Aviation Careers Are For You!

Session Time: One, 50-minute session

DESIRED RESULTS

ESSENTIAL UNDERSTANDINGS

Understand the operational differences between general, commercial, and military aviation as well as how these differences influence the modern aviation/aerospace industry. (EU2)

Develop interest in one or more aviation/aerospace career pathways and learn what is required to pursue future employment in the industry. (EU3)

ESSENTIAL QUESTIONS

1. What career paths exist in aviation and aerospace?
2. What skill sets are required in various aviation and aerospace careers?
3. What aviation or aerospace-related careers do I see myself pursuing in the future?

LEARNING GOALS

Students Will Know

- The job characteristics of aircraft pilots, drone pilots, astronauts and aerospace engineers.

Students Will Be Able To

- *Research* and *compare* core aviation and aerospace-related jobs. (DOK-L2)

ASSESSMENT EVIDENCE

Warm-up
Students list five careers in aviation and/or aerospace and include a brief description of what they think the job duties would be for each one.

Formative Assessment
Students complete research on popular aerospace careers including aircraft pilot, drone pilot, and aerospace engineer.

Summative Assessment
Students create a job announcement for the aviation or aerospace career that interests them the most.

LESSON PREPARATION

MATERIALS/RESOURCES

- Aviation Careers Are for You! Presentation

- Aviation Careers Are for You! Student Activity

Graffiti Wall

- Poster board or rolled paper
- Markers

LESSON SUMMARY

Lesson 1: Introduction to Aerospace Studies
Lesson 2: Engineering Practices in Action
Lesson 3: Aviation Careers Are For You!

In this lesson, students will explore in more detail the similarities and differences between aeronautical and astronautical pursuits. They will do this by exploring the jobs of pilots and astronauts, and aeronautical and astronautical engineers.

Students will watch several short videos and visit a website that provides an overview of core aerospace-related jobs. They will gather information about each job, then analyze and rank the jobs they think are the most interesting based on class-generated criteria.

BACKGROUND

In the first lesson on this section, students were reminded of how aviation and aerospace exist in their daily lives. This lesson reinforces the concept of aerospace as an inclusive category and introduces students to some of the most popular and well-known aerospace careers. The careers will be more deeply covered later in the course.

MISCONCEPTIONS

As in the first lesson of this section, the most common misconception will be that aviation and aerospace are different topics, when in reality one encompasses the other. This lesson is meant to reinforce that conclusion as well as introduce the students to some of the aspects of aerospace careers that will be explored in detail later in the course.

DIFFERENTIATION

To promote reflective thinking and guided inquiry in the **ENGAGE** section of the lesson plan, circulate around the classroom and assist students who might have trouble coming up with ideas for the warm-up. Ask questions that provoke their own ideas for possible answers.

To support student literacy in the **EXPLORE** section of the lesson plan, you may want to guide students as they use the advanced graphic organizer, **Aviation Careers Are for You! Student Activity**.

LEARNING PLAN

ENGAGE

Teacher Material: Aviation Careers Are for You! Presentation

Student Material: Aviation Careers Are for You! Student Activity

Slides 1-3: Introduce the topic and learning objectives for today's lesson. A very broad range of career opportunities are available in the aerospace sector.

Slide 4: Conduct the **Warm-Up**.

This activity should take no more than 5 minutes to complete. When students are finished, ask volunteers to read the careers they wrote, along with the descriptions. Collect student work. This activity is worth up to 5 points. [DOK 1; list, DOK 2; summarize, infer]

Warm-Up

Ask students to think of five careers in aviation and aerospace and write them down, along with a brief description of what they think the job duties would be for each one. This activity is open-ended so no student response is incorrect.

Slides 5-6: Following the warm-up, ask students what kinds of characteristics make a job fascinating. Inform them that they'll have a chance to explore some of these careers in more detail and see which ones might match their interests.

EXPLORE

Teacher Material: Aviation Careers Are for You! Presentation

Student Material: Aviation Careers Are for You! Student Activity

Students will explore several different aviation career opportunities in two "rounds." Have them use the research questions found in **Aviation Careers Are for You! Student Activity** to gather information on the assigned aerospace jobs. These will be analyzed at the end of the lesson to determine the aviation jobs which interest them the most. Average salaries will be revealed after each of the two rounds. The worksheets are worth 10 points and should be graded on the basis of completeness and correctness. [DOK 1; recall, DOK 2; draw conclusions]

Formative Assessment

Give each student a copy of **Aviation Careers Are for You! Student Activity**. Have students complete the worksheets individually throughout the **EXPLORE** section. Collect the worksheets after **EXPLORE.**

Slide 7: In the first round, students will explore the jobs of people who operate aircraft, drones, and spacecraft. In Round Two, students will explore the jobs of two different kinds of engineers—an aeronautical (aircraft) engineer and an astronautical (spacecraft) engineer.

Show students the following videos or point them to the listed website to help them gather information and complete their student activities.

Round One

- Airline Pilot: "JetBlue Pilot" (Length 3:34)

http://video.link/w/kqJd

- Drone Pilot: "A Day in the Life of a Drone Camera Pilot" (Length 2:51) http://video.link/w/lDJd
- Astronaut website: "Great views. Sleeps six: What it's like to live on the International Space Station" http://www.bbc.co.uk/news/resources/idt-c1dffc35-fe53-492d- a4bf-752a22bd1ebc (Source: BBC News website)

Slide 8: After the students have done research for round one, use the presentation to provide information on salaries for airline pilots, drone pilots, and astronauts.

Slide 9: Show students the following videos to help them gather information and complete their student activities.

Round Two

- Aeronautical (Aircraft) Engineer "Product Development Engineer" (Length 4:12) http://video.link/w/pqJd
- Astronautical (Spacecraft) Engineer "Day in the Life of an Aerospace Engineer" (Length 3:56) http://video.link/w/sqJd

Slide 10: After the students have done research for round two, use the presentation to provide information on salaries for aeronautical and astronautical engineers.

EXPLAIN

Teacher Material: Aviation Careers Are for You! Presentation

Slides 11-12: Now it's time for the students to decide which career interests them the most. Have the students work in small groups to consider the criteria for what makes a job really great. Call on groups to share their ideas. Provide poster board and markers to students to record their criteria or have them make lists on whiteboards.

Possible answers include:

- Make lots of money
- Get to travel
- Love what you do
- Make a difference
- Solve hard problems
- Do stuff no one else has done before

Using these criteria, their research, and the opinions they've formed about the jobs presented, have the students rank the five jobs (airline pilot, drone pilot, astronaut, aeronautical engineer, astronautical engineer). Get some sample lists from the groups or take a class vote to make an amalgamated class top-5 ranking.

Have the students discuss aviation jobs they think would be interesting that weren't included in this exercise.

EXTEND

Time permitting, have the students make a mini-promotional poster (8.5" x 11") for the job they thought was best. Ensure they include the reasons with supporting details and facts.

EVALUATE

Teacher Material: Aviation Careers Are for You! Presentation

Slide 13: Conduct the **Summative Assessment.**

Collect student work at the end of class. Use the following rubric for scoring. [DOK 4; create, DOK 2; organize]

Summative Assessment

Ten minutes before the end of class, have students work individually to create a job announcement for the aviation or aerospace career that interests them the most. On the whiteboard, write some on the most common parts of a job announcement such as minimum qualifications, duties, and salary to spark ideas for the students.

Summative Assessment Scoring Rubric:

- Follows assignment instructions
- Postings show evidence of one or more of the following:
    - Knowledge of careers in aerospace and aviation
    - Provides correct job descriptions and qualifications
    - Provides expected salary range of the job
    - Respond to questions of colleagues and instructor
    - Compliment your peers, encourage constructively
    - Ask questions of colleagues or raise new questions for the whole group
- Contributions show understanding of course of the concepts covered in the lesson
- Contributions show in-depth thinking including analysis or synthesis of lesson objectives

Points	Performance Levels
9-10	Consistently demonstrates criteria
7-8	Usually demonstrates criteria
5-6	Sometimes demonstrates criteria
0-4	Rarely to never demonstrates criteria

GOING FURTHER

Brainstorm and research some other jobs in aerospace that students might be interested in doing.

Time permitting, show the movie “Living in the Age of Airplanes.” A preview is available at: http://video.link/w/vqJd

STANDARDS ALIGNMENT

NGSS STANDARDS

Three-dimensional Learning

- **HS-ETS1-1** - Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
    - Science and Engineering Practices
        - Asking Questions and Defining Problems
        - Constructing Explanations and Designing Solutions
    - Disciplinary Core Ideas
        - ETS1.A: Defining and Delimiting Engineering Problems

- Crosscutting Concepts
  - Systems and System Models
  - Influence of Science, Engineering, and Technology on Society and the Natural World

COMMON CORE STATE STANDARDS

- **RST.9-10.1** - Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
- **RST.9-10.2** - Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
- **RST.9-10.4** - Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- **WHST.9-10.2** - Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
- **WHST.9-10.4** - Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- **WHST.9-10.6** - Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
- **WHST.9-10.7** - Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
- **WHST.9-10.8** - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
- **WHST.9-10.9** - Draw evidence from informational texts to support analysis, reflection, and research.

REFERENCES

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