**ACTIVITY: Can I work in the space industry?**

**Activity idea**

This activity introduces ākonga (students) to 10 people who work in space-related/supported fields. It is designed to foster blue-sky thinking about how and where tamariki and rangatahi might see themselves in the space industry. It supports science and communication literacies.

By the end of this activity, ākonga should be able to:

* view videos and video transcripts to gather and interpret information
* consider statements about the aerospace industry that resonate with them
* consider their own personal dispositions and how these might support a future career in an aerospace industry.

**For teachers**

***Introduction/background***

The [space industry](https://www.sciencelearn.org.nz/resources/3158-working-in-the-space-sector) is often associated with rocket launches and astronauts, but it actually crosses the boundaries of science, technology, engineering, mathematics, arts, social sciences, business and law. There will likely be jobs that don’t even exist at the moment.

This activity introduces ākonga to a few of the people who are involved in Aotearoa’s space industry. They are a tiny selection of the 5,000 people who are directly employed in the industry and the 7,000 people who provide indirect support!

It uses the videos [Working in space](https://www.sciencelearn.org.nz/videos/2118-working-in-space) and [So you want to work in space?](https://www.sciencelearn.org.nz/videos/2119-so-you-want-to-work-in-space) as the provocations to foster blue-sky thinking about dispositions and careers. It’s also an opportunity to dispel some of the myths and misconceptions about scientists and the way they work.

***Supporting science and communication literacies***

All videos on the Science Learning Hub have written transcripts. Access the transcripts via the link under the videos or use the blue information icon. Transcripts are useful for developing communication literacies. Students can use them to gather, interpret and locate information and build vocabulary skills. Educators may wish to make use of the questions for discussion that appear above most video transcripts.

***What you need***

* Access to the videos [Working in space](https://www.sciencelearn.org.nz/videos/2118-working-in-space) and [So you want to work in space?](https://www.sciencelearn.org.nz/videos/2119-so-you-want-to-work-in-space)
* Copies of the ākonga handout [Who works in space?](#bookmark=id.hs5m49uc4vx7)
* Access to the New Zealand Space Agency [Careers in space](https://www.mbie.govt.nz/science-and-technology/space/careers-in-space/) webpage (optional)

***Teaching suggestions***

The teaching points below are a suggested pathway based on the ākonga handout [Who works in space?](#bookmark=id.hs5m49uc4vx7) The handout is in Word. Feel free to edit it to meet the needs of your students.

***What to do***

1. Brainstorm the question: Who works in space? Compile a list of responses.
2. Watch the video [Working in space](https://www.sciencelearn.org.nz/videos/2118-working-in-space). It features a few of the people who work in the space sector, what got them interested in this field and what they enjoy about their jobs.

* Prompt ākonga to note some of the hobbies that steered individuals to become interested in space.
* Prompt ākonga to note the school subjects that the individuals enjoyed and found interesting.
* If appropriate, use the video transcript to review what was said in the video.

1. Compare the responses from the brainstorm ‘Who works in space?’ to the people that they saw in the video.

* Are there any similarities or differences between who you think works in space and who you see actually working in space?
* Is there anything that surprised you?
* Is there someone in the video who you can relate to, who does similar things to what you do or has shared interests?

1. Watch the video [So you want to work in space?](https://www.sciencelearn.org.nz/videos/2119-so-you-want-to-work-in-space)

* Prompt ākonga to note words or phrases of interest either on the worksheet or by highlighting them in the written video transcript.
* Discuss their ideas.

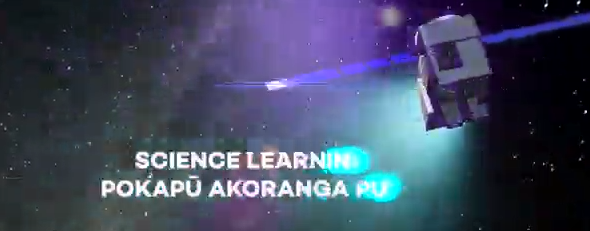
1. Look at the ākonga handout section [Statements from the video: So you want to work in space?](#bookmark=id.tnrpxgvem1pf) Discuss the statements in small groups or as a class.
2. Look at the ākonga handout section [Dispositions](#bookmark=id.k4rb9hsw25g8). Discuss what they mean and what they look like. If appropriate, make comparisons with people appropriate to your school or local community.
3. Match the dispositions to the statements from the video. Some statements support more than one disposition. If in doubt, refer to the video – the dispositions are titled.
4. (Optional) Look at the ākonga handout section [Possible careers in space](#bookmark=id.iy3ib7t3q6ps). Older ākonga can discuss some of these options or come up with some of their own.
5. Encourage ākonga to consider the information from the videos, handout and their own dispositions and write about or draw themselves working in space.

***Alternative conceptions***

The article [Myths of the nature of science](https://www.sciencelearn.org.nz/resources/415-myths-of-the-nature-of-science) explores a number of commonly held misconceptions or myths about the nature of science that are problematic in science education. It is useful to know about these misconceptions in order to address them during classroom discussions.

***Extension ideas***

The article [Working in the space sector](https://www.sciencelearn.org.nz/resources/3158-working-in-the-space-sector) lists a number of jobs and hobbies that experts in the video have been involved with. It provides even more examples for blue-sky thinking.

**For ākonga**

***Who works in space?***

1. Record your ideas or draw a picture of someone working in space.

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1. Watch the video [Working in space](https://www.sciencelearn.org.nz/videos/2118-working-in-space). Record some of the words or phrases that are similar to how you think or feel.

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1. Watch the video [So you want to work in space?](https://www.sciencelearn.org.nz/videos/2119-so-you-want-to-work-in-space) Record some of the words or phrases that interest you.
2. Read the [statements from the video](#bookmark=id.tnrpxgvem1pf) and match them with the [dispositions](#bookmark=id.k4rb9hsw25g8) that they represent.
3. Choose some of the dispositions that represent you as a learner.
4. Look at the [possible careers in space](#bookmark=id.iy3ib7t3q6ps). Are there any that you find interesting? (optional)
5. Using your dispositions and the information that you’ve gathered from the videos, write or draw a picture of you working in the space industry.

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***Statements from the video:*** [***So you want to work in space?***](https://www.sciencelearn.org.nz/videos/2118-working-in-space)

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| We need a real diversity of different people coming through the school system. – Sarah Kessans |

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| The knowledge that we have in mātauranga Māori can provide a really unique insight in our technological development in space. – Pauline Harris |

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| The space industry involves people thinking about the ethics of space, utilisation of space, the type of information we may want to get from space. – David Noone |

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| We need people who are great communicators. – Sara Mikaloff-Fletcher |

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| Engineering in space is a very collaborative environment. We need people that are good at working with other people. – Stefan Powell |

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| We need creative thinkers. We need people who are not afraid to be persistent – very persistent. – Juliet McLachlan |

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| You need to be a person who likes to ask a question, who likes to run down an answer. What it takes more than anything else is curiosity. – Sara Mikaloff-Fletcher |

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| You’ve got that burning desire to do something and do the best you can, then that fire in your belly keeps you going. – Mark Rocket |

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| Resilience is really important. When you’re doing research and development, you do fail quite a lot. – Jennifer Blackburne |

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| If you want to get into aerospace or space, the most important thing is to be motivated and to get actively involved. – Philipp Sueltrop |

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| If your teachers aren’t providing you with the knowledge that you are passionate about, and that you want to learn, you have to reach out and find that knowledge yourself. – Pauline Harris |

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| Anyone can be part of this industry. It’s not some elite club. If you’re keen, if you’re enthusiastic, it’s a great industry to be a part of. – Jennifer Blackburne |

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| Actually see yourself in the space that you want to create for your future. Be innovative, think outside the square, because careers that we think of today are not going to be the careers of tomorrow. – David Perenara-O’Connell |

***Dispositions***

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| **Disposition** | **What this looks like** |
| collaboration | I work cooperatively with others, listening to their ideas and supporting their work. |
| curiosity | I am eager to learn and I have lots of questions. I like to know things. |
| diversity | I have different ways of looking at things and a wide range of ideas when solving problems. |
| effective communication skills | I enjoy speaking, writing, art and presenting information in interesting ways. |
| enthusiasm | I get excited by new information and new ways of doing things. |
| ethical | I am interested in right and wrong, using resources equitably (fairly) and responsibly and thinking about who benefits from an activity. |
| forward thinking | I like to think about the future and the new technologies that will be available. |
| initiative | I am eager to learn new things and try new ways of doing something. |
| mōhiotanga o mua | I can use my prior knowledge to inform my thinking and help others learn. |
| motivation | I am engaged and have a desire to learn and make things happen. |
| persistence | I can stick with a task until it is completed, especially if it is challenging and I don’t succeed the first time. |
| problem solving | I can ask good questions, make investigations and find solutions. |
| resilience | I am a flexible learner and worker. If something doesn’t work the first time around, I look for a different way to do it. |

***Possible careers in space***

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| **I want to …** | **Training and skills I will need** | **Subjects that will help me** |
| build rocket, satellite or aerospace components | engineering  3D printing  computer-controlled machines and tools | science  maths  technology  digital technology |
| design rocket, satellite or aerospace components | engineering  software engineering | science  maths  technology  digital technology |
| navigate rockets, satellites and aerospace planes | computer engineering  software engineering | science  maths  technology  digital technology |
| use data systems to get information to and from rockets, satellites and space planes or analyse the data | engineering  computer engineering  software engineering | science  maths  technology  digital technology |
| explore te ao Māori connections with whakapapa and space | mātauranga Māori  astrobiology  astronomy | te reo Māori  tikanga ā-iwi  pūtaiao  pāngarau |
| create laws and ethics about how we regulate and use space | law  international relations | social sciences  English  learning languages |
| use satellites to monitor animals, climate change or fish pirates | engineering  computer engineering  software engineering | science  technology  digital technology |
| know what lives in space and how humans can live in space | medical science  health and life science  sport and exercise  astrobiology | science  health and physical education |
| create my own aerospace company | engineering  business administration  communication | science  business studies  digital technology |
| build awareness of space industries | communications  website development  social media promotion  advertising and sales | English and languages  the arts  digital technologies |
| do something that’s not been done before | ??? but engineering, computer engineering and software engineering are good places to start | ??? but science, maths, English and technologies are good places to start |