

# Inspiring Indigenous students in science and leadership

## NATIONAL INDIGENOUS SCIENCE EDUCATION PROGRAM

Starting from a small program, the National Indigenous Science Education Program (NISEP) has grown steadily to become a unique collective of science academics, Aboriginal Elders and school staff, who provide measurable enhanced educational outcomes and aspirations for Indigenous youth from 16 low socioeconomic status rural and regional schools.

### Key NISEP events, outcomes and achievements



- 2004** Yaegl Elders of northern NSW ask Macquarie University scientists (now NISEP Directors), *"Can you help us help our youth? Can you make them leaders and motivate them to complete school?"*
- 2005** Indigenous students from northern NSW attend the Science Experience at Macquarie. Between 10 and 15 Indigenous students participate in or lead this event every year. This is the only Science Experience event in Australia to have coordinated groups of Indigenous students attend. Visit [youtube.com/nisepmq](https://www.youtube.com/nisepmq) for more information.  
  
Indigenous students and parents from northern NSW attend Macquarie's Open Day to obtain academic advice and learn about support avenues. Between 8 and 15 Indigenous students from NISEP partner schools now attend this event each year.  
  
First school science shows run at Casino and Maclean High Schools, northern NSW, with Indigenous students demonstrating science activities, alongside Macquarie/NISEP staff, to junior science students (Years 5–7). Science shows at Casino and Maclean High School have run annually since.
- 2007** School science shows extend to Lismore High School and are now an annual event.
- 2008** School science shows extend to Western Sydney's Chifley College campuses – Bidwell, Shalvey, Mt Druitt, Dunheved and Senior campuses – and are now an annual event.
- 2010** River of Learning Cultural Immersion Program commences with Maclean High School and Yaegl Elders, supported by Macquarie NISEP academics. Run annually since 2010 with all Year 7 students of school.
- 2011** NISEP receives an Australian Learning and Teaching Council award.
- 2012** Inspiring Australia grant awarded to extend NISEP's model of engagement.  
  
Inaugural Indigenous Science Experience event is held. Event now runs annually at the Redfern Community Centre, receiving National Science Week grants (\$20k pa, 2012–2018), and being an official Sydney Science Festival event since 2015.
- 2013** NISEP expands to Charles Sturt University (CSU) Wagga Wagga campus. Mt Austin High School science shows run annually jointly with CSU and Macquarie NISEP team.
- 2016** NISEP chosen for the 2016 PwC STEM 21st Century Minds Accelerator Program.  
  
NISEP expands to CSU Port Macquarie and to five new schools, in collaboration with CSU Future Moves.  
  
NISEP wins 2016 PwC Innovator of the Year award.  
  
The River of Learning Cultural Immersion Program receives a Nanga Mai award.
- 2017** NISEP expands to CSU Orange campus.
- 2018** First NISEP event run at University of Queensland. Runner up for the St George Foundation Inspire Grant, with \$50k awarded to sustainably expand NISEP. Shortlisted for BHERT Community Engagement Award.

# Empowering our future leaders



**NISEP has been an incredibly rewarding experience for the both of us, as it has given us the opportunity to expand our knowledge and build our confidence as leaders. Being able to share our experiences with other young Indigenous students is definitely a powerful way of encouraging others to participate.**

SHANAYE WATERS AND OLIVIA SKINNER-SPEIRS, MACLEAN HIGH SCHOOL  
NISEP STUDENT LEADERS YEARS 7-12. SEE "SUCCESS FOR MACLEAN DUO IN ABORIGINAL STUDIES" – DAILY EXAMINER, DECEMBER 2017, [bit.ly/2LXH5XE](http://bit.ly/2LXH5XE)

## MACQUARIE-LED NISEP ACTIVITIES (JANUARY 2017 – JUNE 2018)

Over the last 18 months, we trained and mentored 200 Indigenous secondary students as leaders of science events attended by more than 2000 people. We achieved this significant outcome through NISEP events held in collaboration with 16 NISEP partner schools – from Western Sydney, northern NSW and the Riverina – Yaegl and Wiradjuri Aboriginal Elders, CSU science academics and other NISEP partners.

## SCHOOL SCIENCE SHOWS

NISEP Indigenous youth became role models, demonstrating hands-on experiments to around 1200 junior students (Years 5–7) of their schools and feeder schools.  
[bit.ly/NISEP-Maclean2018](http://bit.ly/NISEP-Maclean2018)

## INDIGENOUS SCIENCE EXPERIENCE @ REDFERN

NISEP students and staff, Aboriginal Elders and Macquarie students showcased Indigenous and Western science at the Redfern Community Centre to 550 participants (funded by Inspiring Australia). See *Science across cultures* – South Sydney Herald and *Wisdom of the ages* – Crinkling News, August 2017. [bit.ly/NISEP-ISE2017](http://bit.ly/NISEP-ISE2017)

## MACQUARIE UNIVERSITY OPEN DAY

NISEP students and community members gained study advice and familiarised themselves with university options while being guided by NISEP staff and students.

## MACQUARIE SCIENCE EXPERIENCE

NISEP and Macquarie students lead three days of STEM activities for 120 Year 9 and 10 students (supported by ConocoPhillips).  
[bit.ly/MQSE2017](http://bit.ly/MQSE2017) and [bit.ly/MQSE2018](http://bit.ly/MQSE2018)

## RIVER OF LEARNING CULTURAL IMMERSION PROGRAM

Yaegl Elders shared their cultural practices and stories with 300 Year 7 students from Maclean High School.

[bit.ly/RiverofLearning2018](http://bit.ly/RiverofLearning2018)

The outcomes of this program, including how important the interaction with Aboriginal Elders and school and university staff is in engaging Indigenous students in higher education, were the subject of a qualitative study. The findings of this study, 'The River of Learning: building relationships in a university, school and community Indigenous widening participation collaboration', feature in the Higher Education Research & Development journal (2017).

[bit.ly/ROL-Paper](http://bit.ly/ROL-Paper)



**WILL FRAZER**

Through my participation with NISEP I have been fortunate enough to be offered many opportunities fostering and furthering my interest in science, whilst gaining a perspective in this field at a university level. The program has also extended my confidence and built leadership skills, whilst allowing me to share knowledge and engage with my own community. These opportunities can be hard to come by in a rural Indigenous circumstance.

FORMER NISEP STUDENT LEADER (YEARS 7-12), CASINO HIGH SCHOOL AND CURRENT MACQUARIE STUDENT, BACHELOR OF SCIENCE WITH BACHELOR OF LAWS, [bit.ly/NISEP-WILLIAM](http://bit.ly/NISEP-WILLIAM)



**ANGELA FROUD**

Our students love to demonstrate science activities to younger students, staff and visitors. They overcome shyness and grow in confidence. They love to interact with the University staff, and some can see themselves attending university. All of our participants can relate to the activities they are demonstrating, sometimes being surprised that they are enjoying science. Some of these student demonstrators have the privilege of attending the Indigenous Science Event at Redfern, and the Science Experience at Macquarie University. Students have told me that they feel more connected to their Aboriginal culture and heritage as a result. I love the impact it has on the self-esteem of our Indigenous students, and on their application to their studies.

ANGELA FROUD, NISEP PARTNER SCHOOL TEACHER, CASINO HIGH SCHOOL



**RENEE CAWTHORNE**

My involvement with NISEP has provided me with the skills that has led to furthering my employment pathways. I currently am employed at the Australian Museum as the Indigenous Education Project Officer and still have a strong affiliation with NISEP.

RENEE CAWTHORNE, FORMER MACQUARIE STUDENT AND NISEP VOLUNTEER

# Impact on participating students



Evaluations from student leaders participating in NISEP events have shown that:

- seven in 10 students had an increased desire to complete Year 11 and Year 12 and to go on to higher education
- eight in 10 students had an increased interest in science
- nine in 10 students found being a leader an inspiring experience.

Focus group interviews, independent of NISEP Directors, with teachers, school support staff and community members confirm the positive impact of NISEP for Indigenous young people.

## FEEDBACK FROM FOCUS GROUP INTERVIEWS ON SCHOOL SCIENCE SHOWS

“I’ve noticed a significant change in the students ... when they go in, it’s like science, it’s so boring. But once they actually get taught things and then realise this is their opportunity to feel like a teacher, you see the big changes in them ... you sit in the classes with them and you notice their body language is way different. They’re more proud. Like their self-esteem has been lifted. They also have shown a greater respect for their teachers. So this sort of program does help students. Because then for the students to actually achieve this – what do you call it? Self-esteem, right? It also benefits the community. Gives out positive energy.”

## ON SYDNEY EVENTS

“The value is more than just a trip to Sydney – the value is they [parents] would see differences, if you asked them, in their students approach to learning. They definitely do. I have one girl here who, like I said, was quite reluctant. She was quite morose and unhappy in early years at school, is now a leader here, laughs,

has a ball and her teachers are all saying what a difference they have noticed in her. All different. Because of the beauty – if I can just digress – of this program is that students are given the opportunity to be leaders. They may start off quiet, but by the end of the sessions they are speaking out and having a lot of fun. So they really get those verbal skills practiced in a way that is not artificial ... making it a real situation where you’ve just learnt something and you are demonstrating it to someone else – it’s the best way to learn something anyway – and they then become a marvellous example for the younger students.”

## ON NISEP OVERALL

“I think it should just keep on running. Because it’s doing wonders and I wish whoever was in charge of the money or whatever could come here and see firsthand exactly the impact that it’s making for our kids, and that’s the main thing, we’re all doing it for our kids.”

“It [NISEP] really opens the kids’ eyes and it’s open mine, too. I didn’t have a lot of knowledge about Aboriginal culture, so it’s been very beneficial. It’s important. Very important.

We’ve made great connections with the community through it, with the Elders and even the families. It really has been a positive for the school.”

“The main thing you see is the confidence of the students change over time ... we’re not really here to create just scientists out of the kids, but we’re trying to get them more engaged in their learning through science. You see that and you see them move on to leadership roles within the community ... They get the confidence from doing that here in front of their peers.”

**Facilitator:** “So in summary, what do you think is particularly good about NISEP?”

**Respondent 1:** “Community, unity, respect.”

**Respondent 2:** “Self-esteem, participation, engagement, motivation.”

For more information visit [bit.ly/NISEP-Testimonials](http://bit.ly/NISEP-Testimonials)



# Partnerships and community impact

**Working in partnerships is core to NISEP providing diverse and impactful opportunities for Indigenous youth and their communities and is also immensely valuable for the community partners.**

ASSOCIATE PROFESSOR JOANNE JAMIE, NISEP DIRECTOR



**I used to walk through the back door, now I go through the front door with pride.**

UNCLE RON HERON AFTER RECEIVING AN HONORARY DOCTORATE FROM MACQUARIE, 2014

**The relationship with Macquarie NISEP has always been open and friendly and we work together in a spirit of cooperation.**

NOELINE KAPEEN, CEO, YAEGL LOCAL ABORIGINAL LAND COUNCIL

(L-R) Associate Professor Joanne Jamie, NISEP Director; Uncle Ron Heron, Yaegl Elder; and Elizabeth Crouch, Deputy Chancellor, Macquarie University

## ON THE INDIGENOUS SCIENCE EXPERIENCE AT REDFERN

The Aboriginal community wholeheartedly embrace the Indigenous Science Experience public day event as it is culturally inclusive of the rich history of the First Nations people by sharing cultural practices since millennia with Aboriginal and non-Indigenous people. The local primary school students who attend the program at our centre are visibly captivated by the hands on interactive science activities and their relationship to Aboriginal culture. More so having senior and tertiary Aboriginal students facilitating will have a lasting impact of the possibilities of education in the fields of science.

KRISTINA KARASULAS  
REDFERN COMMUNITY CENTRE MANAGER

The Indigenous science experience offers like-minded agencies the opportunity to collaborate and maximise the impact of our individual programs. It encourages us to focus and adapt our regular science engagement activities with inclusiveness and cultural authenticity in mind. It also enables our Indigenous Science Educators to reach and inspire new audiences.

MIKE BARTLETT  
SYDNEY OLYMPIC PARK AUTHORITY

I commend NISEP on a quality program of hands-on science activities showcasing Aboriginal and Torres Strait Islander knowledge. I appreciate the opportunities the program gives to Aboriginal and Torres Strait Islander students and Elders to lead and teach, and as a result, feel proud.

CLOVER MOORE  
LORD MAYOR OF SYDNEY



## Innovation, sustainability and scalability

From its small beginnings, NISEP has developed into an innovative, sustainable and scalable model of engagement with proven benefits for Indigenous youth and their communities. It is actively being adapted to become a social franchise to enable more universities, schools and communities to benefit more Indigenous youth across the nation.

The Macquarie NISEP team have developed a framework of activities that can be adapted by universities and other higher education institutes and can also be scaled to local events and state wide initiatives.

PROFESSOR TIM WESS, FORMER EXECUTIVE DEAN, FACULTY OF SCIENCE, CSU (NISEP UNIVERSITY PARTNER)

The NISEP program will provide an excellent platform on which to expand our activities to connect with and excite Indigenous students about science and encourage them in further studies of science in their senior secondary years.

JACKIE MERGARD, OUTREACH MANAGER, FACULTY OF SCIENCE, UNIVERSITY OF QUEENSLAND

NISEP was selected from over 125 applications across Australia as one of the 21CM Accelerator Program STEM education initiatives. We believe the initiative has the potential for growth and will help build Australia's future innovators.

TONY PEAKE, GOVERNMENT SECTOR LEADER AND STEM LEADER, PWC

I am excited about the opportunity for RMIT to be the first Victorian University involved in NISEP - for RMIT University this is a priority area for STEM outreach.

ASSOCIATE PROFESSOR SYLVIA URBAN, RMIT UNIVERSITY

[nisep.org.au](http://nisep.org.au)  
[facebook.com/NISEP.MQ](https://facebook.com/NISEP.MQ)  
[youtube.com/NISEPmq](https://youtube.com/NISEPmq)