

# Space Exploration Hazards & Benefits

## Rich Task 4 Activity 2

### Introduction:

Space exploration is a dangerous endeavour and seems like an unnecessary risk taken by humans, so what motivates us to do it? Later in these tasks we will explore the ethics of this work in terms of its social and economic pressure but in this activity, students will acquire the background knowledge necessary to understand the risks astronauts face. Throughout the activity there is also an underpinning question of media portrayal of space exploration and how accurate it is to real life.

This activity asks students to investigate the hazards and benefits of space exploration. This activity scaffolds the next ([Rich Task 4 Activity 3](#)), which explores the space industry in Ireland and the telling of scientific information in the media to the general public.

### Preparation Required:

- Printing and cutting
- Optional: Set Q1 listening for homework
- Watch video on projector
- Computer access for students

### Downloadable Materials:

- [Worksheet 4.2](#)
- [Expected Student Responses to Worksheet 4.2](#)
- [Timeline Activity](#)
- [Timeline Activity Solution](#)

### Relevant Junior Cycle Learning Outcomes:

Students should be able to...

**E & S 8:** Examine some of the current hazards and benefits of space exploration and discuss the future role and implications of space exploration in society.

**NOS 8:** Evaluate media-based arguments concerning science and technology.

**NOS 10:** Appreciate the role of science in society; and its personal, social and global importance; and how society influences scientific research.

## Teacher Resource

### Learning Intentions:

Students will be able to...

- Investigate the hazards of space exploration
- Communicate their ideas in a small group and whole-class setting.
- Discuss why space exploration is done in light of the possible hazards
- Investigate different inventions which have come about through space exploration

### Prior Knowledge/Horizon Content Knowledge:

- Improvements in technology because of space exploration
- Representation of science in the media
- Hazards of space exploration

### Differentiation and Accessibility Suggestions:

All questions/activities can be completed in small groups, pairs or individually depending on the classroom layout.

The teacher may wish to assign different podcast episodes to different students as homework and allow time in the beginning of class for a Q&A. Possible questions include

- Give a brief summary of your podcast episode
- Why is the particular topic a hazard to astronauts?
- Are there any precautions that can be taken to reduce the hazards?

### Activity Outline:

<b>Activity Name</b>	Space Exploration Hazards and Benefits
<b>Alignment to ISLE investigation</b>	Investigating the hypothesis
<b>Rationale</b>	Recognise hazards and benefits of space exploration whilst also investigating media portrayals of space exploration.
<b>Activity Description</b>	<i>(please see downloadable materials for the resources for this activity)</i>  <i>(Q1. Worksheet 4.2)</i> OPTIONAL: set podcast episodes as homework to allow for more time in class. Students then summarise their episode and there is a classwide discussion of the different episodes. Recommend just listening to the first 10-15 minutes.

	<p>(Q2. <i>Worksheet 4.2</i>)          Watch some of <a href="#">this video</a>          (recommendation: gravity and passengers)          Students write down possible hazards and the less unlikely ones written for movies.</p> <p>(Q3. <i>Worksheet 4.2</i>)          Students reflect on the possible hazards and suggest reasons for why space exploration is carried out. This can take place in pairs or as a classroom wide discussion</p> <p>(Q4. <i>Worksheet 4.2</i>)          Students in pairs organise the timeline of events of space travel and within that timeline guess when particular inventions were made because of space exploration. Years are included in the teacher's solution. Students can then research one of the inventions and find out its application for space exploration.</p>
<p><b>Link to other activities</b></p>	<p>Scaffold for <a href="#">Rich Task 1 Activities 3 and 4</a></p>
<p><b>Link to current research in DIAS Dunsink Observatory</b></p>	<p>The Solar and Space Weather group at DIAS Dunsink consists of PhD students, postdocs and professors who study different aspects of the Sun and Space Weather.</p> <p>Through their research, scientists can get daily updates on the activity of the Sun (<a href="https://solarmonitor.org">https://solarmonitor.org</a>) along with information about the Earths' magnetic field and space storms.</p> <p>More information on space weather and why we predict it can be found here: <a href="https://www.magie.ie/education/">https://www.magie.ie/education/</a></p>