

# SDG9 Future of Space

## MM4:Space Innovation and Enterprise



### MM4: Space Innovation and Enterprise

#### Experimentation and Exploration

#### Lesson 10 Engineering Space Tourism 3

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

### Lesson Title and Summary: Engineering Space Tourism 3

In this lesson, learners will expand on their previous work by developing a space venture centered around civilian space travel. They will engage in creative thinking while exploring the growing industry of Space Tourism. Through this process, students will design key components for their venture, including a business name, a logo, and an investment pitch to attract potential investors.

This lesson can be combined with Lessons 8 and 9 to form a micro-project focused on Space Tourism. As part of the project, learners will enhance their understanding of the space tourism industry and develop entrepreneurial skills, culminating in a well-rounded venture proposal.

### Vocabulary: Civilian Space Flight, Commercialisation, Space Tourism

#### In this lesson, the learner will:

- demonstrate their understanding of the Space Tourism industry by creating a business name and logo
- craft an investment pitch to communicate their space tourism concept effectively.
- engage in imaginative processes to design and present their business ideas within the context of an emerging industry.
- work in teams or pairs to complete a micro-project on Space Tourism, integrating lessons from previous activities.

#### Materials

- Worksheet: Generating a Space Tourism Logo
- Worksheet: Planning a Space Tourism Venture
- Worksheet: Lean Canvas
- Teachers Guide: Dragon's Den Event
- Paper / pens
- AV equipment
- Computers with internet access

8 DECENT WORK AND ECONOMIC GROWTH



10 REDUCED INEQUALITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



17 PARTNERSHIPS FOR THE GOALS



# MM4: Space Innovation and Enterprise

## L10 Engineering Space Tourism 3



### Activity Instructions

#### Activity 1 Create Logo for your Space Tourism Venture (25 mins)

1. Watch the video 5 Logo Design Tips to Help Fuel Your Creativity [3:09 mins]  
<https://www.youtube.com/watch?v=DiVygGdXuHE>
2. As a follow on lesson from lesson 9, ask learners to form their groups from the last lesson.
3. Learners will create a business summary to enable them to create a Logo for your Space Tourism Venture - model the activity using a Business Generator from the media box using this example
  - their business,- sub orbital pleasure trips and party events
  - industry, Space Tourism,
  - brand personality... quirky fun, customer focused
4. Ask learners to complete the first step in the Worksheet: Generating a Space Tourism Logo by creating a business summary to type into the name generator e.g. Space Tourism, sub orbital pleasure trips and party events, quirky fun, customer focused, that they will then use to create their logo.
5. Learners will then use one of the logo Generators on the worksheet (see also media box) to create a logo for their Space Tourism Event / Venture
6. Once they have completed their logo, they can upload to their e-classroom (Teams space or Google Drive) with their Space Venture Idea

#### Activity 2 Space Tourism Venture Pitch (25 mins)

1. Using the Worksheet: Planning a Space Tourism Venture, ask learners to develop their space tourism venture business plan.
2. Learners could also outline their business plan using the Worksheet: Lean Canvas for their space tourism venture as part of additional lessons or micro-project.
3. Encourage Learners to share their ideas with others and ask for help or feedback in terms developing their ideas particularly with thinking about potential clients or customers.

#### 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](http://www.mentimeter.com) to gather reflections

# MM4: Space Innovation and Enterprise

## L10 Engineering Space Tourism 3



8 DECENT WORK AND ECONOMIC GROWTH



10 REDUCED INEQUALITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



17 PARTNERSHIPS FOR THE GOALS



### EXTENSION / REDUCTION ACTIVITIES

**Reduction:** For a shorter lesson, complete Activity 1 only and undertake the other activity in a follow-up lesson.

**Extension:** For a longer lesson, learners can use a business card template from [www.canva.com](http://www.canva.com) with their name, role in the business, contact details and logo to complete the project.

**Option B:** If using lessons 8 - 10 as a micro-project learners can continue to develop their business investment pitch over several lessons with presentations using the worksheet: Lean Canvas for a Dragon's Den style pitch event with their peers - see Teacher's Guide.

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

5 Logo Design Tips to Help Fuel Your Creativity [3:09 mins] [https://www.youtube.com/watch?v=JVva1Ntq5hjQ\\_oY](https://www.youtube.com/watch?v=JVva1Ntq5hjQ_oY)

Space Tourism: Future of Travel [2:58] <https://www.youtube.com/watch?v=PLOSZY2zqExk>

What Will Space Tourism Be Like? [5:19] <https://www.youtube.com/watch?v=eH-xm9G9QBk>

Canva Pitch Deck Templates <https://www.canva.com/presentations/templates/pitch-deck/>

11 Young Builders Pitch at the Largest Patch Showcase to Date

<https://dogpatchlabs.com/11-young-builders-pitch-at-the-largest-patch-showcase-to-date/>

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

### Local Trip / Expertise / Additional Work and Assessments

Explore ESA's Enterprise Ireland's Irish Space Directory and research any of the organisations who are using open source principles, software or working as collaborative communities.

Learners could also create a pitch deck presentation for a Dragon's Den Style pitch event based on their Lean Canvas - see Teacher's Guide for planning and delivering a Dragon's Den event.

Invite a local entrepreneur or a professional in the aerospace industry to speak to the class. They can discuss the challenges of starting a business, innovation in space travel, or even environmental and ethical concerns in the field. This could help students refine their pitches and expand their understanding of the space tourism sector.



## MM4: 10TG DRAGON'S DEN EVENT

### Teacher's Guide: Developing a Dragon's Den-Style Event

This guide will help you organize a Dragon's Den-style event where learners pitch their space tourism ventures to a panel (the "Dragons") in a fun, interactive way. The event encourages creativity, entrepreneurial skills, and critical thinking, while making the process engaging for learners.

#### Preparation Before the Event

##### Set the Stage:

- Explain the Format: Introduce the concept of Dragon's Den or Shark Tank—a competition where entrepreneurs pitch their business ideas to potential investors.
- Learners will present their space tourism ventures to a panel of "Dragons" (this could be you, other teachers, or students playing the role of investors).

##### Pair or Group Work:

- Organise students into pairs or small groups. Each group will have created a space tourism venture with a business name, logo, and investment pitch.
- Ensure learners have completed their business name, logo, and pitch in advance.

##### Prepare the Dragons:

- Select the Dragons: You, other staff, or selected students can be the investors. They will ask critical questions and provide feedback after each pitch.
- Brief the Dragons: Explain that their role is to challenge the ideas, asking questions about feasibility, sustainability, ethical practices, costs, etc. The Dragons will decide which ventures they would hypothetically invest in.

##### Structure of the Event (50-60 minutes)

1. Introduction: Explain the rules of the event:
  - Each group will have 3-5 minutes to pitch their idea.
  - The Dragons will ask follow-up questions for 2-3 minutes after each pitch.
- Emphasise that the pitches should be engaging and convincing, covering:
  - The business name and logo.
  - The concept of the space tourism venture.
  - Its uniqueness, feasibility, and financial potential.
  - Environmental and ethical considerations.

##### Pitches (30-40 minutes):

- Groups take turns presenting their pitches. Ensure timing is strict to maintain the pace.
- After each pitch, the Dragons should ask 2-3 challenging questions (e.g., How will you ensure the sustainability of your venture? or What makes your project different from others in the industry?).

## MM4: 10TG DRAGON'S DEN EVENT



- The Dragons can take notes and rate each pitch based on pre-determined criteria (e.g., creativity, feasibility, ethical considerations, financial potential).

### Deliberation and Feedback (10 minutes):

- After all pitches, the Dragons can deliberate, deciding which ventures they would invest in.
- Provide constructive feedback to each group based on their pitch, highlighting strengths and areas for improvement.

### Announce the Winner(s) (5 minutes):

- The Dragons announce which venture(s) they would choose to invest in and explain why.
- Optionally, have prizes or certificates for the winning team(s).

### Post-Event Discussion (Optional)

- Reflection on Learning (5-10 minutes):
  - Encourage students to reflect on the experience:
    - What went well in their pitch?
    - What would they improve next time?
    - How did they address ethical or environmental concerns?
  - Discuss how the entrepreneurial skills they learned could apply to future career paths.

### Ideas for Certificates

You can award certificates that recognise various strengths in the event. These certificates will give learners positive recognition in areas where they excelled, motivating them to continue developing their skills. Here are some ideas for the titles of certificates:

- Best Pitch: Awarded to the team with the most convincing and well-structured presentation.
- Most Creative Concept: For the group that presented the most original or innovative idea.
- Best Environmental and Ethical Approach: For the team that excelled in addressing sustainability and ethical considerations.
- Most Investable Idea: For the venture that seems most likely to succeed from a financial standpoint.
- Best Teamwork: Recognizing the group that worked exceptionally well together.
- Audience Favorite (optional): If peers are voting, this certificate goes to the group that the audience thought was the most engaging or interesting.
- Outstanding Entrepreneurial Spirit: For a group that demonstrated excellent entrepreneurial thinking and enthusiasm.



## MM4: 10TG DRAGON'S DEN EVENT

### Dragon's Den Feedback Prompts

To help the Dragons (judges) provide structured, constructive feedback to the learners, you can use the following prompts. These will guide the Dragons in focusing on key areas of the pitch. Feedback Structure for Dragons

#### Creativity and Uniqueness:

- "What stood out about your concept was..."
- "I was impressed by how original your idea was because..."
- "One area where you could take the creativity even further is..."

#### Feasibility and Practicality:

- "Your plan seems realistic, especially when you considered..."
- "One challenge you might face is... How would you overcome that?"
- "To make your venture more feasible, you could think about..."

#### Financial Viability:

- "You've done a good job considering the costs, but have you thought about..."
- "I liked the way you plan to attract investors by..."
- "In terms of profitability, you might want to focus more on..."

#### Sustainability and Ethics:

- "Your consideration of the environment was impressive because..."
- "I'd suggest thinking more about how to reduce the environmental impact by..."
- "From an ethical perspective, how would you ensure..."

#### Presentation and Persuasion:

- "Your pitch was very convincing because..."
- "I enjoyed how clearly you explained your ideas, but one area to work on might be..."
- "To make your pitch even more persuasive, you could..."



## MM4: 10WS GENERATING A SPACE TOURISM LOGO

### Activity 1: Generating a Space Tourism Logo

Firstly select one of the business name generators

- Shopify shopify <https://www.shopify.com/tools/business-name-generator?index>
- Namelix <https://namelix.com/>

and use the information from your Space Tourism planning worksheet, from Lesson 9 e.g.

- what is your space tourism business,- sub orbital pleasure trips and party events
- industry, Space Tourism,
- brand personality... quirky fun, customer focused

to create your business summary which you will input to generate your business name e.g. Space Tourism, sub orbital pleasure trips and party events, quirky fun, customer focused

Once you have a business name, you will now use this name to create a Logo for your Space Tourism Venture

1. Watch the video 5 Logo Design Tips to Help Fuel Your Creativity

<https://www.youtube.com/watch?v=DiVygGdXuHE>

2. Use one of the Logo Generators from the media box to create a logo for your Space Tourism Event / Venture

- <https://www.design.com/logo-maker>
- [www.Looka.com](http://www.Looka.com)
- [www.canva.com](http://www.canva.com)
- <https://www.vistaprint.ie/logomaker>
- <https://www.adobe.com/express/create/logo>
- [www.wix.com](http://www.wix.com)

3. Once you have completed your logo - upload to your e-classroom (Google Drive, Microsoft Teams or other online shared space) with your Space Venture Idea

4. If you are having a longer class you can use a business card template template from [www.canva.com](http://www.canva.com) with your name, role in the business, contact details and logo



### Activity 1: Planning your space tourism venture

Use the table to help you develop the space tourism venture that will sell your space tourism event. The questions will help you plan your venture and you can use the second page or a notebook to record your final answers for review by another group.

| BUSINESS<br>DETAIL  | BUSINESS CASE  | NOTES |
|---|--|-------|
| Marketing and Promotion: Who is your audience?                                | <ul style="list-style-type: none"> <li>• Think about your marketing and promotion. How will you generate interest, raise awareness and attract your customers to your venture?</li> <li>• Who are your customers, what style of marketing attracts them, where will you find or connect to your customers?</li> <li>• Imagine how you might use traditional and digital marketing channels, social media platforms, public relations, events, and partnerships to reach target audiences effectively.</li> </ul>                 |       |
| Partnerships and Collaborations: Will you collaborate, get any sponsors? Why? | <ul style="list-style-type: none"> <li>• Do you need any specialist expertise for your venture?                             <ul style="list-style-type: none"> <li>◦ Aerospace companies</li> <li>◦ Space agencies</li> <li>◦ Tourism organisations</li> <li>◦ Catering</li> </ul> </li> <li>• What resources do you need?</li> <li>• What networks could be useful to you?</li> </ul>   |       |
| Experience: What will be the overall experience?                              | <ul style="list-style-type: none"> <li>• Functional, luxury or themed?</li> <li>• What facilities will there be?</li> <li>• Will it be like a cruise ship or more like an aeroplane?</li> <li>• If it is not research or educational design a memorable and immersive customer experience that aligns with the objectives of the space tourism venture.</li> <li>• Consider aspects such as pre-flight training, launch preparations, in-flight activities, accommodations, and post-flight celebrations or souvenirs</li> </ul> |       |






### Activity 1: Planning your space tourism venture

Use the table to help you develop the space tourism venture that will sell your space tourism event. The questions will help you plan your venture and you can use the second page or a notebook to record your final answers for review by another group.

| BUSINESS<br>DETAIL                        | BUSINESS CASE  | NOTES |
|---|--|-------|
| Safety:                                   | <ul style="list-style-type: none"> <li>• Prioritise safety and risk management throughout the planning process.</li> <li>• Identify potential hazards and risks associated with space travel, and develop protocols and contingency plans to mitigate them.</li> <li>• Consider factors such as crew training, medical requirements, emergency procedures, and insurance coverage.</li> </ul>  |       |
| Regulatory Compliance:                    | <ul style="list-style-type: none"> <li>• Familiarise yourselves with the regulatory frameworks governing commercial spaceflight, including licensing, permits, safety regulations, and liability issues.</li> <li>• Ensure compliance with applicable laws and regulations to operate the space tourism venture legally and responsibly.</li> </ul>  |       |
| Financial Planning: Where are they going? | <ul style="list-style-type: none"> <li>• You will need a comprehensive financial plan if anyone is to invest. You will need to consider factors such as spacecraft development, launch services, training facilities, marketing, and insurance and outline                             <ul style="list-style-type: none"> <li>◦ the initial investment required,</li> <li>◦ operating costs,</li> <li>◦ revenue projections,</li> <li>◦ pricing strategies, and potential source of funding or investment.</li> </ul> </li> <li>•</li> </ul> |       |

# MM2 10WSB: LEAN CANVAS

|   |   |  |   |  |
|---|---|--|---|--|
| <p><b>Problem</b><br/>List your customer's top 3 problems</p> <ul style="list-style-type: none"> <li>-worry that pet will get lost</li> <li>-worry that pet is up to no good when home alone</li> <li>-miss pet and want a way to connect while at work</li> </ul>  | <p><b>Solution</b><br/>Outline a possible Solution for each problem</p> <p>worry that pet will get lost-you will be able to track your pet at all times.</p> <p>worry that pet is up to no good when home alone-you will be able to see what your pet is doing at all times.</p> <p>miss pet and want a way to connect while at work-you will be able to connect using your voice while you're away</p> | <p><b>Unique Value Proposition</b><br/>Single, clear compelling message, that turns an unaware visitor into an interested prospect</p> <p>Love Paws makes it possible to be with your pet even when you're away.</p> | <p><b>Unfair Advantage</b><br/>Something, that can't be easily copied or bought</p> <p>I am Cesar Milan, world famous dog trainer and I have my own TV show and numerous celebrity clients.</p>                         | <p><b>Customer Segments</b><br/>List your customer segments and users</p> <p>Ideal customers are middle to high income, tech-savvy pet owners who spend a significant time away from their pets.</p>   |
| <p><b>Existing Alternatives</b><br/>List how these problems are solved today</p> <p>There are various collars on the market that track your pet's location. Some track steps and various other stats. There is a separate camera device that can be worn by your pet, but nothing exists that works as a GPS, camera and communication device in one.</p> | <p><b>Key Metrics</b><br/>List the key numbers, that tell you how your business is doing</p> <p>Number of units sold.</p>   | <p><b>High Level Concept</b><br/>List your x for y analogy (e.g. youtube = flicker for videos)</p> <p>Love Paws is the Nest of pet tracking devices.</p>   | <p><b>Channels</b><br/>List your path to customers</p> <p>Give away for free to celebrity pet owners and celebrity TV personalities on Animal Planet, then do a billboard, print and web and social media campaign.</p> | <p><b>Early Adopters</b><br/>List the characteristic of your ideal customer</p> <p>Early adapters are pet owners who love to keep up and own the latest tech innovations as soon as they come out.</p> |
| <p><b>Cost Structure</b><br/>List your fixed and your variable costs</p> <p>Product design, sourcing of materials, production costs, engineering, marketing, PR.</p>  |   | <p><b>Revenue Streams</b><br/>List your sources of revenue</p> <p>We will initially sell online with the goal to being on the shelves of major pet stores by end of year.</p>  |   | <p><b>MARKET</b></p>   |
| <p><b>PRODUCT</b></p>   |   | <p><b>MARKET</b></p>   |   | <p><b>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</b></p>   |

# MM2 10WSB: LEAN CANVAS

|  |   |   |   |   |
|--|---|---|---|---|
| <p><b>PROBLEM</b><br/><i>List your top 1-3 problems.</i></p>                             | <p><b>SOLUTION</b><br/><i>Outline a possible solution for each problem.</i></p>                     | <p><b>UNIQUE VALUE PROPOSITION</b><br/><i>Single, clear, compelling message that states why you are different and worth paying attention.</i></p> | <p><b>UNFAIR ADVANTAGE</b><br/><i>Something that cannot easily be bought or copied.</i></p> | <p><b>CUSTOMER SEGMENTS</b><br/><i>List your target customers and users.</i></p>          |
| <p><b>EXISTING ALTERNATIVES</b><br/><i>List how these problems are solved today.</i></p> | <p><b>KEY METRICS</b><br/><i>List the key numbers that tell you how your business is doing.</i></p> | <p><b>HIGH-LEVEL CONCEPT</b><br/><i>List your X for Y analogy e.g. YouTube = Flickr for videos.</i></p>   | <p><b>CHANNELS</b><br/><i>List your path to customers (inbound or outbound).</i></p>        | <p><b>EARLY ADOPTERS</b><br/><i>List the characteristics of your ideal customers.</i></p> |
| <p><b>COST STRUCTURE</b><br/><i>List your fixed and variable costs.</i></p>              |   | <p><b>REVENUE STREAMS</b><br/><i>List your sources of revenue.</i></p>  |   |   |