Australia's National
Science Agency

Generation STEM

2021 Annual Review

Acknowledgement of Country

CSIRO acknowledges the Traditional Owners of the lands that we live and work on across Australia and pay our respect to Elders past and present. We recognise that Aboriginal and Torres Strait Islander peoples have made and will continue to make extraordinary contributions to all aspects of Australian life including culture, economy and science.

Contents

Executive summary

In 2021 Generation STEM grew deeper and wider: deeper with increased reach and stronger relationships of its established program, and wider with new programs reaching a more diverse audience and with new regions also increasing the overall spread of Generation STEM.

Generation STEM has established its presence through program delivery in Focus Area 1 (building the STEM pipeline) in Western Sydney, via the STEM Community Partnerships Program (STEM CPP). In 2021 this increased significantly, as participation went from two Local Government Areas (LGAs) in both 2019 and 2020, to seven in 2021. This is set to increase to eleven LGAs participating in STEM CPP in 2022 in Western Sydney alone, not including LGAs from new regions.

This deeper reach in Western Sydney has led to amplified recognition by community, stakeholders and participants of the program's value. Stakeholders and potential participants have proactively reached out to Generation STEM to get involved, and both schools and industry partners have continued involvement despite COVID-19 related challenges. Schools and industry mentors alike spoke positively about their experience with STEM CPP and are keen to remain involved in the program.

STEM CPP has also been an important part of Generation STEM's expansion wider into regional NSW with the program launching in Central West in 2021; the first expansion to a regional area. This was shortly followed by the expansion into New England, specifically the Moree Special Activation Precinct (SAP), and Illawarra-Shoalhaven with Deadly in Generation STEM. Through this regional expansion, Generation STEM is tailoring program offerings to meet local growing STEM needs in these communities.

New programs and projects have been established throughout 2021 extending the scope of Generation STEM. Deadly in Generation STEM under Focus Area 1 is underway with the aim of increasing participation of underrepresented groups in the STEM pipeline, namely NSW Aboriginal and/or Torres Strait Islander students. The second program initiated in 2021 was Generation STEM Links. This program sits under Focus Area 2 (transition to employment) and aims to increase tertiary students' work-readiness through high-quality internships. Lastly, two data insights projects have been initiated, the results of which could have a far-reaching and longer lasting impact beyond the Generation STEM initiative.

This growth has been possible in large due to Generation STEM's continued innovation to understand and meet community needs, and adapt in line with COVID-19 related restrictions and lockdowns. Not only have several program offerings been converted to a virtual format, but processes have also been established to enable flexible delivery moving forward – be it face-to-face, virtual or hybrid.

In summary, 2021 could be themed 'the year of growth' for Generation STEM.

Generation STEM: 2021 year in review

STEM Community Partnerships Program (STEM CPP)

1122 students

47 schools

23 industry partners

27 students participated in Virtual Work Experience

87% school retention, despite COVID-19 challenges

6 teacher professional learning workshops

6 virtual showcases with 87 projects presented and 500+ attendees

Students and teachers report that STEM CPP has **positively impacted students' 21st Century skills.**

'...when they presented their ideas, it was a real-world problem and this was their solution, and they really believed in the process that they had come up with to that problem. I thought that was quite powerful, actually.' – Industry mentor

'We had only anticipated 8 weeks for this project, but we now realise that because it was such a great experience for everybody, it's going to be built into the programming, so it goes for the full semester.' – Teacher

'It was a really great and unique opportunity. Our mentor was a great person who was open to the many questions we were asking. Everything was really helpful, and I recommend this experience to others like me!' – Student Virtual Work Experience

New locations

3 new NSW regions

5 new LGAs in Western Sydney region

New programs

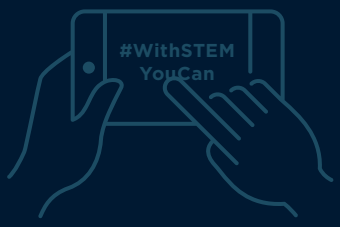
Deadly in Generation STEM
launched in Moree, New England and Illawarra-Shoalhaven

Generation STEM Links
launched state-wide

2 Data insights projects
approved and initiated

#WithSTEMYouCan campaign

Social Media campaign
showcasing STEM achievements to inspire next generation



Campaign platforms included **Facebook, Twitter** and **Instagram**

114 organic social media mention, resulting in a reach of over **1.6 million**

100+ panel discussion attendees

1133 Visitors to csiro.au page content

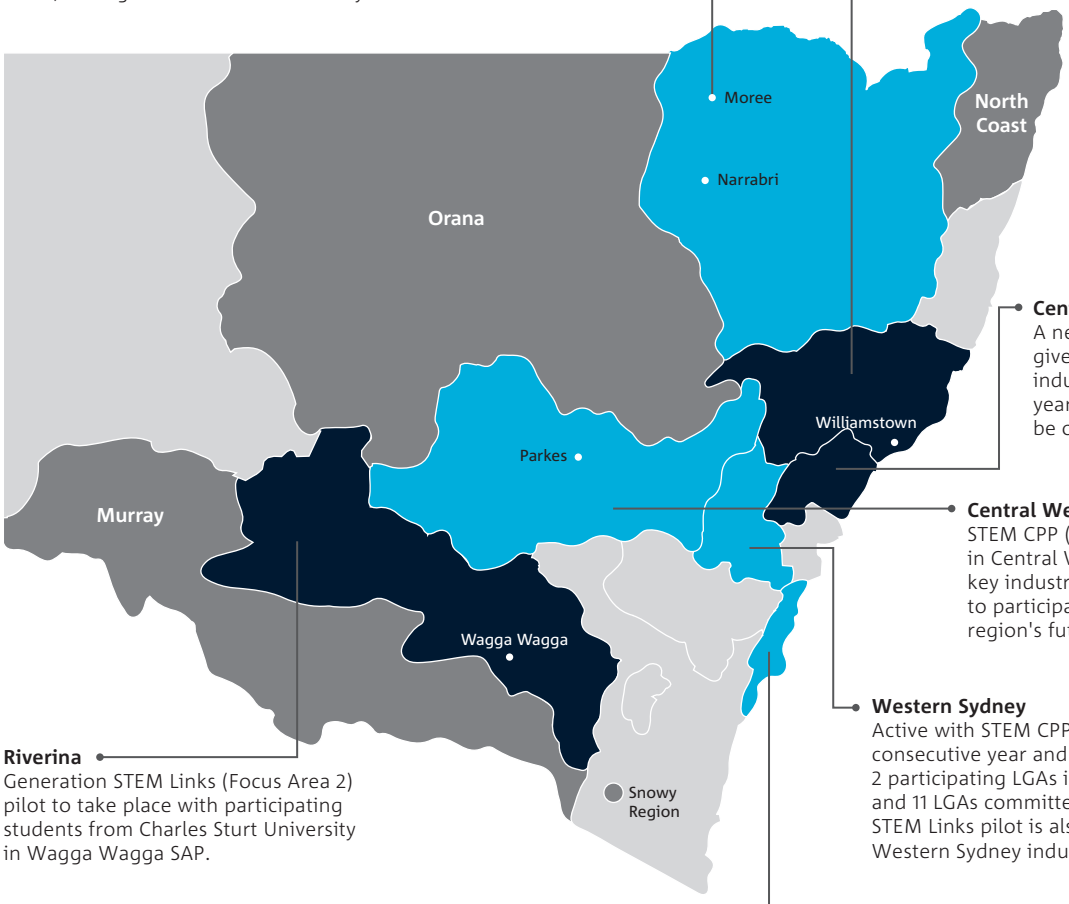
Program growth

Generation STEM's expanding reach

2021 has been the year of the greatest geographical growth for Generation STEM, with expansion **from two to seven LGAs** active in the program within Western Sydney and presence established in **three new regions** in NSW.

New England (Moree)
Deadly in Generation STEM (Focus Area 1) established in the region, focusing particularly on Moree Special Activation Precinct (SAP) to increase participation of Aboriginal and/or Torres Strait Islander students in STEM, through Culture and on Country.

Hunter region
Generation STEM Links (Focus Area 2) pilot to take place with participating students from Newcastle University.



Central Coast
A newly identified location priority given the growth in population and industry skill demand in the last two years. STEM CPP (Focus Area 1) will be offered in Central Coast in 2022.

Central West
STEM CPP (Focus Area 1) established in Central West with mining being the key industry showing a keen interest to participate and invest in the region's future.

Western Sydney
Active with STEM CPP (Focus Area 1) for the third consecutive year and growing year-on-year from 2 participating LGAs in 2020, to 7 LGAs in 2021 and 11 LGAs committed for 2022. Generation STEM Links pilot is also taking place with Western Sydney industry partners.

Riverina
Generation STEM Links (Focus Area 2) pilot to take place with participating students from Charles Sturt University in Wagga Wagga SAP.

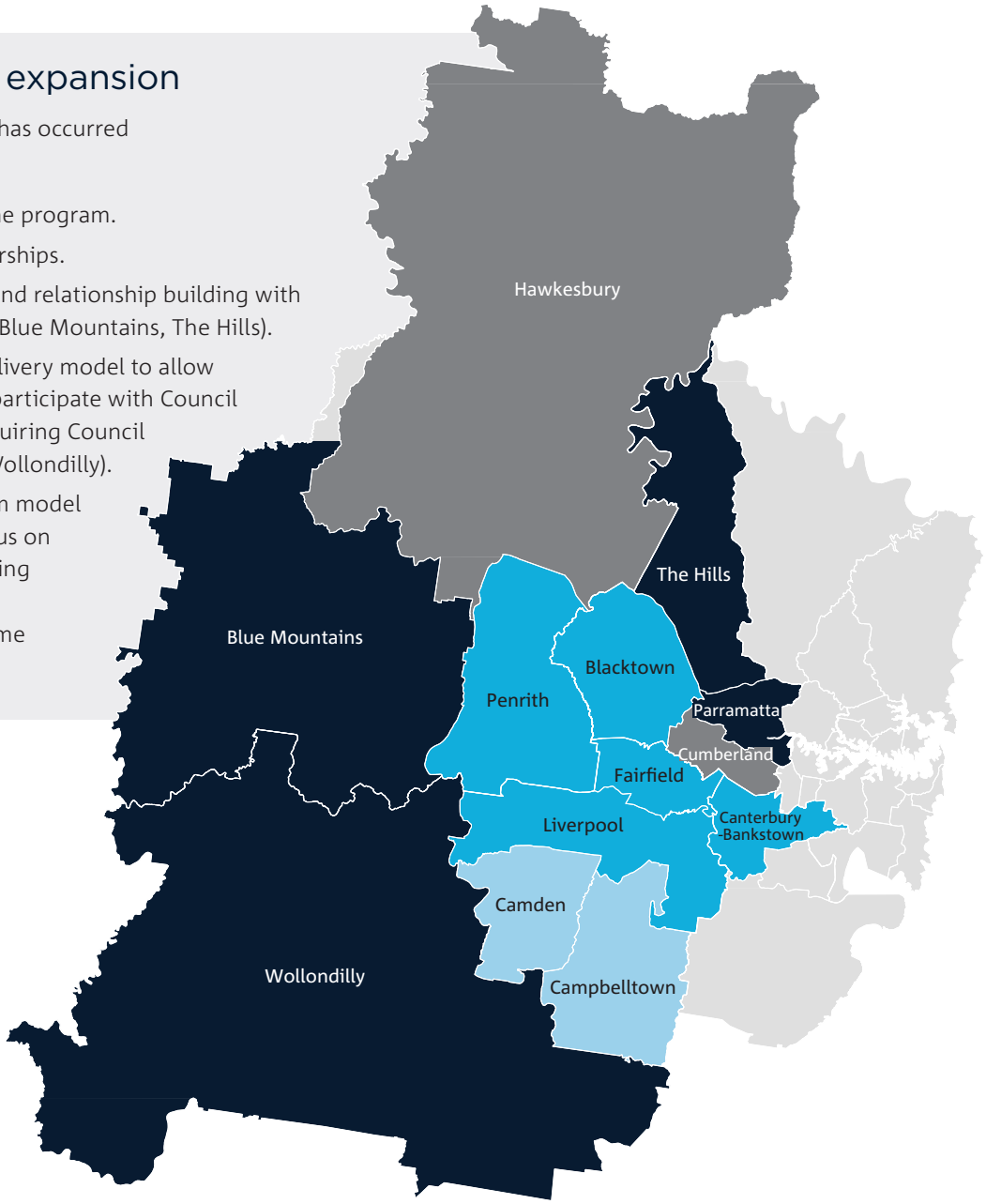
Illawarra-Shoalhaven
Deadly in Generation STEM (Focus Area 1) established in the region to increase participation of Aboriginal and/or Torres Strait Islander students in STEM, through Culture and on Country.

- Active in 2021
- Planned for 2022
- Other location priorities
- Non-priority areas

Western Sydney expansion

Western Sydney expansion has occurred as the cumulative effect of:

- Growing reputation of the program.
- Strategic industry partnerships.
- Ongoing conversations and relationship building with councils since mid-2019 (Blue Mountains, The Hills).
- Adapting to a flexible delivery model to allow schools and industry to participate with Council support, but without requiring Council resources (Parramatta, Wollondilly).
- Scalability of the program model allowing the team to focus on recruitment and supporting new participants, while return participants become self-sufficient.



Generation STEM presence

- Active since 2019
- Active in 2021
- Planned for 2022
- Remaining LGAs

Generation STEM generating interest

Generation STEM's increasing recognition is evident by the number of stakeholders that have proactively reached out to get involved. The initiatives reputation has been established through activities like the #withSTEMyoucan campaign, events and community engagement, social media activity, various announcements of new partnerships, and word-of-mouth promotion.

This has resulted in increased awareness of the program and expanded reach to potential industry partners, industry associations, councils and other government stakeholders. Queanbeyan-Palerang Regional Council, Public Works Advisory and Regional Development, Norman Disney and Young, NSW Minerals Council/NSW Mining all reached out to discuss possible partnership opportunities with Generation STEM independently.

Program delivery

Focus Area 1
STEM Community Partnerships Program (STEM CPP)

Implementation of STEM CPP expanded considerably in 2021 for the third year, building on the valuable processes and relationships established in the first two years of operation. STEM CPP forms strong and sustainable relationships with schools, councils and industry to provide relevant opportunities for students. Learnings from these relationships in Western Sydney have informed the establishment of a delivery partner model of STEM CPP in the Central West region.

Key activities and achievements

Community engagement

7 new formalised agreements with councils

6 school information sessions

95 school leaders engaged

722 registrations and 500+ attendees at Virtual Showcases

Empowering teachers

6 teacher professional learning (TPL) workshops

29 STEM professionals confirmed partnership with teachers

Drop-in sessions to prepare for Virtual Showcase

Attract, support and train students

1122 students participated in program in 2021 (increase of >600% from 2020 (153))

47 participating schools (increase of >480% from 2020 (8))

6 Virtual Showcases conducted with 87 projects presented

Connect to industry

Virtual Work Experience – **27** students

Continued strategic industry partnerships

23 industry partners in Western Sydney

Industry input into **36** new local challenge scenarios

Communications

Impact and evaluation

Engaging industry

2021 demonstrated the benefit of developing industry partner relationships over time; with >280% increase in industry partners (from 6 in 2020 to 23 in 2021). Often these engagements were a result of careful stakeholder management and clearly communicating the benefits of STEM CPP to their organisation. This is particularly true with the larger industry partners such as Western Sydney Airport.

CASE STUDY

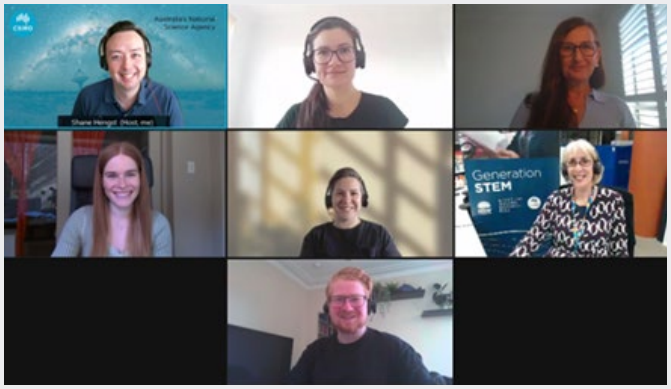
Taking off with Western Sydney Airport

Western Sydney Airport (WSA) invest in the workforce of the future by educating secondary school students about potential career opportunities, securing future employment for the Western Sydney region.

Through STEM CPP, CSIRO'S Generation STEM partnered with WSA to provide inquiry-based STEM project participation opportunities for year 9 and 10 students, connecting students with industry and the local community. This partnership took over a year to reach this point.

Students were invited to visit WSA's construction site and hear from experts bringing the new WSA to life.

During a virtual event, students engaged with WSA engineers who shared insights into their own STEM career journeys, including the trials and tribulations that can be experienced. They interacted with students and answered questions along the way, further providing real world application of STEM skills to their future career prospects.



Results

A total of 76 students from 5 schools participated in the event designed to inspire local students into STEM pathways, with all participants associating themselves with a role in STEM they could see themselves in.

This activity generated media activity, with *The Daily Telegraph* and *Passenger Terminal Today* circulating news articles. Further promotional activity included media releases published to csiro.au, Twitter activity and WSA generated content.

The strong relationship formed between WSA and Generation STEM combined with the positive results of the partnership solidified WSA commitment to participate in STEM CPP ongoing, specifically 2 activities per term hosted by WSA (one virtual, one on-site).

This agreement will provide opportunities for approximately 500 students to interact with STEM professionals each year, understand real-world applications of their inquiry project, and gain regular insight to STEM careers.

An adapted model

Working with local Councils was a key success factor of STEM CPP when first designed three years' ago. Through our partnerships and relationships with local Councils to date, we have gained an understanding of the valuable work Councils do to support their communities.

In light of local Council requirements to redirect resources to support their communities through COVID-19, some Councils did not have the capacity to collaborate on STEM CPP in 2021. This led to the establishment of an adapted STEM CPP delivery model to be used in these circumstances. This model will reduce the strain on local Council resources by allowing school and industry partner involvement without formal local Council collaboration.

The model will be trialled in Wollondilly and Parramatta in 2022 allowing STEM CPP to continue to expand in Western Sydney despite the considerable resource constraints that Councils face. While initially the program may be offered to the community without local Council involvement, STEM CPP will continue to connect with local Councils and invite them to participate in STEM CPP activities such as the Showcase event. If their capacity allows, local Councils have the option to formally collaborate at any stage of the program in future.

COVID-19 2.0

Due to COVID-19 restrictions, STEM CPP was almost exclusively delivered virtually from July 2021. The pivot, however, was different to that of 2020.

Using learnings from the previous year and making improvements for 2021, the program was able to **retain 47 out of 54 (87%) participating schools,** despite the challenges of remote learning.

These improvements and subsequent learnings will inform 2022 STEM CPP delivery.

In 2022, STEM CPP will continue to develop resources and adapt delivery to allow all aspects of the program to be delivered successfully in a hybrid and/or virtual format.

2021 Learnings

2021 How STEM CPP was adapted to address 2021 COVID related challenges	2022 Learning and further improvements to be embedded into program for 2022
Industry mentors met with their partnered teacher (and some instances classes) virtually. This enabled **teachers to continue accessing real world context** and information relating to inquiry projects, despite lockdowns.	Ongoing, mentors and teachers will be able to opt for purely virtual, blended or face-to-face partnerships upon sign up in 2022.
Careers events delivered virtually by organisations such as Western Sydney Airport and Canva provided **150+ students with direct access to STEM professionals** in a range of careers.	The success of the event has inspired Western Sydney Airport to commit and confirm dates for 1–2 virtual event per term. Other industry partners can also be invited to take this approach given this example of success.
Virtual Work Experience replaced onsite Work Experience – **27 Year 10 students** engaged in projects with 5 different supervisors and Generation STEM now have supervisors trained in delivering this mode of work experience. *'I enjoyed being able to talk to professionals about nanotech and STEM in general. It gave me a lot of helpful knowledge that would definitely benefit my future.'* – Student	This will be further expanded and will be offered across the year, with students and teachers being able to 'book' into a project at a time that suits, from a range of different STEM industries. This will continue to allow students direct access to STEM Professionals in an efficient manner.

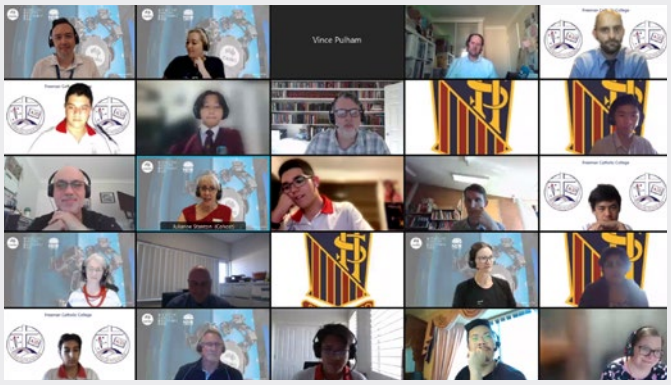
CASE STUDY

New and Improved Virtual Showcases

Using learnings from 2020, the team adapted the Virtual Showcases 2021 to recreate an experience as close to possible as the face-to-face event. A virtual showcase was hosted for each LGA on the originally scheduled showcase date, maintaining the effect of a 'live' event.

Important stakeholders were still able to attend, and teachers remained on schedule in preparing their students. Students were able to present their projects to a live audience and take questions from council employees, STEM professionals and other students.

The sense of celebration and acknowledgement for students that their work has value to community was far higher than it had been in 2020. It also provided students with the opportunity to practise the skill of communicating STEM ideas to a diverse audience and build their confidence in presenting online; something that was not possible in 2020.



Fairfield Virtual Showcase.

Canterbury-Bankstown Virtual Showcase.

Lessons learnt

- **Be available for teachers:** drop-in sessions for teachers were scheduled in the lead up in to showcases – these virtual sessions were invaluable and provided teachers with support and technological know-how, with minimal output from each STEM CPP team member. These will be implemented on an ongoing basis in 2022 for all aspects of STEM CPP for teachers to access Project Officers as and when needed.
- **Build virtual delivery into all planning**: making the decision early to move to a virtual event allowed ample time for planning and preparation, and the changes made from the face-to-face event were well-considered. As a result, the virtual event became more than a minimal viable product. In the process, some work that had been done with a face-to-face event in mind had to be revisited and adapted for the virtual context. From 2022, all events will be planned with a hybrid model in mind so attendees can access any given event either virtually or in person. This means that if an event needs to be moved to only a virtual format, this switch will require minimal 'pivoting'.
- **Virtual events are not just a back-up plan:** the success of the 2021 Virtual Showcases has shown that virtual events do not have to be 'the next best' option, when compared with face-to-face events. As such, the 2022 calendar has virtual events built in where the benefits of this format outweigh those of a in person event. This strategic decision means that the number of participants for each event is uncapped and STEM CPP's reach can be expanded quickly, events can be offered cross-geographies and in-turn participants have the flexibility to choose from multiple scheduled events and the logistical load is removed for teachers as they can dial-in from the classroom

What participants said

'it was fabulous to see some of the great projects the students had come up with, you could tell they had innovated and really done their research' – Council Employee

'The students were incredibly proud of themselves and enjoyed getting to showcase their projects. The students have gained skills from being a part of this project and we look forward to working together for more initiatives in the future.' – Teacher

Focus Area 1
Deadly in Generation STEM

Generation STEM aims to increase the diversity of students entering the STEM pipeline by focusing on underrepresented groups. This program was initiated in 2021 with the specific purpose of increasing participation of NSW Aboriginal and/or Torres Strait Islander students in STEM, through Culture and on Country.

In 2021, the Deadly in Generation STEM team conducted community consultation to better understand the current needs and challenges faced by Indigenous students engaging with STEM education and STEM pathways in their respective communities.

Insights from this engagement have informed how Deadly in Generation STEM will tailor the program appropriately for each community.

Common themes and concerns were expressed in both communities and as such, Deadly in Generation STEM programs will be similar, while localised, for both regions. Further community consultation will take place in 2022.

An Impact Pathway has been drafted that will articulate 'pathways to impact' and the program design has also been informed by 'What works' in Indigenous STEM education, an important best practise summary that came out of the Indigenous STEM Education Project monitoring and evaluation.

The Deadly in Generation STEM program is on track to pilot in Moree and Illawarra-Shoalhaven in 2022.

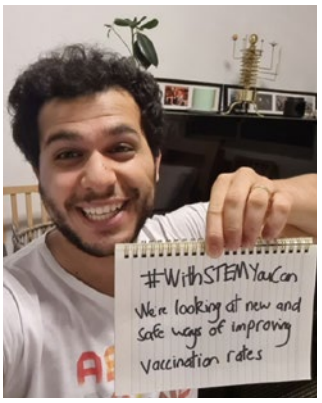
2021 Stakeholder consultation

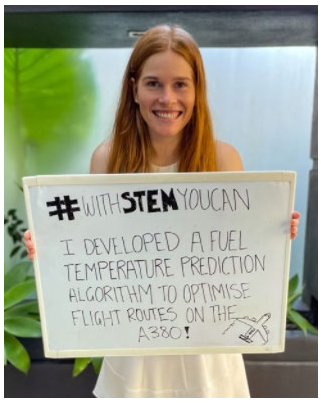
Gomeroi Country (Moree)	Dharawal Country (Illawarra-Shoalhaven)
Moree Local Aboriginal Education Consultative Group (AECG)	Illawarra AECG
Moree Secondary College	University of Wollongong
Local Aboriginal Land Council	Illawarra Local Aboriginal Land Council
Moree Sports, Health, Arts and Education (SHAE) Academy	
Moree Plains Shire Council	
Miyay Birray (Youth Service)	
Aboriginal Affairs NSW	
NSW AECG	

Focus Area 1
#WithSTEMYouCan campaign

The 2021 #WithSTEMYouCan campaign was developed in line with the Generation STEM objective: to **increase student's interest in STEM and awareness of STEM education and career pathways**.

STEM professionals were invited to share their greatest or most interesting career achievements, using #WithSTEMYouCan. By sharing these achievements, they showcased possibilities of a STEM career and broadened students' awareness of the opportunities that STEM career pathways provide.





Campaign activities

- **Events**, including a series of #WithSTEMYouCan Panel Discussions for students, parents and teachers. Our panels bought together some of the brightest mind across government, industry, education and big tech to discuss the future of STEM careers.
- **Social media**: Students were able to see a showcase of #WithSTEMYouCan social posts.
- **Website**: The site included lesson plans and teacher resources.
- **Advertising**: The multifaceted campaign also featured a paid social campaign targeting students and advertising with the Careers with STEM website.
- **In-classroom experiences**: Immersion days were run where schools planned a whole day event for students to work on STEM CPP including meeting with their mentor and watching #WithSTEMYouCan or a masterclass. Given its success, immersion days are now a suggested activity for teachers and included in the content of Teacher Professional Learning (TPL) Day.

Results

- 114 organic social media mentions and hashtag uses, resulting in a reach of over 1.6 million accounts
- 100+ people attended the virtual Panel Discussions
- 1133 website visits
- Paid campaign results: 361,604 impressions (newsfeed appearance), 70,853 accounts reach, 956 link clicks for more information

Post panel discussion polls revealed 93% of the audience (who responded to the survey) found the panel discussion informative and 73% were more likely to choose a STEM elective subject after attending the session.

#WithSTEMYouCan is not limited for use only in 2021. Content is still available on csiro.au for public access and the hashtag is being used for Generation STEM social media posts. This message will continue into 2022 as an ongoing theme for Generation STEM.

Focus Area 2
Generation STEM Links

The Generation STEM Links program provides high-quality internships and workplace skills to support tertiary students' transition into STEM jobs after graduation. The program also aims to strengthen connections between industry and tertiary education institutions.

Generation STEM Links progressed through two stages in 2021

2021 key activities

Q1 | Q2 | Q3 | Q4

Stage 1: Program development

- Identified program model with evidence of success
- Proposed program to Consultative Council and approved as part of Operational Plan 2
- Developed Impact Pathway and established program outcomes
- Explored approaches to program delivery including identifying and pursuing potential partnership opportunities
- Developed program delivery guidelines

Stage 2: Program establishment

- Engaged CSIRO SME team to collaborate on delivery of program
- Established key program processes
  - Key messaging and communication collateral
  - Application documents eg. Eligibility guidelines, EOI forms
  - Impact and Evaluation plan
- Opened for applications for a soft launch and trial of 2022 placements

Key results

6 industry partners applied

- Illawarra-Shoalhaven
- Riverina-Murray
- Western Sydney

21 industry partners in the pipeline

- Agriculture
- Construction
- IT
- Manufacturing

44 students applied

- University of Technology Sydney
- Western Sydney University
- University of Wollongong
- University of Newcastle
- TAFE Ultimo

2022 opportunity

In 2021 the number of industry partners showing interest in engaging TAFE/VET students outnumbered the number of opportunities available to them. With many existing work placement programs directed at University students, bridging this gap is a strategic priority for Generation STEM Links in 2022.

Data Insights projects

In the design and monitoring of the program, Generation STEM has faced a number of data-related issues including:

- Appropriately designing, targeting, and tailoring programs to different student cohorts.
- Obtaining sufficiently detailed and timely data to inform program decision making.
- Assessing the impact of STEM education programs, particularly difficulties obtaining student level data and the benchmarking of outcome achievement.

These challenges are not unique to Generation STEM, with other organisations delivering STEM education programs in Australia grappling with the same issues.

In 2021, the Generation STEM Impact and Evaluation team explored the opportunity for Generation STEM to be the catalyst to potentially address these challenges through one or more data insights projects.

Two projects were proposed and approved to progress:

PROJECT 1 **STEM education outcomes framework**	PROJECT 2 **STEM education predictive analytics tool**
Potential: Widely utilised STEM education-specific outcomes framework that standardises approaches to evaluating success of interventions.	**Potential:** World-first STEM education specific analytics tool spanning STEM pipeline; can identify and help address leaks before they happen.
Points of difference: Compared to many existing education evaluation/ outcomes frameworks: • STEM-education specific • Covers entire STEM pipeline • Inclusive of range of outcomes beyond academic achievement • Identifies specific variables • Provides scales/measurement and data guidance • Bank of standardised evidence over time	**Partners:** Opportunity to partner with a number of organisations (government, university, industry, philanthropic) to develop and use the a predictive and/ or causal model informing education interventions, particularly if linked to social equity outcomes.
2021 – Key activities (post-approval)	
• Project plan developed including scope, timelines and potential partnerships approach. • Initial scan of research and literature conducted. • Recruitment of a research officer to undertake framework development.	• Draft hypotheses for the project developed, including exemplar student pathways in the STEM pipeline. • 'Proof of concept' partner identified, and Catholic Education Diocese of Parramatta have agreed in-principle. • CSIRO Ethics application (waiver of consent) and draft collaboration agreement developed to formalise arrangements.

Program insights

Monitoring program impact is a priority underlying all Generation STEM programs. It provides ongoing evidence about the implementation and effectiveness of the Generation STEM program, and informs continuous improvement.

In 2021, data was collected and analysed to identify key program insights relating to STEM CPP (the only program fully operational).

Data collected included **112 student surveys** (around 10% of participants), post-event questionnaires representing the **views of 165 participants,** and qualitative data from interviews to inform the insights report.

Other data sources are in progress, including a data request to the New South Wales Government for subject selection data, with an initial trial available in the first quarter of 2022.

Other data sources are in progress, including a data request to the NSW Department of Education and NSW Education Standards Authority for subject enrolment data.

Key insights

- A statistically significant proportion of students reported a positive shift in their interest in learning about STEM over the 2021 school year (30 per cent).
- The inquiry-learning project appears to be having the biggest impact on students' interest in STEM (43 per cent of students stated it had made them much more interested in STEM).
- The majority of students reported that they felt confident about doing well in science (70 per cent).
- Female students are less likely than male students to report being confident about technology subjects (48 per cent compared to 59 per cent for males), and to have a desire to work in STEM (45 per cent compared to 62 per cent for males).
- Nearly all students reported that STEM CPP had positively impacted their problem-solving abilities (96 per cent).

The implementation of STEM CPP has faced several challenges, especially with the impacts of COVID. Key barriers in 2021 included:

- the postponement of activities and specific industry partnerships
- the transition to online delivery for several key student activities
- delayed engagement with schools and industry mentors, resulting in less-than-ideal collaborations between schools and industry partners
- a burdensome consent process for schools and parents.

Despite these barriers, participating schools and industry mentors alike spoke positively about their experience with STEM CPP and are keen to remain involved in the program.

For many schools, the student-led approach to solving local community problems has engaged students considerably in the STEM inquiry-learning process.

Conclusion and recommendations

Data from the surveys and interviews indicate the program was well received by participating stakeholders, with most council staff, teachers and industry mentors indicating they are likely to continue with STEM CPP into 2022.

In 2021 STEM CPP provided schools with the opportunity to engage with community and industry in unique ways that may not have been possible otherwise. As a result, students were exposed to examples of 'real-life' STEM beyond the standard classroom curriculum. This led to a significant increase in many students' interest, awareness, and attitude towards STEM.

While one of the key benefits of STEM CPP is that it can be adapted to each school's specific context and need, this can lead to challenges with its implementation. Given STEM CPP is in its first year of substantial growth, recommendations are targeted around its processes and continual improvement for future years:

1

Continue to build on the successes of the program in 2021, including delivering an effective inquiry-project that is contributing to an increase in students' 21st century skills, and an increase in their interest and engagement towards STEM.

2

Further explore gendered differences in student outcomes and consider tailoring some portions of STEM CPP (and/or other Generation STEM programs) to address specific challenges that young women face when pursuing STEM education (e.g., low self-efficacy in STEM, lack of female role models).

3

Consider the purpose and effectiveness of the pre-recorded masterclass videos in the suite of STEM CPP activities. The purpose may need to be revised and/or better communicated to teachers and students, as it was the least likely to lead to increases in interest in STEM out of all the STEM CPP activities.

4

Focus on matching schools with industry mentors earlier in the school year so teachers can more effectively use them as a resource for their students during the entirety of the inquiry-learning project. This could be achieved by the continual strengthening of industry partnerships, and/or by having long-standing relationships between schools and industry mentors, so that existing industry mentors are ready to be matched and organisations providing new mentors are well-prepared to commence early in the school year.

5

Review the current matching process undertaken for industry mentors and schools. While it is important to maintain flexibility around the delivery of STEM CPP, there appears to be a need to better align industry mentors' expertise with the inquiry-learning topics being undertaken in schools. This should be addressed in conjunction with recommendation 4.

6

Explore viable options to provide more personalised feedback to students on their work in the inquiry-learning project. This could include having more formal feedback processes at the showcase event; incorporating a peer-to-peer feedback model; or supporting mentors in providing feedback to their classes. If these options are not feasible, for example because mentors already volunteer their own time to participate in STEM CPP, then better managing the expectations among students should be considered.

Program management

Governance

The Generation STEM Consultative Council was appointed in April 2018.

The current membership is as of 31 December 2021:

- Dr David Wright (Chair), Chief Operating Officer and Company Secretary at Food Agility
- Dr David Williams, Executive Director, CSIRO Digital, National Facilities and Collections
- Ms Gail Fulton, Director, CSIRO Future Ways of Working
- Ms Chloe Read, Deputy Secretary, Skills and Higher Education, NSW Department of Education
- Dr Ian Oppermann, Chief Data Scientist and CEO, NSW Data Analytics Centre
- Gabrielle Trainor AO, Gabrielle Trainor AO, Chair of the Construction Industry Culture Taskforce

Dr David Williams has recently retired from his role as Executive Director at CSIRO and consequently stepped down from the Committee in late 2021. As a result, there is one additional member yet to be placed in the Consultative Council. A nominee is currently being identified and will be confirmed and onboarded in due course.

Appendices

Appendix A: School and student characteristics

This section details the characteristics of the schools that participated in Generation STEM under Focus Area 1 in 2021.

Number of schools participated in STEM CPP by sector and year

	Government	Catholic	Independent	Total
2019–20	15	1	6	**22**
2021	27	12	8	**47**
Year on year change	**+80%**	**+1100%**	**+33%**	**+114%**

Number of schools participated in STEM CPP by LGA and sector

	Government	Catholic	Independent	Total
Blacktown	2	3	1	**6**
Camden	1	0	1	**2**
Campbelltown	7	1	2	**10**
Canterbury-Bankstown	5	2	0	**7**
Fairfield	3	2	0	**5**
Liverpool	4	3	2	**9**
Penrith	5	1	2	**8**
Total	**27 (57%)**	**12 (26%)**	**8 (17%)**	**47**

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