|  |  |
| --- | --- |
| **TEXAS CTE LESSON PLAN**  [www.txcte.org](http://www.txcte.org) | |
| **Lesson Identification and TEKS Addressed** | |
| **Career Cluster** | Agriculture, Food, & Natural Resources |
| **Course Name** | Energy and Natural Resource Technology |
| **Lesson/Unit Title** | Waste and Hazardous Materials |
| **TEKS Student Expectations** | **130.11. (c) Knowledge and Skills**  (1) The student demonstrates professional standards/employability skills as required by business and industry.  (C) The student is expected to: demonstrate knowledge of personal and occupational safety, environmental regulations, and first-aid policy in the workplace |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | The student will be able to:   1. Identify types of waste and hazardous materials. 2. Research legislation related to waste and hazardous materials. 3. Identify entities responsible for waste and hazardous material management. 4. Describe safe handling, storing, and disposal of waste materials including composting and recycling. |
| **Rationale** | This lesson will allow students to explore background information and proper techniques to use when dealing with waste and hazardous materials. Having a thorough understanding of handling, storing, and disposal of hazardous materials and waste is critical in the field of natural resources. |
| **Duration of Lesson** |  |
| **Word Wall/Key Vocabulary**  *(ELPS c1a,c,f; c2b; c3a,b,d; c4c; c5b) PDAS II(5)* | 1. Waste 2. Hazardous Materials 3. Composting 4. Recycling |
| **Materials/Specialized Equipment Needed** | Waste and Hazardous Materials PowerPoint |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | 1. Link: Where does your trash go? 2. Motivation: When you think about all the waste we produce including our trash and hazardous materials, where does it go and how do we manage it all? 3. Overview: Today we will Identify types of waste and hazardous materials, Research legislation related to waste and hazardous materials, Identify entities responsible for waste and hazardous material management, Describe safe handling, storing, and disposal of waste materials including composting and recycling |
| **Direct Instruction \*** | 1. Background    1. Waste has existed since the beginning of time.    2. Before recorded history, this waste decomposed in small quantities according to a natural cycle.    3. With the development of cities, industrialization, population booms, and the consumption of large amounts of waste, the issue of how to collect and store it appeared.    4. As raw material resources become rare and we tackle climate change, recycling and recovery have emerged. 2. What is Waste?    1. Nearly everything we do results in some type of waste material.    2. The Environmental Protection Agency (EPA) classifies waste into two categories:       1. Hazardous Waste       2. Non-hazardous Waste 3. Non-hazardous Waste Materials    1. The EPA defines solid waste as any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities.    2. There are two broad categories       1. Municipal Solid Waste (MSW)– Household trash       2. Industrial Waste—includes construction materials, medical waste, etc. 4. Hazardous Waste Materials    * 1. Hazardous waste is defined as liquid, solid, contained gas, or sludge wastes that contain properties that are dangerous or potentially harmful to human health or the environment. Learn how to properly manage and dispose of hazardous waste. 5. Entities Responsible for Waste Management    1. The Environmental Protection Agency (EPA) is the entity with the primary responsibility to govern waste management 6. Handling, Storing and Disposal of Waste Safely is Important 7. Recycling    1. Use the EPA Recycling Website to determine how you can recycle the following:    2. Electronics    3. Compact Fluorescent Lights (CFLs)    4. Household Hazardous Waste (batteries, etc.)    5. Medical and Pharmaceutical Waste 8. Composting    1. Landfills are brimming, and new sites are not likely to be easily found.    2. For this reason, there is an interest in conserving existing landfill space and in developing alternative methods of dealing with waste.    3. Don’t throw away materials when you can use them to improve your lawn and garden! Start composting instead.    4. Learn how to compost by watching this [video](https://www.youtube.com/watch?v=2s5HdYLSFzg) 9. Research Waste Legislation    1. Use [http://www.regulations.gov/#!home](http://www.regulations.gov/) to find legislation related to Waste Management    2. Is this a big issue? Why or why not? |
| **Guided Practice \*** |  |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | 1. Does your school currently have a recycling program for all the materials that may be recycled?    1. Plan a recycle program for you school based on the needs you see.    2. Consider recycling materials that may be currently in the landfill such as feedbags.   *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  NONE |
| **Lesson Closure** | Summary:  Today we…   * 1. Identified types of waste and hazardous materials   2. Researched legislation related to waste and hazardous materials   3. Identified entities responsible for waste and hazardous material management   4. Described safe handling, storing, and disposal of waste materials including composting and recycling |
| **Summative / End of Lesson Assessment** |  |
| **References/Resources/**  **Teacher Preparation** | 1. Regulations: <http://www.regulations.gov/#!home> 2. Composting Basics: <http://compostguide.com> 3. EPA Recycling: <http://www2.epa.gov/recycle/how-do-i-recycle-common-recyclables> 4. EPA Waste Index: <http://www.epa.gov/epawaste/index.htm> |
| **Additional Required Components** | |
| **English Language Proficiency Standards (ELPS) Strategies** |  |
| **College and Career Readiness Connection[[1]](#footnote-1)** | Social Studies  I. C. 3  I. E. 1, 4  IV. A. 1, 3 |
| **Recommended Strategies** | |
| **Reading Strategies** |  |
| **Quotes** |  |
| **Multimedia/Visual Strategy**  **Presentation Slides + One Additional Technology Connection** |  |
| **Graphic Organizers/Handout** |  |
| **Writing Strategies**  **Journal Entries + 1 Additional Writing Strategy** |  |
| **Communication**  **90 Second Speech Topics** |  |
| **Other Essential Lesson Components** | |
| **Enrichment Activity**  (e.g., homework assignment) | * Start a composting program. Have students consider composting at home. * Identify those responsible for waste management in your community.   + Are there issues with landfills or other waste problems impacting your community?   + Have students investigate and develop solutions to those problems. |
| **Family/Community Connection** |  |
| **CTSO connection(s)** | FFA |
| **Service Learning Projects** |  |
| **Lesson Notes** |  |

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)