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| **TEXAS CTE LESSON PLAN**  [www.txcte.org](http://www.txcte.org) | |
| **Lesson Identification and TEKS Addressed** | |
| **Career Cluster** | Human Services |
| **Course Name** | Dollars and Sense |
| **Lesson/Unit Title** | Saving the Environment |
| **TEKS Student Expectations** | **130.273. (c) Knowledge and Skills**  (5) The student analyzes the relationship of the environment to family and consumer resources. The student is expected to:  (A) analyze individual and family responsibilities in relation to environmental trends and issues  (B) summarize environmental trends and issues affecting families and future generations  (C) demonstrate behaviors that conserve, reuse, and recycle resources to maintain the environment  (D) explain governmental regulations for conserving natural resources |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | **Students will:**   * Understand how the Environmental Protection Agency (EPA) writes regulations to implement environmental laws written by Congress * Describe what one can do as a consumer to implement behaviors that protect our environment * Understand the function and purpose of some of the common EPA agencies * Understand how these regulations affect you as a consumer |
| **Rationale** | The environment we live in has a finite amount of resources. Resources are tangible and intangible items which allow consumers to solve problems and reach goals. Resource limitations impact the individual consumer and family. Consumers need to develop ways to utilize and conserve resources. Consumers need to manage resources in order to meet their goals. |
| **Duration of Lesson** | Five 45-minute class periods |
| **Word Wall/Key Vocabulary**  *(ELPS c1a, c, f; c2b; c3a, b, d; c4c; c5b) PDAS II (5)* | **Acid rain:** Precipitation that is unusually acidic caused by emissions of sulfur dioxide and nitrogen oxide and causes harmful effects on plants, animals, and structures  **Air pollution:** Chemicals, particles or biological materials that cause disease, or damage to living organisms including humans, animals, and food crops  **ENERGY STAR®:** A government-supported program helping businesses and individuals protect the environment through energy efficiency  **Environment:** Physical and biological factors that, along with chemical interactions, affect living organisms  **Environmental Protection Agency (EPA):** The agency that regulates laws passed by congress concerning our environment  **Landfill:** A site for the disposal of waste materials by burial; the oldest form of waste treatment  **Ozone:** Powerful oxidant causing damage to mucus and respiratory tissues in animals and humans as well as damage to plants  **Recycle:** Process to change waste into useful materials to reduce consumption of new raw materials and reduce energy waste  **Reuse:** Using the same object over and over again |
| **Materials/Specialized Equipment Needed** | **Equipment:**   * Computer with projector for PowerPoint presentation * Computers with Internet access (be sure to follow district guidelines for Internet access) * Presenter remote   **Materials:**   * Recyclable items such as:   + Aluminum cans   + Aluminum foil and bakeware   + Batteries and bulbs   + Cardboard   + Clothing   + Electronics   + Glass bottles   + Paper/newspaper   + Plastic bottles   + Steel cans and tin cans   **Supplies:**   * Paper * Pens and markers * Poster board * Copies of handouts   **PowerPoint:**   * Saving the Environment   **Technology:**   * Infographics:   + Why We Recycle  This infographic gives you information about the importance of recycling.<http://www.livescience.com/15692-gofigure-recycle.html>   + U.S. Environmental Protection Agency  Learn how the Energy Star can save you money and protect the environment.<https://www.energystar.gov/ia/products/coolingInfographic.html> * TED Talk:   + Alex Laskey: How behavioral science can lower your energy bill  What’s a proven way to lower your energy costs? Would you believe: learning what your neighbor pays. Alex Laskey shows how a quirk of human behavior can make us all better, wiser energy users, with lower bills to prove it.<http://www.ted.com/talks/alex_laskey_how_behavioral_science_can_lower_your_energy_bill>   **YouTube:**   * Fuel from Garbage Made Easy and Successful  What happens when your trash is collected?<http://youtu.be/-W05rKOG9EM>   **Graphic Organizers:**   * Slide Presentation Notes * What I Learned About …   **Handouts:**   * Environmental Project * Goal Setting for Recycle Project * How One Aluminum Can Makes a Difference * How One Aluminum Can Makes a Difference (Key) * Rubric for Environmental Presentation * Saving the Environment Quiz * Saving the Environment Quiz (Key) |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | **Prior to class:**  Visit U.S. Environmental Protection Agency (EPA) for additional lessons and resources at:  What’s in a Label? Exploring Fuel Economy and the Environment (High school)<http://www.epa.gov/students/pdf/fueleconomyhighschool.pdf>  What’s in a Label? Exploring Fuel Economy and the Environment (Middle school)<http://www.epa.gov/students/pdf/fueleconomymiddleschool.pdf>  Chemical Safety Resource for Middle School Teachers<http://www.epa.gov/students/pdf/chemicalsafety.pdf>  Get ideas for recycle projects to share with students. Visit U.S. Environmental Protection Agency (EPA) for community service ideas at:<http://www.epa.gov/students/communityservice.html>  Become familiar with PowerPoint, handouts, and activities.  **Before class begins:**  Allow students to observe the supplies and give students five minutes to brainstorm ideas of how to protect the environment in small groups and then have them share with class. Assign a scribe to write the ideas on the board. Discuss all the ideas. Begin the discussion with the following questions and have students share their responses:   * Why is it important to recycle? How many of you recycle in your homes? What do you recycle? * What is garbage? * What happens to garbage after it is thrown away? * Are there any alternatives to throwing everything in a landfill? * What happens to a landfill when it fills up? * Where does the garbage go then? * What do you know about acid rain, ozone, and particle pollution? * How do our habits affect pollution? * How can we change our behaviors to be responsible citizens concerning our environment? * What is the difference between reusing and recycling an object? |
| **Direct Instruction \*** | Note to teacher: Prior to beginning this lesson, please review, preview, and select the appropriate multimedia for your classes.  Introduce lesson objectives, terms, and definitions.  Distribute handout Slide Presentation Notes. Students will be expected to take notes while viewing the slide presentation. Teacher will determine the notes to be recorded by students.  Introduce PowerPoint Saving the Environment.  YouTube video included in the slide presentation:   * Fuel from Garbage Made Easy and Successful  What happens when your trash is collected?<http://youtu.be/-W05rKOG9EM>   *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * extra time for oral response * frequent feedback * positive feedback/praise * checking for understanding |
| **Guided Practice \*** | Distribute 10 Ways Teens Can Educate the Community About Conserving Our Resources handout. Students will complete the handout. Allow time for questions and answers.  Display their Conserving Our Resources logos in the classroom for the duration of the lesson.  Distribute How One Aluminum Can Makes a Difference handout. With a partner, students will complete the handout. Allow time for questions and answers. How One Aluminum Can Makes a Difference (Key) is available for you to check their answers.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * extra time for oral response * frequent feedback * praising the students * checking for understanding * providing a student mentor |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | Scenario: You have been hired by the U.S. government to research an environmental trend or issues that may affect our future. Provide students with instructions for a conservation research project which will consist of a visual and oral presentation. Allow students time to brainstorm project ideas. Ideas may include topics such as global warming, water conservation, endangered species, recycling efforts, acid rain, ozone, arctic conditions, chemical exposure, or particle pollution. Issues may be local, national, or worldwide.  Divide students into nine (9) small groups and distribute Environmental Project. You may assign each group a topic or the students can determine their own topic (teacher discretion). Each group will research and present to the class.  Distribute the Rubric for Environmental Presentation so students understand what is expected.  Guide and assist students as needed as they work independently on their research projects.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * frequent teacher contact * frequent feedback * note-taking assistance * presentation assistance if needed |
| **Lesson Closure** | Distribute What I Learned About … graphic organizer. This handout will allow you to see what the students learned about environmental trends/issues, conserving our resources and government regulations.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * extra time for oral response * praising the students * checking for understanding * providing a student mentor * modified quiz if specified in IEP |
| **Summative/End of Lesson Assessment \*** | Assessments during lesson:   * How One Aluminum Can Makes a Difference * Rubric for Environmental Presentation * 10 Ways Teens Can Educate the Community About Conserving Our Resources   Teams will present their multimedia presentations. Allow time for student questions and class discussion after each presentation.  Student projects/presentations will be assessed with appropriate rubric.  Distribute Saving the Environment Quiz handout. Students will complete the quiz and write a one-page summary analyzing the importance of saving the environment. Students will reflect on how the lesson, activities and information will assist them in the future. The reflection and various handouts will be submitted for assessment.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*   * extra time for responses * prompting, if necessary |
| **References/Resources/**  **Teacher Preparation** | **Images:**   * Microsoft Clip Art: Used with permission from Microsoft.   **Websites:**   * Acid Rain  Student’s Site – What is Acid Rain?<http://www.epa.gov/acidrain/education/site_students/> * AirNow  Particle Pollution and Your Health.<http://www.airnow.gov/index.cfm?action=particle_health.page1#1> * AirNow  Smog: Who Does It Hurt?<http://www.airnow.gov/index.cfm?action=smog.page1#9> * Energy Teachers  The network for educators interested in energy resources and uses.<http://energyteachers.org/projects.php> * Environmental Protection Agency Laws and Regulations.<http://www2.epa.gov/laws-regulations> * Environmental Protection Agency What are Six Common Pollutants? <http://www.epa.gov/airquality/urbanair/> * New York Department of Environmental Conservation Resources and themes correlated to environmental topics.<http://www.dec.ny.gov./education/73147.html> * Ozone and Your Health Air Quality Index and Protecting Your Health.<http://www.epa.gov/airnow/ozone-c.pdf> * State Energy Conservation Office (SECO) SECO partners with Texas consumers, businesses, educators, and local governments to reduce energy costs and maximize efficiency.<http://www.seco.cpa.state.tx.us/> * State of Texas Alliance for Recycling Recycling information, news, and events.<http://recyclingstar.org/> * Tools for Zero Waste Schools Waste Reduction for K – 12 Provides students, teachers, school administrators, local recycling coordinators and community activists with the tools that have been developed by their peers to achieve zero waste in their K-12 school systems.<http://www.kidsrecycle.org/overview.php> * Waste Management  Waste Management, Inc. is North America’s leading provider of integrated environmental solutions.<https://www.wm.com/residential/waste-and-recycling-services.jsp>   **YouTube:**   * Fuel from Garbage Made Easy and Successful What happens when your trash is collected?<http://youtu.be/-W05rKOG9EM> |
| **Additional Required Components** | |
| **English Language Proficiency Standards (ELPS) Strategies** | * Ask students to repeat instructions back to you to make sure they understand * Use pictures and charts as another tool for them to grasp understanding * Discuss vocabulary using pictures |
| **College and Career Readiness Connection[[1]](#footnote-1)** |  |
| **Recommended Strategies** | |
| **Reading Strategies** | Current Events: Assign students to read about changes and issues concerning the environment. Information can be found in newspaper articles, magazines, journals, and online print.  Suggestions:   * Do You Really Need to Use a Pesticide?<http://www2.epa.gov/safepestcontrol/do-you-really-need-use-pesticide> * Fast Facts on Children’s Environmental Health<http://yosemite.epa.gov/ochp/ochpweb.nsf/content/fastfacts.htm> * Particle Pollution and Your Health<http://www.airnow.gov/index.cfm?action=particle_health.page1> |
| **Quotes** | Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it’s the only thing that ever has.  **-Margaret Mead**  We won’t have a society if we destroy the environment. **-Margaret Mead**  Take a course in good water and air, and in the eternal youth of nature you may renew your own. Go quietly, alone; no harm will befall you. **-John Muir**  By polluting clear water with slime, you will never find good drinking water. **-Aeschylus**  Nature, not human activity, rules the climate. **-Dr. S. Fred Singer, presentation to the University of Virginia, Sept., 2008** |
| **Writing Strategies**  **Journal Entries + 1 Additional Writing Strategy** | **Journal Entries:**   * How can we protect our environment? * Describe what you know about acid rain, ozone, and particle pollution. * How do our habits affect pollution? * How can we change our behaviors to be responsible citizens concerning our environment? * Why should we be concerned about how pollution might affect our personal health?   **Writing Strategy:**  RAFT (Role/Audience/Format/Topic) writing strategy:   * Role: Peer educator * Audience: Peers * Format: Letter * Topic: Acid rain, ozone, or particle pollution and the effect on our environment |
| **Communication**  **90 Second Speech Topics** | * The effects of acid rain on our waters, forests, and human health * What is the ozone? * Air pollutants can affect our health by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. * The importance of recycling as a community * Habits that we can impose to improve our environment include \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| **Other Essential Lesson Components** | |
| **Enrichment Activity**  (e.g., homework assignment) | * Create a brochure to distribute that encourages people to protect their environment. * Students may take the Home Energy Yardstick to assess their home’s annual energy use at:   + U.S. Environmental Protection Agency  Calculate your home’s annual energy use.<https://www.energystar.gov/index.cfm?fuseaction=HOME_ENERGY_YARDSTICK.showGetStarted&s=footer> * Have students create lists of resources they use at home, school, and work. * Have students journal about ways they can make better use of their resources. * Imagine that you have a summer job with someone who is wasteful. Write an essay persuading them to understand the importance of saving and conserving energy. * Have students plan a recycling project using **Goal Setting for Recycle Project** handout. * TED Talk: TEDx is a program of local, self-organized events that bring people together to share a TED-like experience. At a TEDx event, TEDTalks videos and live speakers combine to spark deep discussion and connection in a small group. These local, self-organized events are branded TEDx, where x = independently organized TED event.  The video below is related to this lesson. Allow students to view the video and lead a discussion concerning the TED Talk.   + Alex Laskey: How behavioral science can lower your energy bill  What’s a proven way to lower your energy costs? Would you believe: learning what your neighbor pays. Alex Laskey shows how a quirk of human behavior can make us all better, wiser energy users, with lower bills to prove it.<http://www.ted.com/talks/alex_laskey_how_behavioral_science_can_lower_your_energy_bill>   **Dollars and Sense Writing Prompts**  Think about individual and family responsibilities in relation to environmental trends and issues. Write an essay in which you state your position on individual and family responsibilities in relation to environmental trends and issues. (10th and 11th grade persuasive writing)  Think about government regulations for conserving natural resources. Write an essay explaining government regulations for conserving natural resources. (9th and 10th grade expository writing) |
| **Family/Community Connection** | * Earth Day is April 22. Students can research and develop a conservation community event. * Students can create interview questions to ask parents, grandparents, or other adults regarding how the environment has changed over the course of their lives. * Talk with family members about habits that promote a healthy environment such as:   + Keeping car well-tuned   + Carpooling, taking the bus or walking   + Purchasing ENERGY STAR® appliances   + Using reusable water bottles   + Using less energy by turning off lights and adjusting the thermostat   + Recycling efforts |
| **CTSO connection(s)** | **Family, Career, and Community Leaders of America (FCCLA)**  <http://www.texasfccla.org/>  **STAR Events**   * Advocacy An individual or team event, recognizes participants who demonstrate their knowledge, skills, and ability to actively identify a local, state, national, or global concern, research the topic, identify a target audience and potential partnerships, form an action plan, and advocate for the issue in an effort to positively affect a policy or law. * Environmental Ambassador  An individual or team event – recognizes participants that address environmental issues that adversely impact human health and well-being and who actively empower others to get involved. * Recycle and Redesign  An individual event – recognizes participants who select a used fashion or home apparel item to recycle into a new product. |
| **Service Learning Projects** | Successful service learning project ideas originate from student concerns and needs. Allow students to brainstorm about service projects pertaining to the lesson. For additional information on service learning see<http://www.ysa.org/>  Have students make a “Recycle and Redesign” project. Hold a charity auction to raise money for a charity of the students’ choosing. |

1. Visit the Texas College and Career Readiness Standards at <http://www.thecb.state.tx.us/collegereadiness/CRS.pdf>, Texas Higher Education Coordinating Board (THECB), 2009. [↑](#footnote-ref-1)