



MISSION AEROSPACE PROFESSIONAL

5 E Lesson Plan for Mission Aerospace Professional

Central Focus: Students will develop an understanding of the role of an Aerospace Engineer and explore other engineering careers applicable to space travel and/or colonization.

Content Standard(s):

North Carolina

- NC 6.E.1 Understand the earth/moon/sun system, and the properties, structures and predictable motions of celestial bodies in the Universe.
- NC 6.E.1.3 Summarize space exploration and the understandings gained from them.

Next Generation Science Standards

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

Overview:

Students will first explore what an Aerospace Engineer does and how their roles might change when traveling to the Moon and/or Mars. Then students will learn about the many types of engineers and discuss how the different types of engineers can be important when we live on the moon. Students will be given two QR codes to scan. QR Code #1 will link them to a student-led interview with an American Airlines Aerospace Engineer while in a functioning airport hangar. While watching the video, students will answer prompts on Section A of the Wingate Mission Aerospace Professional Artifact. Then students will scan QR Code #2 which links the students to a website that provides brief descriptions of 15 types of Engineers. Students will complete engagement by answering Section B and C prompts of the Artifact. This engagement can be done as a stand-alone engagement or with the following engagements developed by Wingate University (Mission Moon Geology, Mission Apollo, Mission Cratering, and Mission Space Timeline) that are designed to work as rotational stations. If working in rotational stations, this mission can be performed off the map.

Materials:

- The Giant Moon Map™
- Wingate Mission Aerospace Professional Artifact
- Wingate Mission Aerospace Professional QR Code #1 that links to a video of STEAM³ Collaborative Interview or Video Link
- Wingate Mission Aerospace Professional QR Code #2 that links to a website about 15 types of Engineers or Website Address
- Computer, iPad, or other devices that can display video and search website



MISSION AEROSPACE PROFESSIONAL

Prior Academic Knowledge and Conceptions: <ul style="list-style-type: none">● Students need to understand the concept of 3D printing technology.
Lesson objective(s): <ul style="list-style-type: none">● Summarize space exploration and the understandings gained from missions and research.● Define the criteria and constraints of a design problem regarding space travel and offer potential solutions.● List potential impacts on people and the natural environment that may limit possible solutions.
Differentiation strategies to meet diverse learner needs: <ul style="list-style-type: none">● Consult with English Language Learners to make sure directions are understood● Highlight use of pictures to connect with content● Strategic partnering when needed
ENGAGEMENT <p>Students will independently work on their task. Students will scan the QR Code #1 which links to a video of STEAM³ Collaborative Interview (Middle school student interviews American Airlines Senior Engineer). Students will simultaneously observe the aerospace engineer interview and answer prompts on the Wingate Mission Aerospace Engineer Artifact.</p>
EXPLORATION <p>Next, Students will scan QR code #2 which will direct them to a website that briefly discusses 15 types of engineers. Students will explore different types of engineers and choose one to three types that they might be interested in pursuing.</p>
EXPLANATION <p>Discuss with the students what an aerospace engineer does and how they have an integral role in space travel. A discussion on how there are many types of engineers that are very diverse. The teacher may want to elaborate on what type of classes and/or skills may be advantageous to become different types of engineers.</p>
ELABORATION <p>Students will respond to Section C extension response explaining the engineer type they chose and explain how that job would help us while living on the moon.</p>
EVALUATION <p>Students will respond to the Mission Aerospace Professional Artifact prompts. We suggest that students verbally respond to the engagement by: reflecting on what roles an Aerospace Engineer plays in space</p>



MISSION AEROSPACE PROFESSIONAL

travel, and exploration, if they were to become an engineer, which type of engineer they would they choose and why, what are some of the jobs required of that engineer, etc.. Teacher will ask students to name their choice of engineer roles and application on the moon and space travel.

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QR Code #1 for American Airlines Aerospace Engineer Interview



<https://www.youtube.com/watch?v=IHSiPA8tF5Q&feature=youtu.be>



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QR Code #2 for Educating Engineers Website



<https://educatingengineers.com/career-specialties>



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Student Name: _____

A. Scan QR Code #1. You will learn about an Aerospace Engineer (his job title is Senior Base Engineer). While you listen, answer the questions below.

1. What is his main job as a Senior Aerospace Engineer?

2. How do we plan on getting or making parts on the moon, mars, and in space to fix spaceships, rovers etc.?

3. What type of advancements need to take place with 3D printing spacecraft and rover parts?

4. What question would you ask the engineer in the video?



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B. It is time to decide what role you will play on the moon. Scan QR Code #2 to view the list of engineers and select **one** type of Engineer that would interest you. Then, list three jobs that type of engineer does.

_____ Engineer:

- _____
- _____
- _____

C. With the Engineer Type that you picked above: Explain how that job could help us if we lived on the moon.
