

Unit Title: Whose Land Is It Anyway?

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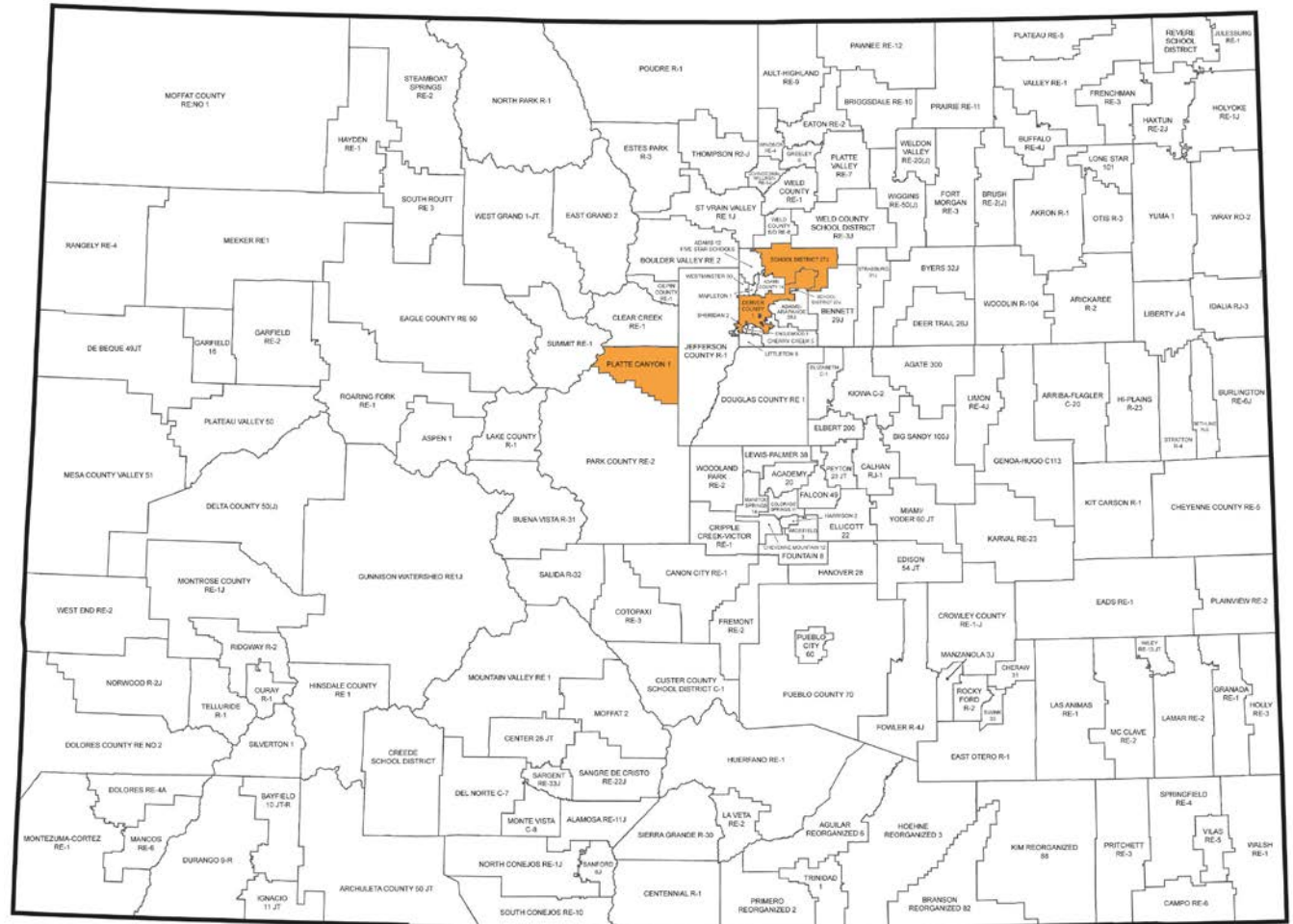
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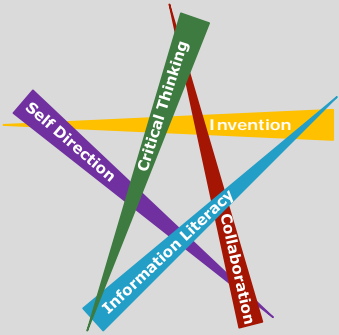
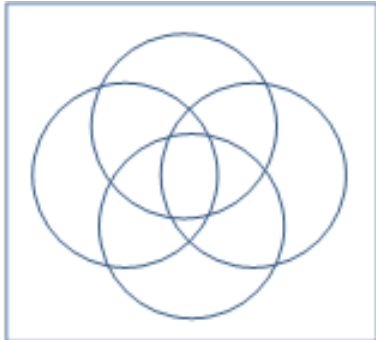
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This unit was authored by a team of Colorado educators. The template provided one example of unit design that enabled teacher-authors to organize possible learning experiences, resources, differentiation, and assessments. The unit is intended to support teachers, schools, and districts as they make their own local decisions around the best instructional plans and practices for all students.

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Content Area	Integrated Science/Social Studies	Grade Level	4 th grade
Course Name/Course Code	Environmental science		
Standard	Grade Level Expectations (GLE)	GLE Code	
2. Geography	1. Use several types of geographic tools to answer questions about the geography of Colorado	SS09-GR.4-S.2-GLE.1	
	2. Connections within and across human and physical systems are developed	SS09-GR.4-S.2-GLE.2	
2. Life Science	3. There is interaction and interdependence between and among living and nonliving components of systems	SC09-GR.4-S.2-GLE.3	
3. Economics	1. People respond to positive and negative incentives	SS09-GR.4-S.3-GLE.1	
4. Civics	1. Analyze and debate multiple perspectives on an issue	SS09-GR.4-S.4-GLE.1	
<p align="center">Colorado 21st Century Skills</p>  <p>Critical Thinking and Reasoning: <i>Thinking Deeply, Thinking Differently</i></p> <p>Information Literacy: <i>Untangling the Web</i></p> <p>Collaboration: <i>Working Together, Learning Together</i></p> <p>Self-Direction: <i>Own Your Learning</i></p> <p>Invention: <i>Creating Solutions</i></p>		<p>Integrated Curriculum Design: This interdisciplinary approach matches basic concepts in science and social studies – interdependence, region, environment, adaptation - forming overlaps in instruction of certain topics in an authentic integrated model.</p> 	
Unit Titles	Length of Unit/Contact Hours	Unit Number/Sequence	
Whose Land Is It Anyway?	4 – 6 weeks	1	

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Unit Title	Whose Land Is It Anyway?		Length of Unit	4-6 weeks
Focusing Lens(es)	Interdependence	Standards and Grade Level Expectations Addressed in this Unit	SS09-GR.4-S.2-GLE.1 SS09-GR.4-S.2-GLE.2 SC09-GR.4-S.2-GLE.3	SS09-GR.4-S.3-GLE.1 SS09-GR.4-S.4-GLE.1
Inquiry Questions (Engaging-Debatable):	<ul style="list-style-type: none"> • Why does the environment need to be protected? • How are resources shared between humans and organisms within a specific environment? • In what ways has human activity impacted/influenced the environment? 			
Unit Strands	Geography, life science, economics, civics			
Concepts	Region, place, organism, interdependence, habitat, ecosystem, environment, adaptation, patterns of settlement, economy, conservation, preservation, physical environment, food chain			

Generalizations My students will Understand that...	Guiding Questions	
	Factual	Conceptual
The interdependent nature of environmental systems reflects the connections among habitats, organisms, cultures and technologies (SC09-GR.4-S.2-GLE.3-EO.d; IQ.1,2;RA.2;N.2) and (SS09-GR.4-S.2-GLE.2-EO.c)	What are nonliving components in an ecosystem? (everything else is a living component)	How would an ecosystem be affected if components are removed or out of balance?
Physical and natural resources typically provide the material basis for social/economic stability, adaptation, and regional development (SS09-GR.4-S.3-GLE.1-EO.c) (SC09-GR.4-S.2-GLE.3-IQ.1; N.1)	What physical resources are significant to the social and economic well-being of the state of Colorado? (SS09-GR.4-S.3-GLE.1-EO.c)	How should we sustain our physical resources while still providing for economic stability? How does the geography of a region determine the major trade and tourism industries of that region? (SS09-GR.4-S.2-GLE.2-EO.a,d)
Humans make decisions that contribute to the protection or endangerment of environmental systems (SC09-GR.4-S.2-GLE.3-EO.e,f; RA.1,2) and (SS09-GR.4-S.2-GLE.2-EO.a)	How are humans currently endangering and/or preserving habitats around the world? (SC09-GR.4-S.2-GLE.3-EO.f) How does the environment of Colorado influence the major trade and tourism industries of the state? (SS09-GR.4-S.2-GLE.2-EO.a,d)	How can decisions made by humans impact an ecosystem? (SC09-GR.4-S.2-GLE.3-EO.e; IQ.3,4; RA.1)
External influences such as climate, physical geography, and available resources determine how humans and organisms adapt to their environment (SC09-GR.4-S.2-GLE.3-EO.a,d,e,f; IQ.3; N.1) and (SS09-GR.4-S.2-GLE.2-EO.a)	What are external influences that could affect an environment? (SC09-GR.4-S.2-GLE.3-EO.e; IQ.3,4; RA.1) Where does energy come from? (SC09-GR.4-S.2-GLE.3-EO.b; IQ.1)	What could happen to a given habitat in the instance of a natural disaster? What would happen if the sun's energy no longer reached the earth? Why would removing water impact an ecosystem?

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Critical Content: My students will Know...	Key Skills: My students will be able to (Do)...
<ul style="list-style-type: none"> • The cause and effect relationship between the physical environment and the economy of Colorado (cattle ranching, mining, fruit industry) (SS09-GR.4-S.2-GLE.2-EO.a, d) • Examples of natural resources and events that impact the environment in Colorado (e.g., droughts can impact ski industry, increase the threat of forest fires, and alter camping and fishing practices) (SS09-GR.4-S.3-GLE.1-EO.b) • The ways in which the movement of goods and services and technology create connections between people and regions of Colorado (SS09-GR.4-S.2-GLE.2-EO.d) (SS09-GR.4-S.1-GLE.2-EO.d) • Adaptations that humans and organisms make in relation to their habitat (SC09-GR.4-S.2-GLE.3-EO.a) (SS09-GR.4-S.2-GLE.2-EO.c) • The living and nonliving components of habitats (SC09-GR.4-S.2-GLE.3-EO.d; IQ.2,4; RA.1,2) • The use and sustainability of natural resources (SC09-GR.4-S.2-GLE.3-EO.f; IQ.1,3; RA.1,2) (SS09-GR.4-S.3.GLE.1-EO.c) • Positive and negative impacts on the Colorado environment (endangered habitats and preservation efforts) (SC09-GR.4-S.2-GLE.3-EO.c,d,e,f; IQ.3,4; RA.1,2; N.1) 	<ul style="list-style-type: none"> • Explain ways people use technology to get what they need from the physical environment (SS09-GR.4-S.4-GLE.2-RA.2) • Create and investigate geographic questions about the environment (SS09-GR.4-S.2-GLE.1-EO.a,c) • Describe how the physical environment affects human activities • Describe the impact of various technological developments on the environment (SS09-GR.4-S.1-GLE.2-EO.d) and (SS09-GR.4-S.3-GLE.1-IQ.2) • Compare and contrast habitats (SC09-GR.4-S.2-GLE.3-EO.c) • Evaluate the use and sustainability of resources (SC09-GR.4-S.2-GLE.3-EO.d; IQ.1) • Make a plan to positively impact a local ecosystem (SC09-GR.4-S.2-GLE.3-EO.e; RA.1,2) • Identify the unique aspects of Colorado habitats • Identify energy flow in a food chain of a particular ecosystem (SC09-GR.4-S.2-GLE.3-EO.c,d; IQ.1,2) • Evaluate how physical features affect the development of a sense of place (SS09-GR.4-S.2-GLE.2-N.1) • Give examples of issues (e.g., environmental, resource use/sustainability) faced by the state and develop possible solutions (SS09-GR.4-S.4-GLE.1-EO.a; N.1)

<p>Critical Language: includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline. EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: <i>“Mark Twain exposes the hypocrisy of slavery through the use of satire.”</i></p>	
<p>A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):</p>	<p><i>I can explain the relationship between humans and the physical geography in an environment.</i></p>
<p>Academic Vocabulary:</p>	<p>Environment, interdependence, resource, impact, evidence, compare, contrast, conservation, preservation</p>
<p>Technical Vocabulary:</p>	<p>Forest, tundra, grasslands, desert, prey, predator, ecosystems, habitat, endangered, consume, adaptations, nonliving (abiotic) and living (biotic) components, solar energy, food chain, organism, natural phenomena (flood, fire, earthquake), pollution, tourism, industry</p>

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Throughout this unit we denote levels of content area integration by listing an **Integration Continuum Color***, as follows:

GREEN	Active involvement in developmentally appropriate knowledge and skills results in work that fuses science and social studies disciplines.
BLUE	Equal and significant attention is given to science and social studies concepts, skills, or content.
PINK	Work combines some content, skills, and concepts from science and social studies disciplines, but proficiency is uneven.
YELLOW	Learning is demonstrated in one discipline or the other, but not both.

* Adapted from *Varieties of Arts Integration developed by Center for Applied Research and Educational Improvement and Perpich Center for Arts Education ©2002 Regents of the University of Minnesota*

Unit Description:	In this unit, students will focus on the interdependence of organisms in their environments. Students will understand the cause and effect relationships of Colorado’s environmental systems by identifying, observing and analyzing patterns among biotic (living) and abiotic (non-living) components of ecosystems. Across the unit’s 4-6 week duration, students will explore the diverse economic, social, civic, geographic and ecological factors that influence Colorado.
Considerations:	In this unit, organisms refers to plants, animals and humans Possible Misconceptions: <ul style="list-style-type: none"> • Everything in an ecosystem is living. • Humans are outside of the environment. • Nature is untouched by humans.
Unit Generalizations	
Key Generalization:	The interdependent nature of environmental systems reflects the connections among habitats, organisms, cultures and technologies
Supporting Generalizations:	Physical and natural resources typically provide the material basis for social/economic stability, adaptation, and regional development
	Humans make decisions that contribute to the protection or endangerment of environmental systems
	External influences such as climate, physical geography, and available resources determine how humans and organisms adapt to their environment

Performance Assessment: <i>The capstone/summative assessment for this unit. .</i>		LEVEL OF INTEGRATION: GREEN
Claims: (Key generalization(s) to be mastered and demonstrated through the capstone assessment.)	The interdependent nature of environmental systems reflects the connections among habitats, organisms, cultures and technologies	
Stimulus Material: (Engaging scenario that includes role, audience, goal/outcome and explicitly connects the key generalization)	A developer has proposed to build a new dam on your local river to generate electricity for the community. This dam will have an impact on the surrounding environmental systems, both locally and regionally. You will present to the city council at a town hall meeting in one of the following roles: biologist, concerned citizen, mayor, representative of the electric company, or developer. You will research your position (for or against) in order to identify the ecological and economic impacts of the dam on humans, plants, animals, and the habitats along the river system. Your presentation should include a speech and visual aids (e.g., maps, graphs, charts, pictures) on whether or not the dam should be built.	

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Product/Evidence: (Expected product from students)	<p>Presentations may be either Individual or in groups. Regardless of role chosen, both the ecological and economic impacts should be investigated and presented.</p> <p>Works cited should also be included in the final product.</p> <p>NOTE: Environmental systems also include cultural and technological connections.</p> <p>Council for Environmental Education. (2006). Project WILD K-12 Curriculum and Activity Guide – To dam or not to dam?</p> <p>McCully, P. (2001). <i>Silenced Rivers: the ecology and politics of large dams.</i></p>
Differentiation: (Multiple modes for student expression)	<p>If a group presentation, each student serves as the researcher, data collector, speech developer, visual aid creator.</p> <p>To extend this work, have students research the how this dam will affect regions farther down the river (other cities, states). Students may also include research of a real life example of a dam created and its outcome.</p>

Texts for independent reading or for class read aloud to support the content

Informational/Non-Fiction	Fiction
<p>Barraclough, S., (2008) <i>Earth Resources</i>. Lexile: 540</p> <p>Demunn, M. (1997). <i>Places of Power</i>. Ages 5 & up</p> <p>Dobson, C. (1999). <i>Watersheds: a practical handbook for healthy water</i>. Ages 12 & up</p> <p>Reed-Jones, C. (2001). <i>Salmon Stream</i>. Ages 6 & up</p> <p>Rozinski, B. (2000). <i>On the Trail of Colorado Critters</i>. Ages 10 & up</p> <p>Spilsburg, L., (2009) <i>Natural Resources</i>. Lexile: 760</p> <p>Toupin, L. (2005). <i>Freshwater Habitats: life in freshwater ecosystems</i>. Lexile: 910</p>	<p>Fourment, T. (2004). <i>My Water Comes from the Mountains</i>. Lexile: 300-500</p> <p>Mauran, H. (2006). <i>Where the Wisdom Lies: a message from nature’s small creatures</i>. Lexile: 680</p> <p>McKinney, B.S. (2013). <i>A Drop Around the World</i>. Lexile: 820</p> <p>McKinney, B.S. (2000). <i>Pass the Energy Please!</i> Lexile: 1010</p>

Ongoing Discipline-Specific Learning Experiences

1.	Description:	Thinking like a scientist: recognizing a problem, making observations, and proposing solutions.	Teacher Resources:	http://www.skillsyouneed.com/ips/problem-solving2.html (Identifying and structuring problems) http://educators.brainpop.com/bp-jr-topic/making-observations/ (Understanding Science-Making observations)
			Student Resources:	https://jr.brainpop.com/science/scienceskills/makingobservations/preview.weml (Brainpop Jr.- Making observations) https://www.youtube.com/watch?v=zsMH9VtdGYM (Video: How to make observations)
	Skills:	Identifying problems through observations and proposing potential solutions.	Assessment:	Students will identify an environmental problem/situation occurring around their school, make observations, and propose a solution to the problem. Format is up to the teacher.

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2.	Description:	Communicate like a geographer using maps and data	Teacher Resources:	http://geology.com/topographic-physical-map/colorado.shtml (Maps: Topographic and Physical Maps of Colorado) http://www.lib.utexas.edu/maps/colorado.html (A variety of Colorado State maps) http://mapmaker.education.nationalgeographic.com/?ls=000000000000 (Interactive Map Maker – National Geographic)
	Skills:	Use data and research to support opinions	Student Resources:	http://mapmaker.education.nationalgeographic.com/?ls=000000000000 (Interactive Map Maker – National Geographic) http://shelledy.mesa.k12.co.us/staff/computerlab/ColoradoLifeZonesInformation.htm (Colorado Life Zones)
		Assessment:	Students will create a variety of maps illustrating the physical geography of Colorado, utilize topographical maps to identify different habitats.	

Prior Knowledge and Experiences

The description of the working knowledge and skills necessary for students to access the learning experiences throughout the unit. Teachers will use their professional judgment and knowledge of their students (including information gained from relevant pre-assessments) to determine the kinds of introductory learning experiences and/or reinforcement experiences that may need to be delivered prior to or within the unit.

- Vertical Articulation: Students have last seen scientific concepts related to this unit in 2nd grade.

Learning Experience # 1

LEVEL OF INTEGRATION: PINK

The teacher may provide visuals (e.g., weathering and erosion time lapse video, maps, Google Earth, etc.) representing various geographic features of Colorado so that students can begin to connect how physical geography and climate determine the formation of environmental systems.

Generalization Connection(s):

Physical and natural resources typically provide the material basis for social/economic stability, adaptation, and regional development
 External influences such as climate, physical geography, and available resources determine how humans and organisms adapt to their environment

Teacher Resources:

www.earth.google.com (Satellite views of the earth)
<http://environment.nationalgeographic.com/environment/freshwater/change-the-course/colorado-river-map/> (Change the Course - the Colorado River)
<http://store.projectwet.org/educators-guides/colorado-watershed-educators-guide.html> (Discover the Watershed: The Colorado River)
<http://www.nationalgeographic.com/search/?q=erosion> (Images: Weathering and erosion)
<http://www.cas.miamioh.edu/scienceforohio/Erosion/L.html> (Lesson Plan: Dig it! Erosion Investigation)
http://www.educationworld.com/tools_templates/template_strybrd_8panels.doc (Storyboard template)

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Student Resources:	https://www.youtube.com/watch?v=J-ULcVdeggE (Video: Weathering and erosion) http://schools.bcsd.com/fremont/4th_Sci_earth_slow-changes.htm (Information: Slow Changes on the Earth) http://www.educationworld.com/tools_templates/template_strybrd_8panels.doc (Storyboard template)	
Assessment:	Students will create a storyboard representing how geographic formations are created and their influence on different environmental systems in Colorado.	
Differentiation: (Multiple means for students to access content and multiple modes for student to express understanding.)	Access (Resources and/or Process)	Expression (Products and/or Performance)
	N/A	Students may work individually, in pairs, groups, or as a whole class
Extensions for depth and complexity:	Access (Resources and/or Process)	Expression (Products and/or Performance)
	Students may compare Colorado landforms/geography with other states	Students may add pictures to illustrate their storyboard. Students may utilize technology (e.g. - PowerPoint, Prezi) in place of the storyboard
Critical Content:	<ul style="list-style-type: none"> • The geographic features of Colorado (e.g., mesa, valley, mountains) • The cause and effect relationship between the physical environment and the climate of Colorado • Positive and negative impacts on the Colorado environment • Features of the physical environment influence the placement of organisms • Different types of habitats based on geographic location 	
Key Skills:	<ul style="list-style-type: none"> • Identify, location, climate type and the effect on habitats • Explain how physical geography can determine where people settle/live • Create and investigate geographic questions about the environment • Compare and contrast habitats • Identify the unique aspects of Colorado habitats 	
Critical Language:	Climate, geographic formations, environmental systems, landform, habitat, organism, physical environment, cause and effect, settlement, erosion, weathering, mountains, mesa, canyons, plateaus, compare and contrast	

Learning Experience # 2	LEVEL OF INTEGRATION: PINK
The teacher may lead students on an investigation exploring an outdoor space so that students can identify various nonliving and living (e.g., people, animals, plants) elements of an ecosystem.	
Generalization Connection(s):	The interdependent nature of environmental systems reflects the connections among habitats, organisms, cultures and technologies
Teacher Resources:	http://tinyurl.com/pxesr5e (Images: Biotic and abiotic factors in an ecosystem) https://www.youtube.com/watch?v=MdlwPtKg-VI (Video: How abiotic and biotic factors make an ecosystem) http://www.fishwildlife.org/files/ConEd-Fostering-Outdoor-Observation-Skills.pdf (Guide to Fostering Outdoor Observation Skills)

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	http://www.enature.com/home/indexNew.asp (Field Guides - can search by zip code)	
Student Resources:	https://www.youtube.com/watch?v=E1pp_7-yTN4 (Video: Biotic and abiotic factors) https://www.youtube.com/watch?v=MdlwPtKg-VI (Video: How abiotic and biotic factors make an ecosystem)	
Assessment:	Students will create a map of their outdoor space, labeling the locations of both living (biotic) and nonliving (abiotic) elements from their outdoor investigation.	
Differentiation: (Multiple means for students to access content and multiple modes for student to express understanding.)	Access (Resources and/or Process)	Expression (Products and/or Performance)
	N/A	Students may work individually, in groups, or as a whole class
Extensions for depth and complexity:	Access (Resources and/or Process)	Expression (Products and/or Performance)
	N/A	Students may create a topographical map Students may analyze how habitats could be improved and create an action plan
Critical Content:	<ul style="list-style-type: none"> • The living and nonliving components of habitats • Distinguishing characteristics of an environment in relation to their physical location • Interdependent relationships among biotic and abiotic characteristics of an ecosystem • The major components of an ecosystem and examples of each component 	
Key Skills:	<ul style="list-style-type: none"> • Identify the impact of humans on the environment /ecosystems/habitat • Determine biotic (living) vs. abiotic (nonliving) components of a habitat • Locate people, animals and resources within a habitat 	
Critical Language:	Biotic, abiotic, habitat, interdependent, ecosystem, diversity, environmental system, resources, component, characteristic, environment	

Learning Experience # 3	LEVEL OF INTEGRATION: YELLOW
The teacher may facilitate hands-on activities that demonstrate interdependent relationships within various ecosystems so students can explain and illustrate how living systems (e.g., food web, including humans; predator/prey relationships; etc.) interact with the biotic and abiotic factors within an environment.	
Generalization Connection(s):	External influences such as climate, physical geography, and available resources determine how humans and organisms adapt to their environment Humans make decisions that contribute to the protection or endangerment of environmental systems The interdependent nature of environmental systems reflects the connections among habitats, organisms, cultures and technologies
Teacher Resources:	Kruger, F.A. & Meaney, C.A. (1995). <i>Explore Colorado: A Naturalist's Notebook</i>

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	<p>Mutel, C.F. & Emerick, J.C. (1992). <i>From Grasslands to Glaciers: The Natural History of Colorado and the Surrounding Region</i>. http://cpw.state.co.us/Documents/Education/TeacherResources/CrossroadsBioiversity.pdf (Colorado ecosystems poster set) http://tpwd.texas.gov/publications/pwdpubs/media/pwd_if_w7000_0033.pdf (Lesson plans that demonstrate predator/prey and human conflict) http://shelledy.mesa.k12.co.us/staff/computerlab/ColoradoLifeZonesInformation.htm (Colorado Life Zones) http://www.landscape.org/colorado/ecosystems/ (Information: Ecosystems and habitats in Colorado)</p>	
Student Resources:	<p>http://shelledy.mesa.k12.co.us/staff/computerlab/ColoradoLifeZonesInformation.htm (Colorado Life Zones) http://www.watchknowlearn.org/Video.aspx?VideoID=2826&CategoryID=1383 (Video: Life on the Mountains) http://www.landscape.org/colorado/ecosystems/ (Information: Ecosystems and habitats in Colorado)</p>	
Assessment:	Students will create a poster of a food web based on ecosystems in Colorado.	
Differentiation: (Multiple means for students to access content and multiple modes for student to express understanding.)	Access (Resources and/or Process)	Expression (Products and/or Performance)
	Students may be provided visuals of food webs from various ecosystems within Colorado	Students may verbally or theatrically demonstrate their understanding of a food web
Extensions for depth and complexity:	Access (Resources and/or Process)	Expression (Products and/or Performance)
	Students may be allowed to compare and contrast food webs from different ecosystems within Colorado	Students may create a food web to illustrate the flow of energy in an ecosystem
Critical Content:	<ul style="list-style-type: none"> • Adaptations that humans and organisms make in relation to their habitat • The living and nonliving components of habitats and their influence on relationships • Positive and negative impacts on the Colorado environment • The effects of predator-prey relationships within a food web • Energy transfer within a food web 	
Key Skills:	<ul style="list-style-type: none"> • Identify energy flow in a food web of a particular ecosystem • Cause and effect relationships of environmental systems • Identify predator/ prey relationships • Identify a hierarchy of organisms within an ecosystem 	
Critical Language:	Predator, prey, geography, biotic, abiotic, interdependent, food chain, food web, relationships, living systems, environment, ecosystem, adaptations, energy transfer/flow, components	

Learning Experience # 4	LEVEL OF INTEGRATION: YELLOW
<p>The teacher may lead a discussion on the importance of adaptation and provide examples and/or artifacts (e.g., animal pelts, videos, pictures) so that students can describe how these modifications help plants, animals, and humans adapt to and survive in their habitat.</p>	

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Generalization Connection(s):	External influences such as climate, physical geography, and available resources determine how humans and organisms adapt to their environment	
Teacher Resources:	http://tinyurl.com/oosypp6 (Lesson plan: Adaptation Artistry from Project WILD) https://www.teachervision.com/ecological-adaptation/animals/6989.html (Animal Adaptations Resources) http://www.bbc.co.uk/nature/adaptations (Animal and plant adaptations and behaviors – BBC)	
Student Resources:	http://www.durrell.org/kids/fun-factsheets/adaptation-factsheet/ (Factsheet: The Truth About Adaptation) http://www.animalplanet.com/wild-animals/animal-adaptations/ (Top 10 Animal Adaptations) http://www.bbc.co.uk/nature/adaptations (Animal and plant adaptations and behaviors)	
Assessment:	Students will create a model of an animal with unique adaptations to a particular habitat in Colorado.	
Differentiation: (Multiple means for students to access content and multiple modes for student to express understanding.)	Access (Resources and/or Process)	Expression (Products and/or Performance)
	Students may be provided with different types of mediums (e.g., clay, various craft materials, paper) to create their animals	N/A
Extensions for depth and complexity:	Access (Resources and/or Process)	Expression (Products and/or Performance)
	Students may display and discuss their products in a gallery walk	Students may create a food web based on the animal they originally created
Critical Content:	<ul style="list-style-type: none"> • The sustainable interactions among living and nonliving components of habitats • Organisms' modifications (adaptations) <i>over time</i> within their habitat • Basic needs of animals and plants for survival in Colorado • How external influences shape organisms' habitats and human settlement • Animal form and function within a variety of Colorado environments 	
Key Skills:	<ul style="list-style-type: none"> • Investigate animal form and function within an environment in relation to their physical environment and climate • Describe how the physical environment affects human activities and organisms' survival • Compare and contrast types of organisms and their habitat needs 	
Critical Language:	Adaptation, habitat, interpretation, modifications, resources, external influences, human activities, external, form and function, compare and contrast, organism	

Learning Experience # 5	LEVEL OF INTEGRATION: GREEN
The teacher may engage students in a brainstorming session about various resources available in Colorado so students can analyze how human dependence on and consumption of nonrenewable and renewable resources can affect environmental systems.	
Generalization Connection(s):	External influences such as climate, physical geography, and available resources determine how humans and organisms adapt to

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	<p>their environment</p> <p>Physical and natural resources typically provide the material basis for social/economic stability, adaptation, and regional development</p>	
Teacher Resources:	<p>http://www.cllarocolorado.org/renewable-energy/ (Article, data, graphs on renewable energy)</p> <p>http://tinyurl.com/hk5d5oh (Lesson plans on renewable and non-renewable energy)</p> <p>http://www.watchknowlearn.org/Category.aspx?CategoryID=2455 (Videos on natural resources)</p> <p>http://www.centerdigitaled.com/artsandhumanities/How-to-Create-the-Perfect-Public-Service-Announcement.html (How to create a public service announcement)</p>	
Student Resources:	<p>http://www.livebinders.com/play/play?id=273108 Article: Natural Resources for Energy: Renewable or Nonrenewable)</p> <p>http://www.watchknowlearn.org/Category.aspx?CategoryID=2455 (Videos on natural resources)</p> <p>http://www.centerdigitaled.com/artsandhumanities/How-to-Create-the-Perfect-Public-Service-Announcement.html (How to create a public service announcement)</p>	
Assessment:	Students will produce a public service announcement on a Colorado natural resource.	
Differentiation: (Multiple means for students to access content and multiple modes for student to express understanding.)	Access (Resources and/or Process)	Expression (Products and/or Performance)
	<p>Students may work in pairs or groups</p> <p>Students may be provided with examples of public service announcements</p> <p>Students may be provided with an outline script for a public service announcement</p>	N/A
Extensions for depth and complexity:	Access (Resources and/or Process)	Expression (Products and/or Performance)
	<p>http://www.nrdc.org/issues/ (Information on solutions to issues of human consumption of resources)</p>	Students may provide potential solutions to issues surrounding human consumption of resources in their PSA
Critical Content:	<ul style="list-style-type: none"> • Availability, use and dependence of natural resources that impact the environment in Colorado • Identification and consumption of renewable and nonrenewable resources • Types and uses of technological advancements (e.g. wind farms, dams, GPS, GIS) • State issues surrounding resource development and use • The ways in which movement of goods and services and technology create connections between people and regions of Colorado 	
Key Skills:	<ul style="list-style-type: none"> • Differentiate between renewable and nonrenewable resources and who uses them for survival • Give examples of issues (e.g. environmental, resource use/sustainability) faced by the state and develop possible solutions • Compare and contrast technological advancements and why they are used • Evaluate how physical features affect the development of a sense of place 	
Critical Language:	Development, technology, differentiate, describe, organisms, cultures, public service announcement, social/economic stability, renewable resources, nonrenewable resources, environment, connections, dependence, consumption, sustainability	

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Learning Experience # 6		LEVEL OF INTEGRATION: GREEN
<p>The teacher may provide various resources (e.g., news story, guest speaker, time lapse videos, simulations) illustrating external influences (e.g., culture, weather, human activities) so students that can analyze the interdependence of external influences on environmental systems.</p>		
<p>Generalization Connection(s):</p>	<p>The interdependent nature of environmental systems reflects the connections among habitats, organisms, cultures and technologies Physical and natural resources typically provide the material basis for social/economic stability, adaptation, and regional development Humans make decisions that contribute to the protection or endangerment of environmental systems External influences such as climate, physical geography, and available resources determine how humans and organisms adapt to their environment</p>	
<p>Teacher Resources:</p>	<p>http://www.historycolorado.org/sites/default/files/files/Educators/3rd_4th/Mining_and_the_Environment.pdf (Lesson plan: History Colorado - Mining and the Environment) http://www.watchknowlearn.org/Video.aspx?VideoID=56715&CategoryID=2671 (Video: What is Climate?) http://www.watchknowlearn.org/Video.aspx?VideoID=32924&CategoryID=2671 (Video: Five Factors that Affect Climate) http://sos.noaa.gov/workshop/spring_2014.html (Lesson plans and videos on the Colorado flood – 2013) http://www.nps.gov/romo/learn/education/upload/Floods-final.pdf (Teacher Guide: Front Range Floods) http://tinyurl.com/h25ywyb (Lesson Plan: Human-Environment interactions) http://www.calrecycle.ca.gov/eei/UnitDocs/Grade04/413415/413415TE.pdf (Lesson plans -see lesson #2 - Human activities, environment and natural resources ... NOTE: password to open doc is “teacheei”)</p>	
<p>Student Resources:</p>	<p>http://www.calrecycle.ca.gov/eei/UnitDocs/Grade04/413415/413415SW.pdf (Student workbook - Human activities, environment and natural resources) http://www.watchknowlearn.org/Video.aspx?VideoID=56715&CategoryID=2671 (Video: What is Climate?) http://www.watchknowlearn.org/Video.aspx?VideoID=32924&CategoryID=2671 (Video: Five Factors that Affect Climate)</p>	
<p>Assessment:</p>	<p>Students will write an essay voicing their opinion on a local example of where external influences have created an environmental issue in their community.</p>	
<p>Differentiation: (Multiple means for students to access content and multiple modes for student to express understanding.)</p>	<p>Access (Resources and/or Process)</p>	<p>Expression (Products and/or Performance)</p>
	<p>Students may be provided an essay template http://tinyurl.com/nn4rabf (Essay template)</p>	<p>Students may verbally voice their opinion</p>
<p>Extensions for depth and complexity:</p>	<p>Access (Resources and/or Process)</p>	<p>Expression (Products and/or Performance)</p>
	<p>N/A</p>	<p>Students may include data, facts, and charts to support their opinion</p>

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Critical Content:	<ul style="list-style-type: none"> • How natural resources and events impact the environment in Colorado • The cause and effect relationship between the physical environment and the economy of Colorado • Positive and negative effects on the Colorado environment due to external influences • Cultures within various Colorado regions • How resources are sustainable • How humans, plants, and animals use resources
Key Skills:	<ul style="list-style-type: none"> • Analyze human made products and the impact on an ecosystem • Identify cultures within a region • Make a plan to positively impact a local ecosystem • Give examples of issues (e.g., environmental, resource use/sustainability faced by the state and develop possible solutions • Evaluate human, plant and animal use of resources and the sustainability of resources
Critical Language:	External influences (factors), interdependence, environmental systems, climate, physical geography, endangerment, mobility, culture, impact, positive and negative effects, analyze, natural phenomena (flood, fire, earthquake)

Learning Experience # 7	LEVEL OF INTEGRATION: GREEN
<p>The teacher may lead a Socratic seminar concerning human’s everyday needs so that students can explain how the interdependence between technology, economies, and activities (e.g., mining, hunting, trapping, industry, trade) is contingent upon the availability of resources.</p>	
Generalization Connection(s):	<p>Physical and natural resources typically provide the material basis for social/economic stability, adaptation, and regional development</p> <p>The interdependent nature of environmental systems reflects the connections among habitats, organisms, cultures and technologies</p> <p>Humans make decisions that contribute to the protection or endangerment of environmental systems</p>
Teacher Resources:	<p>https://www.facinghistory.org/for-educators/educator-resources/teaching-strategy/socratic-seminar (How to conduct a Socratic Seminar)</p> <p>http://www.historycolorado.org/sites/default/files/files/Educators/3rd_4th/Fur_Trappers.pdf (Lesson plan: History Colorado - Fur Trappers and Beaver Pelts)</p> <p>http://www.historycolorado.org/sites/default/files/files/Educators/3rd_4th/Mining_and_the_Environment.pdf (Lesson plan: History Colorado– Mining and the Environment)</p> <p>http://www.pbs.org/wgbh/americanexperience/features/photo-gallery/hover/ (Images of men building the Hoover Dam)</p> <p>http://www.watereducation.org/topic-list-dams-reservoirs-and-water-projects (Background information on water and dams)</p>
Student Resources:	<p>http://video.nationalgeographic.com/video/env-freshwater-whycare (Video: Why Care About Water?)</p> <p>http://exhibits.historycolorado.org/bentsfort/bents_home.html#mountainMen (Interactive: Colorado and the Fur Trade)</p>
Assessment:	Students will investigate, research, and present findings in the Socratic seminar on how technology/industry positively and negatively impacts the environment and cultures.

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Differentiation: (Multiple means for students to access content and multiple modes for student to express understanding.)	Access (Resources and/or Process)	Expression (Products and/or Performance)
	Students may work in pairs Students may use sentence starters or prompts during the seminar	N/A
Extensions for depth and complexity:	Access (Resources and/or Process)	Expression (Products and/or Performance)
	N/A	N/A
Critical Content:	<ul style="list-style-type: none"> • Application of all resources in environments, economies, cultures and technology • Human needs, wants and activities such as mining, fishing, hunting, industry, development and their impact on environmental systems • Technological impact on the shaping and maintaining of human settlements • Sustainability in environments and cultures 	
Key Skills:	<ul style="list-style-type: none"> • Explain ways people use technology to get what they need from the physical environment • Describe the impact of various technological developments on the environment • Evaluate the use of resources and the influence on sustainability • Recognize the interdependence among technologies, human activities, and economies in various systems 	
Critical Language:	Mining, consumption, industry, manufacturing, trade, conservation, sustainability, application, settlements, culture, development, industry, development	

Learning Experience #8		LEVEL OF INTEGRATION: GREEN
The teacher may invite a guest speaker (e.g., Colorado Parks and Wildlife, US Fish and Wildlife Service, Audubon) to discuss wildlife management so that students can explain how human activities can influence the endangerment of some species and habitats.		
Generalization Connection(s):	Humans make decisions that contribute to the protection or endangerment of environmental systems	
Teacher Resources:	http://cpw.state.co.us/learn/Pages/EducationContacts.aspx (Colorado Parks & Wildlife guest speakers) http://cpw.state.co.us/Documents/Education/TeacherResources/WildlifeCurriculum/WILDaboutBlackFootedFerretsFINALweb.pdf (Teacher Guide: Wild About the Black Footed Ferret) http://tinyurl.com/osr7w96 (Lesson Plan: Prairie Chicken Conservation) http://tinyurl.com/qe6m43q (Lesson Plan: Endangered Species – What and Where?) http://tinyurl.com/q9kflmk (Lesson Plan: At-Risk Species) http://teachinghistory.org/teaching-materials/teaching-guides/21731 (Description of Structured Academic Controversy)	
Student Resources:	http://cpw.state.co.us/learn/Pages/SpeciesProfiles.aspx (Threatened and Endangered Species in Colorado) http://www.biokids.umich.edu/ (Wildlife species information and field guides) http://blackfootedferret.org/ (Blackfooted Ferret Recovery Program, including Colorado)	

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Assessment:	Students will engage in a Structured Academic Controversy discussion about how human actions might lead to wildlife and habitat endangerment.	
Differentiation: (Multiple means for students to access content and multiple modes for student to express understanding.)	Access (Resources and/or Process)	Expression (Products and/or Performance)
	Students may be provided with a template of the SAC http://teachinghistory.org/system/files/SAC-Handouts_12.pdf (SAC template with guiding questions)	N/A
Extensions for depth and complexity:	Access (Resources and/or Process)	Expression (Products and/or Performance)
	N/A	Students may research an example of introduction or reintroduction of a particular Colorado species
Critical Content:	<ul style="list-style-type: none"> • Levels of human use (overuse, underuse) of resources and the implications to sustainability in ecosystems (e.g. loss of species) • Environmental structure (species diversity, land forms) in Colorado and the interactions of humans • Causes of species and habitat endangerment • Conservation and preservation principles and actions 	
Key Skills:	<ul style="list-style-type: none"> • Formulate hypotheses and present discussion ideas on sustainable practices for ecosystems • Cause and effect of external influences on species survival (e.g. how species become • Give examples of issues (e.g. environmental, resource use/sustainability) faced by the state and develop possible solutions 	
Critical Language:	Endangered, threatened, conservation, preservation, sustainability, pollution, land use, hypotheses, discussion, practices, issues, implications, overuse, underuse, landforms, interactions, extinct, recovery	

Learning Experience #9	LEVEL OF INTEGRATION: GREEN
The teacher may provide primary and/or secondary sources from various cultures and perspectives (e.g., field trip, guest speaker, maps, images) so students can recognize how cultural perspectives and beliefs influence the choices and actions (positive and negative) that have an impact on the environment.	
Generalization Connection(s):	Humans make decisions that contribute to the protection or endangerment of environmental systems
Teacher Resources:	http://chicagopolicyreview.org/2014/12/04/culture-and-the-environment-how-cultural-values-influence-global-ecologic-practices/ (Article on How Cultural Values Influence Ecological Practices) http://mathinscience.info/teach/k5_science/bio_envisci/first_am_e_circle_kit/home_on_the_range.pdf (Lesson Plan: Home on the Range – lesson plan can be adapted to Colorado context) http://www.historycolorado.org/sites/default/files/files/Educators/4th/Exploration_of%20the_Colorado_River.pdf (History Colorado lesson plan - Exploration of the Colorado River) https://vimeo.com/52955892 (Video: Chasing Water – The Colorado River) http://www.historycolorado.org/sites/default/files/files/Educators/3rd_4th/Hunting_with_Bows_and_Arrows.pdf (History Colorado lesson plan - Hunting Bison with Bows and Arrows) http://hewit.unco.edu/dohist/teachers/plans/indnmenu.htm (Lesson plans on Colorado Indians) http://www.native-languages.org/colorado.htm (Native American Tribes of Colorado) http://tinyurl.com/jg4fq7e (Article: Indigenous Management and Eco-Cultural Restoration in Colorado)

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Student Resources:	https://vimeo.com/52955892 (Video: Chasing Water – the Colorado River) https://www.youtube.com/watch?v=IWLdijamdcQ&list=PLd1csdWoPwT6Jx9H1F1QQQEHKEVLTXEq4&index=1 (Video: Colorado Experience - the Original Coloradans) http://www.historyforkids.net/native-american-religions.html (Article: Native American Religion) http://hewit.unco.edu/dohist/teachers/essays/indians.htm (Article: Indians of Colorado) http://hewit.unco.edu/dohist/indians/themes.htm (Interactive: Colorado Indians)	
Assessment:	Students will write a statement that describes how cultural decisions/choices affect the natural environment. Complete a graphic organizer to compare and contrast how indigenous and non-indigenous peoples use the natural resources in Colorado.	
Differentiation: (Multiple means for students to access content and multiple modes for student to express understanding.)	Access (Resources and/or Process)	Expression (Products and/or Performance)
	N/A	N/A
Extensions for depth and complexity:	Access (Resources and/or Process)	Expression (Products and/or Performance)
	Students may use multiple cultural perspectives to compare and contrast views	Students may create a visual representation of their findings
Critical Content:	<ul style="list-style-type: none"> • Positive and negative influences of human choices on Colorado ecosystems • The ways in which cultural perceptions and actions influence their interactions with the environment • The different ways that cultures interact with and use natural resources 	
Key Skills:	<ul style="list-style-type: none"> • Compare and contrast the various ways in which indigenous and non-indigenous peoples use the natural resources in Colorado • Analyzing primary and secondary sources (e.g. Interviews, film footage and textbooks) • Discuss and investigate environmental issues 	
Critical Language:	Cultural perspectives, interaction, influence, consequences, compare and contrast, perception	