



An Australian Government Initiative



national science week



Photo: Scienceability



Inspiring ideas
for National
Science Week

**DISABILITY
INCLUSION**

**Foreword by Dr Ben Gauntlett,
Disability Discrimination
Commissioner**



Science is for everyone

National Science Week is a chance to celebrate the contributions and achievements of science, innovation and technology. I welcome National Science Week's work to encourage meaningful inclusivity and accessibility, and their recognition that true diversity includes disability.

People with disability are often underrepresented in STEM, and we know that you cannot be what you cannot see. In order to encourage everyone to see themselves in the world of STEM, either as an engaged participant or a future scientist, inclusive events during National Science Week are essential.

I encourage all organisations that are hosting National Science Week events to use the ideas and guidance in this brochure to make their events and resources more accessible and inclusive, and expand their impact in doing so.

This will ensure that everyone who wants to better understand the world around them can take part in National Science Week, whether in person or online.

A NATIONAL WEEK OF SCIENCE

National Science Week is Australia's annual celebration of science and technology, running each year in August. We've put together this brochure of science-inspired ideas to help all organisations engage more with National Science Week and assist existing and new National Science Week events to be inclusive of people with disability.

This celebration of science is an opportunity to acknowledge the contributions of Australian scientists to the world of knowledge. It also aims to encourage a wider interest in science pursuits, and to encourage people, including those with disability, to be fascinated by the world.

National Science Week is supported by the Australian Government in a variety of ways, including through the \$500,000 National Science Week Grants Program. Other partners include CSIRO, the ABC and the Australian Science Teachers Association (ASTA).



CORNUCOPIA OF EVENTS

During National Science Week, over one million people participate in more than 1,000 events across the country. Each year these events attract a wide audience from children to adults, and science amateurs to professionals.

Events are held by universities, schools, research institutions, museums, science centres, libraries, industries and various private organisations. National Science Week also demonstrates the practical application of science and technology in our everyday lives, and provide resources and venues for science activities.

Participating organisations play an important role in the community with the opportunity to connect people with disability to educational resources. National Science Week events that are inclusive of people with disability have the potential to drive inspiration, innovation and a greater sense of community spirit.

This pack aims to encourage disability organisations to become involved in National Science Week and also to encourage new and existing National Science Week events to include people with disability.

The following pages include stories of how a variety of National Science Week events have supported and engaged with people with disability. It also includes a list of event ideas, helpful tips and more information. We hope this gives further inspiration and encouragement to either stay involved or become involved.

INCLUSIVE EVENTS

- Hire an Auslan interpreter for your event (e.g. <https://www.scienceweek.net.au/event/super-stem-careers-qa/>).
- Organisations you can contact to book Auslan interpreters include:
 - **Auslan Stage Left**
info@auslanstageleft.com.au
 Ph. 0423 933 361
www.auslanstageleft.com.au
 - **Auslan Services**
admin@auslanservices.com
 Ph. 1300 287 526
www.auslanservices.com
- Offer tactile tours and audio descriptions. Before the event, you could have audio descriptions about the event and information accessible for people who are blind or have low-vision. Caption your videos to include audience members who are Deaf or hearing impaired. For online streaming game events, you could use voice-to-text to capture what is being said.
- Include the 'Auslan interpreted' symbol in your promotional materials
- Have a tactile display with multisensory models and activities
- Engage with technology and have apps associated with the activities that are accessible for all

Have a tactile display with multisensory models and activities.



- Consider how people will access the venue (e.g. public transport access, wheelchair access, staff on-site to assist people with disability, an accessible bathroom that is signposted, a lift, online information to enable those with disability to plan their visit)
- Contact disabled peoples organisations and disability representative organisations to let them know about your events (e.g. Vison Australia, Expression Australia, Able Australia, Deaf Children Australia and Deafblind Australia).
- Consider the design of the event:
 - is the physical space large enough and designed to enable a diverse range of people to move around comfortably? Can people bring their assistance animal?
 - are the activities accessible for a diverse range of people?
 - is the environment mentally safe and welcoming for a range of people? (Consider lights and sounds)
 - are accessible bathrooms nearby and well signed?

BOX OFFICE BOARD EXAMPLE



Source: Melbourne Fringe, Producers Guide to Access

MORE THAN A GAME

What better way to show that scientists are real people than to have them play video games? National Science Week 2020 saw 17,000 viewers tune in via Twitch to watch Dr Michael Kasumovic, founder of *Arludo*, game with 15 young scientists. The scientists were from a diverse range of backgrounds and disciplines. Over 8 hours, they took it in turns to game with Michael in his Sydney home.

Twitch enabled viewers to interact with the scientists directly, via the chat function. 'The scientists loved it,' Michael said. 'They don't often get to interact with the public in such a relaxed, fun way.'

He said the aim of the event was to engage with young people and show them that scientists are everyday

people. 'The young audience really connected with science through the gaming, because this is a medium they are used to.'

The event was particularly accessible to people with physical disability as it allowed them to join in and communicate from their own homes, where they are technologically set up and feel comfortable.

Accessing the event from home also removed some of the barriers to participation that can occur with in-person attendance. Michael said this not only made the event inclusive for people with disability, but also for people who live regionally. The event was so successful – with viewers from across Australia and in New Zealand – that it is now going to be a monthly show.

LESS STRESS AT THE MUSEUM

A few times a year, including during National Science Week 2018, the South Australian Museum offers additional opening hours, specifically for people with autism. During this time, loud sound effects and light effects are turned off and there are a limited number of tickets sold, to reduce crowds.

The South Australian Museum's Community Programs Coordinator, Meg Lloyd, is autistic, and has personal experience with inaccessible events. 'The staff are understanding and the visitors are really grateful,' she said. 'There is no judgement from other visitors either.'

'Many people (the staff and the guests) enjoy these days. It's very chilled out, staff are less stressed and it's so much quieter than regular opening hours. I think it benefits a lot of people having experiences like this,' Meg said.

The extra opening hours offer a variety of opportunities for people. Some come to enjoy the quiet times, while others use the less crowded atmosphere to learn the layout of the building and feel comfortable within the space. These people often then come back during regular opening hours as they have a greater sense of familiarity with the museum.

The South Australian Museum also has an open day tour of the Science Centre during National Science Week, with Auslan tours run through this area. During the rest of the year the museum runs events for Deaf visitors, blind and low vision visitors, visitors with dementia, as well as an access on demand service where visitors can request access accommodations based on their individual needs, where possible.

Meg said inclusive events are happening all around the world. 'Museums are a hub for STEM education and should be expected to provide quality experiences to the public – all of the public.'

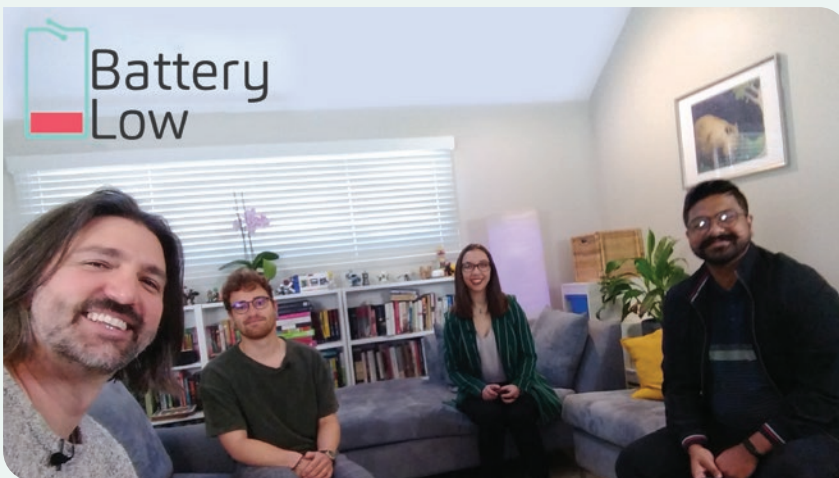


Photo: Battery Low



Photo: Sia Duff

INTERPRETING SCIENCE FOR EVERYONE

Online workshops, some with Auslan interpreters and another specifically for people with autism, were a part of National Science Week 2020. Scientist, academic, author and illustrator Dr Rina Fu presented 6 shows, hosted by the Australian Society for Parasitology.

Lisa Jones, Secretary of Society, said she'd seen just how successful and how easy it was to incorporate an Auslan interpreter throughout the COVID news broadcasts.

'We thought, why shouldn't we do the same for our National Science Week events?' she said. 'And reaching a wider audience turned out to be a much more enriching experience than the standard show ever was.'

Rina, who has worked with Auslan interpreters at many events, said employing an Auslan interpreter was one way to make an event more inclusive.

'It's important to get the script to the interpreter before the event, as science jargon may take them a bit longer to work out,' she said. 'It's also important that whatever inclusive element you are thinking about doing, you plan for it early, to ensure you get the help and funding necessary.'

Rina said 'Sensory Science' explored each of the senses except taste, because she liked to teach people not to eat in a science lab setting. 'For sight, we can use sparkly things like rainbow prisms, slime is good for touch, and shaking and bubbling sounds are good for hearing.'

Rina's brother, who lives with non-verbal autism and intellectual disability,

performed the show with her. 'This was my first time doing science with my brother. It was a special opportunity and I'm really grateful for it,' she said.

The live streams of Rina's shows were recorded so that people could do the experiments at their own pace or later. The shows were also intended to give carers an insight into which experiments are good to run at home, and how to conduct them.

Rina has a passion for making science accessible. 'If STEM is a national priority, then it is a priority for all Australians. As we share science with this community, they are teaching us greater skills in communication, patience, grace, creativity and collaboration across institutions. It's a win-win when we make science accessible,' she said.



"If STEM is a national priority, then it is a priority for all Australians."

AN ABILITY FOR SCIENCE

Scienceability was a series of workshops in 2017 run by people with disability for people with disability. Founder, Siân Keys, was inspired to do the event because her younger brother has Down Syndrome.

'He often said he wanted to do science just like me,' Siân said. 'But science is so often perceived as something only done by an exclusive group of people. It's not though, it's about being curious and asking questions. I liked that these events challenged people's ideas about who does science.'

In the lead up to National Science Week, Scienceability held workshops in the ACT for people with disability to teach them the science concepts and how to conduct the experiments.

Then, during National Science Week, these trained participants ran the workshops for others with disability. The event included a range of people from different backgrounds and abilities. The workshops were adapted to be more visually appealing and tactile and included topics such as the science of colour, flight and sound.

One of the most important and distinctly unique things about the workshops was that the participants had the opportunity to play around with the experiments. They were also given the time to try things out themselves, with the support of a facilitator.

'I've never seen anyone so excited to perform the same experiment again, with just small amendments to see what works best,' Siân said. 'But this is real science – this is how an experiment works!'



Photo: Scienceability

AN ALLIANCE FOR SCIENCE

'I teach you how to think and then you think it!' is Dr Vanessa de Kauwe's motto for teaching science. Vanessa has sensory input disorder. She is also the founder of Science Alliance, which is an alliance between science professionals and the disability community. Everyone who is a member of Science Alliance has an intellectual disability, physical disability or both. For the past two years Science Alliance has run National Science Week events with the ACT Down Syndrome Association. At the events, people with disability are taught science by others with disability.

'Often, people with disability who present at events like this present with another facilitator and the facilitator does most of the work,' Vanessa said. 'But the way we structure our presentations, the show can't go on without the person with disability.'

The workshops consisted of several presentations on a variety of topics. These included combustion engines, thermodynamics and the best methods of teaching others with disability. The presenters walk the audience through exactly what they are thinking, step-by-step.

'Steps of thinking is all about breaking down knowledge into very small steps so that everyone

can understand.' Vanessa said this step-by-step process meant that participants were able to do more of the science for themselves.

'If someone needs assistance to pour liquid from a beaker, they don't need more staff to help, they just need more time,' she said. 'It may take them much longer, but the point is they actually did it.'

Vanessa said having people with disability up on stage inspired others with disability. 'It enables them to see themselves as science rock stars too.'

Gemma Francescangeli, Community Resource Coordinator for the ACT Down Syndrome Association, said the key to these events was to put in the time and the effort before the event to train the presenters.

'On the day of the event it's important to give as much agency and representation to the person with disability as possible,' she said.

While the Science Alliance workshops were run in person during 2019, in 2020 these moved online. But this didn't faze the participants, said Vanessa.

'We had 300 people tune in to our presentations from all across the world – Australia, Zimbabwe, South Africa, the Philippines, India, New Zealand and the UK. It was more like International Science Week!'



Photo: ACT Down Syndrome Association

MAKING FOR ALL

Tape Blocks allow people without fine motor skills to participate in circuit making. Created by Monash University researcher, Dr Kirsten Ellis, Tape Blocks have an LED battery, vibration motor and conductive tape that wraps around a colourful foam block.

‘People can push Tape Blocks together with just the back of a hand,’ Kirsten explained. ‘When linked, the circuits activate lights and vibrations that enable people living with an intellectual or motor disability, or people who are blind, to engage meaningfully with the activity.’

In 2019 Kirsten ran four workshops around Melbourne. She had about 130 participants, plus carers, attend. In 2020, the event was run remotely and 550 kits were sent out across Melbourne and regional Gippsland. Kirsten said the remote event was a huge success.

‘Allowing people to feel comfortable with an activity in their own home means they’re more likely to engage with the activity and to then possibly attend a public, social event in the future.’

Kirsten hasn’t stopped at the simple block design for Tape Blocks. To make the activity more meaningful, in 2020 she enabled participants to create Tape Block boxes, do Tape

Threading, Tape Weaving and create Tape Block characters – using all the same circuit building principles.

‘The characters were a favourite of mine. People made dragons, trains, dogs, cows – a whole array of things,’ she said. ‘They had big googly eyes, bedazzled buttons and lights on their heads or their noses!’

An important part of the Tape Blocks activity is ‘make and take’. Kirsten said she wanted participants to have something tangible to keep and be proud of. She also said she couldn’t have done this without the National Science Week grants to cover the costs of consumables.

Kirsten is creating a start-up so that people can buy Tape Block kits year-round.

Tape Blocks is an activity for anyone. Kirsten has even sent kits to aged care homes for older people with disability. She said doing activities like circuit building was important for making new memories and keeping people stimulated.

‘The first time the light comes on, and you’ve connected the circuit yourself, it is such a Eureka moment – for everyone. It doesn’t matter who you are,’ she said. ‘These events are not about giving people a career in STEM; they’re about giving them the same opportunities as everyone else.’



Photo: Monash University

BRINGING SPACE TO YOU

Since 2017, Swinburne University of Technology has collaborated with the OzGrav outreach team to run an annual astronomy-focused virtual reality event. Dr Rebecca Allen, from the Space Technology and Industry Institute, said these events are held live in Victoria, streamed globally, and enjoyed by children and adults alike.

‘In 2018 we ran the live events at the State Library and a Melbourne brewery,’ she said. ‘The brewery was a great, relaxed venue. You could have a beer and a bit of science for the evening.’

The free SciVR app drives the event, with participants linking the phone app to a bespoke mini-VR headset. Participants then explore different scenes as seen through the headset, while listening to a presentation given by Rebecca and her colleagues. In the presentation, they discuss gravitational waves, black holes, the solar system and what happens to stars when they die.

People who attended live events were given the VR headset, but participants were also able to enter a lottery to win one of 200 headsets

Rebecca said she and her colleagues have been working closely with Auslan Consulting ...



Photo: National Science Week

since 2019 to make the events more inclusive.

'In 2019 and 2020 we hired Auslan interpreters for both our in-person and the online events,' she said. 'These events highlighted that a lot of astronomy terms don't yet have signs. It's a good opportunity to work on creating more content and improve accessibility to science and science communication within the Deaf community.'

Approximately 200 people attended the first live Auslan interpreted event in 2019 and 60 of these guests were Deaf.

Rebecca said the visuals in the app were also designed with people with low-vision and contrast in mind, making it easier for them to see the text and images. There are also clickable audio files within the app that read the text displayed.



TOP TIPS + RESOURCES

General disability organisations you can contact for advice include:

- Able Australia
A provider of disability services and community support
- Disability services Australia
A provider of disability services and community support.

Resources for people who are Deaf and hard-of-hearing:

- Expression Australia
(Previously VicDeaf): Australia's leading body for the Deaf and hard-of-hearing community.
- Deafblind Australia
Advocates and offers support services for people who are Deafblind.

Neurodiverse networks:

- AMAZE
Australia's leading body for people on the autistic spectrum.
- Autism Spectrum Australia
Australia's largest autism-specific service provider (not-for-profit).

Australian advocacy groups for people who are blind or have low-vision:

- Albinism Fellowship
An advocacy, support and education group for people with albinism
- Blind Alliance
A member-driven group to support people who are blind or have low-vision
- Blind Citizens Australia
Australia's leading community advocacy group for the blind.
- Blind Sports & Recreation Victoria
Creates sporting opportunities for people who have low-vision or are blind
- Deafblind Australia
Advocates and offers support services for people who are Deafblind
- Guide Dogs Australia
An organisation that offers personalised training and support programs for people with low-vision or blindness
- Vision Australia Radio
A network of radio stations that offers informative programs and the latest news for people who are blind or have low-vision
- Vision2020 Australia
An advocacy group that focuses on ensuring eye health and vision care remain government health priorities

Contact us

Follow National Science Week on Facebook (<https://www.facebook.com/nationalscienceweek>) and Twitter ([@Aus_ScienceWeek](https://twitter.com/Aus_ScienceWeek)) and tell us what your business is doing by tagging #scienceweek.

For information about National Science Week, contact the National Science Week Team at:

Email scienceweek@questacon.edu.au

Phone 02 6270 2880

Post Questacon, PO Box 5322, Kingston ACT 2604

Register your events on the National Science Week website at <https://www.scienceweek.net.au/my-account/my-events>