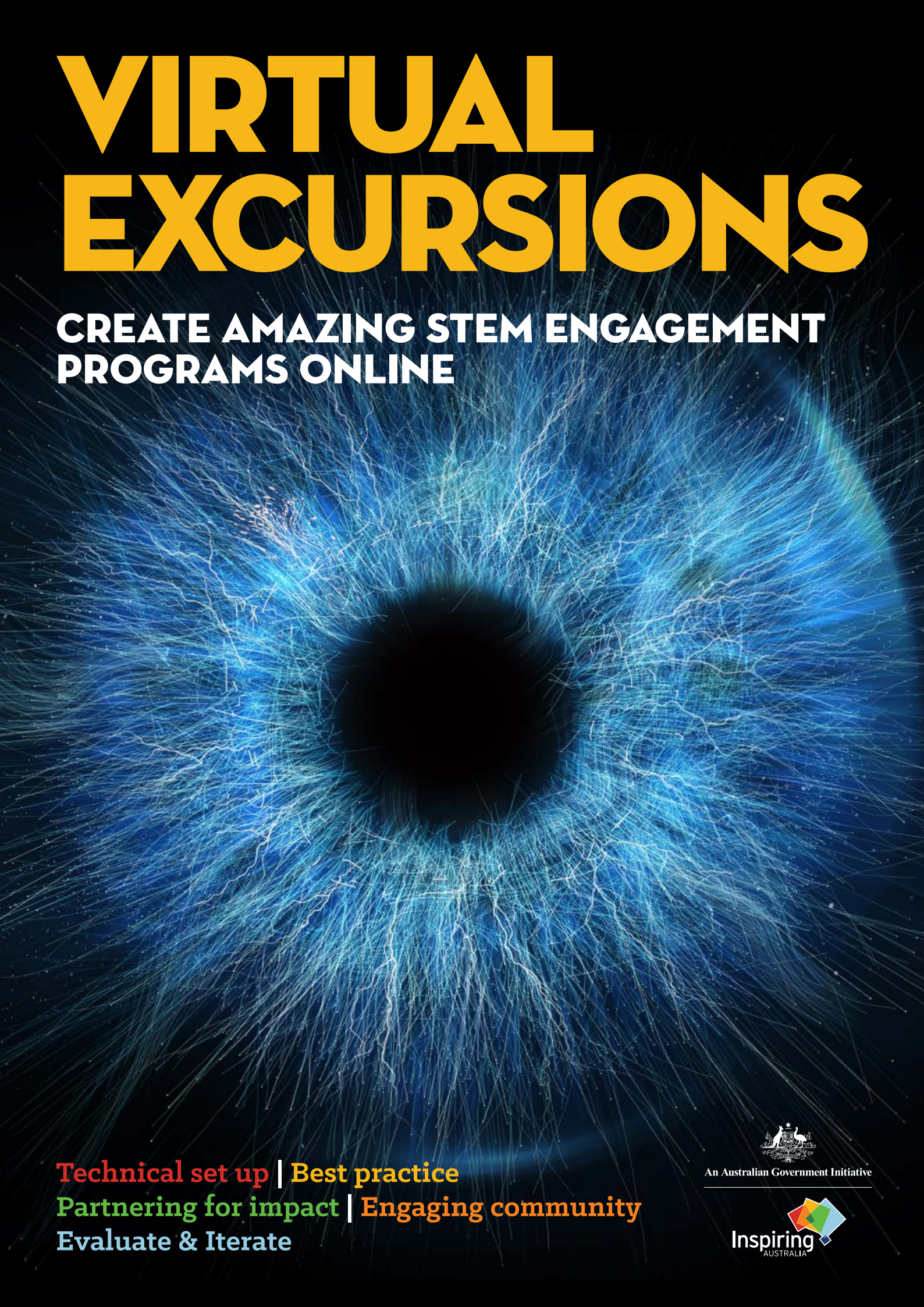
VIRTUAL EXCURSIONS

CREATE AMAZING STEM ENGAGEMENT PROGRAMS ONLINE



Technical set up | Best practice
Partnering for impact | Engaging community
Evaluate & Iterate

An Australian Government Initiative

Inspiring AUSTRALIA

About Inspiring Australia

Inspiring Australia is the national strategy for public engagement with STEM and contributes to the Government's vision to engage all Australians with science.

Since 2009, the initiative supported by Commonwealth, State and Territory Governments facilitates science engagement programs and supports communities in diverse ways including through fostering influential networks to connect science to big audiences and delivering grant programs to organisations, groups and individuals.

Inspiring Australia science engagement activities connect with people nationwide to:

- build an awareness and appreciation of science
- celebrate the excitement of science and scientific discovery
- enhance capability and skills
- improve science communication.

In 2020, global events forced many organisations to adapt their large scale events and STEM engagement for online delivery modes. Inspiring Australia state programs have developed this online training opportunity to assist community partners to transition their programs to online delivery. This manual draws on the expertise of specialists in online education and STEM communication backed by research to deliver the tools, techniques and tips to help practitioners develop rich, deep and meaningful online STEM engagement.

The Virtual Excursions training package has been coordinated for national delivery by Inspiring Australia NSW. It is produced and delivered by Fizzics Education, Sydney Science Education and Refraction Media with support from the Office of the NSW Chief Scientist & Engineer and state Inspiring Australia programs in NSW, ACT, QLD, WA and SA.

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The publishers acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past, present and emerging.

Part 1: Technical set up: online essentials

Part 2: Best practices in engaging audiences

Part 3: Partnering for impact

Taking STEM events online

In early 2020 COVID-19 transformed society, effectively putting a stop to physical events, closing schools and workplaces, and limiting networking and collaboration in the way we were used to. Communities were quick to move online, yet multiple challenges arose in security, technical capacity and format, and virtual events ranged in quality from the 'scrambled together' to global, inspiring events developed by large organisations, as well as viral, virtual trends that created some memorable and mesmerising content.

Virtual events, distance education and online community engagement have a much longer history than just this year, however. Australia's vast distances and remote areas have meant that distance education has been the norm for over a century, using radio and post as the principal tool until video conferencing and internet technology became available in the 1990s[1]. In 2007, the Connected Classroom programs rolled out throughout NSW public schools, with other states rolling out their networks as well, connecting students across the country and beyond with each other, and with hugely popular interactive programs on reef science and astronomy.

This interactivity has reached far beyond schools, with aged care centres, university students, hospital patients, juvenile justice systems and other beneficiaries experiencing virtual events from content creators large and small. Some of the most successful of these programs are included in this booklet. Included also are summaries of the information in three virtual training sessions delivered throughout May–June 2020: online presentation essentials; best practices in engaging audiences in STEM, and partnering for impact.

With expertise, the right tools and your own passion for your programs, we hope you'll find what you need in these materials to deliver science, technology, engineering, maths (STEM) and arts programs to more people in more innovative ways than you could have imagined. By inspiring this next generation about STEM, we'll ensure we have the innovative minds ready to take on the next great global challenge.

1 Newsome, B. 2013. Best practice in science education via video conferencing. Winston Churchill Fellowship Report.

Online event essentials

Online video experiences rely on four key ingredients to make them work for the viewers at home. Use this as your checklist.

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1 Have a clear strategy: Know who you are talking to, what they might enjoy (you can always test and adapt), and what you are trying to achieve.

2 Develop an effective content and delivery plan: What are you going to present? How will you make and keep it interesting, at the right comprehension level?

3 Have you got your technology sorted? Check your visuals: Everything from the speaker and their background to what you want to show your audience. Check your audio: ensure you have good quality voice amplification, any external audio set up, and avoid annoying background noise.

4 Set up a safe, reliable online environment. This is about ensuring that the technology works and that you establish good practice.

5 Record your event. Even if you don't share publicly, by reviewing your work you'll get better. And if you do share it out you'll have bonus data on your audience.

Getting started: Technical set up

Registration

> Always set up a secure registration system, and consider capturing some of your audience data. You can use registration that comes with your online tools (such as Zoom), or commonly used event registration sites like Eventbrite.

> Use a great image to brand the event that is consistent across your communications to help people find and remember you.

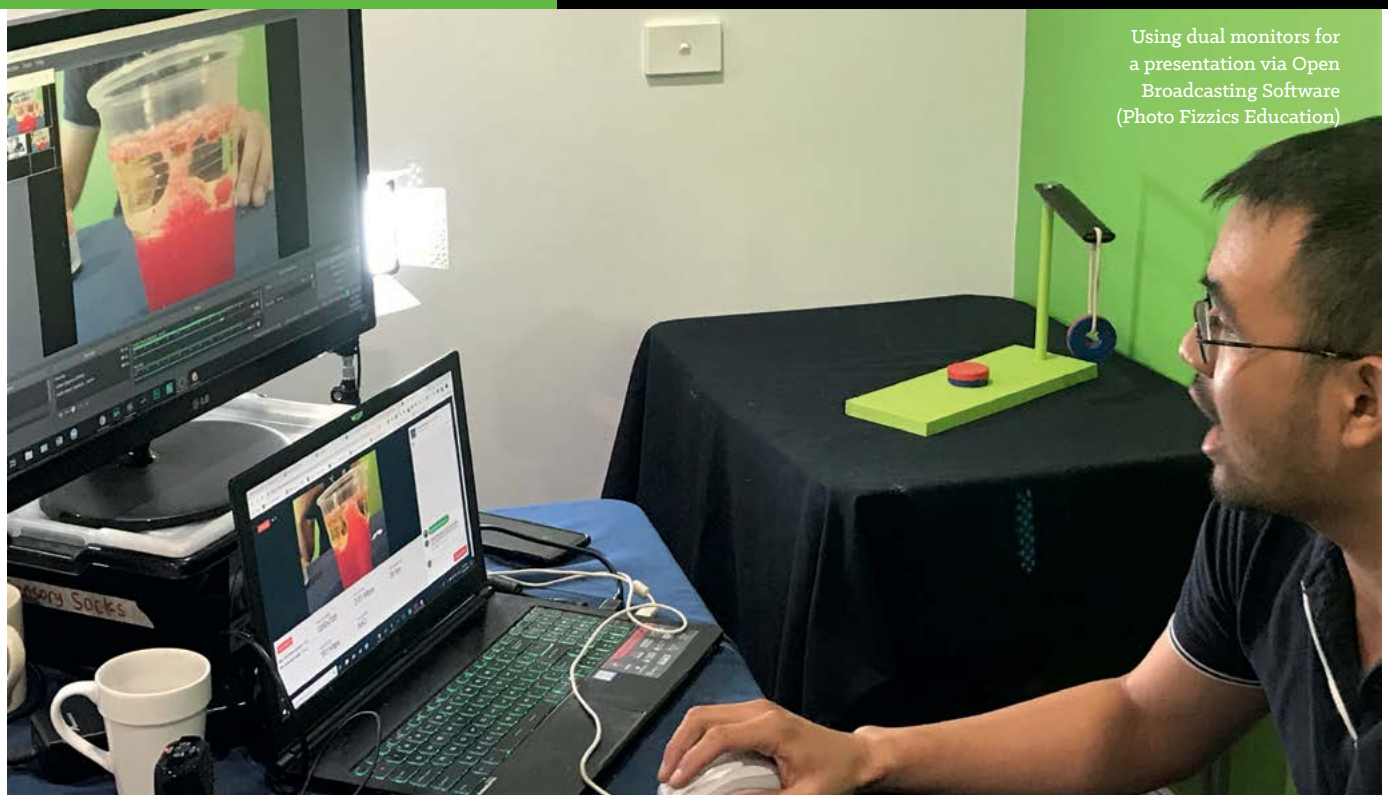
> Set automatically recurring emails to remind people about your event a week or a few days before with the registration link included.

What is video conferencing, web conferencing, live streaming?

Video conferencing is most commonly Polycom or Cisco systems. Key advantage: multiple content streams, for example a main camera, second camera or document cameras and Powerpoint presentations. Disadvantage: Traditionally difficult to connect to publicly.

Web conferencing/streaming is a software-based option contained entirely in a web browser or application. Key advantages: generally cheap and easy to access. Examples include: Zoom, Google Meets, Jitsi, Riot, Jami, Signal, Wire.

Streaming refers to one-way communication whereas conferencing means speakers and the audience can potentially interact with each other from different locations. Examples include YouTube Live and Facebook Live. If you run live events, it's always a good idea to host them online afterwards so people can refer to them later.



Using dual monitors for a presentation via Open Broadcasting Software (Photo Fizzics Education)

Worried about being on video?

More people than ever before are doing live videos and things don't always work out perfectly. No one expects perfection. Being relatable and real is more likely to help endear your audience to you. Practice makes perfect – try it out on your friends, family or colleagues and be open to feedback.

Technology - What's best?

1. Choose a web software platform that works for your audience. Think about your own capacity to manage and host people online, and how you want to manage your audience interaction.

2. Check that your chosen application or software connects with your A/V technology and won't be blocked by internet security or firewalls.

3. Use easy timezone conversion tools, consider when people will most likely participate and put date and time information together for example: Monday 5 June, 16:00 AEDT.

4. Check your network and internet: For video conferencing, check that you have an IP address. Make sure your internet is fast and reliable.

5. Cameras: Will you have more than one? Ensure your video system connects with a good audio system. At least have a good quality USB camera with a built-in decent microphone and consider a light. Consider a versatile videoconferencing camera with pan tilt and zoom. A lot of the great camera work is about good set up - making sure the camera can focus, and setting your room up with interesting props that you can use as an alternative to 'talking heads'.

6. Audio: If you're doing a webinar, the audio may be good enough on a new laptop. Next level up: a headset microphone or a good Bluetooth microphone. Reduce echo where possible, for example with soft furnishings. (see Ensuring excellent audio, p7)

7. An ethernet cable connected to a computer is always better than WiFi.

8. If you can, reduce the amount of internet being used during the conference. This means not having services such as Netflix, YouTube or other similar high-bandwidth heavy applications happening at the same time as your conference.

9. Type 'speed test' into Google to run an internet speed test that will identify any site issues. If you have a video conferencing system, their diagnostics will allow you to look deeper into the speed of the data and as well as data loss.

10. Do technical checks on everything days before. If you're using video conferencing, use a Videoconferencing Test Site service.

11. On the day, log on early to test everything (see Before you begin, p9).

12. Have a backup if everything fails for example an email or social media post drafted ready to send. Ensure speakers are aware of the backup plan.

Green screen with a TV to one side for presenting at the Aquarium of the Pacific. **Below:** Using an iPad as a document camera (photos Fizzics Education)

Technical
set up extensions

• Consider a dual monitor if you have one. One monitor is for your presentation and the other is for applications that you would want to share (such as internet site). A second monitor is ideal for running advanced sessions via production tools such as Open Broadcaster Software (OBS).

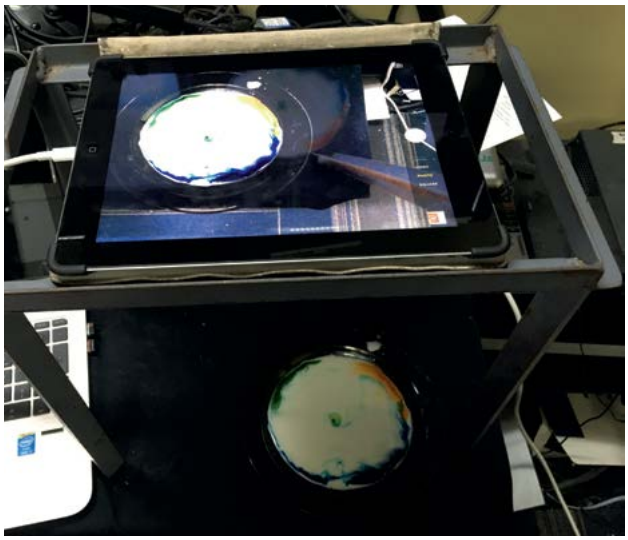
• If you have a video conference system, connect a computer to your system with a HDMI or AV connector. You'll then be able to share all sorts of content with your audience. You can also use an adapter to connect to your iPad so that you have a document camera with extra functionality.

• If you're planning on using a virtual background, double check that your backdrop is one continuous colour. You don't have to paint a wall green, you can also use fabric (use material that is not shiny). Avoid wearing colours that are close to your backdrop colour.

• When adjusting your camera, try to fill the screen as much as possible with people rather than with the table, chairs, walls, lights, or the floor.

• You can use a video switcher to move between devices quickly during a presentation. Test that this works prior to going live.

• Learn how to toggle the various layout views from self-view and gallery view. The self-view option allows you to see exactly what the audience is seeing and you can simply toggle back to the active speaker view so you can see the other people when they are speaking.



Ensuring
excellent audio

• If you are planning on presenting from a noisy environment, you can use a headset microphone. This is also handy for keeping the volume of your voice the same no matter where you turn your head.

• Set up soft furnishings around your presentation area. Hard surfaces and empty rooms create echoes on the microphones. The more sound proofing you have, the better quality of sound you'll acheive.

• If you are presenting outdoors, use a windsock, a foam cap that fits over the mic. You can also put a 'Deadcat' over the windsock for additional noise blocking.

Setting up lighting

• Lighting is crucial. Get the right balance of light on the presenter's face and anything else you're showing. Soft, cool hues work best. Reduce shadows by pointing multiple lights around you, and onto your demonstration area.

• Avoid sitting with a window behind you (avoids you being seen as a silhouette). If there are windows in the room, close any drapes or blinds. Daylight is a variable light source and can conflict with interior room lighting.

• Try to avoid 'back-lighting' from harsh light sources as you will come across as a shadowy figure with your face hidden.

• Use soft lighting for both the background and foreground.

Lighting within the Challenger Learning Center, NY (Photo: Fizzics Education)

Prep the presenters

If it's just you:

• Know the order: ensure that you have a way to keep to your schedule. If you're staying in the one room, have post-it notes on the wall.

• Have a remote mouse and keyboard at the table near you. That way you can access photos and applications easily. It's useful to have a Google page open so that you can look things up on the fly as needed. Additionally, it can be helpful to have the batteries easily accessible so that if you run out of charge on your mouse or keyboard you can quickly change them over.

• Consider your voice. Convey appropriate emotions and excitement. Or do you want to offer a calm experience? Whatever you do, don't be monotone; it's boring.

• Use your words mindfully – choose interesting, positive words and try to limit "umms and ahhhs".

• If presenting from a computer, consider adding a second camera. This will allow for more dynamic presentations as well as give you flexibility to have a close up of items.

• If you're a presenter in a shared space, consider having a sign outside that lets people know that you're 'on air'.

Sessions with multiple presenters and panels

• Brief your panel and co-presenters before the event. It's useful to have a shared document with the session details, everyone's roles and the rundown of the event.

• If you're on a panel, keep your microphone muted until invited to speak by the presenter. Mute your microphone directly after speaking.

• If your internet 'drops out', simply redial into the conference using your meeting link.

• If you are using chat for questions, consider having an extra person as an assigned moderator to help you answer, check and facilitate questions and answers.

Using a second camera for a close-up of an Alka seltzer lava lamp (Photo Fizzics Education)

Polycom and Tandberg conferencing microphones (Photo: Fizzics Education)

Creating a safe environment

As an event runner, keeping your audience and staff safe is critical.

1. Keeping staff safe: this is basic OHS. Ensure staff can't accidentally hurt themselves or someone else during the event.

2. Keeping the audience safe:

- Use a conference platform that is password protected.
- Only allow audio and video from participants during private, closed events.
- Make sure the host has the ability to turn off videos/audio or remove individuals.
- In public programs, all text chat should go through a moderator and never become instantly viewable to the audience.
- Big no-nos: Screen or file sharing and private chat between kids – this is an avenue for cyberbullying.
- Ask people to not share their last names.
- Make sure all moderators and presenters have a Working with Vulnerable People permit and know how to safely set up and manage a safe online environment.

3. Cyber safety: use software platforms that are as safe as possible from hackers.

4. Always have protocols in place if you need to cut the video or audio as a result of an unauthorised video bomber or something going wrong.

Before you begin

- Close down the tabs on your browser that you don't need and close all other applications that you are not using.
- Ensure that you control the mute function for yourself and others. All participants should be muted at the start.
- Have experiment materials ready on a table away from your electronic devices.
- If you have an external microphone that connects to your device, have this connected and selected for use. For microphones not fixed to the ceiling or table, ensure they are at least 1 metre away from the video conference camera/endpoint and not near any other electronic equipment, otherwise audio will be severely affected.

Participants in an all-women hackathon communicating across countries and timezones. Photo: Heather Catchpole.

Common fails and fixes

Livestream fail
Back up your session by recording it, and then if the livestream does not start you can quickly get a recorded version of the event up. If the issue is at the video conferencing side of things, you can copy and paste the streaming url to YouTube Live or Facebook to set the broadcast happening. If it's on the livestreaming side of things, check your encoding software (such as OBS). Also, for some streaming applications you can have a backup stream key… use this too!

Web conferencing set up fail
Notify your audience that there is a technical issue. Let them know when you'll be back online and simply get them to log back in using the details provided with your settings now correctly adjusted.

Timezone fail
It is easy to send out the wrong time zones to the wrong audience. This goes beyond simply scheduling through your web conferencing software. If you add your event to your booking calendar to send invites there is a chance that your calendar may send reminders for the wrong time if it assumes everyone is in your timezone. Not all countries use DD/MM/YY as a notation either. See **www.fizzicseducation.com.au/articles/timezones-matter-for-online-classes/**

Presenter/technical communication
Set up a communication tool such as a Slack channel or shared Google doc to communicate between presenters, moderators and technical staff. This allows any issues to be quickly communicated and resolved in a space that's separate from your video conferencing software.

Streaming fail
To check if the audience is seeing/hearing something different to what you think they're seeing or hearing, have someone else listening, and/or have a secondary device logged in as a fake attendee.

Virtual background fail
Check you have ticked 'mirror my background' to ensure you are not displaying a reversed image for your audience.

Battery fail
These happen! Make sure your devices are charged and that you have accessible batteries near your presentation area.

Environment fail
Courier deliveries happen. Conversations near your presentation area happen. Or, your background has imagery or people you don't want in it. Put signs up, and let people know that you're about to go live. Also, mute your phone and get rid of desktop notifications.

Equipment fail
Have spares of equipment nearby. Also, keep your presentation kits near where you're presenting: there's always that chance that you forgot to put something on the desk and having it nearby helps out greatly. If you have a glass of water nearby, also have a towel! Spills happen.

Presentation device fail
Have a spare device that can also connect to the meeting. It's happened to all of us – computer updates taking too long, batteries out of charge or complete computer shutdown. That spare device makes all the difference.

Software fail
Ensure you've installed the most up-to-date version of your software. It is not only a security risk, it also makes your conference potentially at risk of the software not working because of clashes with the latest version of your operating system. If you do update your software, check that the update works first.

Giving the audience the best experience

1 Don't forget all of your analogue training – invite audience participation such as raising hands, use props, eye contact, asking questions, and inviting ideas.

2 Pick a platform that works for your audience – consider if a Q&A session is better than a webinar, as well as how much audience participation you're after, and what, if any, security protocols they may have in place.

3 Make the session interactive – use polls, quizzes and Q&A to establish a rapport, keep audience engaged and find out more about them.

4 Create an environment in which all voices can be heard – keep in mind any constraints there may be on different audience segments, and actively invite them to share their insights.

5 Be creative – think outside the box in keeping the audience engaged. Could you use your chat stream for live poetry? Or start a virtual Mexican wave? Think about creative ways to keep people entertained as well as informed.

Equity is important!

Always think about access for low socioeconomic areas, and also elderly people or differently abled people who would like to access your content.

Vinnie cam at The Cleveland Museum of Natural History. Photo Fizzics Education.

Marketing and understanding your audience

Who is your audience?
Are you delivering an online experience to your existing audience? Is your focus existing supporters or visitors who are familiar with your organisation?

Or, do you want to reach new audiences? Do you want to engage with people who don't know anything about you?

Deciding on this mix is crucial for what you do next.

Find your audience
If you have an existing audience, think about how you already engage with them. Write a list:

- social media channels, for example, Facebook, Instagram, Twitter
- email / e-newsletters
- promotions with other organisations
- in newspapers or magazines
- in-person / signage on-site
- via phone.

Use as many existing channels to tell them about your new online events.

Hot tip: Sound out interest before investing. If your usual audience is now consumed with the challenges at home with work and children, do they want to come to an online event?

An analogue prop (stuffed penguin) combined with digital imagery in a presentation at the California Academy of Sciences.
Photo: California Academy of Sciences

Watching videos online is shown to increase people's confidence, motivation and learning. What can you show your audience to help them?

Do your research

Existing audiences
Dig into the data you already have to understand your audience demographics. Take a look at Facebook statistics and Google Analytics, past surveys and other resources to give you data. You might be surprised to find who you are already reaching. Search for data on their ages, regions, education levels and interests.

New audiences
Targeting new audiences? Undertake some market research to find out as much about them as possible.

- What do they like to do?
- Where do they hang out online?
- What are they searching for?
- Can you work with organisations with this audience already and ask them to share your events?

Digital marketing
Online/digital marketing tools can help you find and understand your audience. Learn about their online search, social media behaviour and what they want.

Here are some quick tools. These can help you find the audience AND choose the right keywords for your content so they can find you.

Google Trends and Think with Google, Scoop.it and Feedly are free. Ahrefs, Social Animal, Sprout Social (social media keyword research), BuzzSumo (popular topics and who the 'influencers' are) have different costs.

Read more: Find out what Google search data reveals about what people need in this moment, and how brands can help at **this link**.

What is your message?

What is the one take away from your online event? Have a purpose and a clear goal in mind.

These five Generic Learning Outcomes (GLO) can be a guide:

1. Enjoyment, inspiration, creativity
2. Attitudes and values
3. Skills
4. Knowledge and understanding
5. Activity, behaviour and progression.

Consider if you need to align with school curricula. See Inspiring Australia's **Evaluation Guidelines**.

Listen to your audience

You might think: “I’m providing valuable access to a unique piece of scientific infrastructure”. The parent audience hopes: “You are going to entertain, educate and keep the children busy for 30 minutes, right?”.

What does your audience want?

- What are they struggling with right now?
- What do they believe their problem is?
- What words do they use?
- Do they have a solution in mind?

The trick to listening, and then responding effectively, is meeting your audience where they are. Then do what you can to provide value to address their challenge/problem.

Tip: When promoting your event, use the language of your audience, not necessarily your words.

Design for accessibility

Differently abled audiences are less likely to engage through the internet because of barriers to access. When designing virtual events start planning early to ensure the broadest possible accessibility. Include people with different abilities in your team including presenters. Check the software you are using is compatible with assistive technology. There’s an excellent step by step guide to designing virtual events from Rooted in Rights: **How to Make Your Virtual Meetings and Events Accessible to the Disability Community**.

Accessibility tips

- Consider options to allow landline phones into your conference.
- Several web conferencing platforms allow close captioning as an automatic feed from third party services.
- Consider having someone trained in sign language to present either within your room or via shared screen.
- Sensory items can be mailed out or given as a shopping list ahead of time.
- Work with translators to present to ESL groups.
- Be aware of image release for cultural groups both within Australia and beyond.
- Not everyone has the same name for things! Be prepared for experiments to go wrong because your audience might have the incorrect items.
- When working with cultural groups, colloquialisms can confuse people (unless you take the time to go through the meaning).

Laser through perspex. Photo Fizzics Education

Connecting with elderly people

If your event includes elderly people, consider how you could reach out to carers to help them access the platform you are using. Also be respectful of their knowledge and consider how you can share their experiences and insights in engaging them as an audience. Volume and sound clarity matters with your presentation. Ensure that your presentation is clearly audible. Consider running programs outside of traditional work times.

Giants from the past. Photo Sydney Science Education

Connecting through culture

Engaging with Indigenous events is exceptionally rewarding. Look to an elder to guide you through cultural, language and behaviour expectations. Invite Indigenous participants into your discussion. You can find many resources on engaging with Indigenous groups, and you can find organisations to facilitate training for your business and staff.

> **Australians together – Connecting locally with Indigenous Communities**

> **National Indigenous Australians Agency**

Art workshop. Photo Sydney Science Education

Above: Minibeasts workshop. Photo Sydney Science Education. Right: Crocodile skull used to point out predator features. Halloween presentation by the California Academy of Sciences.

How will you measure progress towards your goals?

Consider how online events/distance learning will help you achieve your goals.

Don't jump online because you think you 'should'. What goals underpin your organisation's strategy that can be delivered through online events?

Know: what you want the audience to do after your online event.
Do you want them to sign up for a program or like your Facebook page?

> "Set clear objectives that you can measure to see if you achieved your objectives."

Connect: right tone, content and quality

- What tone is appropriate? What fits with your brand?
- What does the audience want from you?
- What language will connect with your audience?
- Who should deliver your online sessions? Use the most engaging and exciting presenter you have. Make sure they suit the target audience.
- Can people interact with you?
- How can you make it fun? Consider using polls, quizzes, Q&A, and chat to maximise interactivity.
- How will you make and keep it interesting, at the right comprehension level?
- Avoid talking heads. Consider mixing interesting speakers with showing, moving people or things and quiet time.
- Can you get everyone to DO the experiments or activities along with you, at home? People love to 'do things' with you.
- Do you need to get your audience to prepare beforehand?

Experiments and tool kits - some useful examples:

> 150 science experiments you can do from home (Fizzics Education)

> How to get a robot to make a jam sandwich

Marketing: before, during and after

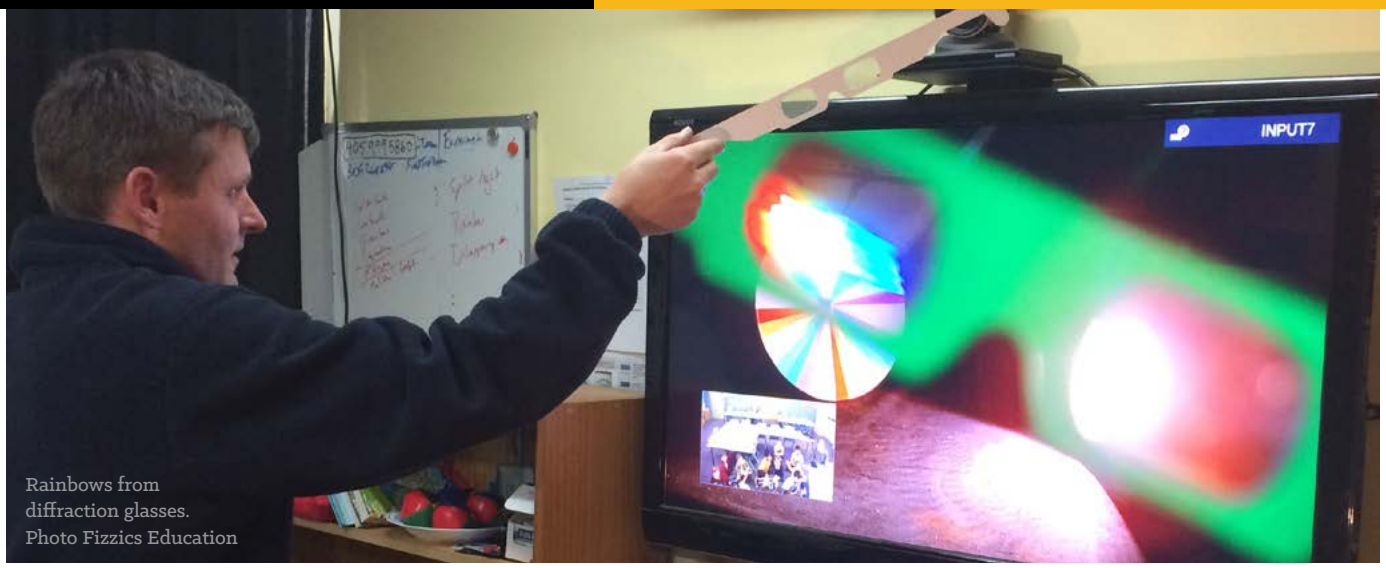
Planning stage: Find out what people want. (Remember there are lots of ways: You can do this through asking them on social media, website polls, emails, via phone or by providing a survey.)

When they register: Ask questions about what they want. It can be simple: Choose from a list of options.

During: If you can adapt on the fly, you can invite people to interact with you. Use the chat box: ask for a 'yes or no' answer. Facebook live: ask people to comment or use an emoji response. Gathering feedback and questions during the event can help you modify the next one.

After: Ask for feedback. Consider that people's time is limited so ask specific, useful questions that you will take on-board. You could do a survey or invite comments. Note if you are getting small snapshots or representative information.

Respond: Answer questions, provide resources. Create value for attendees. Can you leverage the content you've delivered for your public engagement and marketing efforts?



Rainbows from diffraction glasses. Photo Fizzics Education

Connecting strongly with an audience virtually

Energy is sparked by in-person interactions – particularly where there are opportunities to see, hear, taste, feel memorable sensations. While virtual engagement can be trickier to get right, you can potentially access millions of people.

Individuals or small centres in regional areas can connect with audiences around the world at the click of a button. This provides opportunities for the elderly, physically disabled or ill, even if they live locally they may not be able to visit physically.

Sydney Science Education staff presenting with props and live animals (spot the stick insect). Photo Sydney Science Education.

Consider the digitally excluded — people lacking effective and affordable internet access and digital skills.

Fact: Around 2.5 million Australians are not online and 1.25 million households don't have the internet available. Experts say that the rapid digital transformation of government, cultural and social systems is deepening social inequality. This digital exclusion is particularly concerning for two distinct groups: older Australians and children in low-income households.

(Reference**: Media release: Digital equality has never been more important. Centre for Social Impact**)

Top 10 tips for engaging audiences

1. Know who your audience is, what they are worried about, what they want
2. Use digital marketing tools
3. Use audience's language in your marketing
4. Have a clear message about what your online event/learning offers
5. Be interesting and entertaining
6. Communicate before, during and after the event
7. Focus on providing value
8. Ask for and take on board feedback (growth mindset)
9. Adapt for the next time
10. Be grateful that your audience have invested their time and energy to be with you.

Bell Jar experiment: Photo Fizzics Education.

Fun ways to engage your online audience

Team up on big ideas

Partnering with others can amplify your impact with your audiences and the community. First, you need some essentials for a good partnership.

1 Trust: you need to know that your partner, big or small, has your back.

2 Have clear expectations of roles and responsibilities. This can include branding, event preparation, speaking — whatever is involved you need to be clear who is doing what.

3 Create shared goals and an understanding of where goals are different but complementary.

4 Good planning is critical, so make sure you set up the tools to help everyone know where you're at and what's next.

5 Develop respectful communication and excellent listening skills.

6 Have a giving attitude. Partnering is about helping others as well as gaining benefits for you and your organisation.

New partner ideas: Think outside the box. How?

Come up with ideas for who you could partner with by:

> Ask your audience

> Look in your community of practice such as Inspiring Australia, the Virtual Excursions Australia network or Australian Science Communicators

> Think of overlaps with other industries and organisations including the arts, culture and sport

> Look at other organisations that may share similar goals to you, even if they do completely different things.

"Building relationships is a process. You will find over time there are certain partners you especially like to work with and you can build an even stronger relationship."

Karen Player, Founder, Sydney Science Education

What are the benefits of partnering?

- To learn from others and find peer support
- To help partners to reach their goals
- Reach larger audiences by sharing branding, marketing and cross-promoting each other
- Save money and improve your return on investment
- Raise money or build bigger awareness
- Increase your network and build relationships
- Create a bigger and better event than you could have on your own.

What is Virtual Excursions Australia?

Virtual Excursions Australia (VEA) is a collaborative network of content providers from across the country including; arts, science and education organisations. VEA has a website and a social media presence and is a portal for people wanting information about events and content providers. VEA enables learners from across Australia to have access to high quality innovative educational content.

www.virtualexcursionsaustralia.com.au

Virtual Excursions Australia meeting

Reaching out to new collaborative partners

When reaching out to develop a partnership on a virtual event, consider the value that each new partner will bring to the table. Will this be a replication of the skills and networks that you already have, or will the additional partner enrich your collaboration with a valuable new dynamic?

There is strong value in bringing in partners from all sectors; government, non-profit organisations, SMEs and large corporations. Each partner has their own strengths and should be valued equally. Understand the needs of each organisation, including their strengths and their pain points. Be aware that the speed of decision making can vary dramatically across the different organisation types; and this needs to be accounted for during your shared project. State borders are less relevant in a digital age, however the issues you need to consider for online STEM programs are timezones, language and accessibility.

Things to consider when starting a collaboration

- How will different organisations communicate effectively?
- What are the goals of your collaboration?
- What are the barriers to your collaboration?
- How will the collaboration get funded?
- How will decisions be made?
- How will you unify your public messaging?
- What processes will you have in place to handle workflow?
- How will you assign responsibilities, timelines and documentation of your project?
- Which skill sets do you need to gather together across the consortium to be effective?
- What will the in-kind contributions from each organisation be?
- Are you going to be managing large or small project teams?
- Are your child protection policies the same across the different organisations?
- Can you get collateral sign-off quickly from each organisation's marketing teams?
- Is it possible to engage with organisations beyond traditional STEM organisations; how can you bring in culture and the arts?

The target audience should be clearly defined in a discussion amongst your consortium partners.Their characteristics, needs and abilities to connect with you remotely should form the basis of your collaborative project.

Designing your session

Once you have an idea about what you want to do and have an initial core team, it's time to design the session and plan the details. Here are some planning tips:

Brainstorm as a group.

Diversity is strength. Ask:

A What is important to the audience? Why would a participant want to come?

B What are the goals for all partners involved?

C What are your expectations for your organisation and other partners?

D How do we communicate with each other, especially when things are not working?

E How relevant is this to today's society?

F Are there opportunities for interaction and hands-on STEM/STEAM learning?

G How adaptive and responsive will we be? Will we test and invite feedback and then make changes if needed for the next event?

Photo: Virtual Excursions Australia.

Working together best practice

Have an agreement
Have something in writing that covers: shared expectations, deliverables, timeframe.

Shared work area and file store
To ensure all team members and partners can access and share ideas and contribute to plans, create shared folders and files using Google Drive, Dropbox or Microsoft Teams.

Shared project management
Tools like Trello, Asana, Basecamp, Monday, Microsoft Teams etc, even Google Docs and Sheets (online spreadsheets) are brilliant as a central point for activities and next steps. You can set up a simple structure, for example, with themes for each part of the activity or event you're going to run. It's easy to plan tasks and due dates. You can also include links to documents or other files. It's simple to tag people to let them know there is a question and you can discuss tasks within chat boxes.

Good communication processes
Ensure you have regular meetings. Check-in on progress, address any challenges and celebrate the small wins.

Hot tips!

> Think about what unique benefits you or your organisation bring to a partnership. For example, small organisations may be: more agile and can adapt quickly, have stronger local audiences, offer diverse and rich content. Big organisations may be: better resourced, have more digital infrastructure, offer good policies and established processes attractive to Government agencies.

> Make sure when you're partnering with others that you agree how you will share your marketing channels with each other.

> If you're in a large organisation, connect your communication/ marketing/social teams to have a shared campaign.

> Work with communicators and performers who are comfortable with the video experience. Give shout-outs to your partners wherever you can so it's a positive experience.

> Don't lose sight of your ROI, for example track your metrics and whether you hit your goals. Be clear on outcomes and report on them.

> Be very mindful of how cultural and intellectual property is being shared and treated.

> Check off on legal requirements including: privacy, trademarks and police checks.

Scenes from the National Science Week 2019 event Limelight, a collaboration between Murray Arts, NSW Department of Primary Industries and Inspiring Australia documenting the plight of the endangered Pygmy Perch through 360 animation in the round. Photos Nat Ord, Manifeasto.

What could possibly go wrong?

Short answer is, there's always something. Think about the following to help the best possible partnering emerge.

- Is your digital communications software easy to use?
- Can people outside of your organisation contribute to shared projects easily in real-time?
- Do you have a dashboard where everyone can see the status of each project and the milestones to achieve?
- Can you run brainstorming sessions with remote team members easily?
- How easy is it to onboard new people to your project?
- How will remote team members understand the processes involved?
- Do you expect large volumes of files to be generated? How will this be managed?
- How will communications and file security be managed?
- Could you do all of this remotely?
- Does your collaboration have someone who knows about current collaborative technologies and how to implement them?
- What is the timeline for training your team and third parties?
- Who will manage the inevitable helpdesk questions that will come up?
- What are your plans for when things go wrong?

Events with impact

Here are some examples of the types of partnered events you could offer.

Online science festivals
Science festivals are known for their vibrancy and entertainment. You can bring multiple providers, from diverse backgrounds together. Entertain, educate, engage and celebrate.

Some international examples:

- **Cambridge Science Festival 2020**
- **US Science Festival**
- **Pint of Science**
- **COSI Science Festival**

Citizen science projects
Enable people to contribute to science through citizen science projects. Can you run a citizen science activity online in real-time?

The Australian Citizen Science Association has a fantastic list of projects online (e.g. EyeWire, FluTracker, AstroQuest) and backyard projects (e.g. FrogID, Birdata and NatureMapr). Anyone with a mobile phone or internet connection can actively participate.

Where to find projects?
- **Australian Citizen Science Association's Project Finder**
- **SciStarter**
- **Zooniverse**

Working together on a challenge
Teams of people work together virtually to solve problems, design solutions, create art.

When new satellites are being built, scientists and engineers from around the world contribute to the plans and designs. Plant biologists can view samples in a remote microscope to identify species. Read more on how to run a 'mini-build' here: **STEM Mini-builds; emulating collaboration outside of school.**

Hackathons
A hackathon is most commonly a 2-3 day creative, intensive competition where a diverse group of people solve problems using technology as an enabler. You don't necessarily have to know how to code: hackathons are great design, business and marketing development processes.

Above: CEO Dr James Johnson and artist Michelle Grimston at the launch of Geoscience Australia's artist in residence program.

Artists at work. Photo: Geoscience Australia

Art and rock materials. Photo: Geoscience Australia.

When to host your event

Look for a great national day/week month to be part of! Earth Science Week, NAIDOC, National Science Week, Spark Innovation Festival or the Victorian Innovation festival, National Disability Day and more.

Working with Indigenous contributors

For ideas on appropriate acknowledgement working with Indigenous people and their content, watch this recent webinar from Aus Council Arts with Terri Janke **First Nations protocols in a digital space - Creative Connections by Australia Council for the Arts**

Content providers team up for activities presented by the Center for Interactive Learning and Collaboration. Photo: Fizzics Education.

Case Study: The Center for Interactive Learning and Collaboration

As a result of the COVID-19 pandemic, families suddenly had their children home. The US-based **Center for Interactive Learning and Collaboration** (CILC) realised that they could help by offering education and entertainment. For 25 years, the CILC has connected organisations with classrooms, and is keen to connect with more Australian content providers. In March 2020, they developed their communities of learning from the start of COVID-19, connecting 20 organisations and delivering programs to 35,000 kids, parents and teachers.

The centre ran 200 programs from 25 of their key providers, for years K-6. All these sessions were live and interactive via Zoom.

Having existing relationships with a range of organisations that wanted to share their content meant they could develop content quickly.

Jan Zanetis, CILC's Managing Director says,
"I'd recommend looking for other people who are working in the same space as you. Or, find people who are engaging, for example, think about actors who are good across video".

Some of the challenges they faced included monetising the content. Initially, content providers volunteered their time. CILC also coordinated donations from parents and secured grants. They are currently exploring ways to make the money needed to continue running the programs.

After running the program, a survey showed 90% of respondents wanted to continue participating and 60% were open to participating during the coming school term for a fee. Through daily evaluation polls they found that 95% of respondents (parents and teachers) indicated that they would recommend the programs to others.

Pricing your programs

Pricing of your programs can create engagement in its own right. Think about your own perceptions of price, does cheaper always mean a better service or product? Free programs might potentially bring in large numbers of people, but these people equally have less investment in attending beyond curiosity, so expect last minute cancellations. Conversely, pricing a program too steeply can mean reduced engagement as you narrow the ability of the public to attend.

Not all organisations have direct funding. Think carefully about the needs of your consortium partners and what it takes for them to be involved in your collaboration. Open dialogue matters greatly here. Your goals for engagement with your target audience as well as your partner needs and the anticipated outcomes should determine how you price your online programs.

Working with virtual backgrounds. Photo: Fizzics Education

Case Study: Sydney Science Trail

The Australian Museum and The Royal Botanic Garden are working together for National Science Week 2020 to create the **Sydney Science Trail**, a national contemporary science program delivered online as a virtual experience. The aim is to create something unique that capitalises on the strengths from both organisations. The organisations have many things in common: geographic location and a focus on natural history, research and community programs.

Tori Tasker, Creative Producer at the Australian Museum says that benefits from working together on a new online program include being able to build a nation-wide event and working alongside other people.

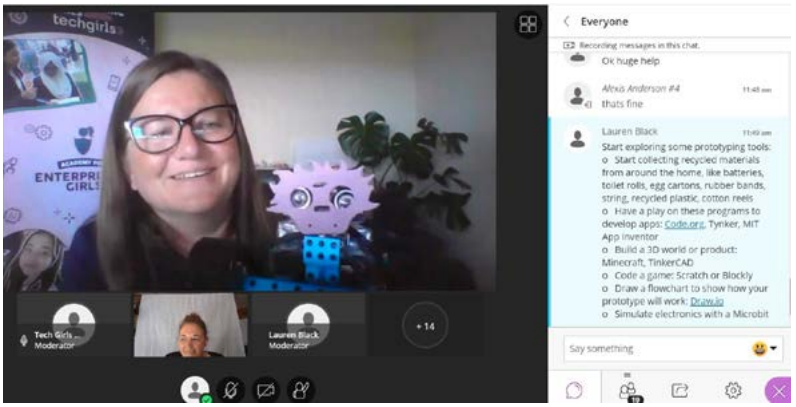
"Everyone is keen to work together and the support from each other as we work through a new way of presenting events, has been very valuable to me personally," she says.

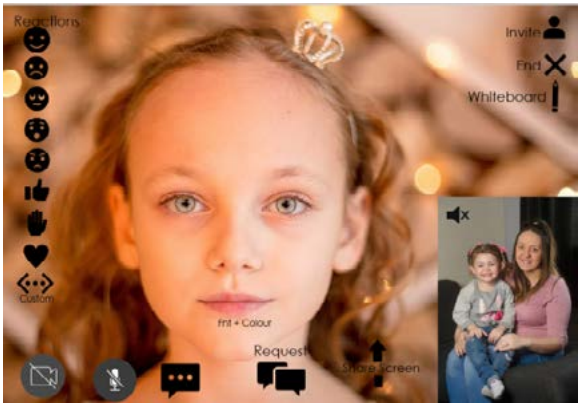
Tori recommends starting with understanding your potential partner before getting into the planning.

"Have the long-term goal in mind. Start then build. Figure out that you have the same overarching goal and what you can bring to the table."

A couple of the challenges for forming this partnership has been the rapid change to operations as a result of COVID-19, the short time-frame to adapt, and the desire to set up a quality program before National Science Week in August 2020.

Science Week activities. Left: Free Museum Weekend 2019 © Australian Museum, photo N. Langley. Right: Science Week 2016 © Australian Museum, photo J. Horan





Case Study: Girls in STEM Design Challenge

University of Technology Sydney Women in Engineering and IT (WiEIT) has an ongoing partnership with the Tech Girls Movement Foundation. In April 2020 they delivered an online **Girls in STEM Design Challenge**. Fifty girls in Years 5–8 took part in the initiative to improve people's lives while practicing physical distancing, as a result of the coronavirus pandemic.

"Partnering with Tech Girls Movement Foundation allowed us to share the workload and expertise, increase our reach, deepen our impact and leverage each other's technology resources," says Lauren Black, Women in Engineering and IT Program Coordinator.

Participants learnt about different jobs in STEM and about the importance of these jobs, met other like-minded girls who were into STEM, and reported that the challenge made them want to study STEM subjects at school, do a job in STEM and learn about STEM at home.

Challenges in running the event as partners included keeping each other accountable for operationalising ideas, which worked well for the online STEM Design Challenge as the event met shared objectives.

Future programs include UTS STEM x Play curriculum-integrated primary school program and the Search for the Next Tech Girl Superhero Challenge.

Left: The Girls in STEM Design challenge workshops happened virtually because of the pandemic. Right: One of the design interfaces developed by the girls. Photos: UTS.

Sapphire coast events happening in the beautiful southern NSW coast. Photos Bournda EEC, NSW Department of Education

Other partnership events

Sapphire Coast Science Festival

Sapphire Coast Regional Science Hub Sustainability Education Network has run a Science Festival every year since 2014. Previous festivals have included citizen science projects like 'Birds of a Feather' utilising the Atlas of Life in the Coastal Wilderness (ALCW), a project documenting biodiversity on the Sapphire Coast of southern NSW. Five online events are planned as part of the upcoming 2020 festival.

According to Doug Reckord, Principal of Bournda Environmental Education Centre, NSW Department of Education, all the hub members are passionate about increasing community awareness and involvement in regional activities and the importance of science in everyday life.

"There is a real interest in science and sustainability and a demand for quality activities for people of all ages. The Festival has also brought our organisations closer together and catalysed more effective collaboration and communication," says Doug.

Challenges: Funding and coordinating the many partners involved. Enablers: using shared project management and collaboration tools including Basecamp software provided by 2pi software, one of the hub members; regular meetings; continuously thinking of new online models that will deliver good outcomes.

City Nature Challenge weekend

City Nature Challenge (CNC) weekend organisers from Adelaide, Geelong, Redlands City and Sydney met with citizen scientists online for "virtual parties" to identify and correct species on the iNaturalist website to be added to the Atlas of Living Australia. One of the key benefits from the partnership — between a range of organisations including universities, city councils, private and not-for-profit bodies — was being able to share diverse skills. These included: social media, WordPress, Canva, technical writing, taxonomy, and field naturalist skills.

The main challenges included achieving social media exposure, managing face-to-face training with participants working around the bushfire crisis and then COVID-19. Michelle Neil, secretary and social media moderator with the Australian Citizen Science Association says they changed their thinking and adapted, flipping their message from 'online pizza parties' to a 'backyard bioblitz while in lockdown over the ANZAC Day weekend' and 'virtual identification party'".

During the four-day CNC event and online identification parties more than 24,000 observations were added to Atlas of Living Australia. Worldwide the CNC in 2020 contributed over 815,000 observations to international databases.

2021 Craft ACT Artist-in-residence program

Geoscience Australia is teaming up with Craft ACT: Craft + Design Centre and ACT Parks & Conservation Service. Selected artists will engage with Geoscience Australia's geologists on the National Mineral and Fossil Collection and other Earth science research. It's not the first time Geoscience Australia has partnered with artists. In October 2018, 50 artists from the ANU School of Art & Design partnered with Geoscience Australia to create new artworks, some of which were unveiled and exhibited at ANU's School of Art in August 2019.

What's next for you? - Brainstorm space

What's one thing you'd like to work on?

Who are three organisations you might reach out to?

What are you planning to do?

How can the people you've connected with, and the Inspiring Australia teams, help you reach your goals?

Thanks and let's stay in touch!

We hope you enjoyed developing your ideas, technology and capacity to present amazing events online. What's next for you? Please do share your events and ideas. Reach out to your Inspiring Australia state contacts to share and promote your events, list them on the **National Science Week** website and feel free to reach out to the authors of this manual.

Connect with your Inspiring Australia state and territory networks

The Virtual Excursions training package has been coordinated for national delivery by Inspiring Australia NSW. It is produced and delivered by Fizzics Education, Sydney Science Education and Refraction Media with support from the Office of the NSW Chief Scientist & Engineer and state Inspiring Australia programs in NSW, ACT, QLD, WA and SA.

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