

SDG9 Future of Space

MM4:Space Innovation and Enterprise



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Experimentation and Exploration

Lesson 11 Exploring Space Careers

Subject Areas: CSPE/ SPHE, Design, English and Communication, Science, Sustainability, Technology

8 DECENT WORK AND ECONOMIC GROWTH



10 REDUCED INEQUALITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



17 PARTNERSHIPS FOR THE GOALS



Lesson Title and Summary: Exploring Space Careers

In this lesson, learners are introduced to the range of career paths within the space industry. Through exploration and discussion, they gain insight into diverse roles such as aerospace engineering, astrophysics, space medicine, and space entrepreneurship. Learners will discover that the space industry offers diverse opportunities, each requiring unique skills, qualifications, and educational pathways.

Learners will begin to consider educational pathways, requirements and qualifications essential for pursuing careers in space-related fields. Learners are invited to consider their own career aspirations within the space industry and equipped with the knowledge to embark on their educational and professional journey towards fulfilling those goals.

Vocabulary: Aeronautics, Career Fields, Pathways

In this lesson, the learner will:

- begin to identify different career paths within the space industry
- gain an understanding of the educational pathways and qualifications required to pursue careers in the space industry
- explore career opportunities within the space industry, including roles in research and development, space exploration missions, space technology development, space policy and governance, and space business and entrepreneurship
- begin to evaluate and compare educational pathways and career options within the space industry based on their interests, skills, and long-term career goals

Materials

- Worksheet: Exploring Space Careers Challenge
- Paper / pens
- AV equipment
- Computers with internet access

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Activity Instructions

Activity 1: Accessing Space - (20 mins)

1. As a class watch Video: 'You don't need an Aerodynamics Degree to get into the Space Industry - Accessing Space' [13:09 mins]
2. Ask learners to list how many different careers and college opportunities they heard in the video.
 - Astrophysics / Physics scientist
 - Aeronautical engineering and physics
 - Flight dynamics
 - Procurement for a satellite company
 - Satellite manufacturing
 - Space operations
 - Space operations centre construction
 - Regional growth of the space industry
 - Space Studies
 - Space grants, outreach and education
 - STEM focused careers
 - Thermal Engineer / Thermal Dynamics for Satellite Engineer
 - Data analysis space exploration
 - Design of space systems, processes and space craft
3. Allow extra time for learners to replay aspects of the video to gather as many careers as possible.
4. Go around the room asking how many different career or college opportunities they found

Activity 2: Space Career Scavenger Hunt (30 mins)

1. Working in pairs, ask learners, to complete worksheet: Space Career Challenge Hunt and divide the tasks between them to complete all the challenges.
2. Once completed, have two groups combine and discuss their answers
3. Ask some of the learners to share their challenge findings with the class

REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks
- Two things they found most interesting and would like to explore more
- One – their opinion they have about the tasks

Use Post-its or a mentimeter survey - www.mentimeter.com to gather reflections

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EXTENSION / REDUCTION ACTIVITIES

Reduction: For a shorter lesson, complete Activity 1 only and complete Activity 2 in a following lesson. Use any remaining time to discuss their findings and any surprising information they found.

Extension: For a longer lesson, invite learners to share any career paths that surprised them and any that inspired or interested them to find out more.

Option B: Invite learners to share their thoughts on how they can apply entrepreneurial principles and STEAM skills to pursue opportunities in the space industry e.g.

- help create new technologies, improve sustainability, or make space tourism more accessible
- apply entrepreneurial strategies to turn an idea in the space industry into a successful venture or project e.g. ways to identify opportunities, attract investors, or develop a business model for a space-related idea.

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

You don't need an Aerodynamics Degree to get into the Space Industry Accessing Space [13:02 mins] <https://youtu.be/oF6tV5LeGlc?>

European Space Agency Art and Culture in Space and Humanities

https://www.esa.int/About_Us/Art_Culture_in_Space/Space_and_the_humanities

Space Skills Alliance Competencies <https://craft.spaceskills.org/>

Careers Portal https://careersportal.ie/sectors/subsectors.php?sub_sector=162§or_id=21

SPIN (Space Placements in Industry) placements <https://sa.catapult.org.uk/spin/>

Enterprise Ireland Company Directory <https://www.enterprise-ireland.com/en/supports/become-more-innovative/space-esa-homepage/esa-directory>

Local Trip / Expertise / Additional Work and Assessments

Using the links in the Media Box learners can explore roles and skills for the space industry. Learners can begin to research and share their thoughts on how they might pursue careers or educational pathways in STEM / STEAM fields with a focus on space entrepreneurship.

Virtual visit tourist guide: Learners could search and explore virtual visit e.g. NASA's Johnson Space Center, SpaceX headquarters, or observatories around the world. They can then share what they have found and create a virtual visit tourist guide for other students to visit.

MM4: 11WS EXPLORING SPACE CAREERS CHALLENGE

9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



Activity 1: Generating a Space Tourism Logo

You will complete the following series of challenges to explore career paths, educational requirements, scientific space discoveries and space professionals.

Challenge 1 - Career Paths

1. Identify three different career paths in space exploration using the following resources / from the following list

2. Create a definition for each of their roles based on what they do

Challenge 2 - Educational Requirements

1. For the three career paths you have identified, find three universities/colleges offering programmes that help people become qualified.

Challenge 3 - Discoveries and Breakthroughs

1. Find one recent breakthrough or development in the space industry and summarise its significance.

- Why is this breakthrough important for the future of space exploration or tourism? (Consider how it advances technology, reduces costs, or makes space travel more accessible.)

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- How does this development impact society or industries on Earth? (Think about new job opportunities, technological spin-offs, or how it might inspire future generations.)
- What challenges does this breakthrough address in space exploration, and how does it help overcome them? (Consider whether it solves issues related to sustainability, safety, or affordability in space travel.)

Challenge 4 - Space Professionals

- **Find and watch a TED talk or interview featuring a professional working in the space industry**

- **Summarise your understanding about what they do .**
 - What is the main role or focus of the professional's work in the space industry?
 - (Consider whether they focus on engineering, research, policy, or another aspect of space exploration.)
 - What challenges do they face in their job, and how do they work to overcome them?
 - (Think about technical, environmental, or ethical issues they address in their role.)
 - How does their work contribute to the overall goals of space exploration or space tourism?
 - (Consider how their specific work impacts advancements in technology, accessibility, or sustainability in space.)