

FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT



Integrated Science 6

Board Approval Date:	Course Length: 3 Trimesters
Grading: A-F	Credits: N/A
Proposed Grade Level(s): 6	Subject Area: Science Elective Area (if applicable):
Prerequisite(s): Sixth grade standing	Corequisite(s): N/A
CTE Sector/Pathway: N/A	
Intent to Pursue 'A-G' College Prep Status: No	
A-G Course Identifier: N/A	
Graduation Requirement: No	
Course Intent: Program (if applicable): N/A	

COURSE DESCRIPTION:

This course is the first of three courses in the preferred integrated model for science instruction in grades six through eight. In this course, students will have the opportunity to engage in real-world phenomena, ask questions, and seek answers to those questions without regard to disciplinary boundaries. Each unit in this course opens with an integrated phenomena that unites all the interdisciplinary sub-units to address a real-world event through an anchoring phenomena. Each anchoring phenomena is explored in more detail through investigative phenomena. The investigative opportunities provide the schema for students to develop an understanding of the disciplinary core ideas, science and engineering principles and cross-cutting concepts. As a result, students are able to build a deeper, personal connection to the idea or concept being explored.

DETAILED UNITS OF INSTRUCTION:

Unit Number/Title	Unit Essential Questions	Examples of Formative Assessments	Examples of Summative Assessment
1. The Atmosphere and Energy	Why do some people get sunburned at the beach and others do not? What are the different parts of the atmosphere? In what layer does weather happen? What factors influence how much sunlight reaches Earth? How does sunlight influence the temperature of Earth's atmosphere and oceans? How can energy from sunlight transfer to objects, such as living things at the beach? What are three different kinds of sunlight? What factor determines how directly the sun hits the Earth? What factor determines what time of year more sun hits the Earth? How does UV light impact living things?	*KWL on anchoring phenomena *Investigation: Identifying elements of weather *Investigation: Journey to the exosphere *Investigation: Creating a scale model of Earth's atmosphere *Investigation: Absorption and reflection of solar energy *Investigation: The greenhouse effect *Investigation: The greenhouse effect - comparing the inner planets	*Engineering challenge: Minimizing and maximizing the rate of heat transfer *Performance assessment: Students will design an improved cooler or solar cooker *Multiple choice test
2. Cells	What is different about the cells of multicellular and unicellular organisms? What makes a cell specialized? How is a skin cell specialized?	*KWL on anchoring phenomena *Observing phenomena questions *Investigation: Categorizing substances *Investigation: Exploring microorganisms *Making sense of phenomena questions *Investigation: Cell parts game *Investigation: Modeling membrane transport *Segment wrap-up: Explain	*Performance assessment: Plan an investigation to determine whether something is living or nonliving

		why some people get sunburned skin while others do not	
3. Weather	<p>How do differences in air pressure explain wind?</p> <p>How does wind chill impact living things?</p> <p>What happens to the water in sweat once it sits on your skin?</p> <p>What is the water cycle?</p> <p>How do air masses relate to changes in the weather?</p> <p>What conditions would lead forecasters to predict sunny skies?</p> <p>What causes heat waves?</p> <p>How does humidity impact heat waves?</p> <p>How does weather impact humans and other living things?</p>	<p>*KWL on anchoring phenomena</p> <p>*Investigation: Create your own wind</p> <p>*Investigation: Build a balloon barometer</p> <p>*Investigation: Tracking atmospheric pressure</p> <p>*Making sense of phenomena questions</p> <p>*Investigation: Measuring relative humidity</p> <p>*Investigation: Predicting fog and dew</p> <p>*Investigation: Tracking water through the water cycle</p> <p>*Investigation: Detecting a front between air masses</p> <p>*Investigation: Modeling how air masses interact</p> <p>*Investigation: Using weather maps to forecast weather</p> <p>*Investigation: Predicting severe weather probabilities</p> <p>*Investigation: Using weather maps to identify severe weather events</p>	<p>*Performance assessment: As a member of a team at the National Oceanic and Atmospheric Administration (NOAA), students will use a given set of weather data to make forecasts, and issue weather warnings.</p>
4. Traits	<p>What is a trait?</p> <p>What traits help organisms survive extreme temperatures?</p> <p>How could two species have different traits to solve the same problem?</p> <p>How do some traits help organisms reproduce?</p> <p>Could surviving for a longer time by staying cool in hot weather end up helping a living thing reproduce?</p>	<p>*KWL on anchoring phenomena</p> <p>*Observing phenomena - comparing four animal limbs</p> <p>*Investigation: Observing survival traits</p> <p>*Investigation: Gathering information on traits</p> <p>*Investigation: Researching traits</p> <p>*Making sense of phenomena questions</p> <p>*Investigation: Gathering information on traits</p> <p>*Investigation: Evaluating claims about a phenomena</p>	<p>*Engineering challenge: Design a device for optimum seed dispersal</p> <p>*Performance assessment: Design a brochure that highlights unique traits of animals and plants that will encourage tourists to visit Madagascar</p>

5. Bodies	<p>What are a few ways the excretory system gets rid of waste?</p> <p>Do all kinds of organisms have the same basic set of body systems?</p> <p>What is similar between exhalation and sweating?</p> <p>How are cells, tissues, and organs related to body systems?</p> <p>What features of lungs help them work to absorb oxygen from the air and release carbon dioxide waste?</p> <p>How are lungs involved in panting?</p> <p>Are sweating and panting voluntary or involuntary?</p> <p>What sense receptors would detect weather conditions?</p> <p>What is the pathway of information that would lead from external weather conditions to a response like sweating or panting?</p>	<p>*KWL on anchoring phenomena</p> <p>*Investigation: Comparing the anatomy of a frog to humans</p> <p>*Investigation: Creating a human body model</p> <p>*Investigation: Diagnosing Mr. T</p> <p>*Making sense of phenomena questions</p> <p>*Investigation: Examining human tissue</p> <p>*Investigation: Connecting structure to function</p> <p>*Investigation: Diagnosing Ms. B</p> <p>*Investigation: Creating a human body model that includes the nervous system</p> <p>*Investigation: Acting it out</p> <p>*Investigation: Diagnosing Ms. K</p>	<p>*Engineering challenge: Students will design a prosthetic hand.</p> <p>*Performance assessment: Students will support an argument with evidence for their diagnoses of a 4th patient, “JJ”.</p>
6. Climate	<p>What factors influence climate?</p> <p>How can people predict climate?</p> <p>Could scientists predict whether drought will be likely in the future?</p> <p>How does movement of the atmosphere impact climate?</p> <p>Could this be related to periods of drought?</p> <p>How does the ocean impact climate?</p> <p>Could this be related to periods to drought?</p> <p>How is local climate determined?</p> <p>Could this be related to periods of drought?</p> <p>How is local climate</p>	<p>*KWL on anchoring phenomena</p> <p>*Investigation: Weather and climate - what’s the difference?</p> <p>*Investigation: The unequal heating of Earth’s surface</p> <p>*Investigation: Climate quiz game</p> <p>*Making sense of phenomena questions</p> <p>*Investigation: Cycling energy in the atmosphere</p> <p>*Investigation: Prevailing winds and the Coriolis Effect</p> <p>*Investigation: International travel and the Coriolis Effect</p> <p>*Investigation: Monitoring Earth’s ocean temperatures</p> <p>*Investigation: Mapping</p>	<p>*Engineering challenge: Design a microclimate for growing a specific vegetable</p> <p>*Performance assessment: Students will identify a city and describe the regional climate and threats it faces from climate change. Students will also develop a plan for the city to mitigate or adapt to climate change.</p>

	<p>determined?</p> <p>Could this be related to periods of drought?</p> <p>How has Earth's climate changed over time?</p> <p>Why has Earth's climate changed over time?</p> <p>How do scientists predict the climate will change in the future?</p> <p>Is drought likely to become more or less common?</p> <p>How could this impact agriculture and people that eat crops?</p>	<p>global circulation in the ocean</p> <p>*Investigation: Modeling the flow of energy through the ocean system</p> <p>*Investigation: Exploring the effects of albedo</p> <p>*Investigation: Comparing the local climates of cities</p> <p>*Case studies in climate change</p> <p>*Investigation: The last century of global climate change</p> <p>*Investigation: Understanding the effects of climate change</p>	
7. Genes	<p>How do genes impact traits?</p> <p>How could a gene be related to a soybean's ability to survive drought?</p> <p>How are genes passed to offspring naturally?</p> <p>Could a soybean get a gene from a sunflower in natural conditions?</p> <p>How do genes and the environment work together to determine the developmental path of living things?</p> <p>If the environment imposes a drought, is the fate of a plant flexible?</p>	<p>*KWL on anchoring phenomena</p> <p>*Investigation Modeling the gene to protein to trait relationship</p> <p>*Investigation: Getting to know DNA</p> <p>*Investigation: Analyzing genetic data</p> <p>*Making sense of phenomena questions</p> <p>*Investigation: Predicting genetic outcomes of asexual and sexual reproduction</p> <p>*Investigation: Breeding happy faces</p> <p>*Investigation: The influence of genes and the environment</p> <p>*Investigation: Constructing an explanation of human height variation</p>	<p>*Performance assessment: Conserving coral reefs using genetics</p>
8. Changes in Genes	<p>How can genes change over time?</p> <p>How does a mutation effect an organism's traits?</p> <p>How can people impact genes?</p> <p>How do people genetically modify organisms like soybeans?</p>	<p>*KWL on anchoring phenomena</p> <p>*Investigation: Modeling mutations</p> <p>*Investigation: Assessing the effects of mutations on organisms</p> <p>*Investigation: Understanding mutations</p> <p>*Making sense of phenomena</p>	<p>*Engineering challenge: Students will develop an algorithm for breeding a new type of dog that fits a set of criteria and constraints.</p>

		questions *Investigation: Understanding genetically modified organisms *Investigation: Debating genetic engineering	
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ESSENTIAL STANDARDS:

MS-LS1-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells. (ELA/Literacy CCSS: WHST.6-8.7 and Math CCSS: 6.EE.C.9)

MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. (ELA/Literacy CCSS: SL.8.5, and Math CCSS: 6.EE.C.9)

MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. (ELA/Literacy CCSS: RST.6-8.1, RI.6-8, WHST.6-8.1 and Math CCSS: 6.EE.C.9)

MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions. (ELA/Literacy CCSS: RST.6-8.1, RST.6-8.9, WHST.6-8.8 and Math CCSS: MP.2, 6.NS.C.5)

MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. * (ELA/Literacy CCSS: RST.6-8.3, WHST.6-8.7)

RELEVANT STANDARDS AND FRAMEWORKS, CONTENT/PROGRAM SPECIFIC STANDARDS:

Link to Common Core Standards (if applicable):

Educational standards describe what students should know and be able to do in each subject in each grade. In California, the State Board of Education decides on the standards for all students, from kindergarten through high school.

<http://www.corestandards.org/ELA-Literacy/RST/6-8/>

Link to Framework (if applicable):

Curriculum frameworks provide guidance for implementing the content standards adopted by the State Board of Education (SBE). Frameworks are developed by the Instructional Quality Commission, formerly known as the Curriculum Development and Supplemental Materials Commission, which reviews and recommends textbooks and other instructional materials to be adopted by the SBE.

<https://www.cde.ca.gov/ci/sc/cf/documents/scifwchapter5.pdf>

Link to Subject Area Content Standards (if applicable):

Content standards were designed to encourage the highest achievement of every student, by defining the knowledge, concepts, and skills that students should acquire at each grade level.

Link to Program Content Area Standards (if applicable):

Program Content Area Standards applies to programs such as International Baccalaureate, Advanced Placement, Career and Technical Education, etc.

TEXTBOOKS AND RESOURCE MATERIALS:

Textbooks

Board Approved	Pilot Completion Date (If applicable)	Textbook Title	Author(s)	Publisher	Edition	Date
<i>Yes</i>		<i>Bring Science Alive! 6th Grade Integrated</i>	Martin, S., L. Blumenthal, S. Duren, R. Mikulec, L. Prescott, M. Wetterschneider	TCI		

Other Resource Materials

Supplemental Materials

Board approved supplemental materials (Including but not limited to: Film Clips, Digital Resources, Supplemental texts, DVDs, programs).

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