

Environment and Society Standards

Texas Essential Knowledge and Skills

<http://ritter.tea.state.tx.us/rules/tac/chapter113/index.html>

4 th grade	5 th grade	6 th grade	7 th grade	8 th grade
<p>8c. explain the geographic factors such as landforms and climate that influence patterns of settlement and the distribution of population in Texas, past and present [GS12-2]</p> <p>9. understands how people adapt to and modify their environment [GS14]</p> <p>9a. describe ways people have adapted to and modified their environment in Texas, past and present, such as timber clearing, agricultural production, wetlands drainage, energy production, and construction of dams [GS14-1]</p> <p>9b. identify reasons why people have adapted to and modified their environment in Texas, past and present, such as the use of natural resources to meet basic needs, facilitate transportation, and enhance recreational activities [GS14-2]</p> <p>9c. compare the positive and negative</p>	<p>9. understands how people adapt to and modify their environment [GS14]</p> <p>9a. describe how and why people have adapted to and modified their environment in the United States, past and present, such as the use of human resources to meet basic needs [GS14-1]</p> <p>9b. analyze the positive and negative consequences of human modification of the environment in the United States, past and present [GS14-3]</p>	<p>6c. analyze the effects of the interaction of physical processes and the environment on humans [GS15-1,2]</p> <p>7. understands the impact of interactions between people and the physical environment on the development and conditions of places and region [GS14,GS15,GS16]</p> <p>7a. identify and analyze ways people have adapted to the physical environment in various places and regions [GS15-1,2,3]</p> <p>7b. identify and analyze ways people have modified the physical environment such as mining, irrigation, and transportation infrastructure [GS14-1,2,3]</p> <p>7c. describe ways in which technology influences human interactions with the environment such as humans building dams for flood control [GS15-3]</p>	<p>10. understands the effects of the interaction between humans and the environment in Texas during the 19th, 20th, and 21st centuries [GS14,GS15,GS16]</p> <p>10a. identify ways in which Texans have adapted to and modified the environment and analyze the positive and negative consequences of the modifications [GS14-1,3]</p> <p>10b. explain ways in which geographic factors such as the Galveston Hurricane of 1900, the Dust Bowl, limited water resources, and alternative energy sources have affected the political, economic, and social development of Texas. [GS15-112]</p>	<p>11. understands the physical characteristics of North America and how humans adapted to and modified the environment through the mid-19th century [GS14,GS15,GS16]</p> <p>11a. analyze how physical characteristics of the environment influenced population distribution, settlement patterns, and economic activities in the United States during the 17th, 18th, and 19th centuries [GS15-1]</p> <p>11b. describe the positive and negative consequences of human modification of the physical environment of the United States [GS14-3]</p> <p>11c. describe how different immigrant groups interacted with the environment in the United States during the 17th, 18th, and 19th centuries [GS16-1]</p>

consequences of human modification of the environment in Texas, past and present, both governmental and private, such as economic development and the impact on habitats and wildlife as well as air and water quality [GS14-3]				
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Texas College and Career Readiness Standards

<http://www.theccb.state.tx.us/collegereadiness/CRS.pdf>

SS.I.A Spatial Analysis of physical and cultural processes that shape human experience

Sc.X.E Human practices and their impacts

SS.I.D Change and continuity of economic systems and processes

National Geography Standards

Standard	4 th grade	8 th grade
14 How human actions modify the physical environment	<p>1. People modify the physical environment <i>Therefore, the student is able to:</i> A. Identify and describe ways in which humans modify the physical environment, as exemplified by being able to</p> <ul style="list-style-type: none"> Identify and describe examples of human modifications to the physical environment surrounding the school or neighborhood (e.g., paving over vegetated areas, constructing buildings, building bridges, installing culverts or drainage ditches, removing or adding trees or shrubs). Describe human-generated changes in the physical 	<p>1. Human modifications of the physical environment in one place often lead to changes in other places <i>Therefore, the student is able to:</i> A. Describe and explain how human-induced changes in one place can affect the physical environment in other places, as exemplified by being able to</p> <ul style="list-style-type: none"> Describe and explain how the construction of dams and levees on rivers in one region affects places downstream (e.g., water availability for human consumption and agriculture, flood control, electricity generation, aquatic and riparian ecosystems). Describe how human

	<p>environment during different time periods using aerial photographs or satellite images of the same location (e.g., farmland to subdivisions, open fields to baseball diamonds, traditional downtown areas to new shopping centers).</p> <ul style="list-style-type: none"> Describe examples of changes that would occur if people decided to build a new road, water park, or shopping center in the local community (e.g., changes in ecosystem, land cover, landforms, drainage patterns or runoff). <p>2. People use technology to get what they need from the physical environment <i>Therefore, the student is able to:</i> A. Describe and explain ways in which people use technology to get what they need from the physical environment, as exemplified by being able to</p> <ul style="list-style-type: none"> Describe and explain examples of the technology used in different industries in the United States (e.g., high-tech farming and irrigation, excavating machinery in strip mining, drilling in oil production). Explain how the use of technology in students' daily lives (e.g., rototiller in the garden, applying plant fertilizer, pumps that provide bore or well water, hybrid or disease resistant seeds) can help people get things they need from the physical environment. Describe and explain how inventions helped people settle the Great Plains (e.g., barbed wire, steel plow, railroad, steamboat, threshing machines). <p>3. The consequences of human modifications of the physical environment</p>	<p>changes to land cover can have negative impacts on other areas (e.g., deforestation and downstream flooding, siltation, soil erosion).</p> <ul style="list-style-type: none"> Explain how industrial activities (e.g., factories, electric power generating plants) affects other locations (e.g., acid rain downwind, thermal inversions, smog). <p>2. The use of technology has changed the scale at which people can modify the physical environment <i>Therefore, the student is able to:</i> A. Describe and explain the ways in which technology has expanded the scale of human modification of the physical environment, as exemplified by being able to</p> <ul style="list-style-type: none"> Describe and explain how strip-mining technology has altered the physical environment of the United States (e.g., mountaintop removal in West Virginia, culm heaps in the anthracite region of northeastern Pennsylvania, deep craters in the Powder River Basin strip mine). Describe how changes in technology have altered the methods and amount of travel and therefore the effects on the physical environment (e.g., car emissions, road building, airplane jet exhaust and noise). Describe and explain how green construction techniques may increase sustainability and reduce the scale of human-induced effects on the physical environment (e.g., reduced energy use, the use of new sustainable building materials). <p>3. The physical environment can both accommodate and be endangered by</p>
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	<p><i>Therefore, the student is able to:</i></p> <p>A. Identify and describe examples of how human activities impact the physical environment, as exemplified by being able to</p> <ul style="list-style-type: none"> • Identify and describe the changes in local habitats that resulted from human activities. • Identify and describe the impacts that students' dietary choices may have on the physical environment. • Describe examples of human modifications to the physical environment as a result of improving transportation routes (e.g., bridges, drainage ditches, widening streets or roads, divided highways). 	<p>human activities</p> <p><i>Therefore, the student is able to:</i></p> <p>A. Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to</p> <ul style="list-style-type: none"> • Analyze the positive and negative effects of human actions on the lithosphere (e.g., land degradation and erosion, soil salinization and acidification). • Analyze the proportion of built area to vegetation land cover around a community and identify possible consequences in changes to that proportion (e.g., habitat changes, heat island effect, water and wetland patterns). • Analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).
<p>15 How physical systems affect human systems</p>	<p>1. The physical environment provides opportunities for and imposes constraints on human activities</p> <p><i>Therefore, the student is able to:</i></p> <p>A. Describe examples in which the physical environment provides opportunities for human activities, as exemplified by being able to</p> <ul style="list-style-type: none"> • Identify and describe the characteristics of the community's physical environment that first attracted people and enabled them to thrive and prosper (e.g., climate, water, soil, landforms). • Identify and describe examples of places that offer vacation activities for people because of the physical environment (e.g., snow skiing, ocean beaches, boating, river rafting). • Describe how people take advantage of the physical environment of their local community (e.g., water 	<p>1. The characteristics of a physical environment provide opportunities for and impose constraints on human activities</p> <p><i>Therefore, the student is able to:</i></p> <p>A. Explain how the characteristics of different physical environments offer opportunities for human activities, as exemplified by being able to</p> <ul style="list-style-type: none"> • Describe and explain the environmental characteristics that people consider when deciding on locations for human activities (e.g., locating a waterwheel at a river's fall line for power, locating a ski resort in a high snowfall area with easy access for recreational skiers, farming on fertile flood plains for high crop yields). • Explain how physical features in the local community provide opportunities for future development (e.g., tourist

	<p>supply, farming, gardens, recreational activities).</p> <p>B. Describe examples in which the physical environment imposes constraints on human activities, as exemplified by being able to</p> <ul style="list-style-type: none"> • Describe how human activities are limited by landforms such as flood plains, deltas, mountains, and slopes in choices of land use (e.g., agriculture, human settlement, transportation networks). • Describe examples in which human activities are limited by different types of climates (e.g., cold or polar, rainy or dry, equatorial). • Describe how transportation routes are shaped by the physical environment (e.g., horseshoe curves, tunnels, bridges). <p>2. Environmental hazards affect human activities <i>Therefore, the student is able to:</i> A. Identify and describe the locations of environmental hazards, as exemplified by being able to</p> <ul style="list-style-type: none"> • Identify on a US map the locations of occurrences of tornadoes, earthquakes, and hurricanes and overlay a map of population density and identify locations where people and hazards are both located. 	<p>river-walk development, beachfront resorts, solar and wind farms).</p> <ul style="list-style-type: none"> • Explain how agricultural practices developed rapidly and successfully in favorable physical environments (e.g., along flood plains and in river valleys, in flat lands with adequate rainfall). <p>B. Explain how the characteristics of different physical environments place constraints on human activities, as exemplified by being able to</p> <ul style="list-style-type: none"> • Explain how environmental characteristics (e.g., rainfall, length of growing season, temperatures, soil) restrict the range of crops that can be grown successfully in an area. • Explain how building technologies are designed to respond to the constraints of the environment (e.g., building on permafrost in polar climates, designing buildings to withstand earthquakes). • Explain how the development of a city can be influenced by the physical environmental characteristics of the area (e.g., requirement of bedrock to support skyscrapers, filling in water areas to add buildable space, reduction of hills to level areas, mountain valleys with limited usable land area). <p>2. The types, causes, and characteristics of environmental hazards occur at a variety of scales from local to global <i>Therefore, the student is able to:</i> A. Describe and explain the types and characteristics of hazards, as exemplified by being able to</p> <ul style="list-style-type: none"> • Identify and explain the types of threats posed to human settlement by different types of
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		<p>environmental hazards (e.g., wind destruction, fires, flooding, collapse of structures).</p> <ul style="list-style-type: none"> • Construct a table of climate-related and tectonic-related hazards and explain the characteristics of each type of hazard. • Identify the locations of environmental hazards in the student's state or region, describe the characteristics of each, and explain how people adapt to living in these areas. <p>B. Explain the causes and locations of various types of environmental hazards, as exemplified by being able to</p> <ul style="list-style-type: none"> • Describe the physical environmental conditions that create or result in different environmental hazards (e.g., plate tectonics causing earthquakes, sea surface temperatures contributing to hurricane development in the Atlantic, strong frontal systems in thunderstorms spawning tornadoes). • Identify the tectonic plate boundaries on a map and analyze the most likely locations of future earthquakes and volcanoes based on an explanation for the causes of these environmental hazards. • Explain where and why tornadoes are most likely to occur in the United States. <p>3. People use tools and technologies in adapting to the physical environment <i>Therefore, the student is able to:</i> A. Explain how people use tools and technologies in adapting to the physical environment, as exemplified by being able to</p> <ul style="list-style-type: none"> • Compare the tools and technologies used in agriculture in different
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		<p>environmental regions (e.g., terraced farming, center-pivot irrigation, slash-and-burn plots).</p> <ul style="list-style-type: none"> • Explain how humans use technologies (e.g., pipelines, air conditioning, water recycling) to adapt to different physical environments. • Explain how people developed new building technologies to adapt to the physical environment (e.g., skywalks in Minneapolis, tunnels in downtown Montreal).
<p>16 The changes that occur in the meaning, use, distribution, and importance of resources</p>	<p>1. The characteristics of renewable, nonrenewable, and flow resources <i>Therefore, the student is able to:</i> A. Identify and explain the characteristics of renewable, nonrenewable, and flow resources, as exemplified by being able to</p> <ul style="list-style-type: none"> • Explain the meaning of the term "resource" and then illustrate the idea of renewable, nonrenewable, and flow resources by sorting example photographs into each of the three categories. • Identify the types of energy resources that students and their families use in their everyday lives and then categorize each as renewable, nonrenewable, or flow resources. • Identify the types of nonrenewable resources students and their families use in their everyday lives and identify renewable and flow resources that could be used instead of nonrenewable resources. <p>2. The spatial distribution of types of resources <i>Therefore, the student is able to:</i> A. Identify the locations of examples of each type of resource, as exemplified by being able to</p>	<p>1. People can have different viewpoints regarding the meaning and use of resources <i>Therefore, the student is able to:</i> A. Describe examples of how cultures differ in their definition and use of resources, as exemplified by being able to</p> <ul style="list-style-type: none"> • Describe differences in the types of resources used in different geographic contexts in various parts of the world (e.g., the use of wood or animal dung versus electricity or natural gas as a cooking fuel, the use of electrical appliances versus doing household chores by hand). • Describe the size and effect on the environment of the ecological footprint of an US school student versus a young person living in a rural area of a developing country. • Describe how cultures value things differently in terms of resource use (e.g., Old Order Amish choose not to use petroleum and electricity, Muslims and Jews choose not to use pork as a food source, many cultures around the world choose not to use insects as food source).

	<ul style="list-style-type: none"> • Identify the locations on a US map of various types of renewable, nonrenewable, and flow resources. • Identify the locations of examples of each of the three types of resources that are found in the student's state or region. • Identify which US states might be good locations for the production of hydroelectric, geothermal, solar, and wind energies. <p>3. The sustainable use of resources in daily life <i>Therefore, the student is able to:</i> A. Identify the ways in which different types of resources can be conserved, reused, and recycled, as exemplified by being able to</p> <ul style="list-style-type: none"> • Identify the advantages and disadvantages of recycling and reusing materials made from resources that people value. • Identify how much and what kinds of waste are or can be recycled in the school cafeteria. • Identify specific ways in which household water and electricity usage can be reduced. 	<p>2. The formation and spatial distribution of types of resources <i>Therefore, the student is able to:</i> A. Describe the physical processes that influence the formation and therefore spatial distribution of renewable, nonrenewable, and flow resources, as exemplified by being able to</p> <ul style="list-style-type: none"> • Explain how physical processes played a role in the formation and location of nonrenewable resources such as coal, petroleum, and diamonds. • Describe the physical conditions necessary to generate electricity from flow resources (e.g., water, geothermal, solar, wind) and then identify on a US map potential locations for the generation of electricity from these flow resources. • Describe the physical processes that support the quantity and quality of renewable resources and how the resulting distribution may make them more or less useful. <p>B. Explain the location and uses of major resources in the world, as exemplified by being able to</p> <ul style="list-style-type: none"> • Construct a map that identifies the ten leading petroleum-producing countries and the ten leading petroleum-consuming countries and then identify where overlap occurs. • Identify countries in which resources (e.g., fossil fuels, minerals, agricultural products) are the primary source of export earnings and describe the advantages and disadvantages of this interdependency. • Describe different types of vegetation used in biofuel production (e.g., corn, sugarcane, switch grass) and identify countries that have
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		<p>or can have an abundance of vegetation that may be used for this type of fuel source.</p> <p>3. Humans can manage resources to sustain or prolong their use <i>Therefore, the student is able to:</i></p> <p>A. Explain how renewable resources can be continuously replenished through sustainable use, as exemplified by being able to</p> <ul style="list-style-type: none"> • Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture). • Describe and explain how international agreements or policies provide for limited and therefore sustainable fishing practices (e.g., whale harvesting, tuna harvesting, seasonal fishing limitations). • Explain how petroleum-based consumer products can be replaced by renewable resources (e.g., plastic bags, eating utensils, diapers replaced by corn- or bamboo-based materials). <p>B. Explain how humans can use technology to prolong the supply of nonrenewable resources and utilize flow resources, as exemplified by being able to</p> <ul style="list-style-type: none"> • Construct a world map showing energy consumption per capita and describe how the use of alternative energy technologies may change the spatial patterns of energy consumption. • Explain how the development and use of technological advances, such as hybrid engines in cars, can extend the supply of nonrenewable resources. • Explain how the development of new technologies can maintain or
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		prolong the supply of nonrenewable resources (e.g., deep-water ocean drilling platforms, advanced oil recovery techniques for oil-shale deposits).
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