

Unit 8 Guide - Engineering is Reflexive

Driving Questions

- What is the role of reflection in engineering?
- What is engineering?
- What does it mean to engineer?
- What is my identity as an engineer?
- How is engineering valuable to me?

Description

Students reflect on their designs, their identity, and the role of engineering in society. They revisit materials they created in the beginning of the course and have opportunities to convey their results to different audiences.

Key Concepts

Connect with Engineering: Students revisit concepts explored through the year such as their engineering identity, engineering ethics, and other topics. One key takeaway from Unit 8 is the chance to explore the progression of student perceptions.



Engineering in Society: Similar to the red thread, students have a culminating opportunity to explore the intersection of engineering and society, and present their final solutions to problems which they identified.

Engineering Professional Skills: Students will produce short videos, posters, and present in a showcase, affording them opportunities to use different communication media.

Learning Outcomes*




Connect With Engineering

CE.A	Iterate and evolve the definition of what it means to engineer and be an engineer.	
CE.B	Recognize the value of engineering for all regardless of one's potential career.	





Engineering in Society

ES.B	Recognize and investigate the world's greatest challenges and the role that engineering plays in solving these challenges (e.g., Engineering Grand Challenges, UN sustainability goals, etc.).	
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Engineering Professional Skills

PS.A	Use various forms of communication (oral, written, visual).	
PS.B	Collaborate effectively in a team.	

Misconceptions

- *Misconception:* Unit 8 only applies if a class has completed Unit 7.

More accurate concept: The process of reflection in Unit 8 is applicable even if Unit 7 is not completed. The concepts covered in Unit 8 are essential for student understanding of the design process. Teachers should prioritize time for Unit 8 at the end of the school year.

- *Misconception:* Unit 8 is not necessary if time runs out at the end of the school year.

More accurate concept: Unit 8 should not be skipped as feedback and student reflection are an important part of the design process. Teachers should plan time for Unit 8 at the end of the school year.

Teaching Challenges

- Time will likely be crunched at the end of the year. Take care to adapt the lessons while still maintaining time for iteration and reflection.
- The Gallery Walk and Showcase may take logistical planning. Ask for help from school administration and other teachers in planning this event.
- The final portfolio for assessment of the e4usa course may be due before the end of the school year. You may need to adjust the coursework to allow students enough time to complete the work in order to meet the assessments and portfolio due date.

Lesson and Content Overview

Lesson Name (duration)	Lesson Description	Activity
8.1 Reflecting on the Role of Engineering in Society [120 min]	Teams reflect on the role of engineering in society and share with the class through a gallery walk.	1.1.2 Think-Pair-Share 2.11.1 Gallery Walk
8.2 Myself as an Engineer [90 min]	Students debrief their experiences in this course, focusing on the self as an engineer.	1.1.2 Think-Pair-Share 8.2.1 Inspirational Videos
8.3 Share Out to the Larger School Community [120-150 min]	All members of the school community are invited to engage with the teams and learn about their final projects.	8.3.1 Sharing the Final Prototype