o Have students write the academic terms, *fossils, mold,* and *cast* in their Science Notebook along with their definitions. They can also write down examples taken from the text or photographs on those two pages. o On pp.320-321 in their textbook, Students will read about the connection between fossils and fossil fuels. As you guide students through the reading, point out the steps that are needed for the formation of fossil fuels so that students can make a comparison. This will help them understand the differences and similarities between fossils and fossil fuels. o Direct students to pp. 322-323. On these pages, students will read and discuss how fossils tell us a lot about what life on Earth was like in the past. Have students write down the term, paleontologist in their notebook along with examples of how fossils are evidence of how some organisms have evolved over time. o Students can complete the *Sum It Up, Brain Check* and *Apply Concepts* in Student Edition, pp. 324-326 to reinforce key concepts and academic vocabulary. o Students can read pp. 330-339, and discover additional information on how organisms found in fossils can lead scientists to discover the exact time period and environment they live in. Remind students to be active readers and to annotate important information on these pages. On pp. 336-337, discuss the ancient environments mentioned on these pages. Focus on the La Brea Tar Pits and the Falls of the Ohio to help students understand what these environments were like long ago or how they help to identify the organisms that lived in

	them. The TE will guide you on what information is pertinent for students to include in their Science Notebook. The Study Guide and Anchor Charts can also be used to access additional information. o Students can complete the *Sum It Up, Brain Check* and *Apply Concepts* in Student Edition, pp. 340-344 to reinforce key concepts and academic vocabulary. • **Texas Science Fusion Digital Lesson and the Digital Lesson Companion** (Must be logged into Think Central to access lessons, copy link and paste on a new tab) o Have students access the digital lesson, "What are Fossils?'. You may present the digital lesson for the students as a whole group, or have them access the lesson themselves. You may also have them work in small groups using the Google Classroom Breakout rooms. Play the digital lesson. The lesson focuses on how fossils are formed. Students will also learn how specific fossils are formed and will identify these fossils to assess their understanding. The lesson will stop at key points to allow for discussion or to have students answer questions. There is a Digital Tracker Answer Key (PDF) available for you to help you guide students through the digital lesson. o You may also assign the Digital Lesson Companion. This resource has students answer comprehension questions based on the Digital Lesson. It can also be used as a tool to assess students' academic progress of the learning objective. There is an Answer Key (PDF) to the Digital Lesson Companion. • **Texas Science Fusion Digital Lesson and the Digital Lesson Companion** (Must be logged into Think Central to access lessons, copy link and paste on a new tab) o This is from the **4th grade** Texas Science Fusion on *"How Can We Examine Properties of Soil?"* You may use it to help you review and reinforce the concepts related to the properties of soil. Have students access the digital lesson. You may present the digital lesson for the students as a whole group, or have them access the lesson themselves. You may also have them work in small groups using the Google Classroom Breakout rooms. Play the digital lesson or have students play the lesson. The lesson focuses on the different properties of soil. Students will also learn how specific soils, how they form, and their distinctive properties. The lesson will stop at key points to allow for discussion or to have students answer questions. Students will conduct a virtual investigation and will need your assistance to complete it. Look through the Teacher Resources and the Digital Tracker Answer Key/ (PDF) is available to assist you through the virtual lab.

- You may also assign the Digital Lesson Companion. This resource has students answer comprehension questions based on the Digital Lesson. It can also be used as a tool to assess students' academic progress of the learning objective. There is an Answer Key (PDF) to the Digital Lesson Companion. Use Anchor Charts and the Study Guide for additional information on Soil properties.

- **Video Links**: The video links can be used to introduce or review key concepts. They may be used in your opening activities or as a review to summarize or wrap up your lesson. You may also want to pause the video and have students record information on fossils, fossil formation, and soil properties, depending on the video and/or academic vocabulary that is well defined in the videos.
  - What's a Fossil 2:34 minutes
  - How Fossils Are Formed 2:38 minutes
  - Fossil Song by Mr. Parr 3:56 minutes
  - BrainPOP Soil 3:16 minutes
  - STEMscopes Content Connection Video: Properties of Soil 2:49 (This video has a Student handout (PDF) that can be used to assess students comprehension of the concepts covered in the video. An Answer key (PDF) is available.

- ***ThinkUp! Science pp. 188 & 189, Student Edition*** *(if available at campus)*
  - *Use p.188, the Examine the Concept in the student edition to build on their knowledge of how fossils form. Help students answer the question on that page. Find pictures from the internet that display possible organisms stuck in tree sap.*
  - *Assist students as they complete the Apply the Concept section on p.188. Review the characteristics of a valid conclusion when it applies to past or ancient environments. Have students work with a group to form a conclusion about past organisms and environments from one of the examples provided in the student edition. Allow groups to share conclusions with the class.*
  - *On page 189, the Concept Application Activity is geared to have students relate the concept to real-world applications. Have students follow the instructions in the student edition to complete the tables. Assist students in completing the assignment by having them use the Internet for examples and possible changes that can occur for each real-world application. You may also wish to have students complete this assignment in groups, if using Google Classroom, you may want to use the Breakout Rooms function to group students. You would be able to monitor their progress.*

- ***ThinkUp! Science pp. 129 (Student Edition)*** *(if available at campus)*
  - *Use page 129, the Concept Practice in the student edition to help students test their knowledge of soils and their properties. Read each question together and discuss the correct and incorrect responses to reveal misconceptions. Model strategies to help students think logically. Assess student understanding and provide feedback as needed. Additional information on how to guide students can be found on p. 133 of the TE. Address any misconceptions students can develop. Examples of some of these misconceptions can be found in the TE, p. 130.*

SPED- STEMscopes ReTEKS: Fossil Evidence Engage- Students play a game wearing headbands in which they use clues to guess vocabulary words displayed on their heads. Print and laminate the Headbands (PDF). You may also add to the vocabulary list provided. There are procedures and facilitation points to guide you through this activity. As students play, circulate the room to listen to their clues and clarify misconceptions. A common misconception is that fossils are common, when in fact they are very rare. Reinforce that fossils can provide a glimpse of what an area was once like.

SPED- STEMscopes ReTEKS: Properties of Soil Engage- In this activity, students participate in a game of four corners to compare soil particle sizes to various types of sports balls. Display sports balls to the class and discuss how they are different. Guide students to understand how their sizes vary. Explain four corners to the students. Tell them you will call out a soil particle type, and students will move to the corner of the room that best represents the particle sizes. Tell students you have written the types of soil on the board that will be called out so they have an idea of where they will go for each before they begin. Ask students to explain their reasoning, and clear up any misconceptions. For example, students may think silt and clay particles are the same size. This is the time to be sure they know the differences so they understand that particle size affects soil's ability to retain water. Larger particles retain less water than smaller particles.

EB- STEMscopes ReTEKS: Fossil Evidence Review It!- Students will answer questions about fossils and fossil formations. Students will use the Fossil Evidence slideshow (PDF) to help them identify the environments each of the fossils presented on the slideshow once inhabited. There are procedures and facilitation points to guide you through this activity. Students will record their information on the Fossil Evidence Handout (PDF).

EB- STEMscopes ReTEKS: Properties of Soil Sciencecabulary- The students start with the Sciencecabulary activity, and then they review their vocabulary words

	and definitions in a variety of ways. This section is designed to help students practice the key vocabulary words and terms used with this content. This section is divided into two parts. The first part is a vocabulary activity for the students to complete and the second part is various worksheets. Follow the procedural and facilitation points to guide you through the lesson. The first activity is Soil Charades (PDF). In this review game, have each team send a representative to draw the same vocabulary term to act out for their teammates. Explain that the first team to guess the term gets a point. Continue play until all terms have been selected and guessed. The other activities are various handouts to reinforce the academic vocabulary. **GT- STEMscopes 5.9D What Happened Before: Science Applied-Fossil Reporter-** Students will research areas in Texas where fossils have been discovered. Students will be instructed to create a report that will include the following information: A teacher wants to visit a place in Texas with natural fossil formations. Where would be the best places to see natural fossil formations in Texas? What type of fossils might they find? What information might the fossils give them? What other evidence could they look for to give them clues about the environment during this period? (A student handout (PDF) is available, as well as a grading rubric.) **GT- Seesaw Activity: Wow Works-Soil Exploration** Students will create a slideshow to display their information on soil properties. They will bring in a soil sample from home. They will take photos to show its color, texture, particle size, etc. Students will also test their soil's ability to retain water and take before and after photos of their results.
Evidence of Learning	**Checking for Understanding (with sentence starters)** • **What are fossils?** (Fossils are...) • **How do fossils form?** (Fossil form when...) • **How can fossils tell us which organisms lived millions of years ago?** (Fossils are evidence of...) • **How can fossils tell us what environments were like millions of years ago?** (Fossils can tell us what environment was present in a particular area because...) • **How can we represent fossils and past environments using models?** (We can use models of fossils to help us represent...) • **How does soil form?** (Soil forms when...)

- **Are all soils alike? How are they different?**
  (Soils are alike in that_____ and they are different in that_____.)
- **What are soil properties?**
  (Soil properties are..,)
- **Can scientists classify soil based on its properties?**
  (Classifying soil based on their properties can be useful...)
- **Classifying soils by their ability to retain water focuses on what soil property?**
  (Soil's ability to retain water focuses on...)
- **Which soil property allows for plant growth?**
  (The soil property that allows for plant growth is...)

Sample Subunit Assessment Items

- STEMscopes 5.9D What Happened Before: Writing Science
  - Students are asked to write about the ways they think the fossil presented could have been formed. What geological story do you think it tells? They should think about this rock slab that was found on the construction site of a new underground parking garage and answer the question: "What do you think the land was like at the construction site millions of years ago?" (A Student Handout/PDF is available.)

- STEMscopes ReTEKS Fossil Evidence: Science Challenge
  - Science Challenge is a short set of activities modeled after released STAAR questions for these particular TEKS (5.9D). Students complete the Science Challenge after the Concept Exploration. Students use what they have learned to complete the Fossil Evidence Handout (PDF). Students can work in groups, in pairs, or individually to work through the provided activities. When students complete the pages, go over the answers and look for any misunderstandings still present. An Answer Key is available (PDF).

- STEMscopes ReTEKS Properties of Soil: Review It!
  - In this activity, students compare the texture and ability to retain water of three different types of soil. Print one copy of the Properties of Soil Handout (PDF) per student and be prepared to project the Properties of Soil Slideshow (PDF). Follow the procedural and facilitation points to guide you through the lesson. (Answer Key/PDF)

- STEMscopes 5.9D What Happened Before Elaborate: Science Today- Read It!
  - Students explore connections and applications of science content through interactions with authentic, real-world media provided by Associated Press. A Student Handout is available (PDF).

Module 10 of 10 (2 Days): Organisms & Environments Unit Review	
TEKS (R) Readiness, (S) Supporting, (P) Process	3.9A **observe** and **describe** the physical characteristics of environments and how they support populations and communities within an ecosystem (S) 5.9A **observe** the way organisms live and survive in their ecosystem by interacting with the living and nonliving components (R) 5.9B **describe** the flow of energy within a food web, including the roles of the Sun, producers, consumers, and decomposers (R) 5.9C **predict** the effects of changes in ecosystems caused by living organisms, including humans, such as the overpopulation of grazers or the building of highways (S) 5.10A **compare** the structures and functions of different species that help them live and survive in a specific environment such as hooves on prairie animals or webbed feet in aquatic animals (R) 5.10B **differentiate** between inherited traits of plants and animals such as spines on a cactus or shape of a beak and learned behaviors such as an animal learning tricks or a child riding a bicycle (R) 3.10B **investigate** and **compare** how animals and plants undergo a series of orderly changes in their diverse life cycles such as tomato plants, frogs, and lady beetles (S) 5.9D **identify** fossils as evidence of past living organisms and the nature of the environments at the time using models (S) 4.7A **examine** properties of soils, including color and texture, capacity to retain water, and ability to support the growth of plants (S)
Content and Language Objectives	• **Understand** that there are relationships, systems, and cycles within environments • **Understand** that organisms have structures and behaviors that help them survive within their environments
Misconceptions	• Refer to previously discussed misconceptions presented for each module.

INSTRUCTIONAL UNITS

Content Connections	**Real-World/Cross-Curricular Connections** • **Writing Connection:** STEMscopes Writing Science (Clever Login required) • Social Studies Connection:Texas Science Fusion, p. 520A- Investigate a Culture (Clever Login required) • Art Connection, Texas Science Fusion, p. 572A- Two Different Faces (Clever Login required)
Materials/Resources: * available in Spanish	• TX Fusion* • STEMscopes* • Kahoot • Seesaw • Carson Dellosa • Lead4Ward • Nearpod • Edpuzzle • Quizizz
Academic Vocabulary *new to grade level	• Refer to previously discussed academic vocabulary presented for each module.
Instruction and Student Engagement	**Additional Activities 5.1A/5.4A** • Videos **Additional Activities** • STEMscopes 3.9A Pre-Assessment Activity • Population, Communities & Ecosystems Anchor Chart • Seesaw Activity, Ecosystems: Population and Communities by Krista Jordan • Seesaw Activity, Defining Ecosystem, Community. Population, Organism by Ms. Gingrich • Kahoot! Animal Environments • EdHelper Ecosystem Vocabulary Quiz

INSTRUCTIONAL UNITS

Additional Activities 5.9A

- Lead4Ward Strategy 1 & 2
- Carson & Dellosa Interactive Science Notebook: Interdependency, p.24-25
- Nearpod-Mosa Mack Interdependency Video
- Edpuzzle-Interdependency Video
- Stemscopes Pre-Assessment (PDF)
- Stemscopes Post-Assessment (PDF)
- STEMscopes Concept Review Game
- Kahoot! Ecosystem Interactions
- Kahoot! Ecosystem Interactions 2
- Student Manipulatives-Vocabulary Train

Additional Activities 5.9B

- STEMscopes 5.9B Pre-Assessment /(PDF)
- STEMscopes 5.9B Post-Assessment /(PDF)
- Seesaw Activity: Food Web Review

Additional Activities 5.9C

- STEMscopes ReTEKS Environmental Changes: Review It!
- Seesaw Activity: Environmental Problem and MY Solution
- Nearpod Lesson: How Carbon Affects Nearly Everything on Earth
- STEMscopes 5.9C Pre-Assessment (PDF)
- STEMscopes 5.9C Post-Assessment (PDF)

Additional Activities 5.10A

- *ThinkUp! Science pp. 199 Concept Application (if available at campus)*
- Carson Dellosa Interactive Science Notebook: Adaptation pp 24-25
- Student Manipulatives
- Lead4Ward - Instructional Strategy
- STEMscopes 5.10A Pre-Assessment /(PDF)
- STEMscopes 5.10A Post-Assessment /(PDF)
- Texas Science Fusion Video Based Assessment: The Sea Turtles of Shark Bay-Student Handout (PDF)

Additional Activities 5.10B

- Carson Dellosa Interactive Science Notebook: Inherited Traits, pp. 34-35.
- Student Manipulatives on Traits and Learned Behaviors
- Student Manipulative on Inherited Traits, Behaviors, Structures and Functions
- Lead4Ward Strategy 1 & 2
- ReTEKS Inherited Traits and Learned Behaviors: Concept Exploration
- Seesaw Activity: Inherited Traits Vs. Acquired Traits

	• Seesaw Activity: Inheritance • Quizizz Inherited Traits and Learned Behaviors • STEMscopes 5.10B Pre-Assessment (PDF) • STEMscopes 5.10B Post-Assessment (PDF) **Additional Activities 3.10B** • STEMscopes ReTEKS Life Cycles Concept Explore • STEMscopes ReTEKS: Life Cycles Readiness Assessment /(PDF) • STEMscopes 4.10C Life Cycles Pre-Assessment /(PDF) • STEMscopes 4.10C Post-Assessment /(PDF) **Additional Activities 5.9D/4.7A** • Carson & Dellosa Interactive Science Notebook: Fossils, pp. 64-65. • STEMscopes 5.9D What Happened Before? eScopedia • STEMscopes 5.9D Pre-Assessment (PDF) • STEmscopes 5.9D Post-Assessment (PDF) • STEMscopes 4.7A Pre-Assessment (PDF) • STEMscopes 4.7A Post-Assessment (PDF) • Carson & Dellosa Interactive Science Notebook: Soil, pp. 62-63. • Seesaw Activity: Miss Michelle Fossils • Seesaw Activity: Soil-What is Soil? • Nearpod Lesson: What are Fossils?
Evidence of Learning	**Checking for Understanding** 1. How is interdependency vital in ecosystems? (Interdependency is vital because…) 2. How do environmental changes affect organisms? (Environmental changes affect organisms because…) 3. How do roles of organisms affect ecosystems? (Roles of organisms affect ecosystems because…) 4. How does energy move and not move through ecosystems? (Energy moves and doesn't move through ecosystems by…) 5. How do organisms' structures affect survival in ecosystems? (Organisms' structures affect survival because…) 6. How do organisms' behaviors affect survival in ecosystems? (Organisms' behaviors affect survival because…)