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| **TEXAS CTE LESSON PLAN**  [www.txcte.org](http://www.txcte.org) | |
| **Lesson Identification and TEKS Addressed** | |
| **Career Cluster** | Science, Technology, Engineering, and Mathematics |
| **Course Name** | Concepts of Engineering and Technology |
| **Lesson/Unit Title** | Great Energy Hunt |
| **TEKS Student Expectations** | **130.402. (c) Knowledge and Skills**  (8) The student understands the opportunities and careers in fields related to electrical and mechanical systems.  (A) The student is expected to describe the applications of electrical and mechanical systems.  (C) The student understands the opportunities and careers in fields related to electrical and mechanical systems. Thestudent is expected to identify emerging trends in electrical and mechanical systems. |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | **Specific Objectives:**  Students will be able to:   * Recall what they have studied about non-renewable and renewable energy sources related to physical and mechanical systems. * List and explore renewable and non-renewable energy sources. * Create a presentation about a non-renewable or renewable energy source they have researched. * Complete a test on their energy IQ from API Energy Arcade online. |
| **Rationale** | Students must understand the opportunities and careers in fields related to physical and mechanical systems. Students must select a non-renewable and renewable energy source in the fields related to physical and mechanical systems. |
| **Duration of Lesson** | Two 45-minute periods |
| **Word Wall/Key Vocabulary**  *(ELPS c1a,c,f; c2b; c3a,b,d; c4c; c5b) PDAS II(5)* | * Green Energy * Non-Renewable Energy * Renewable Energy * Petroleum Energy * Biomass * Geothermal Energy * Hydroelectric Energy * Solar Energy * Wind Energy |
| **Materials/Specialized Equipment Needed** | **Instructional Aids:**   * Technical Terms and Definitions handout for each student * Assignment: Presentation Report for each student * The Great Energy Hunt Quiz 1 for each student * The Great Energy Hunt Quiz 1 key   **Equipment Needed:**   * Computers with Microsoft PowerPoint and Word installed; and with Internet access * Video screen projector   **Materials Needed:**   * Pen/Pencil |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | **Introduction**  **SAY:** Engineers must possess strong technical oral and written communication skills. GreenEnergy is a growing field in the engineering industry. Our country is facing an energy crisis. Engineers will determine what energy sources are the best solutions and why.  **ASK:** Can someone describe how they use energy each day?  **SAY:** In this lesson, you will explore Non -Renewable and Renewable Energy Sources anddetermine which energy sources are the best solutions to solve the United States’ energy crisis.  **ASK:** Can anyone name a renewable or non-renewable energy source. |
| **Direct Instruction \*** | The instructor is recommended to make a PowerPoint presentation in conjunction with the following outline:   1. Technical Communication    1. Technical Terms & Definitions   distribute Technical Terms and Definitions handout   1. Non-Renewable & Renewable Energy Sources 2. What are the Non-Renewable Energy Source?    1. Discuss 3. What are the Renewable Energy Sources?    1. Discuss 4. Non-Renewable Energy Sources    1. Discuss       1. Coal       2. Natural Gas       3. Nuclear Energy       4. Petroleum       5. Propane 5. Renewable Energy Sources    1. Discuss       1. Biomass       2. Ethanol       3. Geothermal       4. Hydroelectric Power       5. Solar Energy       6. Wind Energy 6. Quiz 1: Test Your Energy Knowledge    1. Distribute the Great Energy Hunt Quiz 1 7. Quiz 2: What is your energy IQ?    1. Student complete online quiz, “What is your energy IQ?” from API 8. The Great Energy Hunt Assignment: Presentation Report    1. Distribute the assignment       1. Create an energy source presentation       2. Students make presentations to the class   *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  None |
| **Guided Practice \*** | *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  None |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | Students will test their energy IQ from API Energy Arcade online  Students will create an energy source presentation using Microsoft PowerPoint; and will take Quiz.  *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** | **Review**  **Question:** What are non-renewable energy sources?  **Answer:** The non-renewable energy sources are Coal, Natural Gas, Nuclear Energy,Petroleum, and Propane.  **Question:** What are renewable energy sources?  **Answer:** The renewable energy sources are Biomass, Ethanol, Geothermal, HydroelectricPower, Hydrogen, Solar Energy, and Wind Energy. |
| **Summative/End of Lesson Assessment \*** | **Informal Assessment**  Students are using Microsoft PowerPoint to create their career presentation.  **Formal Assessment**  Students will complete The Great Energy Hunt Assignment: Presentation Report; and will take The Great Energy Hunt Quiz.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  None |
| **References/Resources/**  **Teacher Preparation** |  |
| **Additional Required Components** | |
| **English Language Proficiency Standards (ELPS) Strategies** |  |
| **College and Career Readiness Connection[[1]](#footnote-1)** |  |
| **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) | Students will present/discuss their Great Energy Hunt Presentation in class. |
| **Family/Community Connection** |  |
| **CTSO connection(s)** | SkillsUSA  Technology Student Association (TSA) |
| **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)