

Lesson Plan

Problems and Solutions

Book: *Engineering for Space Disasters*

Series: Engineering for Disaster

Level: Navigator

Objective

To help students practice researching, organizing, and presenting information on engineering solutions to space disasters.

Supplies

- Several copies of the *Engineering for Space Disasters* book
- Computers with internet access

Before the Activity

Read *Engineering for Space Disasters* out loud, or assign it to students to read on their own. Divide students into four groups.

Activity

Engineering for Space Disasters describes several key challenges that engineers have faced or continue to face as they work toward sending people to space. The book also discusses some of the solutions that engineers have developed for these problems. In groups, students will conduct their own research into how engineering and technology have furthered human space exploration. Assign each group one of the following problems to research:

- Making sure spacecraft have enough fuel for round-trip missions while also ensuring spacecraft are light enough to achieve liftoff
- Feeding astronauts on long spaceflights
- Keeping astronauts' bodies strong and healthy on long spaceflights
- Allowing astronauts and engineers to stop missions when something goes wrong during a launch

First, each student should independently find a reputable website with additional information on his or her group's topic. After this independent research, groups should come together to create slideshow presentations to share their findings with the class. Each presentation should include slides explaining the problem, slides describing the solution(s), and a slide listing the website sources used. Students in a group should take turns presenting their research, so that each student has an opportunity to speak.

Evaluation

Use the following system to score each group's presentation:

- 1 point for an organized slideshow presentation
- 1 point for including links to the students' sources for their information
- 2 points for a clear explanation of the problem or challenge
- 3 points for a discussion of a relevant and well-researched solution to the problem
- 3 points for each presenter who speaks clearly and organizes information well

(Note: If groups are uneven sizes, the last point will need to be adjusted slightly.)

Standards

This lesson may be used to address the Common Core State Standards' reading standards for informational texts, grade 5 (RI 5.9), and speaking and listening standards, grade 5 (SL 5.4), and the National Science Education Standards' Content Standards D and E, grades 5–8.