



ENGINEERING

POST-LESSON PLAN

Lesson Title

- Sustainability in Action: Engineering Solutions for Your School.

Basic Information

- Grade Level: 4–8.
- Duration: 60 minutes.
- Subject Areas: Engineering, Science, Sustainability, Career Exploration.

Lesson Objectives

- Explore how engineers design systems to reduce waste and drive sustainability.
- Apply engineering concepts from the video to a real-world sustainability challenge.
- Reflect on the accessibility of engineering career paths and jobs.
- Encourage creativity, teamwork, and problem-solving.

Learning Objectives

- Students will:
 - Identify sustainability challenges engineers solve at SoFi Stadium.
 - Work in teams to design a school-based sustainability plan.
 - Explain how their ideas mirror the systems engineers use at the stadium.
 - Connect engineering careers to their own skills and interests.

Vocabulary

- **Troubleshooting** – Figuring out what’s wrong with a system and fixing it quickly.
- **Systems** – Different parts working together to make something run smoothly.
- **Recycling & Reuse** – Taking materials that might be thrown away and giving them a new purpose
- **Schematic** – A special kind of drawing that shows how things are built or connected, often used by engineers.

Standards Alignment

Next Generation Science Standards (NGSS)

- 5-ESS3-1: Obtain and combine information about ways communities use science ideas to protect Earth's resources.
- MS-ETS1-2: Evaluate design solutions using a systematic process.

Common Core ELA Standards

- RI.4–8.1: Refer to details and examples to explain and infer.
- W.4–8.2: Write informative and explanatory texts.
- W.4–8.7: Conduct short research projects using multiple sources.
- SL.4–8.1: Engage effectively in collaborative discussions.
- SL.4–8.4: Present claims and findings clearly.

Career Technical Education (CTE) Standards

- CRP 2: Apply academic and technical skills.
- CRP 5: Consider environmental, social, and economic impacts of decisions.
- CRP 6: Demonstrate creativity and innovation.
- CRP 8: Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP 10: Plan education and career paths aligned to personal goals.

Lesson Components & Educator Guidance

1. Warm-Up: Stadium as a Living Body (10 min)

Review Jasmine's analogy from the video: the stadium is like a human body. In it, she dives into the following examples ... help students understand them through conversation:

- Exterior = skin.
- Plumbing = intestines.
- Engineers = immune system.

Ask these questions (or some others you like) and use them to create a conversation:

- Does this analogy make sense to you? Why or why not?
- What would happen if one system at SoFi Stadium stopped working? What happens when one system in the human body stops working?
- Do you think our school could be the same kind of living body? Why or why not?
- What systems keep our school alive?
 - If students are struggling, provide some examples:
 - Electricity
 - Cafeteria
 - Trash
 - Teachers/staff

Teacher Tip - Set the table: Let your students know that today, they will be applying what they learned in the video (and what they already know about sustainability and engineering) to help make their school more sustainable and environmentally friendly through a challenge.

2. The Green School Challenge (35 min)

Divide students into small groups (3–5) and ask them to brainstorm waste/energy issues at their school. Prompt students with these examples (or others that are more relevant to your school) if necessary:

- Lights left on leads to wasted energy.
- Plastic bottles in trash means the school is wasting resources.
- Food scraps in garbage are a missed composting opportunity.

Step 2: Pass out the [Green School Challenge Worksheet](#). Walk students through it and answer questions. Tell them that as part of the activity, they will:

- Work in groups to identify and document environmental problems they see at school.
- Choose one problem to focus on.
- Design a system or solution to fix the problem.
- Sketch out their ideas.
- Share how their concept can solve the problem they have identified and have a positive impact on their school.

Teacher Tip - Prime the pump: It may be difficult for students to identify sustainability problems at school. If necessary, pause the class and offer a few simple and easy suggestions to get them thinking in the right direction. Does your school use solar energy? Does it recycle? Does it manage its electrical use?

3. Share & Reflect (15 min)

Ask groups to present their ideas to the class. Facilitate comments after each presentation, prompting the class to ask questions about proposed solutions. If necessary, provide your students these questions to ask each presenting group:

- Why did they choose the problem they chose?
- Now that they have thought about it, is their proposed solution the best one?
- Are they excited or willing to present their idea to school leadership? Why or why not?

At the completion of all the presentations, ask the entire class a set reflection questions like these, or others you think will resonate:

- How was this process for you? What was easy? What was hard?
- Do you like the idea you chose or would you change it?
- Which ideas were easiest to think of? Which were the hardest?
- What steps can you take to make your plans to make our school more environmentally friendly a reality? How can I help?

Materials Needed

- Green School Worksheet
- Materials to support group brainstorming

Assessment

- Completed worksheets
- Group solution designs
- Participation in presentations/discussion