



# Exploring Technology 2 (District)

District > 2016-2017 > Basic > Technology & Engineering > Exploring Technology 2 (District) > Anderson, Tamara; Gutierrez, Steve; Hart, Jeffrey; Masimer, Paul; Scott, Robert; Selk, Kerry; Smith, Shelli; Twining, Kurt  
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Unit	CTE Standards and Objectives	Essential Questions	Content	Skills	Vocabulary	Formative & Summative Assessments
<b>Introduction to Technology</b> <i>(Week 1, 2 Weeks)</i>	<p><b>UT: CTE: Technical and Engineering</b>  <b>UT: All Grades</b>  <b>Exploring Technology</b>  <b>Standard 1</b>  <b>Students will learn and use safe practices, learn basic design skills, and be introduced to related careers through activity-based education.</b></p> <p>Objective 4          Explore related careers.</p> <p><b>Standard 9</b>  <b>Students will explore how math and science are used in engineering and engineering technologies in our world through</b></p>	<ul style="list-style-type: none"> <li>• How does technology impact your life?</li> <li>• How have you used technology today in your life?</li> <li>• What is the difference between technology, science and engineering?</li> </ul>	<ul style="list-style-type: none"> <li>• What technology is</li> <li>• Careers in technology</li> <li>• Technology resources</li> <li>• History of technology</li> </ul>	<ul style="list-style-type: none"> <li>• Explain what technology is</li> <li>• Identify different technology fields/careers</li> <li>• Explain how technology affects their lives</li> <li>• Describe the positive and negative impacts of technology</li> </ul>	<ul style="list-style-type: none"> <li>• Technology</li> <li>• Science</li> <li>• Engineering</li> <li>• Technologist</li> </ul>	<p><b>Positive &amp; Negative Impacts of Technology</b>  <b>Summative: Written: Informative</b>          Students write the positive and negative impacts of four different types of technology.  <b>Overview of Technology</b>  <b>Formative: Oral: Discussion</b>          Discussion about content that can be large group or pair share.</p>

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	<p><b>activity-based education.</b></p> <p>Objective 1 Explore the nature of engineering technologies.</p> <p>Objective 2 Explore how engineering technologies affect our society.</p>					
<p><b>General Shop Safety</b> (Week 2, 3 Weeks)</p>	<p>UT: CTE: Technical and Engineering</p> <p>UT: Grades 6-8</p> <p>Exploring Technology</p> <p>Standard 1</p> <p>Students will learn and use safe practices, learn basic design skills, and be introduced to related careers through activity-based education.</p>	<ul style="list-style-type: none"> <li>• What situations could cause injury in your shop?</li> <li>• How can you avoid injury in the shop?</li> <li>• How much is a body part worth (your thumb, eyes, hand, etc.)?</li> <li>• How does your behavior impact you and other individuals safety?</li> </ul>	<p><b><u>Basic Safety Rules and Shop Behavior</u></b></p> <ul style="list-style-type: none"> <li>• Shop organization and cleanup</li> <li>• Safety apparel</li> <li>• Professional conduct</li> <li>• When you can use shop machines and tools</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate professional conduct</li> <li>• Wear proper safety attire</li> <li>• Follow shop rules</li> </ul>	<ul style="list-style-type: none"> <li>• Safety Zone</li> <li>• Margin of safety</li> <li>• Safe Practices</li> </ul>	<p><b>Safety Test Common: Test: Common</b></p> <p>General safety test.</p> <p><b>Shop Observation Common: Other: Teacher Observation</b></p> <p>Observe behavior, safe practices and attire.</p>

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	<p>Objective 1 Learn and use basic safety rules for the tools, the equipment, and the facilities that will be used in the course.</p>					
<p><b>Measuring</b> (Week 3, 2 Weeks)</p>	<p><b>UT: CTE: Technical and Engineering</b> <b>UT: All Grades</b></p> <p><b>Exploring Technology</b> <b>Standard 1</b> <b>Students will learn and use safe practices, learn basic design skills, and be introduced to related careers through activity-based education.</b></p> <p>Objective 2 Learn and use measuring skills.</p>	<ul style="list-style-type: none"> <li>• Why do most countries use the metric system and not the standard system of measuring?</li> <li>• What careers require the use of measurements ?</li> <li>• Can you think of any product that does not use a form of measuring?</li> </ul>	<ul style="list-style-type: none"> <li>• How to read and use a ruler to measure an object.</li> <li>• Know the difference between standard (SAE) and metric measuring systems</li> <li>• How to use fractions of an inch (add, subtract, reduce).</li> <li>• fraction to decimal equivalency for halves and quarters</li> </ul>	<ul style="list-style-type: none"> <li>• use a ruler to correctly measure an object accurately to 1/16th inch.</li> <li>• draw and measure the length of a line accurately to 1/16th inch.</li> <li>• add, subtract, and reduce ruler-based fractions</li> </ul>	<ul style="list-style-type: none"> <li>• metric system</li> <li>• Standard system</li> <li>• SAE</li> <li>• numerator or</li> <li>• dimension</li> </ul>	<p><b>Measuring Worksheet</b> <b>Formative: Written: Informative</b> measurement worksheet <b>The Ruler Game</b> <b>Summative: Performance : Skill Demonstration</b> practice measuring using halves, quarters, eighths, and sixteenths (online application)</p>
<p><b>Problem Based Learning</b></p>						

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(Week 4, 12 Weeks)						
<b>Flight and Space</b> (Week 4, 3 Weeks)	UT: CTE: Technical and Engineering UT: Grades 6-8 Exploring Technology Standard 4 Students will explore energy and power technologies in our world through activity-based education. Objective 4 Participate in activity based learning activity to explore energy and power technologies. Some examples are: a. Participate in an electronics/electricity activity. b. Participate in an energy conversion and storage activity. c. Participate in a	<ul style="list-style-type: none"> <li>If you had the opportunity to fly to the moon would you take it? why or why not</li> <li>How is society using space exploration today?</li> <li>How do you think flight technology will be different in the future?</li> <li>Why do we drive cars to work each day instead of flying planes?</li> </ul>	<ul style="list-style-type: none"> <li>How aerodynamics can affect the flight of an object.</li> <li>Bernoulli's Principle.</li> <li>the four principals of flight               <ul style="list-style-type: none"> <li>lift, drag, thrust, gravity</li> </ul> </li> <li>Newtons Laws of Motion.</li> </ul>	Build a rocket, plane, boomerang, helicopter toy, or other project that demonstrates the principles of flight.	<ul style="list-style-type: none"> <li>Aerodynamics</li> <li>Trajectory</li> <li>Lift</li> <li>Drag</li> <li>Thrust</li> <li>Gravity</li> <li>Bernoulli's Principle</li> <li>Newton's Three Laws of Motion</li> </ul>	<b>Rocket build and launch</b> <b>Formative: Performance : Lab Assignment</b> Students will build a rocket based on flight principles. The rocket will be graded on flight height, air time, longevity, appearance, structure

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	<p>fluid power activity.</p> <p>d. Participate in an internal combustions engines activity.</p> <p>e. Participate in a solar power activity.</p> <p>f. Participate in a steam power activity.</p> <p>g. Participate in a water power activity.</p> <p>h. Participate in a wind power activity.</p> <p><b>Standard 6</b> Students will explore transportation technologies in our world through activity-based education.</p> <p><b>Objective 4</b> Participate in activity based learning activity to explore transportation technologies. Some examples are:</p> <p>a. Participate in an aviation / aerospace</p>					

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	<p>activity.            b. Participate in a boat hull (hydroplane or hydrofoil) activity.            c. Participate in a CO2 cars activity.            d. Participate in a hover craft activity.            e. Participate in a mouse trap cars activity.            f. Participate in a restraint systems (crash) activity.            g. Participate in a rockery activity.            h. Participate in a wind tunnel activity.</p>					
<p><b>Machine Safety</b>  <i>(Week 6, 9 Weeks)</i></p>	<p>UT: CTE: Technical and Engineering            UT: Grades 6-8            Exploring Technology            Standard 1            Students will learn and use safe practices, learn basic design skills, and be introduced to</p>	<ul style="list-style-type: none"> <li>• How much money is your thumb or your eyesight worth?</li> <li>• How would your life change if you lost a finger, or your eyesight?</li> <li>• Is it fair that you are required to wear safety glasses while working in the shop? why or why not?</li> </ul>	<ul style="list-style-type: none"> <li>• How to operate the following machinery correctly and safely: scroll saw, disc sander, drill press, router</li> <li>• How to work safely in the engineering lab.</li> </ul>	<ul style="list-style-type: none"> <li>• Pass a written safety test with a score of 100 percent.</li> <li>• Work safely in the engineering lab.</li> <li>• Use tools and machinery properly and safely.</li> </ul>	<p>scroll saw            disc sander            drill Press            router            machine safety            margin of safety            blades,bits,cutters            RPM</p>	<p><b>Machine Safety Test</b>  <b>Formative:</b>  <b>Test: Written</b></p>

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	<p>related careers through activity-based education.</p> <p>Objective 1 Learn and use basic safety rules for the tools, the equipment, and the facilities that will be used in the course.</p> <p>Objective 2 Learn and use measuring skills.</p>					
<p><b>Pinball Machine</b> (Week 6, 4 Weeks)</p>		<ul style="list-style-type: none"> <li>• In what ways do old pinball machines compare with new electronic games?</li> <li>• What are the main elements of a pinball machine?</li> </ul>	<ul style="list-style-type: none"> <li>• Six simple machines               <ul style="list-style-type: none"> <li>○ Belt &amp; Pulley</li> <li>○ Screw</li> <li>○ Wedge</li> <li>○ Lever</li> <li>○ Wheel &amp; Axle</li> <li>○ Inclined plane</li> </ul> </li> </ul>	<p>Design and construct a working pinball machine</p> <p>Incorporate the six simple machines in a project</p> <p>Safely use tools and lab equipment</p> <p>Successfully work in a team environment</p>	<p>Bumper</p> <p>Plunger</p> <p>Flipper</p> <p>Spinner</p> <p>Score</p> <p>Return</p> <p>Ejector</p> <p>Tilt</p>	

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<b>SA-Coding &amp; 3D Design</b> <i>(Week 9, 3 Weeks)</i>		What makes a fun video game? What technology have you used today that needed programming/coding?	<ul style="list-style-type: none"> <li>• The coding process</li> <li>• Microsoft Kodu</li> <li>• What is coding?</li> <li>• Programming</li> </ul>	The student will be able to build a 3D Video Game with Microsoft Kodu. The student will learn the basic concepts of "Engineering the Tools of Scientific Discovery".	<ul style="list-style-type: none"> <li>• Programming</li> <li>• Coding</li> <li>• Terrain</li> <li>• Obstacles</li> <li>• Variables</li> <li>• Functions</li> <li>• Sprite</li> </ul>	
<b>Electronics</b> <i>(Week 10, 3 Weeks)</i>		How would life change if electronics ceased to exist? What is your most used electronic device? Why?	Difference between series and parallel circuits Elements of a circuit Functions of various electrical components Ohms law	Demonstrate proper soldering technique Construct series and parallel circuits Calculate values (voltage, amperage, resistance) of a circuit using ohms law	Transistor Resistor LED Series Parallel Capacitor Circuit Conductor Current Source Load Ground Volts Amps Resistance Ohms Ohms law Static Direct Current Alternating Current Short circuit Binary	
<b>Robotics</b> <i>(Week 12, 5 Weeks)</i>		Will robots ever take over the world? Will you lose your job to a robot?	Impacts of robotics on society Parts of a robot Robot hardware Robot software	Program a robot to perform simple tasks Design and build a robot based on specified criteria	Input Output Sensor Motor Programming	



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		<p>Will you be able to buy a robot to clean your room? Do your homework?</p>			<p>Switch Ultrasonic Negative Positive Open loop system Closed loop system Feedback Hardware Software</p>	
<p><b>Lab Maintenance</b> (Week 19, 1 Week)</p>	<p>UT: CTE: Technical and Engineering UT: Grades 6-8 Exploring Technology Standard 1 Students will learn and use safe practices, learn basic design skills, and be introduced to related careers through activity-based education. Objective 1 Learn and use basic safety rules for the tools, the equipment, and the facilities that</p>	<ul style="list-style-type: none"> <li>• How is a clean environment related to a safe environment?</li> <li>• Why is it important to keep machines in proper working condition?</li> <li>• Why is shop organization important?</li> <li>• If you tripped on some garbage in your dad's garage and then broke your arm, who would be liable/responsible?</li> </ul>	<ul style="list-style-type: none"> <li>• the importance of a well-maintained facility</li> <li>• basic machine and shop maintenance</li> <li>• lock out/tag out safety procedures</li> </ul>	<ul style="list-style-type: none"> <li>• complete the items on the facility and machinery maintenance schedule</li> </ul>	<ul style="list-style-type: none"> <li>• Student responsibility</li> <li>• maintenance</li> <li>• preventive maintenance</li> <li>• lock out/tag out</li> </ul>	<p><b>Maintenance Assignment Formative: Performance : Authentic Task</b> assign groups of students to perform basic lab maintenance assignments. Students will then be instructed how to carry out that assignment. An inspection of the assignment will take place at the completion of the assignment.</p>

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	will be used in the course.					
<b>Careers</b>						
<i>(Week 3, 17 Weeks)</i>						