

Virtual Engineer-a-thon Activity Plan

Student Organization: American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

Title of Activity	Ketchup Catastrophe
Content of Subject Area	Mechanical Engineering: Fluid Dynamics
Length of Video	10 minutes
Duration of Activity	~15 minutes

General Objectives	<p>Pressure's effect on fluid flow</p> <p>Understanding the relationship between pressure and area.</p>
<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>Students can visually see the difference between a small and large outlet under pressure.</p> <p>Students gain a basic understanding of fluid dynamics. With pressure staying the same, changing the nozzle area will increase/decrease fluid velocity.</p> <p>Safety protocols include replicating the experiment outside in an open area.</p>
Materials and Resources	<ul style="list-style-type: none"> - 1 ketchup bottle - box of baking soda - empty water bottle w/ flip cap lid
<p>Instructional Procedures</p> <p><i>Why should students care about this topic or activity? How does it help them learn about</i></p>	<p>Ask, which bottle will shoot liquid faster? Which bottle will shoot further? Why?</p> <p>This concept can be used to solve HVAC problems: the AC ducts at school will need more pressure to move air throughout the building compared to your house's AC.</p>

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)