

Virtual Engineer-a-thon Activity Plan
Clean Snowmobile Club at Montana State

Title of Activity	Engine Piston and Crankshaft Design
Content of Subject Area	Rotary to Linear Motion
Length of Video	~15 minutes
Duration of Activity	~30 minutes with video

****Safety protocols**** Be safe with scissors and pins

General Objectives	Construct a simple physical model for transmitting linear motion to rotary motion
<p>Learning Outcomes</p> <p><i>What do you want students to know and be able to do?</i></p> <p><i>What knowledge, skills, strategies, and attitudes do you expect students to gain?</i></p> <p><i>What important math/science and engineering or computer science applications will students learn?</i></p> <p><i>What are the safety protocols you should take.</i></p>	<p>The students should be able to explain how energy is transmitted from linear motion to rotational motion in a simple piston engine.</p> <p>The students should learn how to leverage geometries to translate types of motion.</p> <p>Applications of this principle can be found in any combustion or heat engine.</p>
Materials and Resources	<p><i>Materials</i></p> <ul style="list-style-type: none"> - <i>Cardboard</i> - <i>Scissors</i> - <i>Thumbtacks or pins</i> - <i>Pen or pencil</i> - <i>Ruler</i>
<p>Instructional Procedures</p> <p><i>Why should students care about this topic or</i></p>	<p>The concept of using geometry to change how things move is used in nearly every mechanical design, and oftentimes it is necessary to change from one type of motion to another. Combustion engines are complicated versions of this</p>

activity? How does it help them learn about engineering or computer science?

What "big" questions will generate discussion about this topic and what engineering, or computer science is?

(Reference Grand Challenges when possible - tie back to earlier videos)

principle, with multiple linkages between the combustion chamber and the wheels. Developing an intuitive understanding of how things move and interact is necessary to appreciate how the physical world interacts. One of the best ways to start to understand this is to work with your hands to feel the limits of a linkage.