Science & Technology AUSTRALIA

POLICY SUBMISSION

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FIRST NATIONS EDUCATION POLICY

Science & Technology Australia thanks the Department of Education for the opportunity to contribute to the First Nations Education Policy consultation.

Science & Technology Australia is the peak body for the nation's science and technology sectors, representing nearly 150 member organisations and more than 235,000 scientists and technologists. We connect science and technology with governments, business and the community to advance science's role in solving some of humanity's greatest challenges.

Key points

- The growth in STEM-enabled jobs is outpacing other careers, with the Government's own analysis showing nearly a 25% growth over the next 10 years, but First Nations students are not currently well placed to benefit from this opportunity – with maths and science scores in school testing lower than non-First Nations students.
- In positive news, there is no gap in employment rates between First Nations and non-First Nation university graduates, which sits at 85% – supporting First Nations students through school and on to university completion has clear and demonstrable benefits.
- Focus must also be given to programs and initiatives that support engagement and access to alternative education pathways, such as vocational and industry STEM options.
- Current approaches have not delivered the progress needed. Piecemeal, short-term, attendance-focused programs cannot close educational gaps that reflect deeper systemic issues. Education statistics persistently demonstrate that First Nations students are educationally disadvantaged. Bold, sustained, properly resourced action that places First Nations people at the centre of solutions is needed.
- The new First Nations Education Policy must empower and enable First Nations-led and owned organisations to play a stronger role and deepen existing capacity in delivering enhanced engagement and achievement for First Nations students.
- There are deep evidence and powerful examples that STEM is an effective mechanism for education engagement that can harness locally relevant challenges and knowledge.
- Education policy should also work towards the National Science and Research Priority of elevating Aboriginal and Torres Strait Islanders knowledge systems.

Science & Technology Australia recommendations

1. The First Nations Education Policy, and/or its implementation, should include:
    a. provisions to deliver sustainable long-term funding (minimum 5-year commitments) to First Nations-owned and -led STEM organisations
    b. strategies and opportunities that move beyond attendance-focused or sporting programs to engage First Nations students in education – and embed accountability and aspiration for achievement, not just attendance – in evaluation and success metrics, and
    c. additional targets for educational achievement and success that go beyond attendance and completion.

2. To support culturally responsive and relevant curricula, the First Nations Education Policy should:
    a. invest in teacher professional training and build capacity that enables STEM teaching and learning that incorporates First Nations knowledge systems
    b. ensure NAPLAN and national testing incorporates local contexts while maintaining test robustness and comparability to ensure First Nations students' capabilities are best understood, and
    c. deliver sustainable long-term funding for projects embedding Indigenous Knowledge in school curricula.
3. To leverage the power of STEM as an education engagement mechanism, the First Nations Education Policy should support:
    a. locally tailored programs supporting First Nations students' STEM engagement and access to university and alternative education pathways
    b. sustained programs demonstrating clear STEM career pathways that align with First Nations values and cultural obligations.
4. The Commonwealth Government, in partnership with states and territories, should support creation of STEM careers that enable connection to Country and cultural practice and development of First Nations communities.
5. The Commonwealth Government should establish an Office for Indigenous STEM, with First Nations leadership, to deliver coordination and support for both strategy and operational measures to support both the elevation of Aboriginal and Torres Strait Islanders knowledge within STEM and school curricula, as well as support for Indigenous STEM education organisations and First Nations student's STEM engagement.

The current approach is not working

Successive governments have made significant efforts to improve education outcomes for Australia's First Nations people, through targeted funding and other policy initiatives. Many of these have been largely focused around research, data collection and pilot programs, and shifting the dial is a persistent challenge. The current statistics are not encouraging.

NAPLAN numeracy results highlight a stark difference between First Nations and non-First Nations student outcomes, with First Nations students' proficiency levels generally 2 years behind that of non-First Nations students[1] across all year levels and throughout the years of NAPLAN testing (2008–2025). In 2025, around one third of First Nations students across all year levels were assessed as requiring extra support in numeracy – compared to less than 10% of non-First Nations students.

Results from the 2023 Trends in International Mathematics and Science Study (TIMMS), that test a sample of year 4 and year 8 students globally, tells a similar story. In maths, only 45% of year 4 and 33% of year 8 First Nations students achieved national proficiency standards (NPS) compared with 76% and 67% of non-First Nations students respectively. In science, 63% of year 4 and 44% of year 8 First Nations students achieved NPS, compared to 86% and 73% of non-First Nations students respectively.

[1] Year level difference based on the NAPLAN score equivalencies calculated in the Grattan Institute Widening Gaps report. https://grattan.edu.au/wp-content/uploads/2016/03/937-Widening-gaps.pdf

Data from the 2022 Programme for International Student Assessment (PISA) results also highlight a significant disparity. The proportion of First Nations students who met the NPS in maths (20%) and science (29%) was around half that of non-First Nations students (53% and 60% respectively).

Progress towards education Closing the Gap targets is either slow, or non-existent:

- First Nations children commencing school assessed as developmentally on track: 33.9% in 2024, down from 35.2% in 2018, and compared to 54.3% of non-First Nations children. The 2031 target is 55%.
- First Nations people aged 20–24 completing year 12: 68.1% in 2021, up from 63.2% in 2016, compared to 90.7% of non-First Nations people. The 2031 target is 96%.
- First Nations people aged 25–34 who completed a tertiary qualification: 47% in 2021, up from 42.3% in 2016, compared to 75.9% of non-First Nations people. The 2031 target is 70%.
- First Nations youth engaged in employment or education: 58% in 2021, largely unchanged from 57.2% in 2016, compared to 79.9% of non-First Nations people. The 2031 target is 67%.

These targets, while useful, have a bare minimum focus – with a focus on completion, rather than achievement or excellence, especially in STEM, given the economic opportunities STEM pathways can offer. Additional education targets that add a level of higher aspiration are also needed.

However, amid this concerning lack of progress in many Closing the Gap targets, there is one statistic that is overwhelmingly positive: **For First Nations people with university degrees, there is practically no employment gap**. The 2021 Census shows that 85.3% of all First Nations people with university degrees are employed – an almost identical figure to non-First Nations people with degrees (85.9%). This clearly demonstrates the power and importance of having strong education pathways for First Nations people – and supporting them to succeed.

While there is still much more work to be done to support First Nations to succeed at university, several initiatives exist across the sector, including universities' Reconciliation Action Plans and other initiatives, such as work done by the Australian Council of Deans of Science to deliver guidance on best practice for including Indigenous science in curricula and educational resources.

STA acknowledges that the 2024–25 Federal Budget included a suite of measures to support better outcomes for First Nations people, including $110 million to support education initiatives, largely building on existing investments. This is laudable, but there are ongoing concerns in the sector that a significant proportion of funding is allocated to non-First Nations organisations or towards existing Commonwealth Government activities. There is little specific focus on STEM, with funding to the successful Indigenous Girls' STEM Academy (run by CSIRO and supported by NIAA) being one of the few exceptions. While all the initiatives supported are worthy, truly shifting the status quo requires new and additional approaches and funding.

It's time to move beyond further rounds of reviews, enquiry and data collection. The new First Nations Education Policy must fundamentally shift the approach to First Nations education – away from deficit thinking to recognising and building on First Nations' strengths; from programs for or about First Nations people to **programs designed and led by First Nations people**; from short-term projects to sustained commitments; and from consultation to **co-design, genuine partnership and shared delivery**.

Empowering First Nations-led and -owned organisations

There are many different programs currently aimed at supporting First Nations students' engagement and success through the education system. However, the statistics reported above clearly demonstrate that that traditional approaches are insufficient. One-dimensional programs focused on school attendance or other blunt metrics are not closing the gap.

While programs that work can be delivered in many organisational structures and delivery methods, from Indigenous-led and designed, through to co-design and delivery in mainstream education

organisations, these initiatives must be designed and delivered **with, not to,** First Nations people, and be reflective of local needs and context.

There are several noteworthy First Nations-led organisations delivering transformative results through culturally safe, community-driven STEM-based programs. The success and merit of these organisations is evident – yet their funding is by no means secure nor stable. First Nations-led organisations such as these should be prioritised for funding to ensure strong, culturally safe programs while boosting economic opportunities for First Nations communities and people.

Aboriginal and Torres Strait Islander Mathematics Alliance

The Aboriginal and Torres Strait Islander Mathematics Alliance (ATSIMA) is a First Nations-led organisation with a vision that all Indigenous students will be successful in mathematics. ATSIMA builds this success through teaching mathematics in connection to the students' culture.

ATSIMA's programs work directly with mathematics teachers and Indigenous Communities across urban, rural and remote locations, building long-term relationships with Communities and the schools in these Communities. These partnerships co-design maths curriculum, programs and resources with the Community language and culture as foundational components.

ATSIMA works with schools (and clusters of schools) to train principals, teachers and Indigenous Education workers on culturally responsive pedagogies and mathematics programs. This is always done in partnership with the local Indigenous Community. ATSIMA works directly with Indigenous students through schools but mostly through Indigenous STEM Camps. ATSIMA also supports teachers more broadly through the creation of culturally responsive mathematics resources, a series of webinars and through a biennial conference.

DeadlyScience

DeadlyScience exists to create STEM equity for Aboriginal and Torres Strait Islander learners. They are building a future where Aboriginal and Torres Strait Islander learners can see themselves in STEM and thrive. Because you can't be what you can't see. By recognising and valuing First Nations knowledge, they are elevating it in the eyes of all Australians - decolonising STEM and creating systemic change.

Through its various programs, DeadlyScience has engaged more than 50,000 learners in more than 900 schools nationwide. In 2025, they completed 114 schools visited for a total of 382 DeadlyScience sessions including 90 sessions in remote or very remote locations and 2026 bookings show these figures will double throughout this year.

The DeadlyScience approach uses a series of programs to support First Nations learners throughout their education journey. DeadlyScience's programs ignite engagement and interest in STEM with students from Foundation through to Year 12. This is delivered in a range of ways including the in-person Stem in Schools program, online Deadly Learners sessions and Deadly Labs, which engages with local communities and Elders to identify a local problem, then work collaboratively with community to deliver STEM-based solutions – giving cultural context to STEM as well as elevating and revitalising Indigenous knowledge.

Building on the suite of activities and programs delivered by DeadlyScience, the DeadlyScience Pathways program, delivered in partnership with the Walter Eliza Hall Institute, encourages students to enrol in STEM subjects in their later school years and delivers rich STEM career experiences at state of the art biomedical research facilities. DeadlyScience also works to ensure regional and remote schools have the resources they need to support STEM education. To date, DeadlyScience partnerships have delivered 25,000 STEM related books, 700 telescopes, and other STEM resources to more than 180 communities around the country.

Deadly Coders

Deadly Coders is an Indigenous led organisation focused on equipping First Nations young people with the future skills they need to thrive in a rapidly changing digital world. Through culturally safe programs spanning digital technologies, AI literacy and emerging tech, Deadly Coders supports students to build confidence, capability and agency in technology.

To date, Deadly Coders has reached nearly 16,000 First Nations students through a combination of face-to-face delivery and its purpose-built online learning platform, Deadly Coders Online. Beyond technical skills, Deadly Coders is deeply committed to advocacy and the creation of genuine career pathways into technology and STEM industries. Its programs connect students with community, educators and industry role models, helping students understand real world opportunities and envision meaningful futures in tech. By combining education, connection and advocacy, Deadly Coders works to close the digital divide and support long term economic empowerment for First Nations communities.

The Deadly Coders Academy aligns with alternative non-university pathways and career opportunities in the Technology Industry, including areas such as cyber security, data operations, data analysts, AI operations and testing, and other emerging technologies. In partnership with Microsoft, Deadly Coders is currently undertaking a national skilling initiative with First Nations communities around Australia and the Torres Strait in the teaching of fundamental AI skills as well as its safe, ethical and culturally appropriate use. Deadly Coders is also working with AWS on scalable digital literacy education programs across Australia and the Torres Strait.

Young Indigenous Women's STEM Academy

The Young Indigenous Women's STEM Academy is funded by the National Indigenous Australians Agency and delivered by CSIRO. This program supports First Nations women to study and access STEM opportunities. It provides a platform to support STEM engagement from year 8 until pre-employment with the aim of empowering the next generation of role models and STEM leaders. Importantly, activities are tailored to individual student's interests and support is given as they transition between school and university.

This is a deeply successful program for these young women, and there would be benefit in supporting a similar program for young men. While the Clontarf Foundation focusses on boys and young men, it has a focus on sport and related activities, rather than STEM, as a focus and vector for education and lifelong success.

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    b. strategies and opportunities that move beyond attendance-focused or sporting programs to engage First Nations students in education – and embed accountability and aspiration for achievement, not just attendance – in evaluation and success metrics, and
    c. additional targets for educational achievement and success that go beyond attendance and completion.

Culturally responsive and relevant curriculum

Current curriculum approaches often disadvantage First Nations students. Research demonstrates that standardised testing contains inherent bias – for example, when NAPLAN-style tests were tailored to local context in the NSW town of Dubbo (i.e. with no change to the material nature of the question), reading scores for First Nations students were closer to those of non-First Nations students by up to 50%. This shows that First Nations students' capabilities could be higher than they are perceived to be, but the form of standardised testing used can put barriers in their way to showcase this.

Additionally, First Nations knowledge systems contain deep STEM expertise developed over thousands of generations. Astronomy, agricultural practices, fire management, nature-based solutions and ecological practices, and land management represent sophisticated and ongoing scientific knowledge and expertise. Evidence of this knowledge dates back to before other historical discoveries around the world – for example, the Brewarrina Fish Traps in New South Wales are estimated to be about 40,000 years old, with the previous oldest records of aquaculture being around 4,000 years ago in China. First Nations science and innovation, including the evidence of it being millennia older than other parts of the world, remains largely undervalued and underutilised in Australian education.

The First Nations Education Policy must recognise the critical importance of embedding First Nations knowledge in school curricula, in culturally safe and locally relevant ways. This includes equipping teachers with the cultural capability and resources to effectively engage with both Aboriginal and Torres Strait Islander knowledge as well as support First Nations Students.

As mentioned above, DeadlyScience's Deadly Labs program works with communities to identify a local problem or challenge, then works with that community to deliver STEM-based solutions and insights – giving cultural context to STEM as well as elevating and revitalising Indigenous knowledge.

Another example is the 2022 Prime Minister's Prize for Excellence in Science Teaching in Primary Schools winner, George Pantazis' approach of working genuinely with local Elders and combining local First Nations language and knowledge with virtual and augmented reality technologies, using two-way learning to empower students as teachers.

Programs like the NSW Government-funded Deadly in Generation STEM program, delivered by CSIRO, could also provide insights for a more strategic national approach. This program takes a community-driven approach to deliver and support activities, drawing connections between Indigenous STEM knowledges and local STEM industries, and delivered through two distinct program components: teacher professional learning for local primary and secondary educators, and science camps. Another effective example is the WA Government's Ngaparrtji Ngaparrtji two-way science project.

Science & Technology Australia recommendations:

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    a. Invest in teacher professional training and build capacity that enables STEM teaching and learning that incorporates First Nations knowledge systems.
    b. Ensure NAPLAN and national testing incorporates local contexts while maintaining test robustness and comparability to ensure First Nations students' capabilities are best understood.
    c. Deliver sustainable long-term funding for projects embedding Indigenous Knowledge in school curricula.

STEM is an effective and important engagement pathway for First Nations students

Programs like ATSIMA, DeadlyScience and Deadly Coders demonstrate how STEM can be taught through cultural lens, making learning more relevant and meaningful.

STEM engagement is also important in creating visible role models for First Nations students – for example, DeadlyScience's approach of connecting students with STEM professionals shows First Nations youth that STEM careers are achievable. This is particularly important pertinent as STEM jobs are predicted to grow by 24% by 2035 – making a STEM qualification a valuable asset for future employment.

It's hard for anyone to be what they can't see. The Policy must recognise the value of programs and activities that highlight and celebrate First Nations STEM leaders, including the Prime Minister's Prize for Aboriginal and Torres Strait Islander Knowledge Systems and STA's own Superstars of STEM, which includes several First Nations participants. STA has ensured excellent participation levels of First Nations scientists in the program to ensure First Nations people have strong role models. These include Dr Vanessa Sewell (biomedical researcher), Tiahni Adamson (wildlife conservation researcher), Dr Susan Beetson (computer scientist), Krystal De Napoli (astrophysicist), Camille Goldstone-Henry (nature tech entrepreneur), Dr Kalinda Griffiths (epidemiologist), Dr Jessica Buck (cancer researcher), Karlie Noon (astronomer), Renee Wootton (aerospace engineer), and Sophie Gilbey (environmental water expert).

The program provides participants with advanced communication skills and encourages them to grow a media and public profile as a role model and visit schools to inspire students to pursue STEM careers. Student's subject choices at school are influenced both by teachers and by parents and carers. It is therefore important to reach not just students, but whole communities, to break down stereotypes and open the door to STEM pathways. The Government recently expanded funding to the Superstars of STEM program to enable its Superstars, both First Nations and non-First Nations, to more effectively reach First Nations audiences and be those important STEM role models.

STEM education and career pathways also offer tangible options for First Nations people's economic self-determination through owning, running, and working in Indigenous STEM programs and related businesses. Organisations like Indigenous Climate Change demonstrate how combining Indigenous Knowledge with STEM training creates careers benefiting individuals and communities. STEM qualifications can also lead to careers that can support cultural values and connection to Country, such as Indigenous Rangers, climate scientists, and environmental managers.

Science & Technology Australia recommendations:

3. To leverage the power of STEM as an education engagement mechanism, the First Nations Education Policy should support:
    a. locally tailored programs supporting First Nations students' STEM engagement and access to university and alternative education pathways
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4. The Commonwealth Government, in partnership with states and territories should support creation of STEM careers that enable connection to Country and cultural practice and the development of First Nations communities.

An Office for Indigenous STEM to deliver coordination and support for First Nations education and STEM initiatives

The National Science and Research Priorities now include elevating Aboriginal and Torres Strait Islander Knowledge systems. However, there is currently no clear and systematic plan for how this should be done, nor how it can or will be embodied in education practices.

Further, current approaches to supporting First Nations STEM education (and research) are fragmented, with responsibilities sitting across different portfolios – or falling through the cracks between different Government departments.

A federally funded Office for Indigenous STEM (potentially housed within AIATSIS, DISR, or NIAA) with First Nations leadership would provide the strategic coordination and sustainable support for First Nations STEM education and research programs required to deliver transformative change across the sector. This office would eliminate duplication, ensure programs work together effectively and deliver long-term stability required to build genuine partnerships and develop. Core functions would include:

- Strategic leadership:
  - Deliver a national plan to elevate Aboriginal and Torres Strait Islander Knowledge systems (co-led by Australian Chief Scientist and AIATSIS)
  - Deliver a national plan to improve First Nations participation in STEM from school through research
  - Identify strategies to improve culturally responsive learning across Australian schools
- Operational support:
  - Administer grants for:
    - New and existing initiatives elevating Indigenous Knowledge in curricula and research
    - First Nations-owned and -led organisations building STEM engagement and support
  - Coordinate with government agencies on First Nations engagement in climate adaptation and resilience

Science & Technology Australia recommendation:

5. The Government should establish an Office for Indigenous STEM, with First Nations leadership, to deliver coordination and support for both strategy and operational measures to support both the elevation of Aboriginal and Torres Strait Islanders knowledge within STEM and school curricula, as well as support for Indigenous STEM education organisations and First Nations student's STEM engagement.

Please do not hesitate to be in contact if the department requires any further information.

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