



## Next Engineers Academy Unit 3 Student Reflection

### STUDENT REFLECTION

| Time       | Academy unit | Group size | Activity Type      |
|------------|--------------|------------|--------------------|
| 30 minutes | Unit 3       | -          | Student Reflection |

### Activity Description

This activity gives students an opportunity to reflect on their experiences in unit 3, in particular with regard to what they learned completing the engineering design challenge.

### Materials

You will need the following materials for this activity:

- A copy of the *Academy Unit 3 Student Reflection* student handout for each student

Students will require their *Academy Journals* and a pen or pencil.

### Preparation

1. Print out a copy of the *Academy Unit 3 Student Reflection* student handout for each student. If you do not wish to make printed copies, you can project the questions onto a screen for the group.
2. Step through the activity slowly in your mind imagining how you will arrange the room and how you will direct students during each part of the activity.



NOTES



## What to do

3. Have students answer the following questions individually in their *Academy journals*. They can refer back to their copies of the *Engineering Design Process* and *Engineering Habits of Mind* handouts they received in Unit 1 if they need to. Give students about **15 minutes** to answer these questions.
  - a. Which step in the **engineering design process** did you find the most difficult during this challenge?
  - b. How has your **perception** of yourself as a future engineer changed since starting the Engineering Academy?
  - c. Rank how well you think you **understand** each of the six engineering habits of mind from 1 = least understood to 6 = most understood. How has your ranking changed from the Unit 2?
  - d. Rank your **comfort level** with each of the six engineering habits of mind from 1 = least comfortable to 6 = most comfortable. How has your ranking changed from Unit 2?
  - e. Describe in your own words what you understand by the **Creative Problem Solving** and **Adapting** engineering habits of mind.
  - f. Describe a time during this challenge when you think you practiced the **Problem Solving** engineering habit of mind.
  - g. Describe a time during this challenge when you think you practiced the **Adapting** engineering habit of mind.
  - h. Describe a time during this challenge when you saw a team member practice the **Creative Problem Solving** engineering habit of mind. When did they work collaboratively with other people and use creative and innovative thinking to come up with new ideas and solutions?
  - i. Describe a time during this challenge when you saw a team member practice the **Adapting** engineering habit of mind. When did they change an existing product, material or approach to fulfil another purpose? When were they willing to modify or adjust their ideas or approach to changing conditions or requirements?
4. Have students get into their design challenge teams to discuss the following questions. Give them about **15 minutes** for their discussions.
  - a. Discuss with your group what the **Creative Problem Solving** and **Adapting** engineering habits of mind mean to you.
  - b. As a team, how well do you think you practiced the **Creative Problem Solving** engineering habit of mind during this challenge? When do you think you worked collaboratively to combine your different perspectives and use creative and innovative thinking to come up with a wide range of new ideas and solutions without judgment? When were you willing to challenge your assumptions and experiment with new ideas or try things that had not been tried before?
  - c. What other **actions, skills, or strategies** do you think are important when creatively problem-solving in engineering?
  - d. How do you think practicing the Creative Problem Solving engineering habit of mind **helped you** in this challenge? What specific benefits can you recall?
  - e. As a team, how well do you think you practiced the **Adapting** engineering habit of mind during this challenge? When did you use an existing material or product to do things differently or use old things in new ways? When did you change your thinking or assumptions based on new



### ACADEMY JOURNAL

Require students to write their reflections in their Academy journals. Having to express your thoughts in writing helps you to slow down, focus your attention and think more deeply. It helps make your thinking reasoned and less reactive.

As the philosopher Mortimer Adler said, “the person who says he knows what he thinks but cannot express it usually does not know what he thinks.”

Writing their reflections will help students to form and clarify their thoughts.



circumstances? When did change your approach based on a test and see failure as just an opportunity to learn more?

- f. What other **actions, skills, or strategies** do you think are important when adapting in engineering?
- g. How do you think practicing the Adapting engineering habit of mind **helped you** in this challenge? What specific benefits can you recall?

