Puffmobiles

<table>
<thead>
<tr>
<th>Materials:</th>
<th>Amount per Trial:</th>
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<tbody>
<tr>
<td>Straws</td>
<td>6</td>
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<td>Life Savers</td>
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<tr>
<td>Index Cards</td>
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<td>Tape</td>
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The purpose of this activity is to work as a team to create a moving “wind” powered vehicle. Our goal is to reiterate the engineering method (AIPC) and focus especially on the “improve” portion. Students will work within a strict limitation of materials and will need ingenuity to perform best in the final competition.

**White Board Pictures + Planning (~5-8 min)**

**REVIEW:** Remind students what entails engineering and the importance of working as a team.

**How do you make a car move?**
Circular wheels combined with the force of an engine (or in this case breath) make for the most efficient cars. **Why don’t we use square wheels?**

**How do engineers use the wind to their advantage?**
Ship designs and wind power are both excellent examples of how engineers use the forces and energy all around us. Talk about how wind energy is beneficial for the environment.

**Have a spare Scout write these on a whiteboard.**

**ASK:** What is the problem? How can we make the most efficient Puff-Mobile?

**IMAGINE:** What are some solutions? Brainstorm.

**PLAN:** The most important part. Engineers spend most of their time planning their designs before testing them.

**CREATE:** Test out your design!

**IMPROVE:** What could be better? Modify your design and try again!

**Part 1 – Planning (~5 min)**

*In pairs, ask students to spend 5 minutes drawing a car on paper. Scouts should help with the designing process and give tips:*

- Wheels need an axle!
- Sails want a large surface area for breath but little drag (triangles accomplish this!)
- Blow soft to beat static friction then let out the rest of the breath in one big puff!
- Students only get one big breath from one student, and no eating the lifesavers!!

**Part 2 – Build and Test (~15 min)**

*Scouts should walk around and assist groups. Remind students their goal!*

1. Students will work together for approximately 6 groups in total.
2. Test buildings one at a time on the class floor.
   Mark how far each car goes.
   *Testing should be very quick!*

**Part 3 – Re-Test (~15 min)**

*10 minutes for improvements, Scouts can be slightly more explicit with suggestions. 5 minutes for final testing.*

Congratulate the winners and if time, explain why their design possibly outcompeted the others.

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