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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** | Robotics I |
| **Lesson/Unit Title** | Robotics I - Evolution and Classification |
| **TEKS Student Expectations** | **130.408. (c)** **Knowledge and Skills**  (9) The student uses engineering design methodologies. The student is expected to:  (E) refine the design of a robotic or automated system to ensure quality, efficiency, and manufacturability of the final product |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | After completing this lesson, students will be able to identify areas in Robotics where quality, reliability, and safety can be designed into a product and about the history of Robotics and robot classifications by completing the Assignment: The Evolution of Robotics and Rubric. |
| **Rationale** | Students should be able to identify areas in Robotics where quality, reliability, and safety can be designed into a product. |
| **Duration of Lesson** | Teacher’s Discretion |
| **Word Wall/Key Vocabulary**  *(ELPS c1a,c,f; c2b; c3a,b,d; c4c; c5b) PDAS II(5)* | The key words document is in the lesson plan attachment section. |
| **Materials/Specialized Equipment Needed** | **Materials**   * Pen/Pencil * Engineering Notebook * Technical Terms and Definitions handout * Assignment: The Evolution of Robotics handout * Computers with Microsoft Word and PowerPoint installed * Video screen projector |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | **SAY:** Today we will understand that there are key events in the history of Robotics and thatthere are several methods of robot classifications. **ASK:** What are some of the names of robots in history?  **MAKE:** An Evolution of Robotics and Robot Classifications PowerPoint slidepresentation (The PowerPoint should be in conjunction with the lesson outline). Tell the students to check out the History of Robotics book from the school’s library  **SAY:** Our first objective is to identify areas in robotics where quality, reliability, and safety canbe designed into a product.  **ASK:** What is the name of your favorite robot?  **SHOW:** A video on the History of Robot Evolution in 2007.  **ASK:** What is Robotics?  **SAY:** Robotics is the study of robots and the technology dealing with the design, construction,and operation of robots.  **ASK:** Is it important to study the history of Robotics?  **SAY:** Yes, it reveals key events back to ancient times and shows the historical steps by whichthe robot developed. |
| **Direct Instruction \*** | **Lesson Outline:**   1. Introduction   Begin Evolution of Robotics and Robot Classifications   1. Purpose 2. Objectives 3. Section 1: Evolution of Robotics   Distribute Terms and Definition Handout and discuss slides   1. Technical terms and Definitions 2. Show History of Robot Evolution in 2007 video 3. Overview 4. Timeline 5. Section 2: Classification of Robots 6. Technical Terms and Definitions 7. Overview 8. Classifications by; 9. Arm configuration 10. Controller 11. Power Supply 12. Technology 13. Task Performed 14. Design 15. LERT 16. Rubrics for Grading Assignment: The Evolution of Robotics Discuss grading rubric with students 17. Assignment: The Evolution of Robotics 18. Have copies of the assignment handout   *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 \*** | Review the Assignment: The Evolution of Robotics and Robot Classifications with the students.  *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 research The Evolution of Robotics and Robot Classifications lesson using the Internet and Microsoft Word.  *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** | **Question:** What are the names of some of the robots in history?  **Answer:** The names of some of the robots in history are: Abacus, Difference Engine,Punched Card Device, ENIAC I, Unimate, Mars Exploration Rover  **Question:** Why do we need robots?  **Answer:** Robots are strong, tireless, accurate, and repeated, and well-immune. Robotsprovide labor savings. They are used to improve working conditions, increase flexibility, productivity, and quality. |
| **Summative/End of Lesson Assessment \*** | Students will complete the Assignment: The Evolution of Robotics and Robot Classifications with the teacher and answer the reflection question: “O\*NET Online has detailed descriptions of the world of work for use by job seekers, workforce development and HR professionals, students, researchers, and more! Visit the O\*NET Online website (http://www.onetonline.org/). Do you think that this website may help you locate career opportunities in Robotics? What types of Robotics career opportunities are listed?  *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** | 1. Understand that there are key events in the history of Robotics and that there are several methods of robot classifications. 2. Make an Evolution of Robotics and Robot Classification PowerPoint presentation. 3. Make copies of the Assignment: The Evolution of Robotics handout for each student. 4. Identify a video to show on the History of Robot Evolution in 2007   References:   1. ROBOTICS Introduction, Programming, and Projects – Second Edition by James L. Fuller 2. O-NET Online - <http://www.onetonline.org> 3. ClipArt – <http://www.clipart.com/en/> 4. BEST (Boosting Engineering, Science, and Technology) <http://www.bestinc.org/b_history.php> 5. FIRST Robotics   <http://www.usfirst.org/aboutus/first-history> |
| **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 their Evolution of Robotics Essay in Class |
| **Family/Community Connection** |  |
| **CTSO connection(s)** | SkillsUSA, 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)