

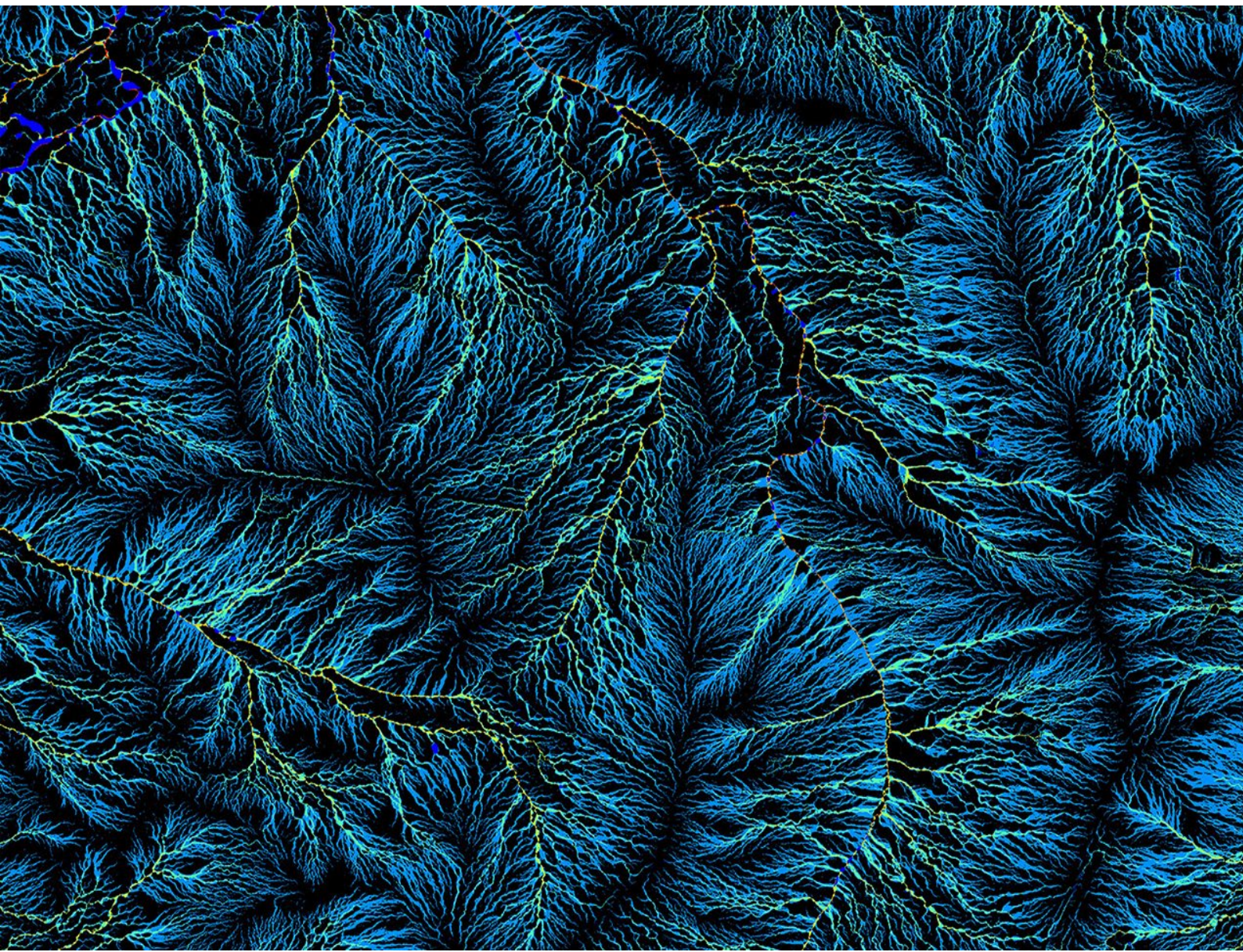


# Deadly in Generation STEM Insights: 2023

Generation STEM

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September 2024





# Deadly in Generation STEM 2023 Snapshot of Achievements

In 2023, **139** teachers and students directly participated in program activities.

**38** teachers and teacher support staff participated in Teacher Professional Learning sessions held in Illawarra and Shoalhaven to build capacity to implement Indigenous STEM inquiries.

**17** Aboriginal students participated in the program's inaugural four-day STEM camp in the Illawarra region.

A high proportion (**66%**) of program participants contributed to evaluation evidence in 2023.



## STEM Science camp highlights

100% of students would recommend the camp to others



*I was like, "Alright," I'll just go along and see how it goes. But after the first time, meeting people and understanding a big more about my culture, and the STEM side of it, I grew to love it. And now [I'm doing] two sciences for my Year 11 electives, and I've moved up heaps in science, and that's what I want to do for a job and a Uni degree.*  
Student Ambassador

100% of students agreed they know more about local organisations and people to ask about cultural knowledge

100% of male students made connections with other students and mentors they can share their STEM interest with.

## Teacher Professional Learning highlights

High teacher satisfaction with the TPL they attended: **52% of teachers** were very satisfied and **48%** were extremely satisfied.

**100% of educators** rated the TPL as very or extremely beneficial to their skill and confidence to teach within a traditional Indigenous context.

**88% of female students** connected with a new mentor and **75%** connected with new students to share their STEM interests with.

**100% of female and 88% of male students** have more knowledge about where to go to share their cultural connections with other students.

*And that is one of the massive benefits of the program. It's increasing our capacity to be able to deliver the curriculum in a meaningful way.* Educator



*We were not looking forward to the training, but it was great and as professionals, to be engaged in something that excited us – it was great. All of the presenters were very engaging, the content was interesting, the hands-on activity was great, the content, the delivery, it was fantastic so, it was a great day.* Educator

# Acknowledgements

The CSIRO Impact & Evaluation team acknowledges the Traditional Owners of the lands with whom this project is collaborating their vibrant living cultures and knowledge systems and acknowledge the Countries on which the evaluation work took place. We pay our respects to Elders past and present and thank all community members who provide the leadership to ensure meaningful and effective engagement with Aboriginal and Torres Strait Islander communities for the Deadly in Generation STEM program. We specifically acknowledge the Traditional Owners of the lands on which the program operated and the evaluation work was conducted, specifically the Kamilarioi, Yuin and Dharawal Peoples.

CSIRO wishes to acknowledge the significant knowledge and leadership of Aboriginal and/or Torres Strait Islander scientists, educators, and program team members that have made the development and implementation of the Deadly in Generation STEM program possible. The author would like to thank the two peer reviewers, and the former and current members of the evaluation team who supported the program monitoring and evaluation methodologies, data collection, and analyses.

Finally, and most importantly, the students, teachers, and parents who helped organise and took part in the evaluation research are gratefully acknowledged. The time that was given to the evaluation team, and the knowledge that was shared, made this insights report possible.

Suggested citation:

Cherry, K. (2024). *Deadly in Generation STEM insights: 2023*. CSIRO.

# Introduction

As part of the ongoing monitoring and evaluation of Generation STEM, this summary report was developed by the CSIRO Education and Outreach Impact and Evaluation Team and aims to provide a 2023 evidence snapshot of implementation learnings and emerging student and teacher outcomes of Deadly in Generation STEM. This evaluation was led by a non-Indigenous evaluator, working in close collaboration with the Deadly in Generation STEM program team and Aboriginal camp leaders to deliver a strength-based and reflexive evaluation methodology. CSIRO acknowledges the time, knowledge and expertise contributed by Aboriginal staff and camp leaders to shape the design and implementation of evaluation data collection including facilitation of student yarning circles during camp. Aboriginal and non-Indigenous staff and leaders contributed to a post camp focus group to generate implementation learnings and consider student feedback.

Due to the place-based nature of Deadly in Generation STEM (in two locations), its design and delivery continues to evolve in response to local community needs and strengths and therefore, the purpose of this report is to support the further development and continuous improvement of the program. In 2023, the program held its first student camp, generating enough difference in program activities to make comparison to 2022 student immersion day data unsuitable. The Generation STEM evaluation report 2019-2022<sup>1</sup> includes learning from the program's early establishment stage. Consideration to community context should be made when generalising report findings from the student camp activity, until more transferrable findings emerge as the program implements similar camp activities over several years. Findings from the Teacher Professional Learning component contribute to CSIRO Education and Outreach's considerable practice evidence in this field and are more broadly applicable.

This report is based on the **data<sup>2</sup> available** for Deadly in Generation STEM as of November 2023. It draws on:

- survey data representing the views and experiences of 16 students<sup>3</sup> that participated in a camp
- qualitative data from 16 students that participated in a camp yarning circle.
- researcher observation data from camp – all participants
- qualitative data from 7 CSIRO program staff and camp leaders
- qualitative data from 15 teachers across 3 different focus groups

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<sup>1</sup> Banks, Chris; Miller, Kate; O'Brien, Mearon. Generation STEM: evaluation report 2019-22. CSIRO website: CSIRO; 2023. csiro:EP2023-5111. <https://doi.org/10.25919/tybc-wq69>

<sup>2</sup> Ethics approval for this evaluation project was granted by CSIRO's Social and Interdisciplinary Science Human Research Ethics Committee (CSSHREC)

<sup>3</sup> One male student left the camp early and didn't participate in the survey or yarning circle.

Participant group	Number of program participants	Evaluation participation rate (per cent)
<b>Camp Participants</b>		
Students	17	94
Aboriginal Knowledge Holders	5	100
Aboriginal and Torres Strait Islander STEM Professionals	3	100
Aboriginal and Torres Strait Islander camp staff and supervisors	3	100
Non-Indigenous CSIRO program staff and camp supervisors	3	100
<b>Teacher Professional Learning participants</b>		
Teachers and Teacher support staff	38	39
<b>Total program participants for 2023</b>	<b>68</b>	<b>66</b>

**Figure 1: Survey response rate by participant group**

As highlighted in Figure 1, stakeholder participation in evaluation activities is relatively high overall. The camp activity facilitated full evaluation participation, primarily due to the participatory observation approach taken by the evaluator and the embedded evaluation activities in the final day of camp. The Deadly in Generation STEM team and the Impact and Evaluation team worked collaboratively in the lead-up to the camp to design appropriate survey and yarning questions and ensure there was adequate time for student reflection on their camp experience. In contrast, for the teacher professional learning evaluation activities, educator participation rate was slightly lower at 39 per cent, however views represented are from six different schools (primary and high schools) in the Illawarra region and these findings provide useful evidence of how the program operated in 2023 and where potential improvements might be considered. The following summary of findings provides a snapshot of the key themes that emerged from the interviews and surveys, followed by some suggestions for improvements in program delivery.

## Program description

Deadly in Generation STEM is part of the Generation STEM initiative, funded by the NSW Government and delivered by CSIRO to attract, support and retain NSW students in STEM and school into further education and employment. Deadly in Generation STEM is currently delivered in Illawarra-Shoalhaven, Moree - Narrabri and surrounding areas, in response to anticipated workforce demands in high-growth industries such as advanced manufacturing, agribusiness, and Information and Communications Technologies.

Deadly in Generation STEM takes a community-driven approach to implementation, drawing connections between Indigenous STEM knowledges and local STEM industries. This is delivered through two distinct program components:

1. Teacher Professional Learning (TPL) for local primary and secondary educators to support schools in fostering culturally safe and responsive learning environments.
2. Student STEM Camps for local Aboriginal and/or Torres Strait Islander students with an interest in STEM, to strengthen cultural knowledge and connections to local STEM educational and career pathways.

In 2023, the program has delivered:

- Three Teacher Professional Learning and one reflection sessions in Illawarra and extended into the Shoalhaven reaching 38 teachers and teacher support staff.
- The first Deadly in Generation STEM student camp in Illawarra was attended by 17 Aboriginal students from years 8 to 10 from seven schools, who were joined by five student ambassadors returning from the 2022 Immersions Days.
- A full day in-school workshop demonstrating the connection between Indigenous knowledges and science was delivered in the Narrabri region and attended by 66 Indigenous and non-Indigenous students and 13 teachers and support staff.

In 2024, program implementation is expected to include:

- Teacher Professional Learning and reflection sessions for primary and secondary school teachers in the Illawarra, Shoalhaven, Moree and Narrabri regions. These will now include a series of four webinars and face-to-face workshops and reflection sessions that will support educators through the year to develop and share localised examples of activities to deliver to their students, as well as support schools to build connections with local Cultural Knowledge Holders.
- Two Student STEM Camps, one in each region, Illawarra and Moree in the second part of the year to continue to deepen the connection between Indigenous science and Culture and strengthen the rapport with local Cultural Knowledge Holders, Aboriginal STEM Professionals, local mentors and other students.

# Summary of findings

Overall, program feedback from students, teachers, and mentors<sup>4</sup> was positive and most changes suggested were for the program to expand in function, timeframes, and/or reach. Students self-reported positive increases across all survey measures. In addition to this general improvement in student awareness, interest, wellbeing, and sense of connection, individual students reported various personal stories of impactful change. Teacher feedback identified the most valued aspects of the professional learning program including how it supports them to deliver authentic two-way science<sup>5</sup> inquiries, more readily than other resources or programs they've accessed. Teacher feedback also provides useful insights into the experience of both early career and experienced educators and their aspirations to deliver more student-led, inquiry-based Indigenous STEM across the curriculum.

The findings in this report (similar to the Generation STEM 2019-22 Evaluation Report) are formative in nature and correspond to the program's development in 2023, including emerging outcomes, and continuous improvement learnings. Specific findings have been organised around student and teacher outcomes. As the program continues to be implemented, data will be collated and further analysed against key evaluation questions based on the Deadly in Generation STEM program logic.

## Student engagement

A primary component of the Deadly in Generation STEM program is Student STEM Camps, designed to engage directly with young people. In 2023, a four-day camp was held in the Illawarra region for high school students in years 8 - 10. Seventeen students attended the camp, with one student leaving early for personal reasons. The remaining sixteen students all agreed (agreed or strongly agreed) that the camp was fun and useful; in addition, all students reported feeling welcomed and supported at the camp and listened to by the camp staff. Ninety four per cent of students (15 out of 16) would recommend the camp to others and 88 per cent of students (14 out of 16) wanted to be involved in future camps as a Student Ambassador.

### **Students are building connections with local Aboriginal knowledge, and reporting increased wellbeing, and improved awareness and interest in STEM and culture.**

The Deadly in Generation STEM camps aim for holistic impact in the following related areas: to improve students' awareness and interest in Western STEM pursuits and Indigenous science and cultural knowledges, improve student wellbeing, and strengthen connection young people have with culture.

#### **Student awareness**

Student responses to the post camp survey indicated higher increases in levels of awareness than levels of interest or wellbeing. Awareness changes occurred in areas such as Indigenous STEM knowledges, local cultural knowledges as well as STEM subjects and job options. Students rated themselves the lowest in their level of awareness prior to camp, so overall, students had the biggest opportunity to improve in this area. The camp was likely providing students with information and experiences that they were previously unaware of (for both the male and female students), and overall, this was the area of biggest improvement.

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<sup>4</sup> In this report, mentors refers to Aboriginal and Torres Strait Islander adults that contributed to the camp, such as camp leaders, Elders and STEM Professionals.

<sup>5</sup> Two-way science is a science pedagogy for students that links Indigenous knowledge with Western science. In the Deadly in Generation STEM program, this is commonly referred to as Indigenous STEM inquiry with program participants.

During their yarning circle, many students commented that before the camp they didn't realise how diverse STEM is and the extent to which it connects to Aboriginal Knowledges.

*I didn't really know much about STEM but I've learnt a lot over the past couple of days.*

*I've realised that STEM links up with a lot more culture than you would've thought, and I think I might do something with STEM in the future.*

*I learnt how important Indigenous science is, as like a foundation for science we have today.*

### Student interest

Overall, students attending the camp assessed themselves as already being moderately interested in their culture, as well as having a moderate interest in studying or working in STEM areas or applying STEM skills in future work. Having these interests was considered a prerequisite for participation in the camp, therefore a lower overall level of change in this area is expected. When analysing survey responses from the male students, overall, their interest in working in a STEM career demonstrated the biggest interest change, for example one student commented:

*I was pretty much adamant on going into the defence force and doing a job there and going pretty much straight there after Year 12. But now, hearing all of these opportunities in university, I've started to actually contemplate going to university instead.*

In comparison, for female students, overall, the largest increase was in their interest in studying STEM subjects. For example, one student shared:

*I feel like I have changed a lot since I've got more information about my own culture and what I want to do in the future, it's been opened to me, what I want to do. I thought I've had this one path but now I've heard lots of stories from university people, and they've shared how they went down this path, didn't like it, went to a different one.*

### Student wellbeing and connections

Overall, and in relation to their pre-camp levels of awareness and interest, students assessed their wellbeing prior to camp as comparatively high. Wellbeing measures relate to student confidence to pursue goals, and their feelings of cultural connection, respect, and pride. Overall, and for female students particularly, the most change occurred in feeling more connected to culture. For male students, their survey responses indicate the biggest overall increase occurred in their level of confidence to pursue school and career goals.

All students surveyed agreed or strongly agreed that on camp they knew more about local organisations and people to talk with about cultural knowledge. Overall, male students reported higher levels of connection, with all male students agreeing or strongly agreeing that they made connections with at least one student and with one mentor that they can talk to about their STEM interests. One student commented:

*I feel like I've connected with a lot of people on the camps. I think I will keep in touch with most of them. And I'm pretty sure everybody else here has made a lot more friends and feels a lot more connected with everybody in this yarning circle today.*

In comparison, only 75 percent of girls and 88 percent of girls agreed with this respectively. One student noted that it can be awkward when the girls are sitting together, and that it takes more time to start feeling comfortable, observing that "we talk in little groups but not across the bigger group – the boys all mix together well pretty quickly" In contrast, all female students agreed or strongly agreed that they know



where to go to connect with other students to feel proud about their culture. Several girls agreed that having a sibling or friend attend with you can help reduce anxiety and support building connections.

Connections between students and Elders or Aboriginal Knowledge Holders was another highly valued aspect of the camp activity. Students, Student Ambassadors, and Aboriginal Knowledge Holders shared similar sentiments about this and the impact it had on them. Elders participating in the program communicated an intergenerational responsibility to the students, saying they held a shared “responsibility to our young people” to “pass on their knowledge” also in response to the Elders’ “responsibility to the Elders who passed on their knowledge”. Throughout the camp different Knowledge Holders and Elders valued the opportunity to build supportive connections and share cultural knowledge with the students, reminding them to “take the opportunities presented to them” and that “our Culture is building on listening, respect and sharing”. In response the students discussed their deeper connection to the Elders and appreciation and respect for their knowledge and experiences. When asked about their favourite activities, the students all listed activities led by the Elders as one of their favourites.

### Student Ambassadors

In 2023, five students (two female and three male) from the previous year’s student immersion days attended the last day of camp in the role of Student Ambassadors. These students were interviewed about their experience over the two years and their perspectives on what works for secondary students when it comes to engaging with Indigenous STEM inquiries. The group of five Ambassadors voiced a largely shared perspective, generally agreeing with each other during their free-flowing discussion. The group indicated that they had kept in touch since coming together in 2022 and agreed that “meeting everyone” and “getting to know new people” were some of the highlights from last year. One Ambassador went further to say that he “definitely made some good friends. I think because I enjoyed it, it made it seem more fun than just sitting in a classroom learning about it.”

The Student Ambassadors shared their desires to have an influence on the younger students, especially in supporting their cultural connections and mental health. One student stated:

*I think the best way of finding out information is to build your connections, talk to people, but at the same time you’ve got to be patient. Just be patient and just make sure you get out there and talk to people, whether it’s a school Aboriginal counsellor or something like that, or just Elders in the community, or just other Aboriginal friends and community members.*

They agreed that the camp should be an opportunity for all students with an interest in STEM, including “kids that need to connect more with people outside of their school”. The Student Ambassadors went on to highlight the significant benefits of an immersion or camp experience for young people, compared with the school-based cultural experiences that was perceived as targeted towards younger students and less engaging and authentic, whereas the Deadly in Generation STEM program activities were described as “by far the best”, with activities described as making sense and with relevance and variety to appeal to a broader group of students.

The opportunity to listen to Elders and form a connection with local Knowledge Holders was clearly one of the most significant components of the program for the Student Ambassadors and one they wanted this year’s student cohort to make the most of. Some of the Student Ambassadors described the importance of engaging with their Elders in the following ways:

*It gives you a better understanding of your mental state...it all ties into something that goes on in your life, and that can affect you physically, mentally or spiritually. And talking to Elders, that can bring you mental calmness, and take you back to the ancestors in your spiritual self.*

*Especially for someone who isn't in contact with that many Elders often. Especially because I had to find my background; it took me years. I've only known where I'm from for about eight months. So, it's good to talk and engage with Elders from my mob and my country, and others from other areas around, to learn about their mob and where they come from and their stories, and to learn about where I live.*

## **Educator engagement**

Deadly in Generation STEM includes a Teacher Professional Learning (TPL) component that engages directly with educators in primary and secondary education. Teachers that participated in focus group discussions for the evaluation included members of school leadership, primary educators, and specialist science and other secondary educators. One teacher interviewed had just completed their first year of teaching, while others had been teaching for ten years or more.

### **Teacher Professional Learning is supporting authentic and confident educator delivery of the Indigenous STEM inquiries.**

Overall, educator feedback about the Teacher Professional Learning (TPL) sessions delivered in 2023 was overwhelmingly positive. Teachers described it as “phenomenal”, “engaging”, “refreshing” and “we left feeling inspired”. Teachers reported a high rate of satisfaction with the TPL, with several teachers stating it was the best they ever attended. Fifty two percent of teachers were very satisfied and 48 per cent were extremely satisfied with the TPL. Through the qualitative data, it became apparent that when educators start to apply or can successfully apply their learnings from the TPL, educators describe very tangible program impacts. That is, as teachers start to increase in skills and confidence, then improve their practice, benefits for their students start to emerge. The delivery of Indigenous STEM inquiries relies on the commitment of educators and their school leadership, however; without the support and contribution of local Aboriginal and Torres Strait Islander Knowledge Holders, the program doesn't create the same level of learning or impact for educators or students. This difference was raised by several teachers during the focus groups.

#### **Learning and resource application including educator connections with Aboriginal and Torres Strait Islander Knowledge Holders.**

Educators spoke favourably of the program resources, and how the program facilitates relevant and practical learning for teachers. Teachers discussed how well aligned the program resources are to the curriculum and its expected student outcomes. Some teachers also spoke about the flexibility and comprehensive nature of the resources, allowing the easy adaptation to mixed ability classes. One principal noted that the Two-way Science activity card resources are ‘*quick and easy to use*’ which was endorsed by several other educators. The authenticity and integrated nature of the resources was also identified by several educators as valued. One secondary educator stated, ‘*you're always, as teachers, hungry for any kind of resources that we can just take in and be directed in the right area with good quality information. Then, having those resources to build on and make deeper connections more authentic*’.

There was limited evidence of individual non-Indigenous teachers engaging with local Aboriginal Knowledge Holders or Aboriginal and/or Torres Strait Islander students with cultural knowledge to deliver or contribute to the Indigenous STEM inquiries. Where Aboriginal Knowledge Holders were involved, they were usually Aboriginal Education Officers (AEO) within the school, contributing to non-Indigenous educator planning and confidence to deliver the Indigenous STEM inquiries. It was unclear if this was an explicit part of the AEO role or was on top of AEO usual duties and could be considered additional load. One educator acknowledged the limitations to this approach, ‘*They're [AEOs] really open, it's just with everyone*

*finding the time to sit and have these conversations about how to make it more, I guess, sustainable and not an ad hoc thing. That would be really good'. Outside these few examples relating to classroom work, educators were able to identify school level connections with local Elders or Elder groups, and Aboriginal Knowledge Holders, however; these relationships were not commonly accessed by individual educators to inform the delivery of, or co-deliver Indigenous STEM inquiries. One educator noted, 'the school has some local First Nations connections but would like to broaden them to reduce the cultural load and have connections that reflect the whole curriculum.'*

On average, all elements of the TPL were highly valued (average rating was 'very valuable' across all elements) with the most highly valued being 'Learning about cultural considerations in the classroom setting' and 'Linking Indigenous knowledges to the curriculum'. Several educators acknowledged the value of having stronger connections with the local Aboriginal community and teaching alongside local Knowledge Holders. One educator commented, *'here I am trying to teach something that really, I have no experience with, [I'm] just wanting to learn. So I think having a local community member as part of the school to deliver it, to start it, to embrace or ignite their [students'] passion would be, I think, more special and more – yeah, I guess enriching'*.

### **Increased teacher skills and confidence to support enhanced Science educator practice.**

Many teachers agreed that while user-friendly written information is critical to their planning, the opportunity to observe and practice the inquiries makes a significant difference to their levels of confidence. This hands-on adult learning approach is supported through the program which provides opportunities for teachers to see an inquiry in action; however, ongoing practice opportunities for teachers within each school are integral to teacher confidence in delivering Indigenous STEM inquiries with their various classes. Early career teachers interviewed felt that their academic studies didn't include enough practical based learning or student-directed teaching training, and they felt they were just starting to build their skills in this area. Teachers spoke about preferring a gradual implementation of the Indigenous STEM inquiries, to build their own confidence, before taking the lessons to mixed ability classrooms. For some teachers this meant only delivering the inquiries with their smaller, enrichment classes, while other teachers were still observing more experienced educators to improve their understanding of classroom management during an Indigenous STEM inquiry.

*Our school is super supportive and that's helpful, and that makes a big difference. We all have areas that we're unfamiliar with and so having a faculty that enables you to draw on each other's strengths is very helpful...the faculties all share resources where they can. Everyone in the science faculty shares resources where they can. Secondary Educator*

Several of the barriers described by educators to implementing Indigenous STEM inquiries are broader system level challenges, such as time and resource constraints. Educators also discussed a general lack of cultural capability across schools and their subsequent lack of confidence to engage with the Aboriginal community, for fear of saying something inappropriate or offensive. This lack of capability and confidence also impacts educator ability to navigate the specific cultural protocols associated with each inquiry being delivered such as sourcing authentic materials and their appropriate use.

### **Student engagement**

Many of the educators interviewed commented on the high levels of engagement students demonstrate during the Indigenous STEM inquiry lessons. One primary educator commented, *'just from that one lesson...the excitement, the engagement, the curiosity was amazing'*.

Several secondary educators discussed the range of benefits they observe for their students. One educator noted that student curiosity is piqued even before the lesson, when the different materials are delivered to the classroom. Another secondary educator highlighted the increased attention students give to their work when they can be active learners, focused on a meaningful project, saying, *'Anytime students can take ownership of something and feel as though they have agency in the process, they tend to respond better'*. Another secondary educator commented on the level of learning observed following one of the practical Indigenous STEM inquiry lessons, *'It was a great experiment. There was a lot of student engagement. The whole class loved it, but then I got them to do a reflection on the lesson and they sent it to the deputy and the deputy said he can't believe that a year seven student could relate that information to the topic of physics and explain how the science of it worked. He was very impressed with that.'*

## Program strengths and areas for consideration

The following findings comprise common themes from the qualitative data collection but should not be taken as program recommendations. In the table below, the qualitative data has been analysed to highlight common or repeated views volunteered by evaluation participants, including program staff, but is not being generalised to all program participants. This purpose of this thematic summary is to contribute to Deadly in Generation STEM's continuous improvement processes. These themes can be prompts for the program team to explore areas further, including with key program stakeholders as part of the program implementation and improvement cycle and will be incorporated into the programs' ongoing evaluation for further analysis against program outcomes.

Student engagement	
Consider the flow and sequence of camp activities to maximise student engagement and provide space for reflection and connection of concepts	<ul style="list-style-type: none"> <li>For students this was described as: more free time in-between activities, having some time after breakfast to get ready for the day, feeling tired at night; dancing was a good way to get energy out; playing games and being chill around the fire; more camp days and spread out the activities; doing the practice first then the theory - you want to learn more about what you just did.</li> <li>For program staff this was described as: more camp days, allocated times to settle the group, then reflect and make connections; this might include 20 minutes of activity to get energy out before they sit down; smaller reflection groups; activity based-reflection (weaving, art, games); thinking about how people reflect and process differently and not all people are able to do it verbally.</li> </ul>
Consider how to support student connections earlier in the camp	<ul style="list-style-type: none"> <li>For students this was described as spending more time getting to know everyone, less time in their rooms, but could include watching a movie together; mixing up groups so people get to know each other; more time to get to know people, more time with Elders.</li> <li>For program staff this was described as focusing on connections early, in a fun activity-based way; around the fire; encouraging</li> </ul>



	<p>new connections between students, informal sports support connections, having a mixed, shared dining table,.</p>
<p>The importance of the first day to build rapport and set the tone of the camp and communicate key messages.</p>	<ul style="list-style-type: none"> <li>• Program staff described this as: culturally appropriate welcome by Elders, then a bush walk/bush bathing activity with navigation, bush medicine, seasonal information, establishing camp leaders’ role and knowledge and setting the tone for the camp – Winangali (meaning ‘to hear, to know’ in the Gamilaraay language), it’s a privilege to be part of the camp. Not too much information overload on the first day – focus more on connections and tone and for students to find ways to feel comfortable to participate.</li> </ul>
<p>Establishing the role of Student Ambassadors</p>	<ul style="list-style-type: none"> <li>• Ambassadors wanted to be more involved and to walk alongside students, being part of the activities, helping, encouraging and motivating the students, telling their own pathway stories.</li> <li>• Program staff described the need to have a clear role for Ambassadors to avoid confusion, and agreed that Ambassadors could be part of the first day of camp, work with the camp leaders, run a workshop or lead a reflection session, talk about their experience and journey so far.</li> </ul>
<h2 style="background-color: #0099cc; color: white; padding: 5px;">Educator engagement</h2>	
<p>Teacher suggestions on educator resources</p>	<ul style="list-style-type: none"> <li>• Make explicit the message that teachers are teaching science through culture, not teaching culture – non-Indigenous educators don’t have to be and aren’t experts in culture.</li> <li>• More localised resources (students are interested in this), including videos, up-to-date resources; links to a range of resources.</li> <li>• Get involved in the new syllabus (2025) planning to align resources.</li> <li>• Information about where teachers can access the full suite of resources and materials required for inquiries would be useful, some teachers make their own resources in their own time.</li> </ul>
<p>Considerations to support teacher application of Indigenous STEM inquiries</p>	<ul style="list-style-type: none"> <li>• Regular checking in for teacher accountability to implement the training.</li> <li>• Student incursions delivered by Indigenous Knowledge Holders, also gives teachers the opportunity to observe, learn, and build their knowledge.</li> <li>• Program delivery structure that understands and scaffolds teacher learning to incrementally build their confidence.</li> </ul>

	<ul style="list-style-type: none"> <li>• Spaces for sharing – experience and resources – within the school and across schools.</li> <li>• Focus on the teacher journey at each school/network of schools – end of year reflection and inspiration day to progress to the next level of confidence and application.</li> </ul>
<p>How to build on school and community connections with local Aboriginal knowledge holders and Elders</p>	<ul style="list-style-type: none"> <li>• Deadly in Generation STEM staff being the link to bring the school and community together; – just starting the conversation and supporting the partnership at critical touch points, such as inquiry planning, in the classroom and on-Country and then stepping back.</li> <li>• Linking with other schools to share Indigenous STEM inquiry experiences.</li> <li>• Identify a range of options for the schools to connect with the community – not just a Showcase.</li> <li>• Mutual benefit – acknowledge the contribution and time of community members, explore what works best with each individual Elder and Knowledge holder, including with remuneration, formal acknowledgement, or a mutually beneficial partnership.</li> </ul>

## Conclusion

Overall, evaluation participant feedback obtained through the student survey and qualitative data collection has been overwhelmingly positive. Due to its people-and-place focus, Deadly in Generation STEM relies on the development of community relationships and sustained engagement with schools and local Aboriginal Elders and leaders to achieve success. Therefore, program outcomes are expected to mature over a period of sustained engagement with key community stakeholders. Notably, all student camp participants recorded positive improvements in their levels of awareness, interest, and wellbeing, and a substantial majority of students experienced stronger social and cultural connections following the camp. The delivery of the Teacher Professional Learning sessions in 2023 were very well received by participants and resources are valued for their utility; however, program impact will be fully realised when educators demonstrate confident application of their learnings and gradually improve their practice. Further evidence will be collected to better understand the program’s role in this and assess educator experience in applying Indigenous STEM inquiries in mutual collaboration with local Aboriginal Knowledge Holders.