

# The STEPS Young Engineers Award

STEP 5	LESSON PLAN	WORKSHEET 3
<b>REFERENCE TEACHERS GUIDE CHAPTER 3 STEP 5</b>	<b>Time Required</b> 30 – 40 mins	<b>Date</b>
<b>Subject</b> Science and Engineering	<b>Class Level</b>	
<b>Strand</b> Environmental awareness and care, Materials	<b>Strand Unit</b> Science and the environment, Properties and characteristics of materials	
<b>Title</b> EVALUATE – Project Summary (Worksheet 3)		
<b>Objectives</b> Write a Project Summary		
<b>Skills Required</b> Working scientifically: recording and communicating Designing and making: evaluating		

Learning Objectives	Learning Activities
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>Learn to reflect and evaluate as a team</li> <li>Learn to apply their classroom engineering experience to better understand a real-life engineering project</li> <li>Learn about material choices and to evaluate why properties of materials are important to know and understand</li> <li>Learn to communicate effectively in writing</li> <li>Practice report writing skills</li> </ul>	<p><b>Worksheet 3 (25mins)</b></p> <p><b>Instructions</b></p> <p>Hand out Project Books. Fill in Worksheet 3 by answering the questions. It doesn't matter if the prototype did not turn out as planned. What we really want to read about is how the engineering teams made decisions and how they dealt with problems.</p> <p><b>Hints on how to answer the questions</b></p> <p>(See overleaf)</p>

**Q1** – Describe the prototype, using the prompts on the worksheet.

**Q2 – Prototype** – Draw the prototype and label the drawing.

Optional: attach some photos. Write beside the photo some of the important features.

**Q3-5 Materials** – Fill in the table. There is a completed example in the Project Book to make it clearer. This question is designed to make the students aware of real-life material choices. Engineers need to choose materials for their designs, just like the young engineers had to choose materials for their prototypes.

**Q6 Properties and Characteristics of one of the materials** - Ask them to write some of the properties of the material (what it looks like and feels like e.g. hard, strong, soft, light, thin, flexible, stretchy etc.). Comment on practicalities such as the shape, or how it was easy to obtain, or perhaps if it was easy to work with.

**Q7-9 Overview** – Write about the overall evaluation of the project. Did they have to make changes? Use the prompts to guide the answers. For example: *we planned to use tin foil as the solar panels for our new car, but it kept getting torn. To solve the problem we used lots of layers of the foil. What went well overall in the project? (Think bigger picture, like: the design of the prototype would really improve the community, the teamwork was good etc.) What would they do differently? Ask them to think of things that could be improved to make their project even better. It could be anything from a different design to better time management.*

**Q10 What did they learn?** Let them answer this themselves. What do they think they learnt from the engineering experience?

	<p><b>Congratulations! You're an Engineer! (10mins)</b></p> <p>The project is completed! Well done! Now let's find out what the young engineers learnt.</p> <p><b>Instructions</b></p> <p>Hand out a copy of the Congratulations! You're and Engineer! Worksheet to each student. Give them a few minutes to fill it out. After, discuss their experience. Did they learn about engineering? Are they more confident talking about engineering now? Do some students think they would like to be an engineer one day?</p> <p><b>Submit the entries</b></p> <p>Collect the Project Books and the Congratulations Worksheets.</p> <p>To enter the competition scan the documents (listed below) and upload them to your STEPS Account. You can also post the entries to STEPS at Engineers Ireland, 22 Clyde Road, Ballsbridge, Dublin 4, or you can email the entries to <a href="mailto:steps@engineersireland.ie">steps@engineersireland.ie</a>.</p> <p><b>Documents to submit:</b></p> <ol style="list-style-type: none"> <li>1. The Project Books</li> <li>2. The Engineering Personality Quizzes</li> <li>3. The Congratulations! Worksheets (below)</li> <li>4. Any photos you would like us to see (optional)</li> </ol> <p>The deadline for entry is midnight on 6th December. Results will be announced during Engineers Week. Prizes will be presented at a later date.</p>
Want More?	<p>What will your class do for Engineers Week? February 29th - March 6th 2020.</p>
Resources	<p>Project Books, pens, pencils. Optional: photos</p>
Integration	<p>English oral language – verbalising ideas, solutions and methods as a team SPHE - Myself and the wider world</p>