



STEM Activity: Overlapping Engineering Fields

Type of Teacher Tool: Whole Class or Small Group

Targeted Grade Level(s): 9-12

Targeted Curriculum Areas: STEM, Science, Engineering

Learning Objectives:

The learner will:

1. learn about the different engineering fields and the type of work each field does.
2. increase their understanding of the different subjects encompassed by the multiple engineering fields.
3. demonstrate knowledge to be able to distinguish one type of engineering from another.

Featured National Standards:

1. CCSS.ELA-LITERACY.RST.6-8.1

Cite specific textual evidence to support analysis of science and technical texts.

Resources/Materials Needed:

Consider using any combination of the following Educate.Today videos:

1. Engineering 7: What skills are important to being a successful engineer?
2. Sample Video 88: Robots 7: The Science Behind Robots
3. Engineering 9: The Science Behind the New Mississippi River Bridge, Part 1
4. Sample Video 81: Engineering 10: The Science Behind the New Mississippi River Bridge, Part 2
5. Sample Video 80: Engineering 30: What are some different ways that engineers dissipate energy to slow the coaster down as it enters the station?
6. Sample Video 51: Space 11: History in the First Person: Building the Mercury Capsule
7. Sample Video 34: Physics 9: The Science Behind Roller Coasters
8. Sample Video 26: Aviation 13: Four Forces That Affect Flight
9. Sample Video 25: Aviation 16: Flying a Jet Fighter
10. Resource Package 10: Engineering
11. Aviation 2: The Science Behind Aviation
12. Aviation 9: Propulsion
13. Environment 8: The Science Behind Dams
14. Space 10: Orion: The First Step to Deep Space
15. Space 9: History in the First Person: The Gemini Project
16. Space 11: History in the First Person: Building the Mercury Capsule

- 17. Engineering 9: The Science Behind the New Mississippi River Bridge, Part 1
- 18. Transportation 15: Explore! Trains
- 19. Environment 14: Earth Day: Building Green Program 1
- 20. Transportation 20: HEC-TV Live! Passage to Progress Program 2
- 21. Engineering 11: You Are Here: Gateway Arch

Teacher Instructions:

1. Have student(s) research and list the different types of Engineering and the subjects each of those types cover
2. Discuss the way the different fields of engineering have over lapping subjects. (i.e. electrical and biomedical).
3. Next have students make a list of each subject required for each type of engineering.
4. Determine which of the videos listed above that you want students to watch to see those elements of engineering come to life.

Assessment/Evaluation Option:

1. After discussion and viewing videos, have students pick 2 types of engineering and write an essay to compare and contrast those 2 types.