

Wind Turbine CTF Challenge Idea

Challenge	Wind Turbine		
Essential Question	Can your green energy company design the most efficient wind turbine?	Estimated Time	25 hrs.

All CTF learning outcomes should be addressed in each CTF challenge.

Challenge Description	<p>In this project, students will develop a wind turbine to solve a new community’s energy needs and then explore ways to modify it. Key concepts include the following: forms of energy, energy transformation, generation of electrical energy, electric charge and current, circuits, electrical energy storage, energy transmission, measures and units of electrical energy, renewable and non-renewable energy.</p>																																
Scenario	<p>A local land developer is in the process of designing a new “green” community as the company feels this would be a big selling feature. The land developer is turning to a host of companies that will submit project ideas for the wind turbine that will help to provide electricity to the community’s homes.</p> <p>As a group, you will need to develop a green energy company name, logo and mission. Your next step will be to create a wind turbine by using the materials provided. Once you have constructed your turbine, you will then need to research this alternative energy source, looking for</p> <ul style="list-style-type: none"> • ways to modify the design so that it would be more efficient • ways that it could deliver more electricity than the stock design you started with <p>You will need to articulate how the electricity your turbine produces will be sustainable and how the turbine will impact society and the environment.</p>																																
Occupational Areas	<p>BUSINESS</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Computing Science</td> <td><input type="checkbox"/> Financial Management</td> <td><input type="checkbox"/> Management & Marketing</td> </tr> <tr> <td><input type="checkbox"/> Enterprise & Innovation</td> <td><input type="checkbox"/> Information Processing</td> <td><input type="checkbox"/> Networking</td> </tr> </table> <p>COMMUNICATION</p> <table style="width: 100%; border: none;"> <tr> <td><input checked="" type="checkbox"/> Communication Technology</td> <td><input type="checkbox"/> Design Studies</td> <td><input type="checkbox"/> Fashion Studies</td> </tr> </table> <p>HUMAN SERVICES</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Community Care Services</td> <td><input type="checkbox"/> Foods</td> <td><input type="checkbox"/> Legal Studies</td> </tr> <tr> <td><input type="checkbox"/> Cosmetology</td> <td><input type="checkbox"/> Health Care Services</td> <td><input type="checkbox"/> Recreation Leadership</td> </tr> <tr> <td><input type="checkbox"/> Esthetics</td> <td><input type="checkbox"/> Human & Social Services</td> <td><input type="checkbox"/> Tourism</td> </tr> </table> <p>RESOURCES</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Agriculture</td> <td><input type="checkbox"/> Forestry</td> <td><input type="checkbox"/> Wildlife</td> </tr> <tr> <td><input checked="" type="checkbox"/> Environmental Stewardship</td> <td><input type="checkbox"/> Primary Resources</td> <td></td> </tr> </table> <p>TECHNOLOGY</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Construction</td> <td><input type="checkbox"/> Fabrication</td> <td><input type="checkbox"/> Mechanics</td> </tr> <tr> <td><input type="checkbox"/> Electro-Technologies</td> <td><input type="checkbox"/> Logistics</td> <td></td> </tr> </table>			<input type="checkbox"/> Computing Science	<input type="checkbox"/> Financial Management	<input type="checkbox"/> Management & Marketing	<input type="checkbox"/> Enterprise & Innovation	<input type="checkbox"/> Information Processing	<input type="checkbox"/> Networking	<input checked="" type="checkbox"/> Communication Technology	<input type="checkbox"/> Design Studies	<input type="checkbox"/> Fashion Studies	<input type="checkbox"/> Community Care Services	<input type="checkbox"/> Foods	<input type="checkbox"/> Legal Studies	<input type="checkbox"/> Cosmetology	<input type="checkbox"/> Health Care Services	<input type="checkbox"/> Recreation Leadership	<input type="checkbox"/> Esthetics	<input type="checkbox"/> Human & Social Services	<input type="checkbox"/> Tourism	<input type="checkbox"/> Agriculture	<input type="checkbox"/> Forestry	<input type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Environmental Stewardship	<input type="checkbox"/> Primary Resources		<input type="checkbox"/> Construction	<input type="checkbox"/> Fabrication	<input type="checkbox"/> Mechanics	<input type="checkbox"/> Electro-Technologies	<input type="checkbox"/> Logistics	
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Skills Related to Occupational Areas	<p>Communication Technology</p> <ul style="list-style-type: none"> • Selecting appropriate methods and tools to communicate a message • Tailoring a message to a specific audience • Understanding copyright restrictions and permissions and putting them into practice • Demonstrating good health and safety practices (posture, ergonomic design) • Ensuring safety of equipment, software, supplies and personal work <p>Environmental Stewardship</p> <ul style="list-style-type: none"> • Having a basic understanding of management and conservation of resources in Alberta • Understanding and promoting energy conservation 												
Safety and/or Environmental Concerns	<ul style="list-style-type: none"> • Effective ergonomic and digital citizenship practices • Safety procedures for any tools used <p>Remember to follow your school's and/or district's safety requirements at all times.</p>												
Grade	<input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input checked="" type="checkbox"/> 9												
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