Indigenous Science Network Bulletin

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Website: research.acer.edu.au/isn/ Contact: IndigenousSciNet@yahoo.com

Promoting First Nations' science, teaching & education

FROM THE COORDINATOR

We present another collection of articles and resources related to First Nations peoples and their science knowledge for a global audience of teachers, scientists and interested community members. Our Board Chair, Liz McKinley has written an inspiring editorial that reflects on her journey as a Maori science educator working across all levels in a career spanning over 40 years. From simple beginnings with some Maori words used in her lessons, through to the total integration of Matauranga Maori within curriculum, she now seeks a recalibration of aspirations as previous successes are overtaken by time and circumstances. Recent unfortunate moves by the NZ government to wind back the rights and expectations for Maori means the efforts to decolonise curriculum must continue. Link.

Liz also touches on one of the long running controversies that seems unavoidable in this space, that of the value and credibility of allowing non-western cultural knowledge into science curricula and pedagogy. We stand firmly on the side of science as a human endeavour requiring that culture must be acknowledged and valued. And our continuing exploration of that topic continues here.

In May this year, the second biennial Turtle Island Indigenous Science Conference was held at the University of Regina in CANADA. Many social media posts can be found in this bulletin, while the complete Conference Program can be downloaded from here. Our thanks to the Conference Organisers especially Dr Mel Hart, Associate Dean, University of Regina.

This issue contains three items written specifically for us. The first is a summary of the Queensland Education Department's Solid Pathways program by Dr Hind Hegazy, which see online STEM instruction provided to First Nations primary level students. The second is an item provided by another staff member of Queensland Education, being Goodna State School's science teacher Gerard Salmon. He provides opportunities for Indigenous girls to excel at science through an Indigenous Girl's Technology and Drone Club. The third is provided by Dr Nick Ruddell of Charles Sturt University. Along with colleague Holly Randell-Moon, they have summarised a recently published book chapter titled *Country as teacher in the development of cross-cultural Indigenous science environmental education*. Big thanks to all these members for their contributions!

Mark Linkson, Coordinator ISN, Tulmur (Ipswich), Queensland, AUSTRALIA
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Original artwork for the ISN from Tiwi Designs by Jennifer Coombs, Melville Island, NT, AUSTRALIA

Aims of the Indigenous Science Network

Originating from a meeting in 1998 of science educators and Indigenous community members in Darwin, Australia. We agreed that there should be a central place for Indigenous knowledge in any science curriculum. We have grown to cater for scientists, educators and Indigenous community members from across the world:

- To promote First Nations science, teaching and education
- To support all educators who would like to improve their knowledge and understanding of Indigenous science and how to access and use it in their teaching
- To involve Indigenous scientists, educators and community members who support the inclusion of Indigenous knowledge in teaching science and are open to dialogue and sharing about their own experiences.

Regional Correspondents

The Indigenous Science Network is managed from Tulmur (Ipswich), on the unceded lands of the Ugurapul and Yagara peoples of southeast Queensland, AUSTRALIA.

ISN Facebook page and X account

The Facebook page now has around 1700 followers and the X account has around 2800 followers (at 27 September 2024). Most of these people are not official members of the network (not having supplied an email address) but some do contact us via those sites to join. It means we can improve and widen our reach by posting to those media. Items posted on Facebook focus on Indigenous science, environmental, welfare and equity issues. More pointedly, the X account covers many Indigenous issues, much more than just science and has contributions from First Nations peoples of all settler countries. Even though Elon Musk has partially wrecked it, there are still outposts of clear minded thinkers only wishing to improve society on his social media platform. We like to believe we fit into that category! The logos above contain hyperlinks to our live and continuing everyday media presence. However, the Bulletin is our most important and significant work.

INDIGENOUS SCIENCE NETWORK: BULLETIN ITEMS

Items are listed under six headings being **News and Views; Resources; Decolonising Science; Papers; Indigenous Astronomy** and **Conferences / Seminars**. We further categorise some of these sections with sub-headers of **Australia** or **The World**, to make finding your areas of interest easier. (See the Contents tabled following). We also have sub-sections for each of five regions of the globe within **News and Views (The World)**. **Weblinks for most items are contained as hyper-linked addresses or as hotspots within illustrations.** All links were active at the time of publication (20 October 2024).

All members are encouraged to submit links to items of interest OR submit reports, narratives or academic papers created by themselves that relate to the aims of the network. The strength of the network derives from the interests and motivations of the membership. Get involved!

ACER PROVIDES AN ONLINE HOME FOR THE BULLETINS AND THIS NETWORK

The Indigenous Science Network and the Australian Council for Education Research (ACER) are in a partnership, with ACER providing a permanent online home for the network as part of their Research Repository. We thank ACER for this kind gesture and hope that our regular bulletins provide their readers with plenty of useful material regarding the role and value of Indigenous knowledge in education at all levels. All ISN Bulletins issued since 2020 are stored on this website.

CONTENTS

The boomerang logo appears at the end of every section and is a hyperlink that will return you to this Contents Page.

Aboriginal people and Torres Strait Islander people of Australia should be aware that this bulletin may contain images and names of deceased persons.

Professor Elizabeth McKinley ONZM *is Executive Director of the Atlantic Fellows for Social Equity at the University of Melbourne and previously Professor of Indigenous Education, Melbourne Graduate School of Education.*

Some Reflections on Science Education and Culture from Aotearoa New Zealand

Recently I was asked to present to a group in the US on the curriculum work in Aotearoa New Zealand. It gave me the opportunity to reflect on over 40 years of experience at every level in the education system - from teaching in the classroom, teacher education, national curriculum policy development, through to carrying out research. I began integrating *Mātauranga Māori* (Māori knowledge) into my high school science lessons in 1986. I was teaching a bilingual class in a school I had just moved to. It was simple at first – the 'bilingual' nature of the science lessons were commands used in the running of the classroom activities and the naming of science objects commonly found in the science laboratory. This expanded to the development of further resources that included the Māori calendar, stories and names of the stars and night sky, ocean voyaging, and environmental topics.

This work, small as it was at the time, was occurring at the same time as a strong revival of *te reo Māori* (Māori language) was occurring in other places. At the end of the 1970s, linguists had declared the Māori language was in its death throes and something needed to be done. By the 1980s strong advocates for the restoration of Māori language began developing Māori immersion early childhood education (*kohanga reo*) and primary schools (*kura kaupapa Māori*) outside state schools and institutions. And so, something was done. The 1980s saw an almighty push by large numbers of Māori (and a few *Pākehā* or white people) to develop Māori language use in a wide range of places, mainly in schools. All these initiatives helped with Māori being recognized as an Official language of New Zealand and the government establishing the Māori Language Commission (*Te Taura Whiri I te Reo Māori*).

While there is still much to do, it is useful to stop every now and then to reflect on our accomplishments, to focus on the challenges and to reset our aspirations. Aotearoa New Zealand now has a consolidated Māori education sector that includes institutions from early childhood through to doctoral granting tertiary institutes and universities, where Māori language is the medium of instruction. What this meant for science education (and other subject areas) in schools is a huge translation and curriculum development strategy. We now have curriculum policy written in both Māori and English languages.

While the first science curriculum written in Māori (known as *Pūtaiao*) was virtually a translation of the English medium science curriculum, the subsequent versions of *Pūtaiao* have moved to incorporating more Māori philosophy and knowledges. Parallel to, and integrated with, this curriculum development has been the building of Māori language across many aspects of public life in Aotearoa. There now exist discipline specific dictionaries to assist teachers and students. All this work has occurred over the last 30 years – from a science curriculum built on our colonial roots that incorporated introduced flora and fauna from Britain that matched books used in science classrooms to one incorporating a Māori philosophical and Western scientific approach to making sense of our world. Of course, anyone who can understand this document can actually teach it in their classes in schools.

I believe the development of Māori curriculum documents had progressed well over the 30 years, with them now beginning to inform the English documents. The last English language science curriculum drafts I was sent to comment on looked to have incorporated significant Māori language and knowledge. However, it turned out that it was 'a step too far' for many teachers and schools, and I found I was in the minority with what I thought was good progress. The objections raised, previously aired in the early 2000s after we wrote the first *Pūtaiao* document, concerned the support for teachers and the second, the theory of knowledge. A significant number of teachers liked the new curriculum but felt they were not prepared well enough to do justice to the curriculum in that they were not trained to teach it, and they would not know where to start. While the document was meant to encourage change it appeared too many teachers felt they would not have the support that they need to be able to do it.

The second objection that concerns the theory of knowledge - that science is universal, and culture does not have a place - is a 'hoary chestnut' that just keeps arising. This idea has been debated in academic journals over the last 30 years or more. At this point it is irresolvable as the debate slogans about universality are much too blunt and lack the nuanced approach to science and its activity as a human endeavour. The new curriculum documents have been put on pause while reports are being written by 'expert groups'. This will always happen if the step has been taken without the engagement and consent of community.

To bring about lasting change it is important we have the full capability of institutions and agencies, and the full consent and engagement by communities and families. One needs to be a bit obsessive with a focus on the different moving parts of the whole. Curriculum policy will only progress at the pace the other moving parts will let it. Think of it as an assemblage, each of the parts moving and interacting with other parts, sometimes in predictable ways and sometimes not. The whole transforms as the parts transform. We need to keep our eye on the horizon we set for ourselves. And the vision we started with needs to be front and centre. Much can change in a generation, and in all honesty, New Zealand's science curriculum has achieved a lot. I take my hat off to all those people who have gone before me who have worked incredibly hard to lay a platform on which the rest of us can work from – standing on the shoulders of giants.

Liz McKinley

LINK TO ORIGINAL STORY

Links to the Bulletin of the Indigenous Science Network are distributed via email notification directly to members. Bulletins are stored on our webpages hosted by ACER (The Australian Council for Education Research). Membership is open to all. If interested in being a part of the Network, please contact Mark Linkson, the Coordinator, via email at IndigenousSciNet@yahoo.com.

Indigenous Science Network
August 11 at 9:26 AM ·

Sarah Landers is a queer Aboriginal woman and mother who works in science, technology, engineering and maths (STEM) education. She sees the challenges she has faced as blessings and believes in being open minded and always learning. Sarah is working with our Young Indigenous STEM Academy to support Aboriginal and Torres Strait Islander girls to pursue STEM careers.

Sarah has more than 20 years of experience working in education, community services and Aboriginal health services. Supporting Aboriginal children and communities has always been her passion. Her ancestors' land is far northeast of South Australia between Katithunda – Lake Eyre in the west and Moomba in the east.

"They cover Mumpy (Murnpeowie Station) in the south and up to Clifton Hills station in the north," Sarah says. "As an Aboriginal woman and mother, I have lived and working experience with Aboriginal people. It's my true purpose in life."

This dedication extends to her current role as an academic coordinator for the Young Indigenous Women's STEM Academy. She's championing the next generation of Aboriginal and Torres Strait Islander female leaders, role models, and game changers in science, technology, engineering and maths (STEM).

"It's important that we support more Aboriginal and Torres Strait Islander women into STEM career pathways and roles. Our people are the very first scientists. That's something we can all be proud of," Sarah says.

CSIRO.AU

Meet Sarah Landers: walking in two worlds

Sarah Landers is working on getting more Aboriginal and Torres Strait Islander women into ST...

LINK TO ORIGINAL STORY

Indigenous Science Network
@IndigenousScie1

Promote ···

Mob have a lot to say about STEM. Indigenous STEM is vast and includes astronomy, weather knowledge, medicinal plant knowledge and animal classification systems. 'Definitions are often very western. This excludes us.'
theconversation.com/definitions-ar... via @ConversationEDU

From theconversation.com

9:22 AM · Aug 11, 2024 · **2,738** Views

LINK TO ORIGINAL STORY

Indigenous Science Network
August 4 ·

Abandoning traditional practices led to intense dry season fires, drastically altering biodiversity and increasing greenhouse gas emissions.

Researchers report that Indigenous fire management occurred in Australia as early as 11,000 years ago, and reintroducing these old ways could help cool hotter and more frequent wildfires occurring due to climate change today.

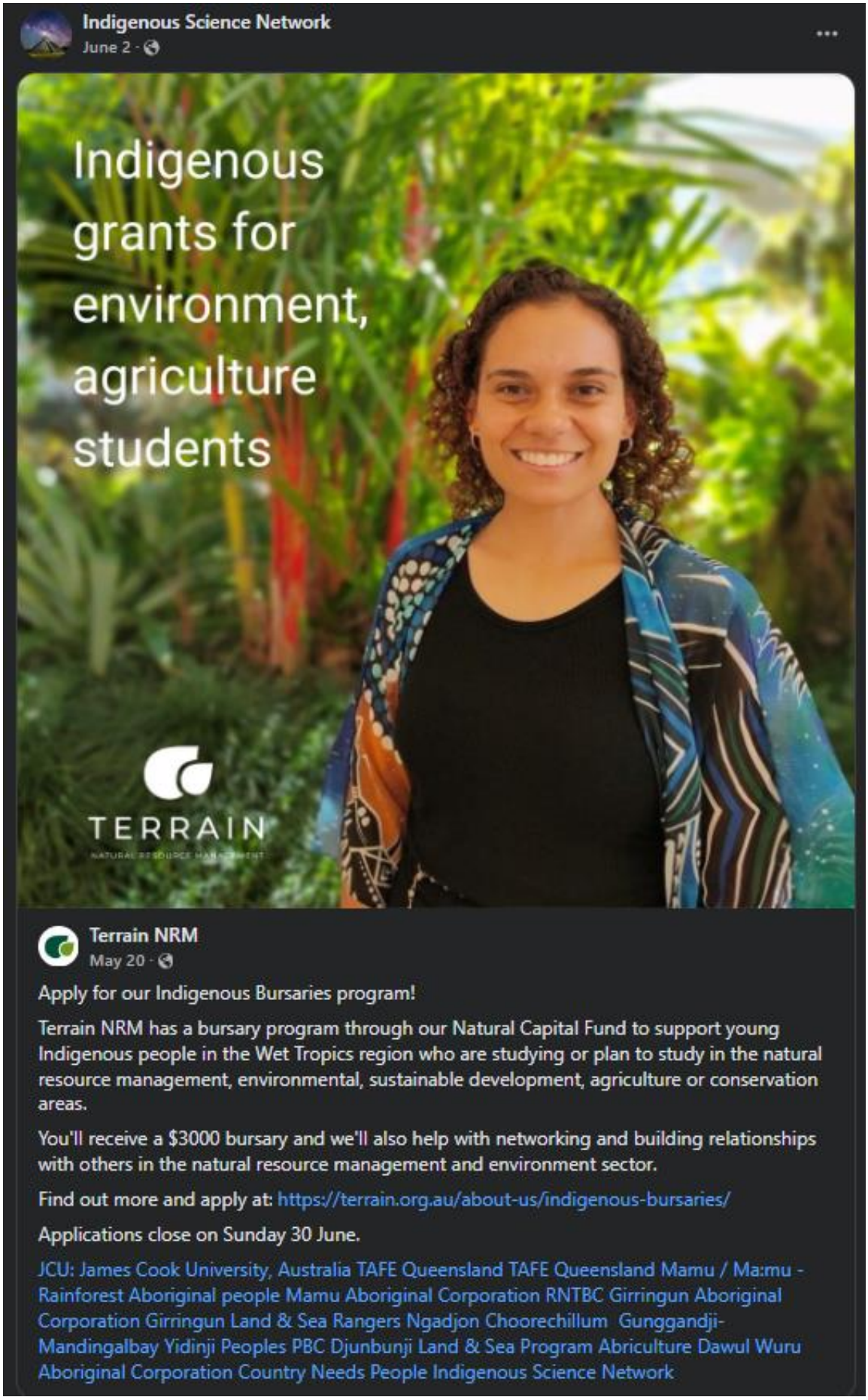
Some 65,000 years ago, humans first arrived in Australia. Fires, both natural and those shaped by Indigenous practices, have long contributed to ecosystem and biodiversity changes in the northern savannahs. "Indigenous Australians actively used fire to reduce risk, and also to protect and husband resources of use to them," Michael Bird, a researcher at James Cook University, in Australia, wrote in an email to Advanced Science News. "This is likely to have changed plant and animal biodiversity although exactly how remains to be determined."

But the arrival of Europeans and tapering off of Indigenous fire management regimes have led to biodiversity loss. "It is clear that removal of indigenous fire management (along with other stressors like climate change and invasive species) has had detrimental impacts on both flow and fauna over the last century," said Bird.

ADVANCEDSCIENCENEWS.COM

Indigenous fire management in Australia traced back 11,000 years - Advanced Science News

LINK TO ORIGINAL VIDEO



LINK TO BURSARY

Indigenous Science Network
@IndigenousScie1

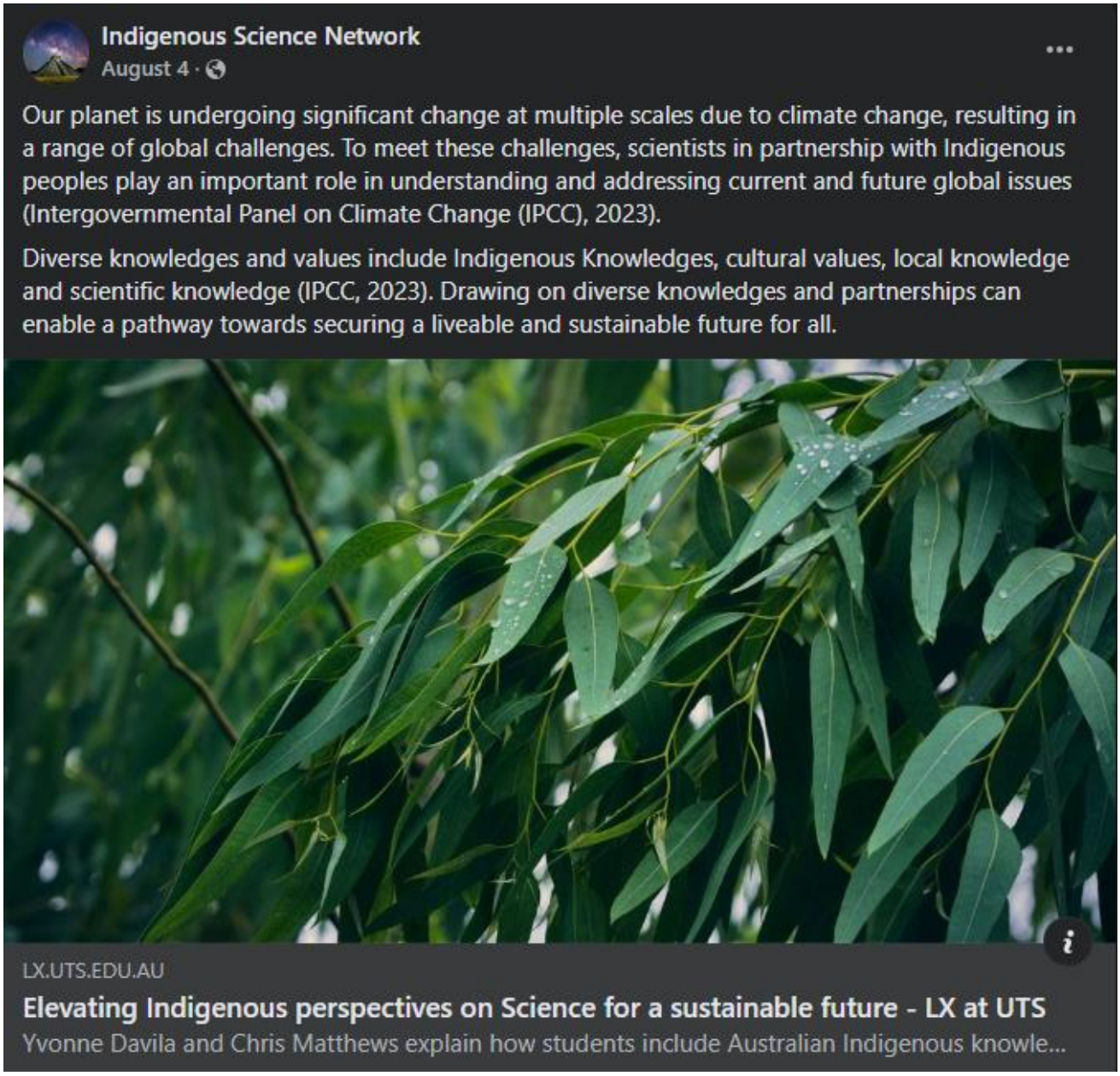
Promote ···

How Indigenous knowledge is saving Australia's great desert skink. Cross-cultural monitoring boosts knowledge and care for vulnerable species!

From thinklandscape.globallandscapesforum.org

2:48 PM · Aug 3, 2024 · **227** Views

LINK TO ORIGINAL STORY & VIDEO



LINK TO ORIGINAL STORY

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ISN members are encouraged to submit items exploring any aspects of Indigenous science, teaching or education. As the Bulletin is not an official journal or organ of any recognised institution, we are not required to enforce any formatting, editing or reviewing regimes. We do have an Editorial Board made up of First Nations Co-Editors from across the globe who view all items before publication. If you are doing something valuable in Indigenous science, teaching or education, please consider telling your story here!

Enhancing STEM Education Through Culturally Responsive Pedagogy – The Solid Pathways Program

Dr Hind Hegazy - Principal Advisor, Solid Pathways Program
First Nations Strategy & Partnerships Division, Department of Education, Brisbane, Queensland.

E: Hind.Hegazy@qed.qld.gov.au

The Solid Pathways STEM program is a state-wide online program designed to deliver a rigorous STEM-focused academic curriculum to over 900 Aboriginal students and Torres Strait Islander students each school term. Targeting students in Years 4 to 6, the program utilises the online platform iSee and includes university experience days. It aims to raise students' expectations of themselves as learners, enhance post-school aspirations, and promote tertiary pathways. This article explores the structure, cultural integration, and pedagogical approaches of the Solid Pathways Program, emphasising its impact on student engagement and teacher professional growth.

Program Structure

The Solid Pathways Program is structured into four rounds, each aligning with a school term. Students participate in a one-hour on-line STEM lesson each week for nine weeks. Each teacher delivers three lessons per day, totalling 15 lessons per week, with the same lesson repeated across different student groups. This repetition ensures consistency and allows for continuous refinement of instructional strategies.

Cultural Integration

The program embeds Aboriginal and Torres Strait Islander histories and cultures through culturally responsive curriculum and pedagogical models. This integration supports students in embracing and affirming their cultural identity, increasing academic achievement and self-belief. The program offers culturally responsive learning experiences that align with the Australian Curriculum's cross-curriculum priority of Aboriginal and Torres Strait Islander Histories and Cultures. There are two key elements that underpin the planning and design of teaching and learning to authentically embed Aboriginal and Torres Strait Islander perspectives:

> ***Enhancing meaning***: by creating challenging, thoughtful learning experiences that include students' perspectives and values and reflects personal relevance and volition.
>
> ***Engendering competence***: by supporting students to attribute their success to their capability, effort, and knowledge.

Pedagogical Approaches

The program's pedagogy is built on four aligned frameworks: Uncle Ernie's Holistic Framework, the '8 Aboriginal Ways of Learning,' an inquiry-based approach, and digital learning principles. These frameworks guide teachers in incorporating Aboriginal and Torres Strait Islander perspectives and inquiry skills into their lessons, fostering a culturally inclusive learning environment.

Uncle Ernie's Holistic Framework, developed by Ernie Grant, a Djirrabal Elder, integrates land, language, and culture, emphasising relationships within the community. It supports students in connecting with their ancestral heritage, promoting cross-cultural understanding, and helping students become two-way strong—confidently navigating both their Aboriginal and Torres Strait Islander identities and broader cultural contexts.

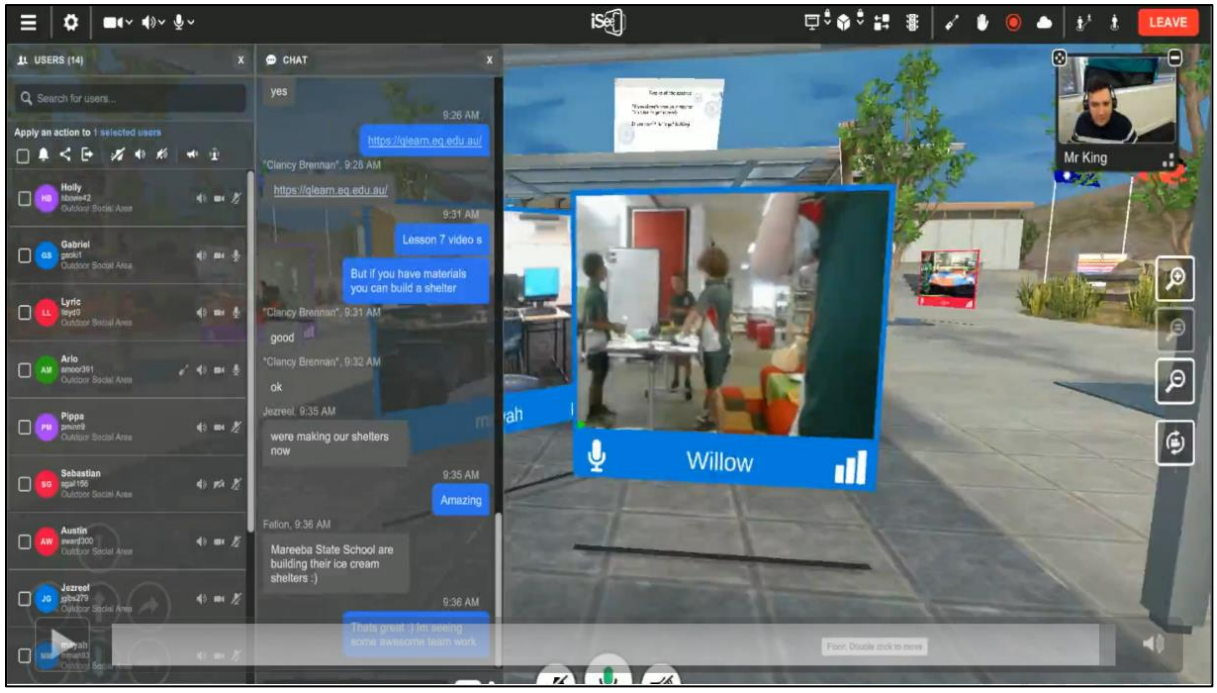

Figure 1: *Year 4 students demonstrating their scientific understanding of material properties and heat transfer by designing a cooler to protect food from heat.*

Figure 2: *Year 4 students learning coding and developing algorithms involving sequencing, branching, user input, and iteration to create a digital solution for schools to enter in the Premier's Coding Challenge.*

The '8 Aboriginal Ways of Learning,' developed by Yunkaporta (2009), consists of eight interconnected pedagogical practices: Story Sharing, Community Links, Deconstructing/Reconstructing, Non-linear, Land Links, Symbols and Images, Non-verbal, and Learning Maps. These practices enable teachers to incorporate Aboriginal and Torres Strait Islander ways of knowing and doing into everyday lessons, making learning culturally relevant.

The inquiry-based approach allows students to explore how Aboriginal and Torres Strait Islander people have utilised critical and creative thinking for over 50,000 years. Central to this approach is the 5E Model, which engages students in STEM through five phases: Engage, Explore, Explain, Elaborate, and Evaluate. This model has been widely recognised for its effectiveness in promoting inquiry-based learning in STEM education (Bybee et al., 2006). The 5E Model supports deeper learning and helps students develop a more profound understanding of scientific concepts (Bybee, 2014). This model is particularly effective in integrating Aboriginal and Torres Strait Islander perspectives, as it allows for the inclusion of traditional knowledge and practices within the inquiry process.

The program's approach to digital learning is rooted in the belief that technology is a powerful catalyst for transforming learning experiences and outcomes. We are committed to creating an educational environment that not only prepares students for the future but also empowers them to contribute to the ongoing digital transformation. Here are the key pillars of our approach to digital learning:

- **Learning Environment:** Creating a dynamic and flexible learning environment that leverages technology to enhance learning experiences.
- **Student Engagement and Growth:** Utilising digital tools to engage students actively and support their academic and personal growth.
- **Pedagogical Structure:** Integrating technology seamlessly into pedagogical practices to support effective teaching and learning.
- **Relationships and Collaboration:** Fostering strong student-teacher relationships and promoting collaboration through digital platforms.

These principles highlight the need for active learning, collaboration, technological proficiency, and strong student-teacher relationships, as well as embedding digital literacy and critical inquiry skills in students.

Teacher Professional Growth

The repetitive nature of the program's lesson delivery supports teacher professional growth through reflection and iterative improvement. By teaching the same lesson multiple times, educators can refine their strategies, identify areas for improvement, and adapt their methods to meet diverse student needs. This iterative process serves as an action research cycle, enabling teachers to systematically evaluate the effectiveness of their pedagogy and make data-driven adjustments to enhance both teaching and learning outcomes. The cyclical nature of lesson repetition and evaluation aligns with the principles of action research, promoting continuous improvement in teaching and learning. This process aligns with Schön's (1983) concept of "Reflection-in-action," which emphasises real-time analysis and adaptation of teaching practices to enhance effectiveness.

The Solid Pathways Program aims to increase participation and achievement of Aboriginal students and Torres Strait Islander students in STEM. It reflects priorities identified in the Advancing Aboriginal and Torres Strait Islander Education Action Plan and responds to the national focus on STEM education. By nurturing students' cultural capital and self-efficacy, the program contributes to developing a pool of positive role models and leaders from Aboriginal communities and Torres Strait Islander communities.

The Solid Pathways STEM program exemplifies a culturally responsive teaching model that enhances STEM capabilities and nurtures scientific curiosity through critical and creative thinking. By integrating the perspectives and knowledge of Aboriginal peoples and Torres Strait Islander peoples, the program creates an engaging, inclusive learning environment that fosters academic success and cultural pride. This approach not only benefits students but also supports ongoing teacher development and reflects effective pedagogy in action.

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The Queensland Education Department's webpage for **Solid Pathways**:

https://education.qld.gov.au/about-us/budgets-funding-grants/grants/state-schools/core-funding/solid-pathways

Club meets national guidelines around Science Technology and Innovation

Gerard Salmon, Science Coordinator, Goodna State School, Goodna, Queensland AUSTRALIA

Goodna State School's science coordinator Gerard Salmon says society is undergoing a digital, technological revolution that is dizzy in its pace and challenging for educators and school budgets to accommodate.

"The Indigenous Girl's Technology and Drone Club is a response to key state and federal government initiatives around science, technology and innovation," he said.

"We have a variety of digital toys to engage our children in this space."

"The Parrot 'Mambo' Drone and Ozobot 'Bit' are powerful tools for coding that have very serious fun components built in," added Mr Salmon.

"Our Indigenous kids also use the Phantom 4 Pro V2 drone to map koala habitat in the Greater Ipswich area."

"The end game with all this is to get kids comfortable enough with the technology so that it's just second nature for them to code a digital technology to perform an intended function."

"We call the strict set of instructions that a robot follows, an algorithm. These commands can be easily block coded into a digital device by clicking and dragging, or at a more advanced level, lines of code can be written in," said Mr Salmon.

The Phantom 4 Pro V2 Drone, piloted by a female Indigenous student, flies over the Mutdapilly offset (located near Goodna) seeking to plot the boundary of a koala habitat. Image courtesy Gerard Salmon

Country as Teacher: Advancing Cross-Cultural Indigenous Science and Environmental Education

Nicholas Ruddell and Holly Randell-Moon
School of Indigenous Australian Studies Charles Sturt University, Australia

*This article, written for the Indigenous Science Network, is excerpted from Randell-Moon, H., & Ruddell, N. (2024**). Country as teacher in the development of cross-cultural Indigenous science environmental education**. In **Encountering Ideas of Place in Education** (pp. 26-38). Routledge. If you would like access to the chapter, please email the authors.*

Dr. Nicholas Ruddell is a lecturer and Dr. Holly Randell-Moon is a non-Indigenous associate professor in the School of Indigenous Australian Studies at the Bathurst campus of Charles Sturt University.

Australian Indigenous approaches to place-based education can be used to embed First Nations scalable and adaptive sustainable practices into school curriculum and to foster sustainable river management in school communities. This is achieved by centring First Nations expertise to place-based education and fostering reflexive practice on how non-Indigenous peoples come to view themselves as placed on Indigenous Country and their responsibilities as a result of this placement.

Facilitating students' relationship with place has been recognised as having benefits for fostering environmental literacies, responsibility and relevancy of curriculum to students. In their book *Literacies in Place*, Comber et al. (2007, p. 16) suggest 'when places are made the object of study, teachers and young people can come to know their environments in complex ways'. They go on to say that engagement with Indigenous Elders is considered one avenue for research for students.

Focusing on fish trap engineering, our proposed learning plan supports transformative education programmes for schools to increase water health and prevent fish habitat loss by implementing a cross-cultural school science curriculum for years 5 and 6 students. Connecting First Nations knowledge holders with schools through the 3 stage Mutual Cultural Responsivity framework (Ruddell, 2021) will enable the translation of New South Wales curriculum priorities and address the need for Indigenous/non-Indigenous collaboration in climate change mitigation and adaptation.

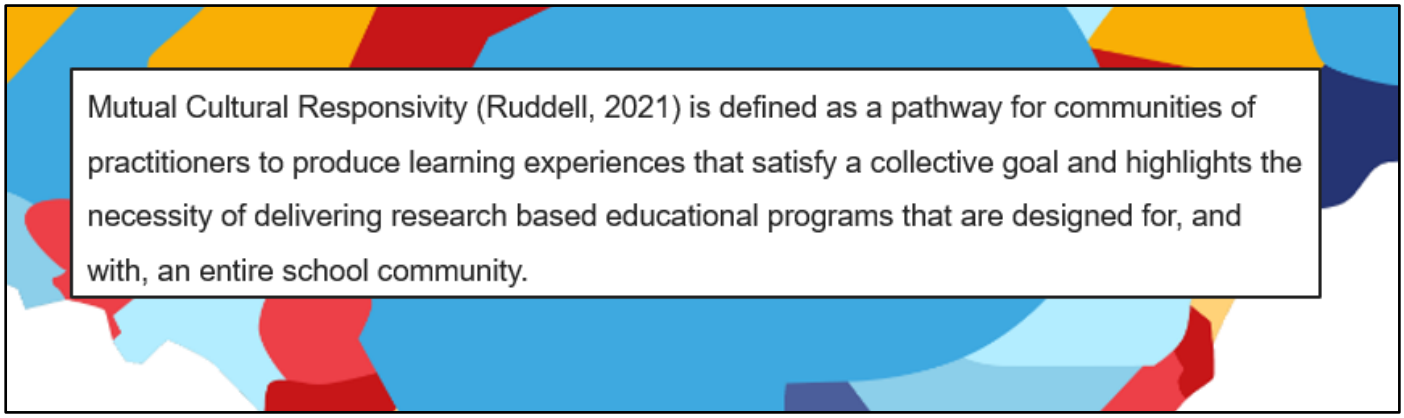

***Image 1:** The Mutual Cultural Responsivity framework*

To help develop good reflective practice, some advice and questions have been developed to assist educators and researchers:

Stage 1 Awareness: Program participants are presented with information and reflect on whether they have gained an awareness of culturally appropriate and/or inappropriate actions and attitudes.	○ Be clear on which First Nation community you need to work with ○ Is your project wanted or needed by this community? ○ Have you identified who the appropriate community members are that you need to approach? ○ Have you received training in particular language group protocols? ○ Have you allowed sufficient time for the community to communicate between themselves? ○ How does the project benefit the community and what legacy will be left behind? ○ Have you developed a [team] reflective practice that holds members accountable?
Being: "not about us without us", "sufficient time" to consider the multiple viewpoints is understood and practised by all. Relationships are paramount.	○ Are First Nations resources and peoples actively and appropriately engaged before and during my project? ○ Is there clear evidence of participants operating with professional cultural confidence? ○ Do I see participants sharing resources? ○ Does my program reflect my capabilities and professional understandings of ethical, decolonised, culturally appropriate methodologies and approaches (e.g., Rigney, 1999; Martin & Mirraboopa, 2001; Smith, 1999) and Standpoint theory (e.g., Nakata, 2007)?
Stage 2 Being: Understand and appreciate the dialogical exchange, knowledge and perspectives generated by two distinct knowledge systems.	○ Are you providing professional development involving cultural competency to non-Indigenous stakeholders? ○ Are you providing the sort of environment whereby cultural knowledge will be freely offered? ○ Are you providing/ donating resources e.g., teaching and learning materials? ○ Are you allowing time for project collaborators and stakeholders to absorb information? ○ Have you set up practical communication and consultative practices across multiple platforms?

Image 2: *Advice and questions underpinned by Mutual Cultural Responsivity Framework*

Hands-on activities include working in collaborative learning group teams to design and building mini fish traps using a selection of materials based on local construction methods. A stream table set up with variable water flows will allow students to test their designs in terms of strength and ability to function when confronted with fast/slow, high/low water levels. Elder participation, teacher training and community involvement are critical components of the project. Image 2 shows the proposed unit of work which comprises six weeks of activities.

Image 3: *Week 4 - Using a stream table and resources, students create an approximate facsimile of their local creek / river and then test their fish trap models.* Photos courtesy of Em River 2021

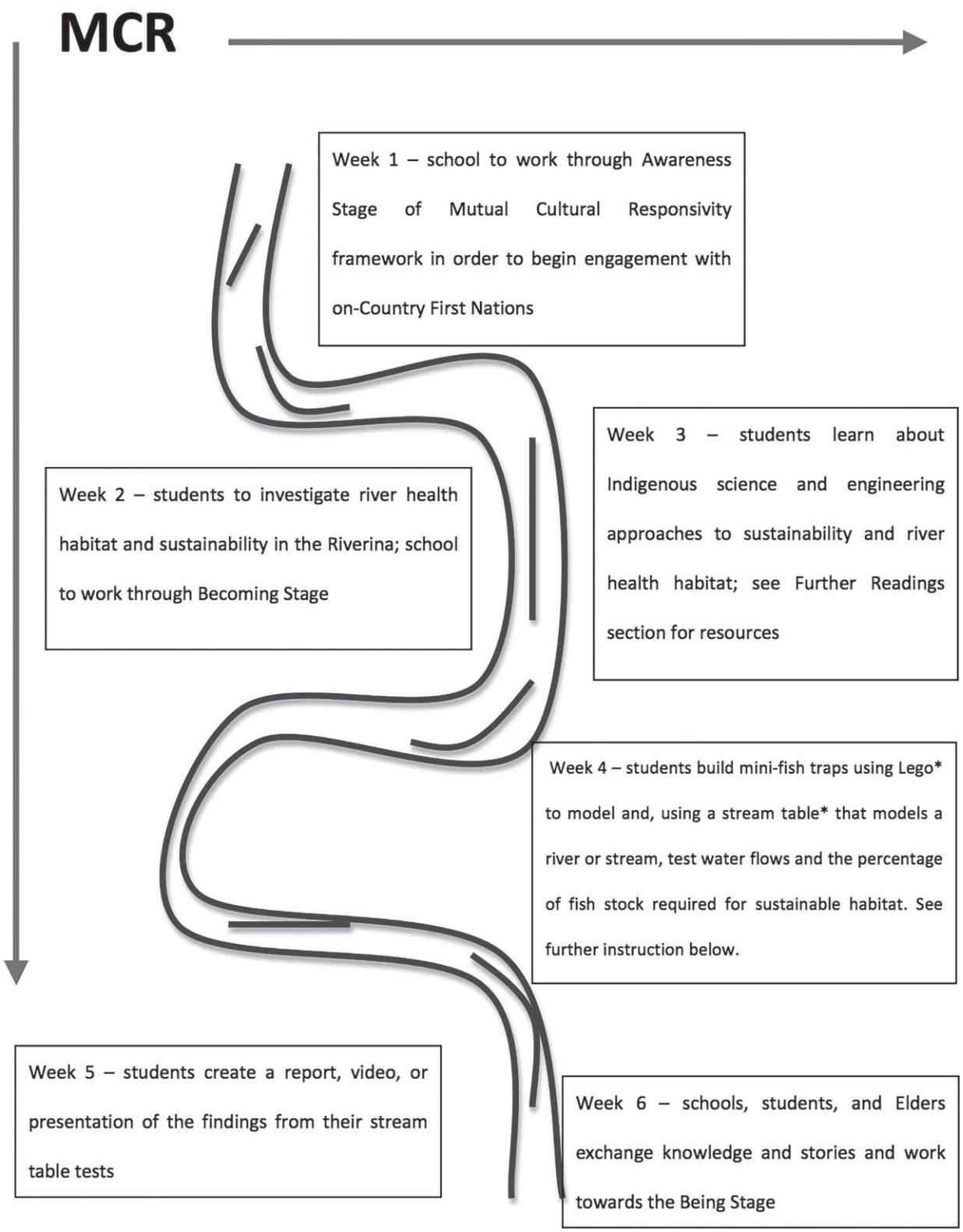

***Image 4**: Six-week unit of work*

The programme develops student capabilities for understanding the scale and design required for sustainable river management and fish habitat approaches. Through reflexive and responsive practice, schools, students and communities alike are able to place themselves in Country and continuously learn and adapt to its knowledge.

Further reading:

- For middle-school years, engagement with Pascoe's (2014) discussion of the traps is

recommended.

- Kutay and Lawrence (2017) is an excellent source of background information for educators at the middle-school level.
- Several examples of fish trap engineering remain in Australia, including the Brewarrina fish traps or Baiame's Ngunnghu (https://visitbrewarrina.com.au/brewarrina-aboriginal-fish-traps/)
- Ruddell, N., & Randell-Moon, H. (2022). Indigenous automation in the Brewarrina fish and Budj Bim eel systems: cultural responsivity in cross-cultural indigenous science education. In *Indigenous engineering for an enduring culture* (pp. 72-101). Cambridge Scholars Publishing.

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7NEWS Townsville
@7NewsTownsville

First Nations ties to the reef are set to be strengthened when almost 70 Queensland school students graduate from a JCU program. The program is in its 11th year inspiring the next generation of marine scientists. 7NEWS.com.au @newswithbethany #7NEWS

6:13 PM · Jun 12, 2024 · **487** Views

The FB post above concerns the Indigenous Science Family Fun Day on 17 August 2024, organised by the National Indigenous Science Education Program's Professor Joanne Jamie of Macquarie University. I flew down from Brisbane to experience the event in Sydney first-hand, and enjoyed the hospitality and many interesting conversations with science and community people at the Redfern Community Centre. Also see post on the next page.

Mark Linkson, Coordinator, ISN

LINK TO EVENT DESCRIPTION

Indigenous Science Network
15 hours ago ·

Lots of science, lots of Indigenous people and culture, and some Indigenous science. Demo's of artefacts like woomera, presentation on archaeoastronomy, bush foods and a 3d virtual representation of a Torres Strait island. Along with some dance.A great day at Redfern.

Indigenous Science Network
August 3 ·

Garrthalala Bush University will support students from Yolngu communities in north-east Arnhem Land to remain on Country and immersed in their cultural traditions while studying towards a tertiary qualification.

The university is based on the two-way learning model pioneered by the Wuyagiba Study Hub in south-east Arnhem Land, which was established by the Wuyagiba Bush Hub Aboriginal Corporation in partnership with Macquarie University.

"The partnership between Macquarie University and Wuyagiba Bush Hub Aboriginal Corporation has provided wonderful, two-way opportunities for students, staff and communities in terms of academics, Cultural learning and personal growth," says Mr Sam Ricketts, Macquarie University's Pro Vice-Chancellor (Indigenous).

Subjects offered at Wuyagiba Study Hub include Caring for Country and culture in South-East Arnhem Land, and Indigenous Science. Associate Professor Ens says that, in a similar vein, there will be subjects developed in partnership for Garrthalala that focus on cultural knowledge and practices.

INDIAEDUCATIONDIARY.IN
New Bush University to Be Established in North-east Arnhem Land
The bush university, scheduled to launch later this year, was one of 10 new Regional University...

LINK TO ORIGINAL STORY

DeadlySience
@DeadlySience

Our team are in the Torres Strait on Dauan Island creating our next Deadly Labs kit! Thanks to the U.S. Consulate General (Australia) for your support in sponsoring this trip.

All donations $2 or over to DeadlyScience are tax deductible - deadlysciencefundraising.org.au

10:54 AM · Jun 7, 2024 · **657** Views

DeadlyScience
@DeadlyScience

Our impact report for 2023 has been released - take a look at the incredible work DeadlyScience has been doing and the impact we are having on the ground creating STEM equity for Indigenous learners ♥

Read the full impact report for 2023 here: ow.ly/SFLb50RE9Ps

10:35 AM · May 14, 2024 · **1,042** Views

LINK TO THE IMPACT REPORT

DeadlyScience
@DeadlyScience

Our DeadlyScience tram hit the tracks yesterday as part of the Yarra Trams Community Partnership program ♥Thanks to Yarra Trams for this incredible opportunity and to Worimi-Biripi artist Jake Simon from InYaDot Art for designing such a deadly tram!

11:15 AM · May 10, 2024 · **1,670** Views

13 45

Indigenous Science Network
August 3 ·

Indigenous peoples have been caring for the health of our communities and the environment for thousands of generations. Yet our voices have been silenced and our knowledge disregarded since colonisation.

This has been disastrous for the health and wellbeing of our communities, and for the planet. It's time to listen to the wisdom of Indigenous peoples and forge a sustainable future for our children.

A recent publication, Health a Political Choice, highlights diverse Indigenous knowledge on advancing Indigenous peoples' rights and wellbeing. These writings provide lessons for all, and foreground the importance of Indigenous knowledge for thriving.

For example, Indigenous peoples comprise about 5% of the world's population, care for 20% of the planet's lands, and 80% of the world's remaining biodiversity. This heavy lifting for the world (human life depends on biodiversity) is achieved despite imposition of some of the worst social and health inequities.

LENS.MONASH.EDU

Listening to Indigenous peoples' knowledge

It's time to ditch colonial thinking and listen to the wisdom of Indigenous peoples to advance ...

LINK TO THE STORY


Indigenous Science Network
July 13 ·
CELEBRATING NAIDOC WEEK

Victorian Fisheries Authority
July 11 ·

Did you know that the largest and oldest aquaculture system in the world exists right here in south-west Victoria?

Budj Bim is a dormant volcano on Gunditjmara Country, located between Portland and Port Fairy. It's home to an extensive collection of lakes, wetland swamps and sinkholes created by ancient lava flows, making it the ideal habitat for eels and other fish.

By creating stone channels and weirs within the landscape, the Gunditjmara People were able to manipulate seasonal flows to release or trap eels in holding ponds, catering for seasonal variation in supply while maintaining sustainability of the eel population. They were able to farm large quantities of short-finned eels within the ponds and channels, using woven nets and traps.

Further evidence of stone dwellings made from basaltic rock formations and many 'smoking trees,' where eels were smoked for consumption, are scattered throughout the area too. The cultural landscape is estimated to be at least 6,600 years old and was added to the World Heritage List in 2019 in recognition of its outstanding universal value.

To find out more about this fascinating place and to check it out for yourself, visit www.budjbim.com.au.

Photo credits:
Top: Tae Rak channel and holding pond, credit Tyson Lovett-Murray, UNESCO. Copyright Gunditj Mirring Traditional Owners Aboriginal Corporation.
Bottom: Traditional eel trap, supplied by Budj Bim Heritage Centre.

#NAIDOCweek #NAIDOC2024 #BudjBim #WorldHeritageList Budj Bim Tours

LINK TO ORIGINAL STORY

LINK TO ORIGINAL STORY

Download links to the Bulletin of the Indigenous Science Network are distributed via email notification directly to members. Also then promoted on Facebook and Twitter. Bulletins are stored on our webpages hosted by ACER (The Australian Council for Education Research). Membership is open to all. If interested in being a part of the Network, please contact Mark Linkson, the Coordinator, via email at IndigenousSciNet@yahoo.com.

Indigenous Science Network
June 23 ·

WHAT IS THE TEACHERS OF STEM INITIATIVE?

stronger smarter institute | Australian Government National Indigenous Australians Agency | NIAA

The Stronger Smarter Institute
June 21 ·

🤝 Empowering Women in STEM! 🤝
ToSI offers Indigenous women in STEM education an incredible opportunity for mentorship, finances and support. Connect with like-minded professionals and grow together.

Interested or know someone who might be? Check out our website
https://strongersmarter.com.au/teachers-of-stem-initiative/

indigenous.gov.au
#WomeninSTEM #IndigenousWomen #STEMeducation #STEMTeachers

LINK TO ORIGINAL STORY

Indigenous Science Network
March 10 at 9:47 AM ·

As chief scientist at Australia's national research agency, the Commonwealth Scientific and Industrial Research Organisation – better known to the public by its acronym CSIRO – Bronwyn Fox's remit is vast.

The institution, which employs more than 6,300 people at 49 sites across the country (and 2 globally), focuses its scientific research and technology development into six key challenges: health and wellbeing, food security and quality, secure Australia and region, resilient and valuable environments, sustainable energy and resources, and future industries.

Her face lights up when she describes current initiatives building the CSIRO's capacity around Indigenous science and engagement, which includes practical measures like increasing the number of Aboriginal and Torres Strait Islander employees and applying a co-design approach for research.

"We're now really, consciously putting that into place with the way we partner more broadly, across universities and across industry," she says.

COSMOSMAGAZINE.COM

For this chief, science is both work and play

Professor Bronwyn Fox loves science so much, she even takes it on holidays.

LINK TO ORIGINAL STORY

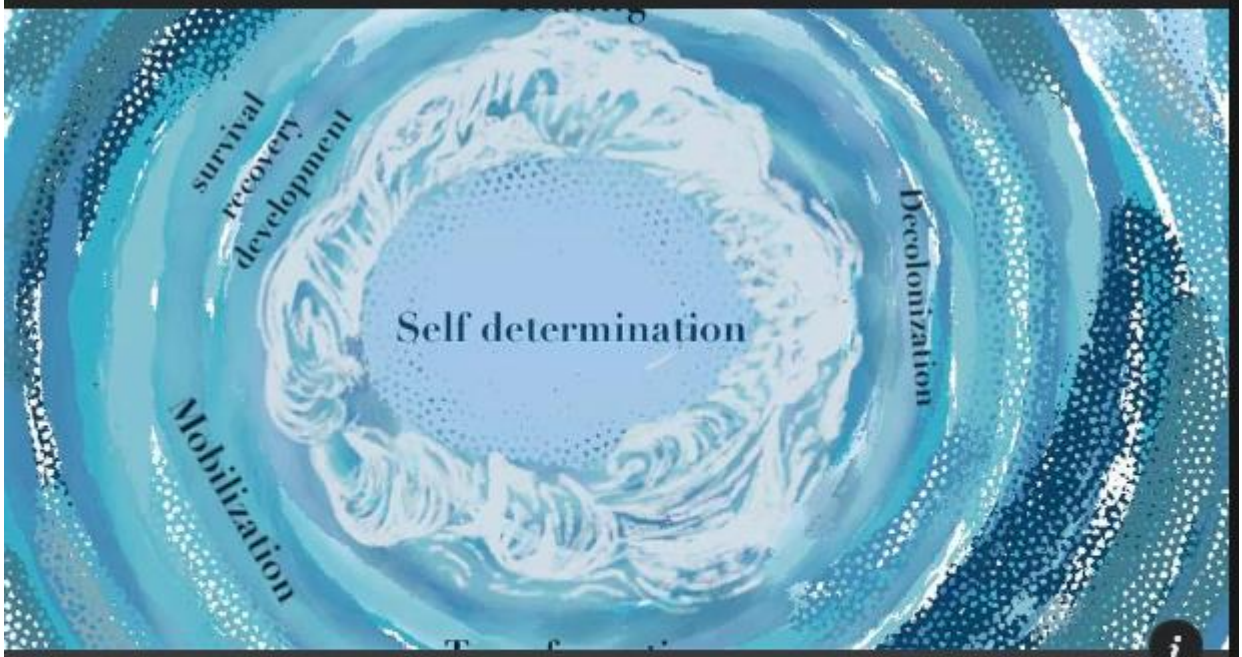
a) Pasifika

LINK TO ORIGINAL STORY

Indigenous Science Network
August 11 at 3:17 PM ·

Linda Tuhiwai Smith is Māori of Ngāti Awa and Ngāti Porou, and director of the International Research Institute for Maori and Indigenous Education at the University of Auckland. They're the author of Decolonizing Methodologies, a book on the history of research involving Indigenous peoples that discusses how to break out of a strictly Western research framework — explains this history through two lenses: "colonizing the disciplines" and "disciplining the colonized."

Western scientific disciplines and ways of research have become individualistic, assertive, and hostile toward other manners of thinking and research, wrote Smith. "Disciplining the colonized" has come in the form of marginalizing Indigenous peoples and their ways of thinking in forceful and violent manners. This marginalization naturally led to a mistrust of researchers within Indigenous communities.



THEVARSITY.CA
Guidelines for research involving Indigenous communities are lacking
U of T researchers' guidelines suggest ways to improve research by involving Indigenous Peop...

LINK TO ORIGINAL STORY

Indigenous Science Network
@IndigenousScie1

Promote ···

A recent film shows First Nations' & Māori perspectives on kaitiakitanga (guardianship) and interconnectedness of living things. All work together to monitor disease and to breed more disease-tolerant species to protect native trees in NZ and Australia!

From teaonews.co.nz

10:06 AM · Aug 4, 2024 · **439** Views

LINK TO ORIGINAL STORY

Indigenous Science Network
August 11 at 10:27 AM ·

Te Niwha, a national infectious diseases platform led by director Te Pora Thompson (Ngati Hauā), is tasked with improving Aotearoa's preparedness for future pandemics and has a mandate to ensure projects partner with iwi.

One of the projects Te Niwha is overseeing is a research effort by scientists, with iwi and local communities, to develop a portable in-field environmental DNA detection tool for bird flu and other viruses as part of an enhanced nationwide surveillance system.

Before Te Niwha came on board, project scientists had made initial contact with Ngāi Tahu and now Te Niwha is involved there has been preliminary kōrero with Rahui Papa of Waikato-Tainui, she says.

Thompson says Te Niwha needed to ensure the scientists were properly prepared before engaging in a meaningful way with iwi. This meant ensuring they recruit experts in mātauranga Māori and te ao Māori.

"They are also bringing on board a mātauranga Māori kairangahau matanga to advise a lot of that relationship."

TEAONEWS.CO.NZ

Iwi and scientists to partner on bird flu study as preparation for future pandemic

Plans are underway to engage iwi Māori in a project to understand how avian influenza and ot...

LINK TO ORIGINAL STORY

LINK TO ORIGINAL STORY

Indigenous Science Network
June 2 ·

The disconnect between classroom learning, iTaukei culture, and traditions was a key issue highlighted by students at the Ratu Sukuna Education and Culture Symposium held in Suva today.

Participants expressed concerns about the minimal inclusion of Vosa Vakaviti (iTaukei language) in the school curriculum, where it is currently an optional subject rather than a compulsory one.

Suva Grammar School student Eliki Baleinakama emphasized the need for Vosa Vakaviti to be made a mandatory part of the curriculum to ensure that all students have a thorough understanding of the Fijian language.

"We need to make Venacular classes to be compulsory to enhance i-Taukei culture and understand the way of life, so vernacular classes or Vosa Vakaviti should be compulsory in every secondary school now."

FBCNEWS.COM.FJ

Calls for stronger integration of iTaukei culture in curriculum

The disconnect between classroom learning, iTaukei culture, and traditions was a key issue hig...

LINK TO ORIGINAL STORY

Indigenous Science Network
August 3 ·

Whales and dolphins have been officially recognised as "legal persons" in a new treaty formed by Pacific Indigenous leaders from the Cook Islands, French Polynesia, Aotearoa (New Zealand) and Tonga.

He Whakaputanga Moana, a treaty that translates as the ocean declaration of Māori, promotes the protection and survival of these animals in an holistic way, according to Mere Takoko, vice president of environmental organisation Conservation International Aotearoa. But alone, this treaty won't stop illegal or harmful activity against cetaceans (whales and dolphins).

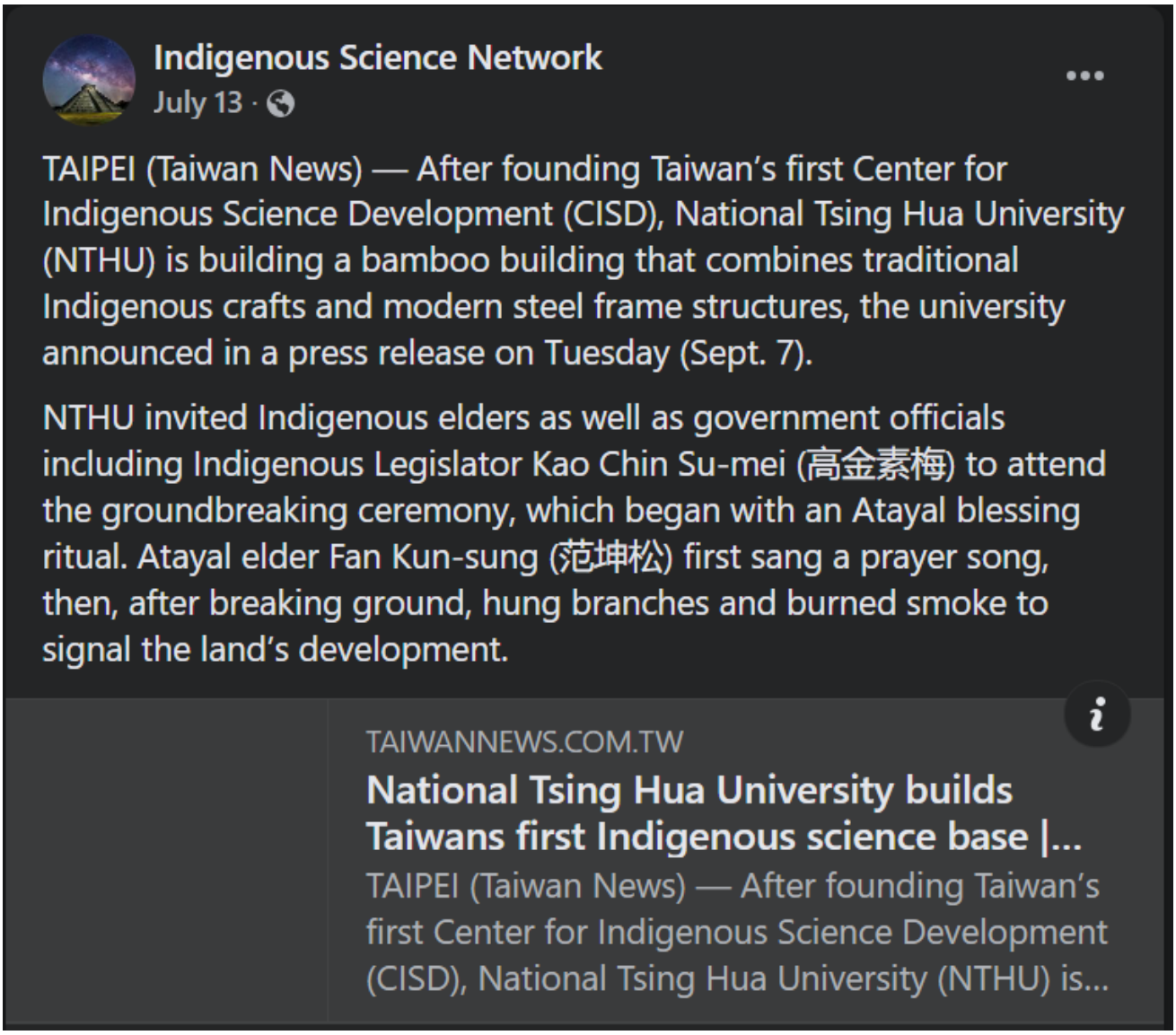
Given the importance of whales and dolphins to many Pacific communities, spiritualities, and customs, this treaty is another watershed moment for Indigenous self-determination. Indigenous voices and actors are beginning to retake control of their lands and waters, and as tikanga Māori (Māori customary law) holds increasing weight in Aotearoa's general legal system, this treaty could mark a shift in Pacific environmental policy.

THECONVERSATION.COM

Whales and dolphins now have legal personhood in the Pacific – but one treaty won't be enough to protect them

LINK TO ORIGINAL STORY

b) Asia



LINK TO ORIGINAL STORY

Indigenous Science Network
July 7 ·

Kamran
July 4 ·

An Australian mathematician cracked the code of a famous 3,700 year old Babylonian clay tablet revealing that they were doing more accurate trigonometry nearly 1,500 years before the Greeks.

In 2017, Australian mathematician Dr. Daniel Mansfield from the University of New South Wales decoded a 3,700-year-old Babylonian clay tablet known as Plimpton 322. The tablet, which was originally discovered in the early 20th century in southern Iraq, contains a series of numbers arranged in four columns and 15 rows. For a long time, the purpose of these numbers remained a mystery.

Dr. Mansfield and his team discovered that Plimpton 322 is a trigonometric table. Unlike Greek trigonometry, which is based on angles and circles, Babylonian trigonometry used ratios of sides of right-angled triangles and a base 60 (sexagesimal) number system. This system, the researchers found, enabled the Babylonians to create a trigonometric table that is more accurate than the Greek method, as it avoids irrational numbers and provides exact ratios.

Key points about this discovery include:

1. Plimpton 322 predates Greek mathematicians such as Hipparchus, who is often credited with founding trigonometry, by more than a millennium.

2. The Babylonians' use of a base 60 number system allowed them to make complex calculations with great precision. Their method is particularly advantageous for some practical applications, such as surveying and architecture.

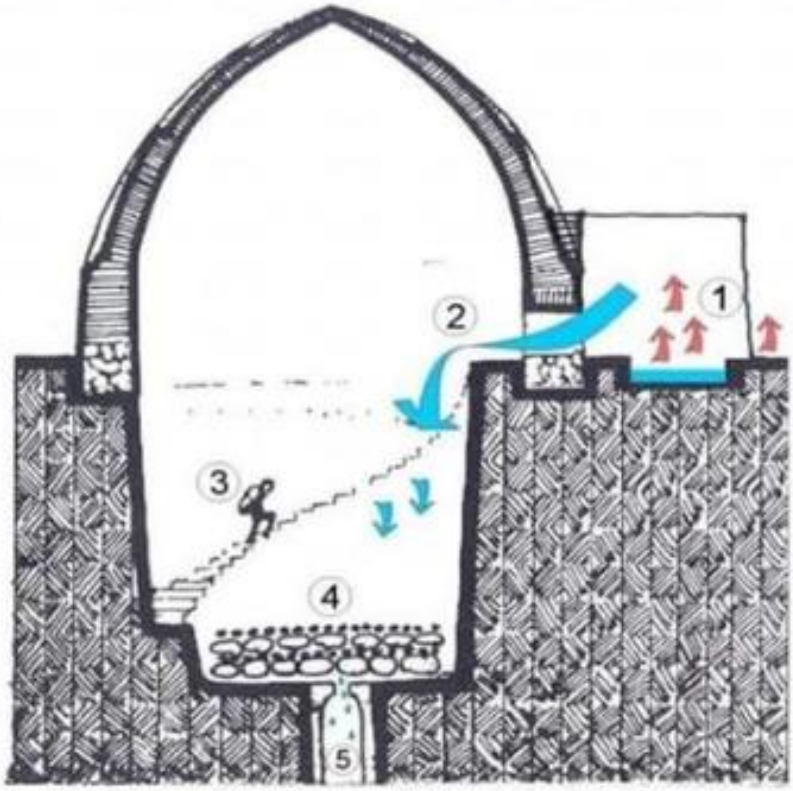
3. The tablet shows that the Babylonians had a sophisticated understanding of right-angled triangles and could solve problems related to their sides with exceptional accuracy.

4. This finding suggests that the history of mathematics is richer and more complex than previously thought, with advanced mathematical practices emerging in different cultures independently.

The discovery of the true purpose of Plimpton 322 has reshaped our understanding of ancient mathematical knowledge and highlights the advanced capabilities of Babylonian scholars long before similar concepts were documented in Greek mathematics.

Antonio J. Bavaro
June 21 ·

WOW



Off Grid Living & Eco Homesteading
June 21 ·

Off Grid Living & Eco Homesteading
June 21 ·

Ice making during the Persian Empire in the middle of the desert: the Yakhchal or "Ice Pit" is an architectural method that was used to produce ice and preserve food. The Persians were already making tons of ice and freezing food in the desert 2,400 years ago.

1- Design of the structure: The Yakchal had a dome shape with thick walls made of bricks and clay. This construction helped maintain a cool temperature inside the vault.

2- Water collection: During the winter, water was collected from rivers or from melting snow in the mountains. This water was directed towards the Yakchal through canals.

3- Freezing process: The water was distributed in small ponds or pools within the vault. During the night and in the coldest hours of the day, the water would freeze due to the low temperatures of the desert at night.

4- Ice storage: Once frozen, the ice was cut into blocks and stored in the lowest part of the Yakchal, where the temperature was coldest. The dome shape and natural insulation of the walls helped keep the ice frozen for many months.

5- Later use: During the summer, the stored ice was used to cool drinks, preserve food or even for medical purposes if necessary. In short, the Yakchal took advantage of the natural cold of desert nights to create and preserve ice, using simple but effective storage and thermal insulation techniques.

c) Africa

Indigenous Science Network
July 13 ·

Findings from the Decolonizing and Reimagining Made in Africa Monitoring, Evaluation, and Learning (MEL) Methods and Practices project, led by the University for Development Studies (UDS), with support from the Mastercard Foundation, have uncovered the pivotal role of Indigenous Knowledge in Western Science, Disaster Risk Management, and Climate Adaptation.

The research findings also indicate that with the integration of indigenous African knowledge such as traditional medicine and healing, technology, festivities, and recreation, life has improved significantly.

Indigenous agricultural practices, including crop diversification, inter-cropping, and soil conservation methods, provide sustainable solutions to climate change challenges. These techniques, as recognized by scientists, bolster food security, combat soil erosion, and facilitate adaptation to shifting environmental conditions.

MYJOYONLINE.COM

MEL Findings reveal Indigenous knowledge crucial for western science, disaster risk management & climate adaptation - MyJoyOnline

LINK TO ORIGINAL STORY

LINK TO ORIGINAL STORY

d) Americas

LINK TO ORIGINAL STORY

Indigenous Science Network
August 25 at 9:15 AM ·

"I feel very passionate about being able to use what I do and the things I'm interested in to serve my Indigenous community and any underserved community," says Cannon Cline, an Earth and atmospheric sciences major in the College of Agriculture and Life Sciences (CALS) and co-president of the university's chapter of the American Indian Science and Engineering Society (AISES), a student organization focused on strengthening and growing the Indigenous STEM community at Cornell.

Over the last three years, Indigenous students have worked to resurrect AISES-Cornell after it fell dormant during the COVID-19 pandemic – and in rebuilding have made it stronger and more active. With a membership of around 30 students, AISES-Cornell has collaborated with admissions teams in the colleges to ramp up outreach efforts, held fundraisers, sent large contingents to the AISES national and leadership conferences, and provided community and professional development for Indigenous students on campus.

NEWS.CORNELL.EDU

Through community, Indigenous students thrive in STEM | Cornell Chronicle

Indigenous students in STEM are creating community and working to increase representation ...

LINK TO ORIGINAL STORY

Indigenous Science Network
@IndigenousScie1

Promote ···

Thaïs Bernos collaborates with the Cree Nation of Mistissini to find innovative ways to manage the fisheries in line with their values. My role in the FISHES project is to establish the link between Indigenous and Western science.

From concordia.ca

10:41 AM · Aug 11, 2024 · **127** Views

LINK TO ORIGINAL STORY

Indigenous Science Network
August 11 at 8:17 AM ·

The University of Calgary is calling upon its faculty and staff to become "good relatives" with the launch of a new hybrid learning program called URise Indigenous.

URise Indigenous aims to enhance learning and understanding of First Nations, Métis, and Inuit cultures and worldviews.

"Oftentimes, reconciliation becomes a buzzword; we avoid the truth and jump into conversations about reconciliation, but the programming we deliver is about addressing and validating the truth that will support transformative reconciliation," says Gerald Ratt, Indigenous intercultural initiatives specialist with OIE and one of the many driving forces behind the program's development. Ratt says the idea was borne from student, faculty and staff collaboration focused on intercultural capacity-building.

"The word 'allyship' has many challenges," says Ratt. "We want to centre Indigenous worldviews and what it means to becoming a good relative."

UCALGARY.CA

New UCalgary program embraces Indigenous perspectives and intercultural capacity building

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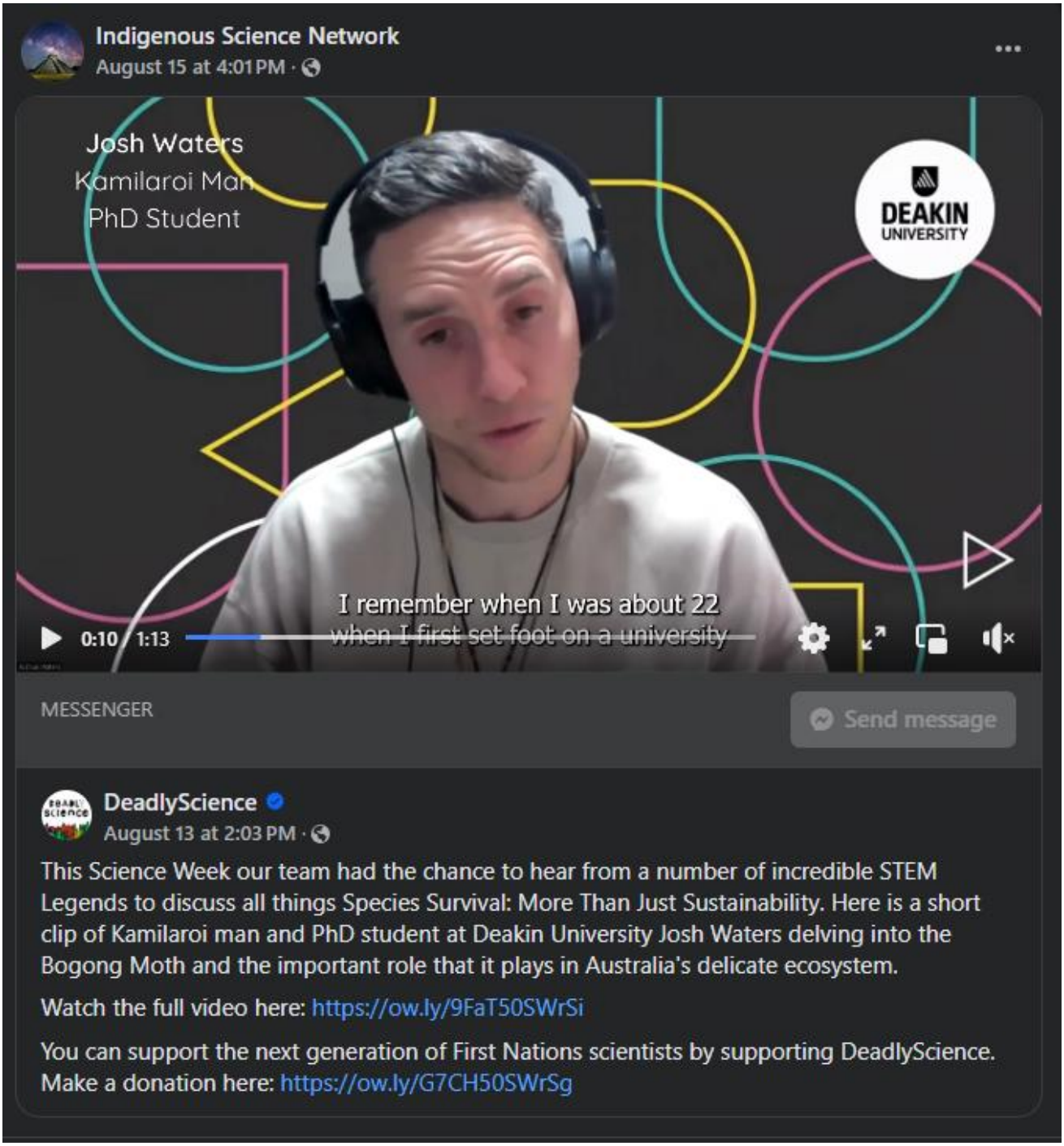

LINK TO VIDEO IN STORY

Indigenous Science Network
@IndigenousScie1

Promote ...

Aerospace engineering major Nicole McGaa is Oglala Lakota and trying to reconnect with culture while making space travel safer for humans. In doing, she connects to her Indigenous values of excellence in engineering, and caretaking, and community.

From news.mit.edu

9:09 AM · Aug 11, 2024 · **990** Views

LINK TO ORIGINAL STORY

Indigenous Science Network
Published by Yahoo Share
· August 3 ·

On April 19, the Department of the Interior announced a finalized strategy to guide its management of public lands.

The Public Lands Rule emphasizes the use of science and data, including Indigenous Knowledge, to guide balanced decision-making, according to the Department of the Interior. The rule applies the existing fundamentals of land health across BLM programs, establishes restoration and mitigation leases, and clarifies practices to designate and protect areas of critical concern.

The final rule clarifies and refines concepts first proposed in April 2023. The Bureau of Land Management received and considered over 200,000 comments on the proposed rule from individuals, state, tribal and local governments, which were incorporated into the final rule.

Secretary of the Interior Deb Haaland said the new rule helps to restore the balance to public lands for generations to come.

YAHOO.COM
New Rule for Public Land Management Emphasizes Indigenous Knowledge
Today, April 19, the Department of the Interior announced a finalized strategy to guide its man...

LINK TO ORIGINAL STORY

LINK TO ORIGINAL STORY

Indigenous Science Network
June 23 ·

The Planetary Guardians launched in 2023 as a diverse and global collective, committed to listening to the science, the wisdom of Indigenous Peoples, and to the planet itself. They focus upon always elevating the Planetary Boundaries as a measurement and operating framework for the world.

New Guardians, Dr. Carlos Nobre and Christiana Figueres, were announced during The Planetary Guardians' event 'Celebrating Brazilian Scientists'. The event honoured the critical work of Indigenous Scientists; Braulina Baniwa, Francisco Apurinã, Sineia Bezerra do Vale and Cristiane Gomes Julião. The event took place at AYA Hub, AYA Earth Partners' headquarters in Sao Paolo. AYA is the first and largest ecosystem dedicated to accelerating a regenerative and low-carbon economy in Brazil.

VIRGIN.COM

The Planetary Guardians welcome new Guardians and honour Indigenous Scientists in Brazil | Virgin

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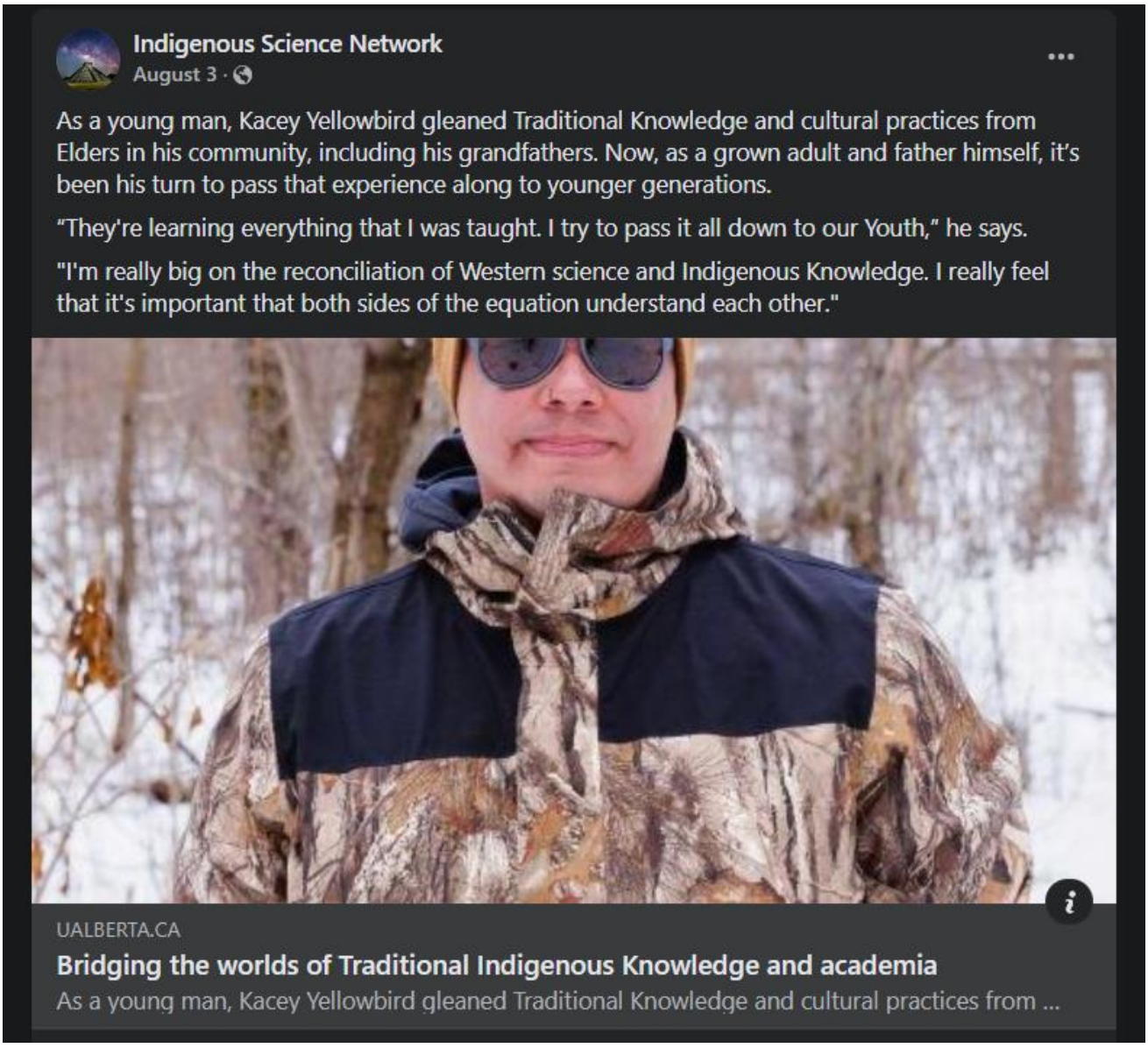


LINK TO ORIGINAL STORY

LINK TO VIDEO

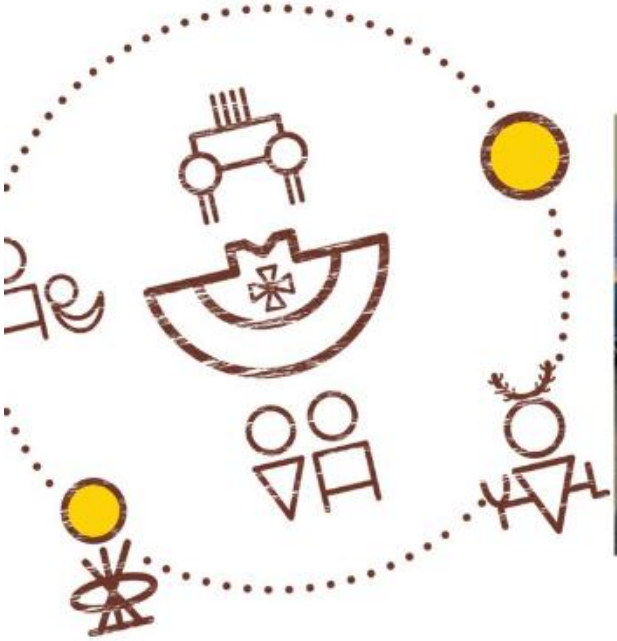
Indigenous Science Network
July 28 ·

Launched in 2022, the Indigenous Curriculum Grants provide up to $10,000 for initiatives that advance Indigenous engagement and Indigenous perspectives in academic courses and programs. These projects help create spaces for an Indigenous resurgence in academic curriculum through innovative land-based learning and the inclusion of Traditional Knowledge, Elders, and Knowledge Keepers.

"The land and the environment are our resource, and we need it to connect to Indigenous knowledge. Knowledge is the spirit that awakes all of it," says Crowshoe.

The grants are a partnership between the Office of Indigenous Engagement, Vice-Provost (Teaching and Learning) and the Taylor Institute for Teaching and Learning.

"These grants help create innovative land-based learning opportunities and affirm Traditional Knowledge Keepers in the context of the University of Calgary's curriculum," says Dr. Natasha Kenny, PhD, senior director of the Taylor Institute for Teaching and Learning.



UCALGARY.CA

Pipe ceremony accepts new Indigenous curriculum grant recipients for their work ahead

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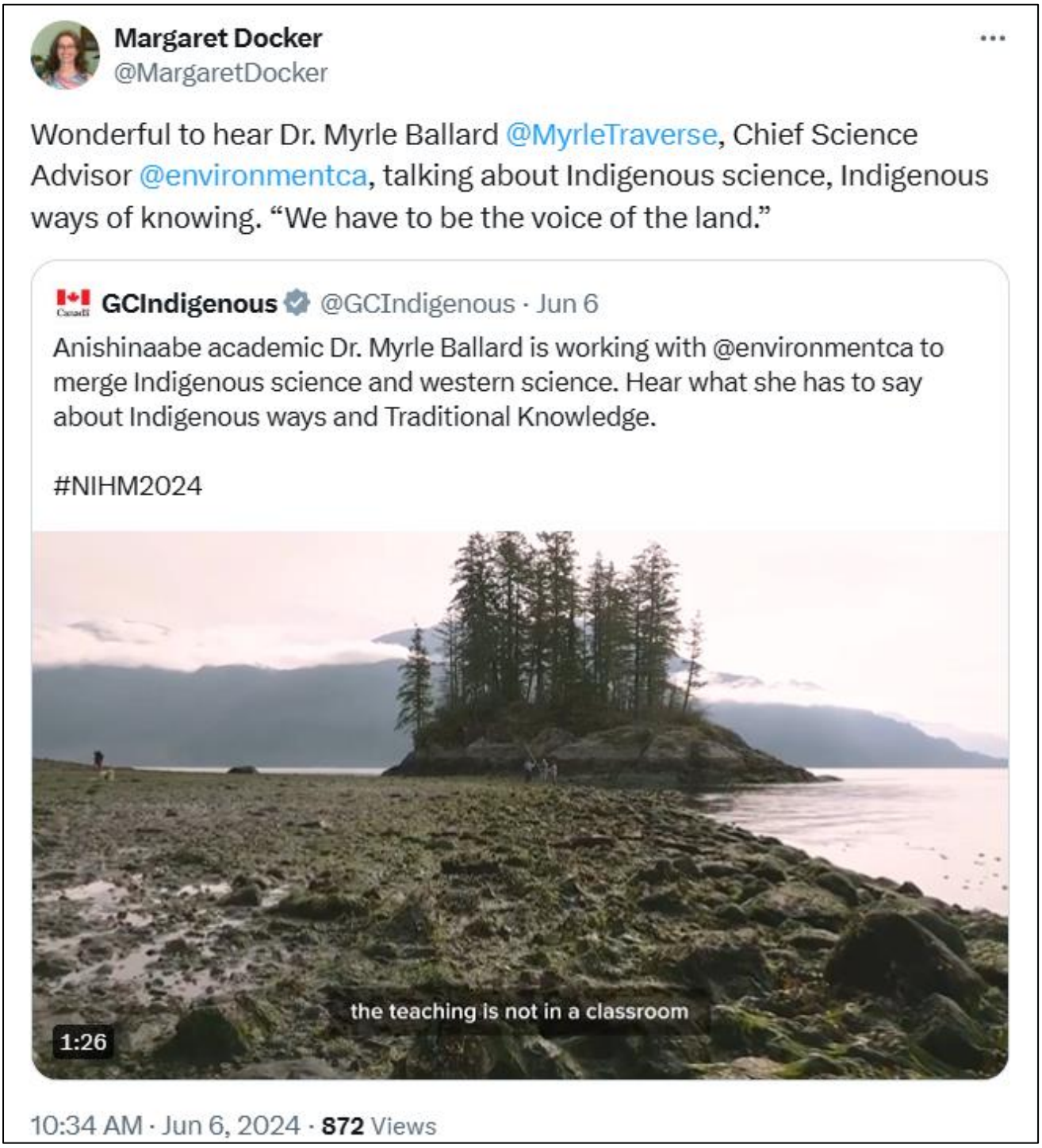

LINK TO ORIGINAL STORY

Indigenous Science Network
July 28 ·

Sustainable logging practices aren't very common in the Okanagan Valley, but forest management company, Ntityix Resources, has demonstrated how Indigenous knowledge and values have the potential to make the industry sustainable.

"When I came to work in forestry in Westbank First Nation, ten years ago, my whole world got turned upside down as far as what I knew about forestry and that paradigm shift I experienced showed me that we, as foresters, have to start thinking about certain things in more detail as we shift into a new paradigm of forest management in BC," Dave Gill, general manager of forestry at Ntityix Resources, says.

"A lot of that is based on Indigenous knowledge and values that have to be brought forward and understood. That's going to facilitate a new way we look at forest management and do forest management."

INFOTEL.CA

Indigenous knowledge and values add sustainability to Okanagan forest industry

Westbank First Nation forestry company Ntityix Resources has demonstrated how Indigenous ...

LINK TO ORIGINAL STORY

Indigenous Science Network
@IndigenousScie1

Promote ...

Red Deer Polytechnic staff and students expanded their knowledge of Indigenous ways of knowing during an Indigenous Culture Camp. The camp featured authentic outdoor teaching and learning opportunities in tipis, Métis trapper's tents, and an Inuit tupiq

From centralalbertaonline.com

11:26 AM · Jun 16, 2024 · **172** Views

LINK TO ORIGINAL STORY

LINK TO ORIGINAL STORY

Links to the Bulletin of the Indigenous Science Network are distributed via email notification directly to members. Bulletins are stored on our webpages hosted by ACER (The Australian Council for Education Research). Membership is open to all. If interested in being a part of the Network, please contact Mark Linkson, the Coordinator, via email at IndigenousSciNet@yahoo.com.

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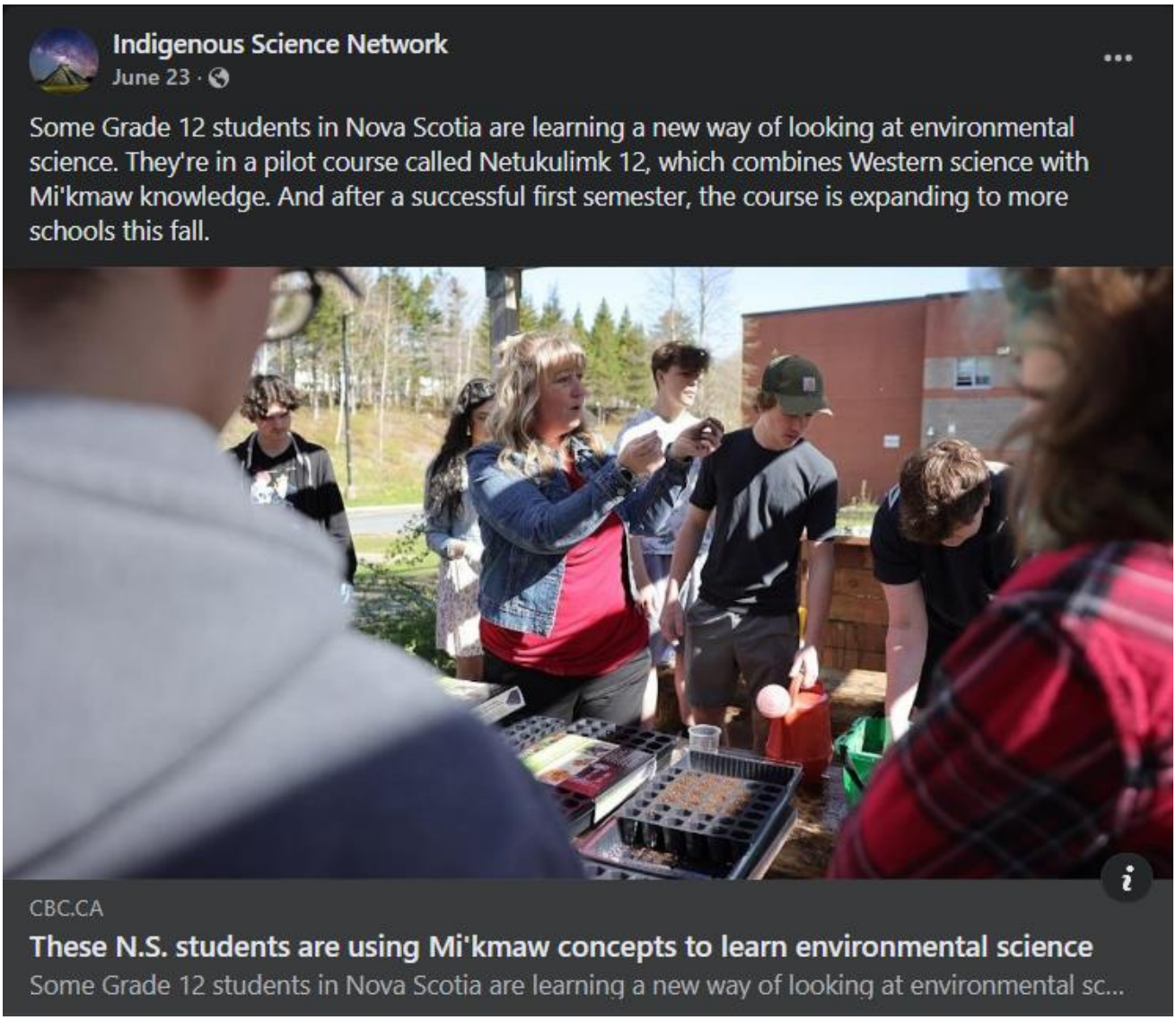
Dr. Melinda Adams
@Scholar_Melinda

This photo UC Davis captured at one of our Indigenous cultural burns is now part of the @calacademy permanent exhibition 🔥#goodfire #Indigenous #wildfire #biodiversity #california #science



LINK TO ORIGINAL STORY

Journal of Applied Ecology
@JAppliedEcology

Great plenary talk by Dr. Jessica Hernandez at the Turtle Island Indigenous Science Conference in Canada

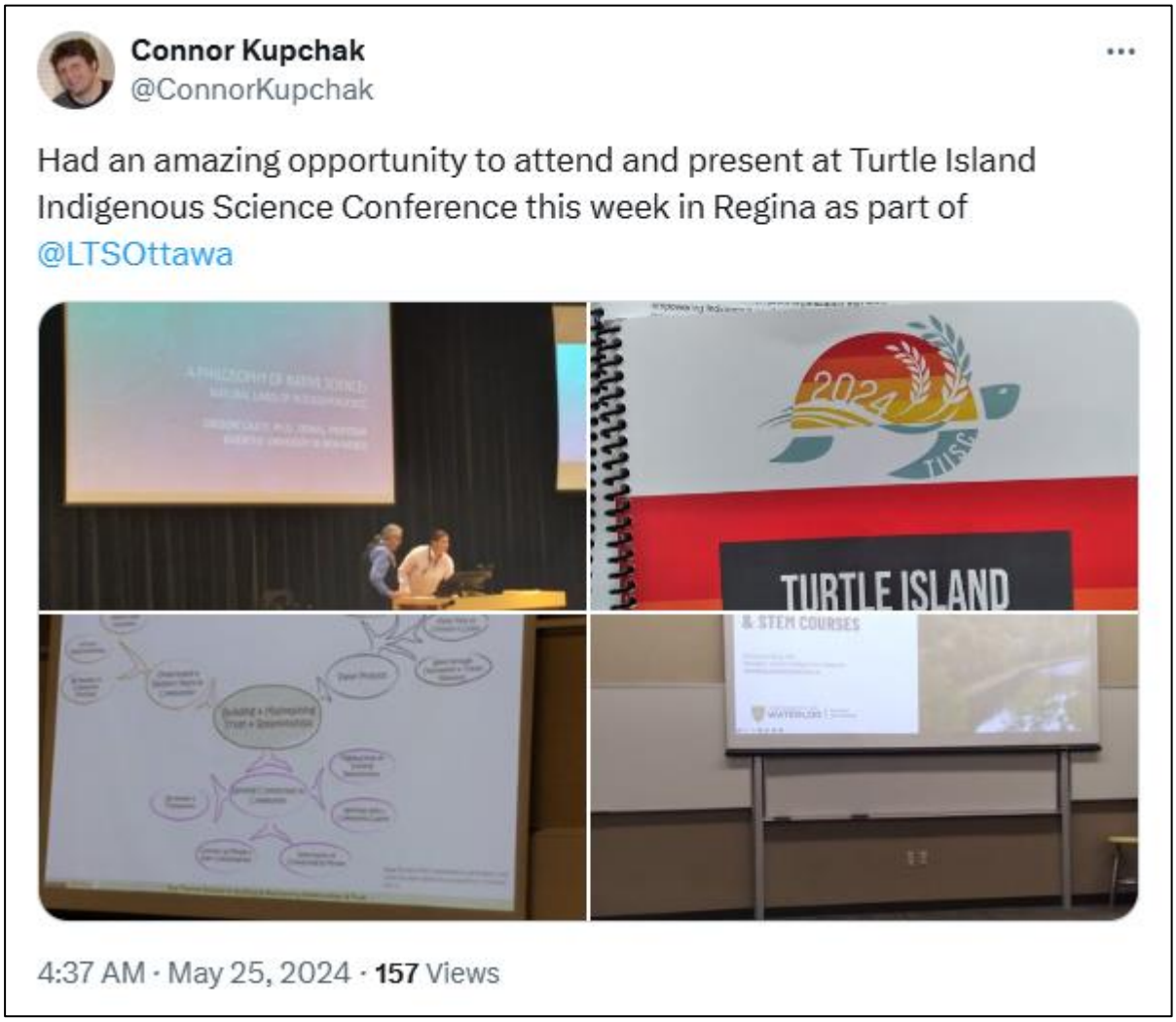
Indigenous science is fundamental to solve many of our current ecological challenges

3:20 AM · May 22, 2024 · **944** Views

Journal of Applied Ecology
@JAppliedEcology

We are today at the Turtle Island Indigenous Science Conference (Turtle Island=North America)
Indigenous science is clearly a very important topic that has been historically neglected in Ecology
For sure we will learn a lot!
All typos now belong to @martin_A_Nunez
#TIISC

11:19 PM · May 21, 2024 · **5,823** Views


Connor Kupchak
@ConnorKupchak
Had an amazing opportunity to attend and present at Turtle Island Indigenous Science Conference this week in Regina as part of @LTSOttawa
2024
TISSC
TURTLE ISLAND
& STEM COURSES
4:37 AM · May 25, 2024 · 157 Views

University of Regina
@UofRegina

Day 1 of the Turtle Island Indigenous Science Conference is underway!

Hosted by @UofRScience in partnership with @FNUNIVCAN & @FHQTC, the 3-day conference will bring together scholars, knowledge keepers & others from across #TurtleIsland to share in Indigenous science, research & education. #TIISC

3:51 AM · May 22, 2024 · **1,311** Views

You reposted

Dr. Jessica Hernandez
@doctora_nature

It was an incredibly inspiring and humbling experience to attend the Turtle Island Indigenous Science Conference and meet such incredible individuals. It was a privilege to deliver a keynote alongside Dr. Cajete, one of the pioneers of Indigenous science and a true trailblazer in the field.

12:26 AM · May 25, 2024 · **2,377** Views

LINK TO ORIGINAL STORY

The complete Conference Program containing all abstracts from the presentations can be downloaded from here.

Land Needs Guardians
@land_guardians

For many Indigenous peoples, fire is a tool for renewal and regeneration and is deeply intertwined with Indigenous cultures and traditions–watch & learn how, by integrating this knowledge and practice into wildfire management strategies, we ALL benefit. ✊ #landneedsguardians!

Why Guardians should manage fire

For many Indigenous peoples, fire is a tool for renewal and regeneration and is deeply intertwined with Indigenous cultures and traditions.

2:11 AM · May 9, 2024 · **658** Views

Indigenous Science Network
July 13 ·

Every year in Kahnawà:ke, a Kanien:keha'ka community on Montreal's South Shore, students present their projects at a science fair organized by the Kahnawà:ke Education Center (KEC).

For more than 15 years, KEC Science Curriculum Consultant Kathy Walsh has supported students at schools across the community as they prepare projects in the weeks leading up to the annual fair. This year, she and KEC Science Projects Liaison Mya Bordeau enlisted the assistance of McGill's Office of Science Outreach to bring McGill students into the classroom as mentors.

Left to right: Kahnawà:ke Education Center (KEC) Science Projects Liaison Mya Bordeau, KEC Science Curriculum Consultant Kathy Walsh, and McGill Neuroscience PhD student Isabel SartyFaculty of Science Faculty of Science
"Having students from McGill come to our schools to sit with and support our students in the development of their STEM inquiries not only helped our students complete their science fair projects, but also introduced our students to the various fields of STEM at McGill and allowed them to meet McGill students who enjoy STEM," said Walsh.

REPORTER.MCGILL.CA
Science fair fun in Kahnawà:ke - McGill Reporter
Science Outreach students from McGill team up with Kahnawà:ke schools for mentor clubs an...

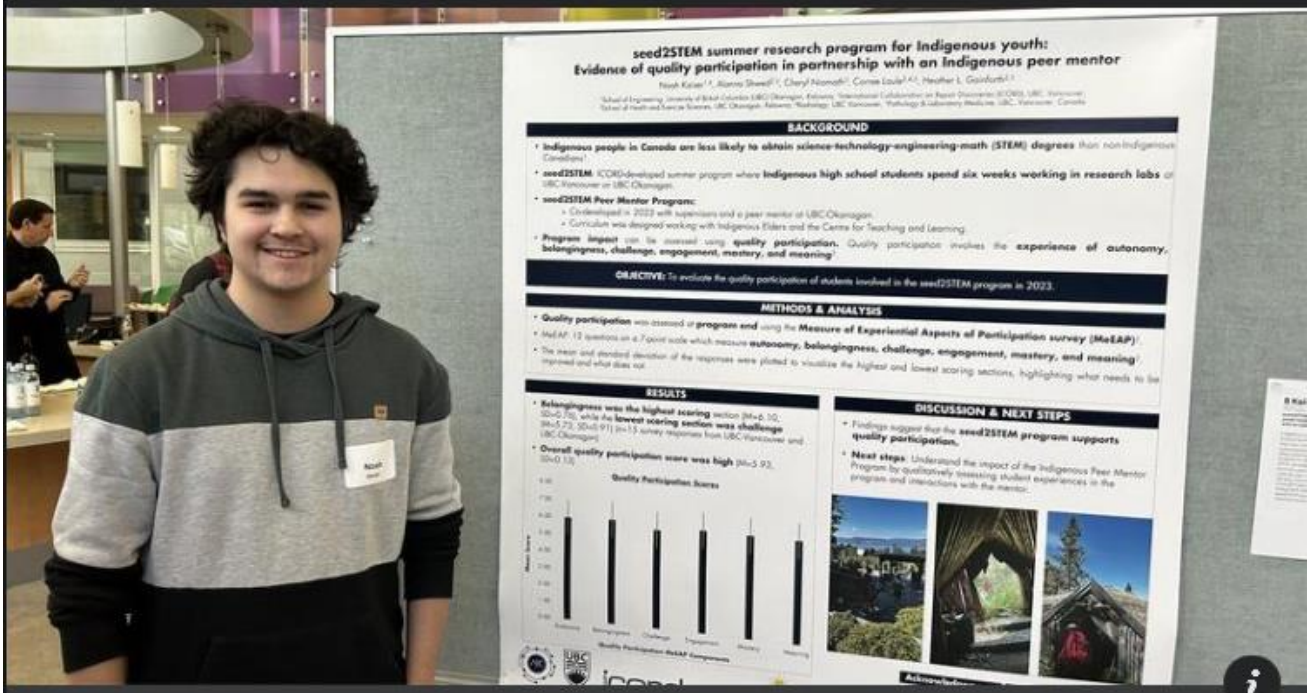
LINK TO ORIGINAL STORY

Indigenous Science Network
July 13 ·

A UBC program is embracing the call to equity, diversity and inclusion to better serve local Indigenous youth in STEM.

In Canada, Indigenous people are underrepresented in scientific academia, with only 4.5 per cent holding a STEM degree compared to 11–12 per cent for non-Indigenous communities. A 2014 study also found that many Indigenous faculty members experience additional barriers in academic institutions, including a lack of representation..

UBC's International Collaboration on Repair Discoveries (ICORD), a spinal research centre, is addressing barriers for Indigenous youth through the seed2STEM program.



UBYSSEY.CA

Indigenous in STEM: How a UBC program is planting the next generation of Indigenous scientists

LINK TO ORIGINAL STORY

Indigenous Science Network
Published by Seven Days
· June 29 ·

For at least 8,000 years, the Wolastoqiyik have been traditional guardians of a territory spanning modern-day New Brunswick, Québec and northeastern Maine. (They are sometimes called "Maliseet" in English.) Larry Jenniss, general manager of the Wolastoqiyik Wahsipekuk First Nation, said Grand Chief Jacques Tremblay envisioned Putep't-awt as a way to merge scientific knowledge with ancestral Wolastoqey teachings.

"He wanted to build a bridge between cultures," Jenniss said, "to educate visitors about our traditions and about the beluga, highlighting our role in protecting them."

Jenniss explained that while Western science often isolates a subject and focuses on hard data collected over a relatively short period, Wolastoqey teachings weave together interconnected observations and emotions gathered over centuries and build this information into stories, art, laws and protocols. Jenniss believes that integrating Western science with such Indigenous knowledge can yield a deeper and more nuanced understanding of the natural world.

SEVENDAYSVT.COM
Baby Belugas Meet First Nations Culture in Québec's Newest Whale-Watching Site | Seven Days

LINK TO ORIGINAL STORY

LINK TO ORIGINAL STORY

Indigenous Science Network
June 16 ·

The new immersive experience, "Ne:Kahwistará:ken Kanónhsa'kówa í:se Onkwehonwe," is a vivid retelling of this creation story by multimedia artist Jackson 2bears, also known as Tékeniyáhsen Ohkwá:ri (Kanien'kehà:ka), the 2022–24 Ida Ely Rubin Artist in Residence at the MIT Center for Art, Science and Technology. "A lot of what drives my work is finding new ways to keep Haudenosaunee teachings and stories alive in our communities, finding new ways to tell them, but also helping with the transmission and transformation of those stories as they are for us, a living part of our cultural practice," he says.

NEWS.MIT.EDU

A creation story told through immersive technology

Artist Jackson 2bears, also known as Tékeniyáhsen Ohkwá:ri (Kanien'kehà:ka), re-i...

LINK TO ORIGINAL STORY

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e) Europe

LINK TO ORIGINAL STORY

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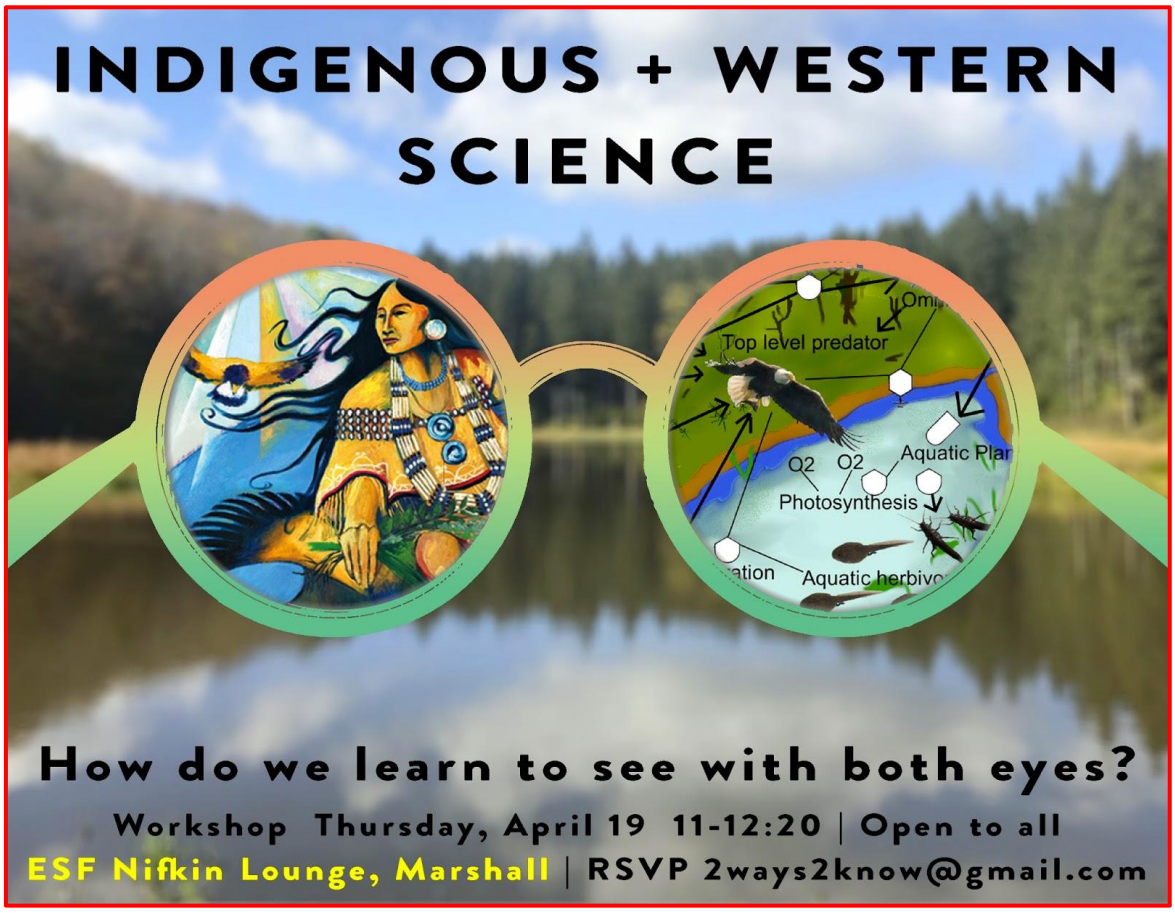
INDIGENOUS AND WESTERN SCIENCE – DECOLONISE, COLLABORATE, CELEBRATE



Beginning with energetic discussions in New Zealand in 2021 regarding the place of Māori knowledge in their school and university science curricula (see articles in the previous eight bulletins from Aug '21 to April '24), the debate continues. We have also included a series of commentaries on issues around decolonisation and racism.

And please note that the opinions expressed in some of the following items and linked stories are highly objectionable to the mission of this network. Be prepared.

LINK TO ORIGINAL STORY

Indigenous Science Network
August 11 at 3:25 PM ·

Western scientific knowledge, with its roots in the Enlightenment, emphasizes objectivity, quantifiability, and predictability. Its reductionist approach has undeniably propelled technological advancements and economic growth. However, this progress often comes at the expense of environmental sustainability and social equity.

In contrast, Indigenous knowledge systems, developed over millennia, offer a holistic understanding of the natural world, where the spiritual, ecological, and communal are inextricably linked. This knowledge is not static; it evolves with each generation, reflecting a deep understanding of change, resilience, and sustainability.

The contrast between these systems is stark: where Western science seeks to isolate variables and establish linear cause-and-effect relationships, Indigenous knowledge embraces the complexity of the natural world, recognizing the interconnectedness of all living and non-living elements. This holistic approach fosters a deep respect for nature and an inherent understanding of the need for balance and sustainability — principles crucial for the long-term success of any rural industry or enterprise.

The potential of Indigenous knowledge to spur creativity and innovation in rural development is immense. Its application can lead to more sustainable agricultural practices that improve food security while preserving biodiversity.

TIMES-STANDARD.COM

My Word | Indigenous knowledge and the path to a modern renaissance

In our ever-evolving world, the sharp divide between holistic Indigenous knowledge and West...

LINK TO ORIGINAL STORY

Indigenous Science Network
@IndigenousScie1

Promote ···

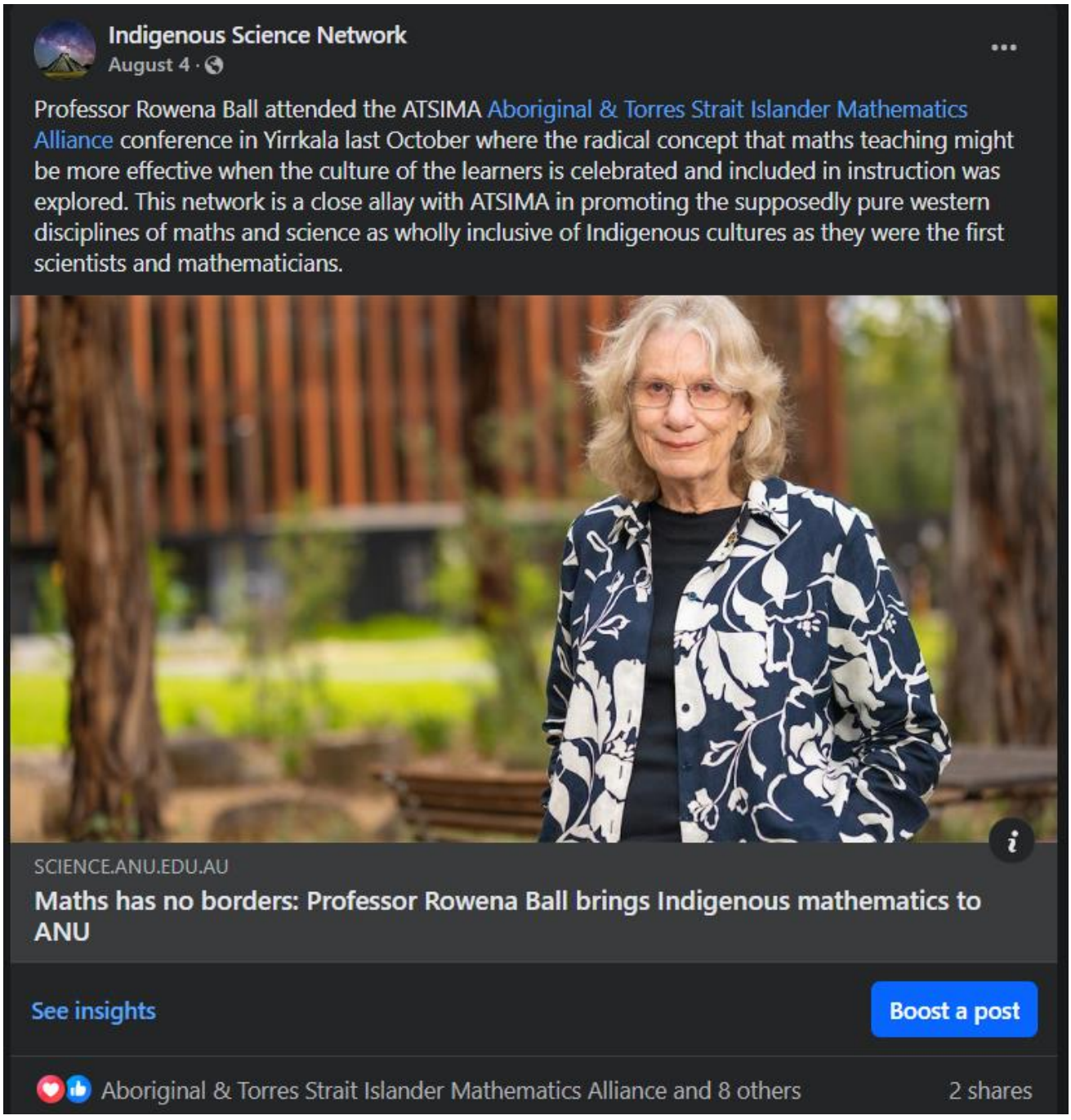
Empiricists NEVER actually engage with the reality of Indigenous sciences, just their biased view of it. Another in a conga line of Matauranga Maori critics has a crack:
thecollegefix.com/dawkins-founda... via @collegefix

From thecollegefix.com

3:06 PM · Jun 23, 2024 · **289** Views

LINK TO ORIGINAL STORY

LINK TO THE VIDEO (VIEWER DISCRETION ADVISED)



LINK TO ORIGINAL STORY

Indigenous Science Network
July 28 ·

Just another of the never-ending attacks on non-western, pro-diversity, science approaches. How's this for a laugh:

"Science is naturally inclusive. Scientists have long built on each other's work, particularly in the modern era."

Ask women scientists and scientists of color how "naturally inclusive" science is. How about this quote:

"Science is a colorblind meritocracy (or was before the diversity virus hit). Research labs are stunningly multinational and multiethnic. The underrepresented groups—blacks and American Hispanics—are underrepresented because of their (on average) lower skills levels, not because of race-based exclusion, as demonstrated here."

Sorry to publicise this hateful ignorant racist excrement, but we must always know thine enemy folks.

CITY-JOURNAL.ORG

Sham Science

"Inclusive scholarship" is the latest justification for failed diversity efforts.

LINK TO ORIGINAL STORY

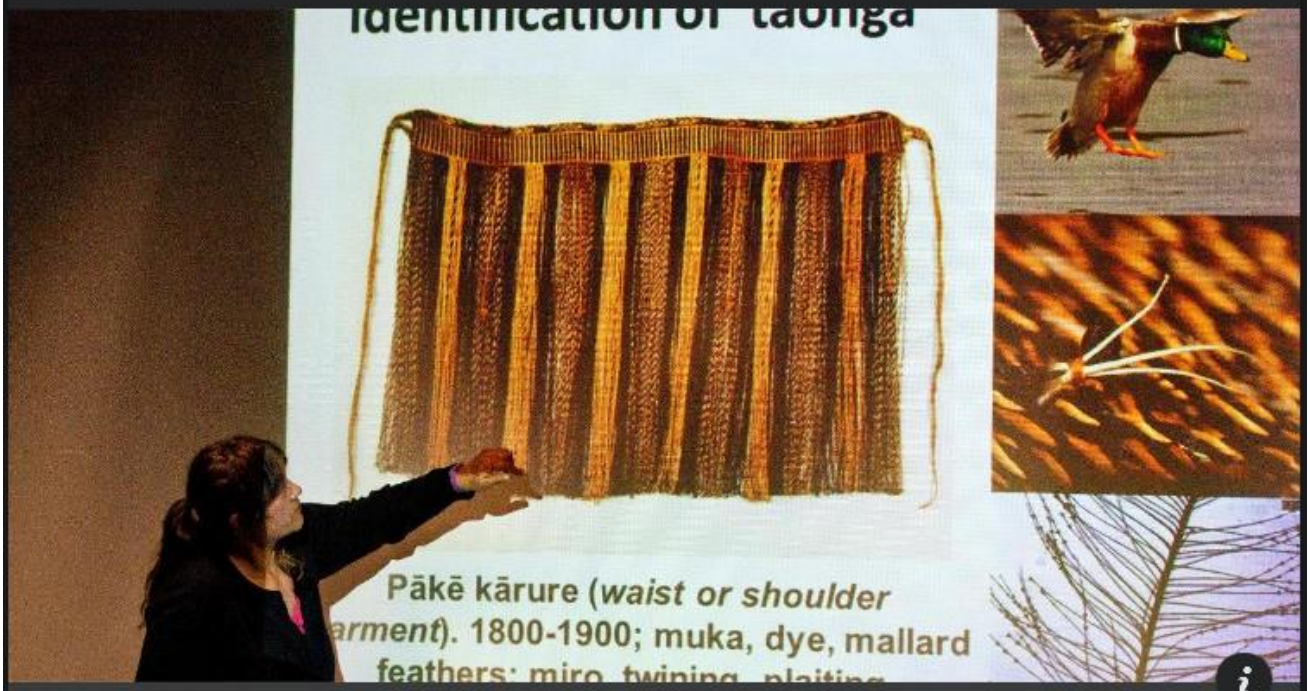
Indigenous Science Network
June 16 ·

Ariana Estoras is AgResearch's director of Māori research and partnerships. She writes:

As the Government prepares to transform Aotearoa's science and university sectors, the future role for mātauranga Māori and holders of that knowledge in those sectors becomes a pressing concern for many of us.

Two advisory groups will provide advice to the Government about what changes will improve those sectors, and critically how they can "play a greater role in lifting New Zealand's productivity and economic growth".

Putting a value on centuries of empirical knowledge transmitted intergenerationally by Māori is not easy. So many of the benefits are less tangible than the economic, but in the coming months it will be incumbent upon us as advocates to demonstrate the breadth of the benefits for Aotearoa.



WAIKATOTIMES.CO.NZ

Speaking up for the value of mātauranga Māori in science

OPINION: A central issue here is recognising the value of different knowledge systems, mātaur...

LINK TO ORIGINAL STORY

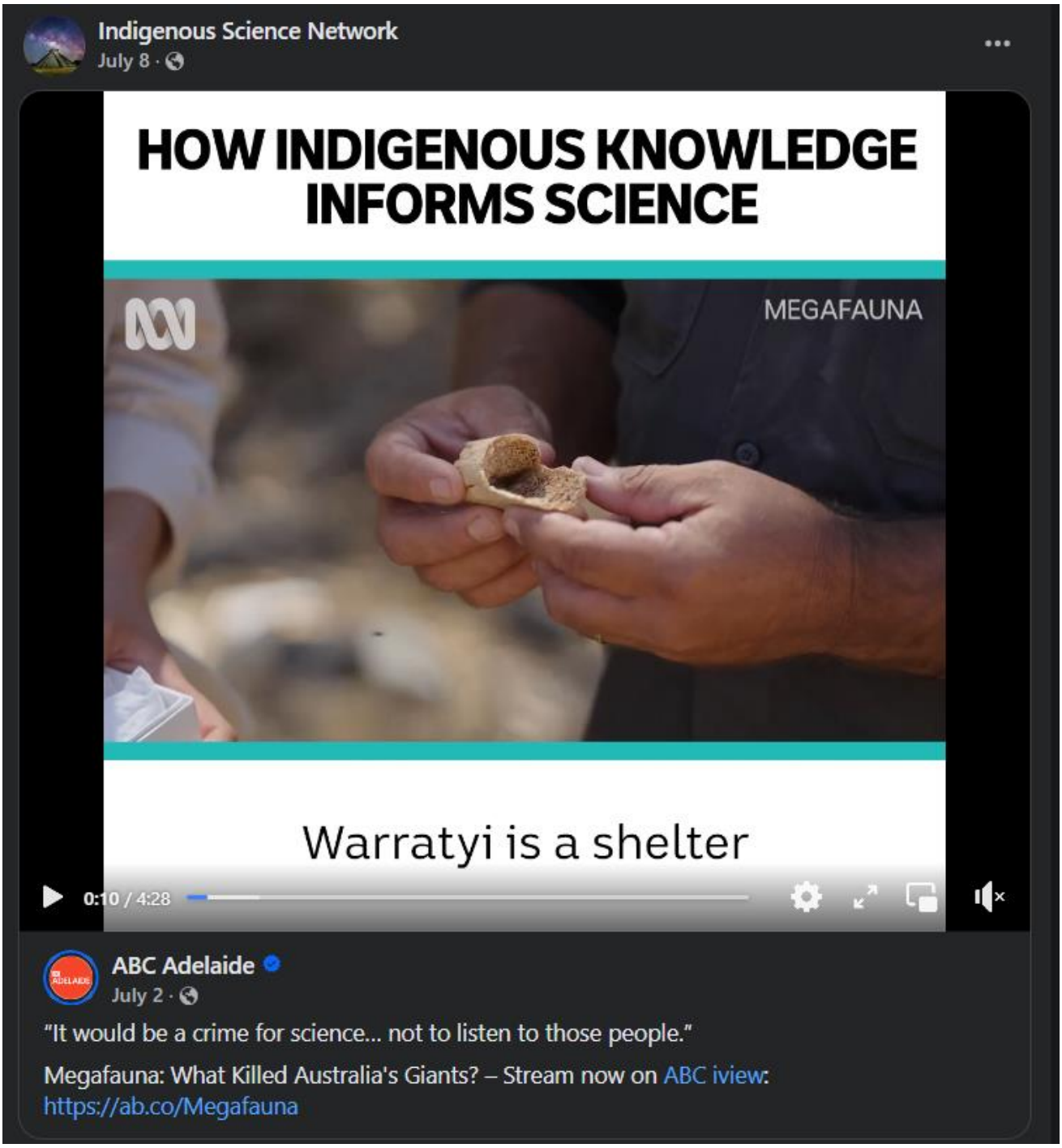
RESOURCES – AUSTRALIA

DeadlyScience
@DeadlyScience

Our Science Week 2024 Teacher Guide is coming soon! This guide is based around the theme for 2024 Science Week 'Species Survival, More Than Just Sustainability'.

Thank you to Australia Post and Wingaru Education for partnering with us to deliver this guide.

10:54 AM · Jun 26, 2024 · **771** Views



LINK TO VIDEO

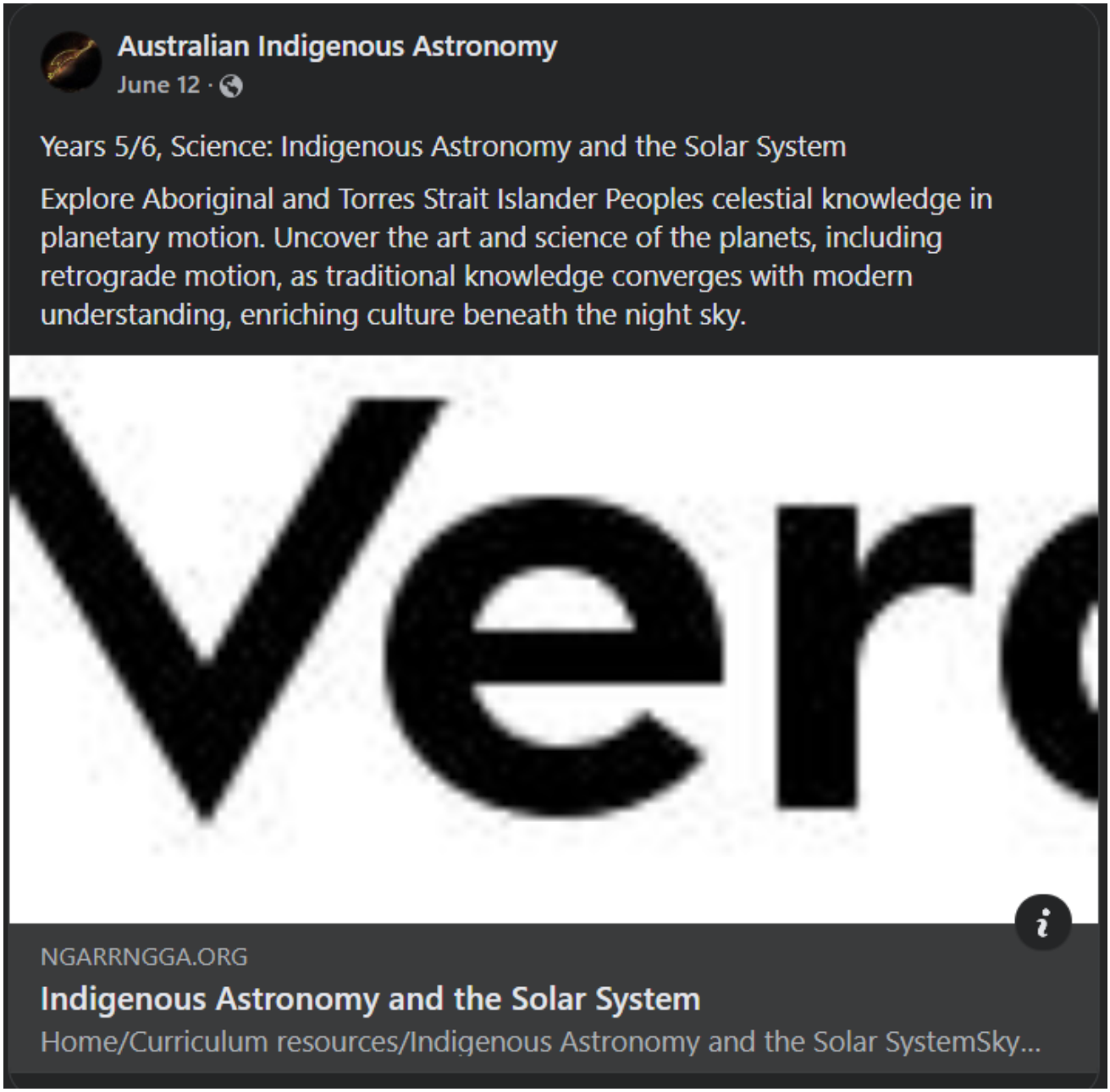
Indigenous Science Network
May 16 ·

Aboriginal & Torres Strait Islander Mathematics Alliance
May 16 ·

What is Culture? ... Prof. Chris Matthews explains, when you teach from different cultural perspectives, it allows you to 'open up the classroom' and encourage students to consider how their own cultural lenses affect how they approach mathematics. He also demonstrates the knock-on effects cultural influences can have on maths education.
Want to access the full video resource? ... Join up as a paid member of ATSIMA
https://atsima.com/membership/
#education #maths #culture #aboriginaleducation #mathematics #stem #mathematicseducation #stemeducation #indigenous #unique #connectingculturewithmaths #Indigenouseducation #firstnationaustralian #CulturallyResponsiveTeaching #AAMT #investment #relationships #truthtelling @followers
https://youtu.be/BS9Lc2wqzdQ

YOUTUBE.COM
WHAT IS CULTURE PREVIEW

LINK TO NEWSLETTER



LINK TO RESOURCES

Indigenous Science Network
June 23 ·

Living STEM and the Mamutjitji Story are connecting science education with Aboriginal ecological knowledge. CSIRO Education supported the development of a new app, which tells a Traditional story in both Ngalia and English. Ngalia language is spoken by the people in the Leonora Community and the Western Desert of Western Australia.

We've given new life to two-way science components as teaching models, creating the new teacher's professional learning program, Living STEM.

David Broun was the Science Pathways Lead and Living STEM's first program manager. Now working at the Department of Education Western Australia, David helped develop the Mamutjiti app.

"It's a privilege to continue to be part of this work, working with Community," David says.

CSIRO.AU

New app brings Mamutjitji Story to life

Mamutjitji Story is the first-ever app in the Ngalia language, and it takes a unique approach by...

LINK TO RESOURCES

RESOURCES – THE WORLD

Natural Science and Indigenous Knowledge: The Americas Experience

Edward A. Johnson (Editor), Susan M. Arlidge (Editor)

Current price: $64.99

Publication Date: April 30th, 2024

Publisher: Cambridge University Press

ISBN: 9781009416672

Pages: 350

DESCRIPTION

How do we combine the areas of intersection between science and indigenous knowledge, but without losing the totality of both? This book's objective is to consider how Indigenous populations have lived and managed the landscape. Specifically, how their footprint was a result of the combination of their empirical knowledge and their culture. The chapters are divided into four groups: The first deals with reintegrating cultures and natural landscapes and the role of kinship and oral tradition. The second group approaches the landscape as a living university of learning and managing, discussing the ethnobotany of how to grow more responsibly, and assess and project the harvest. The third group deals with the managing of fire in an anthropogenic plant community and how to integrate indigenous agriculture in hydrology and dry regions. The fourth group consists of studies of how science and indigenous knowledge can be taught in schools using land-based studies.

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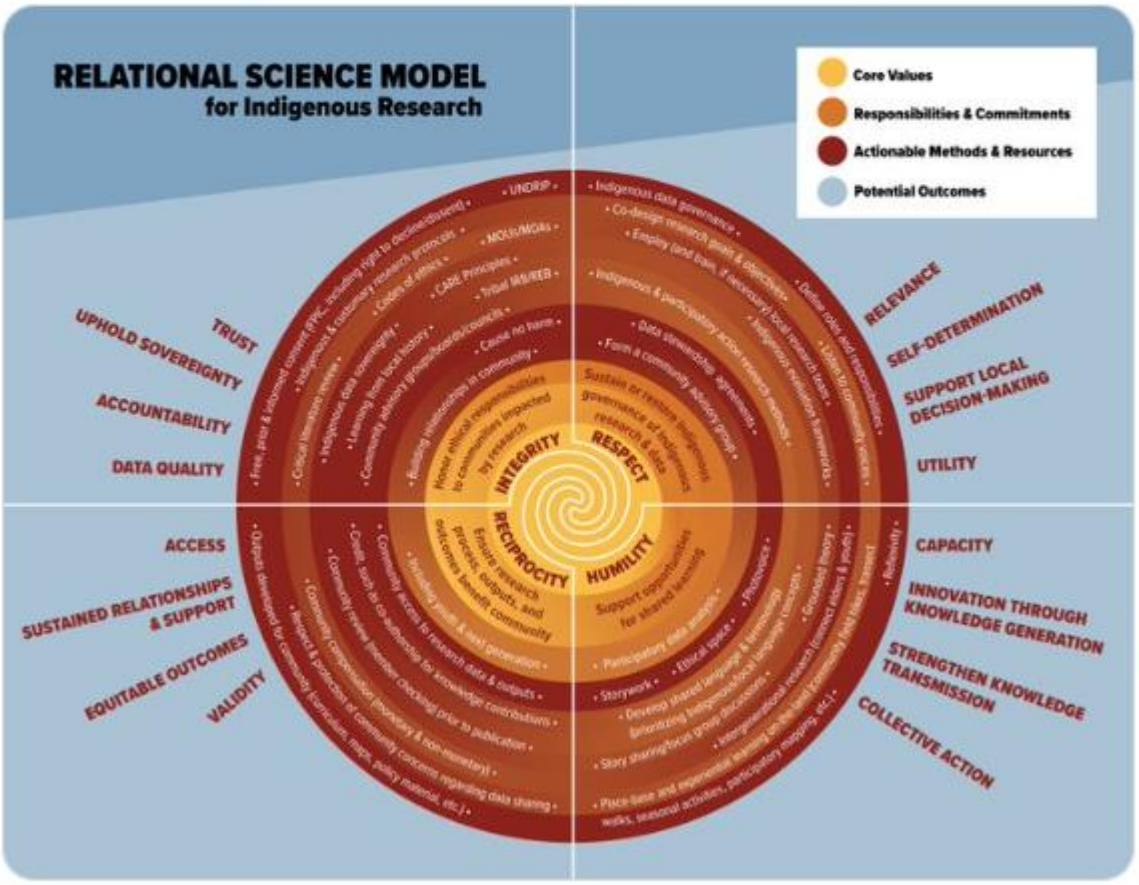
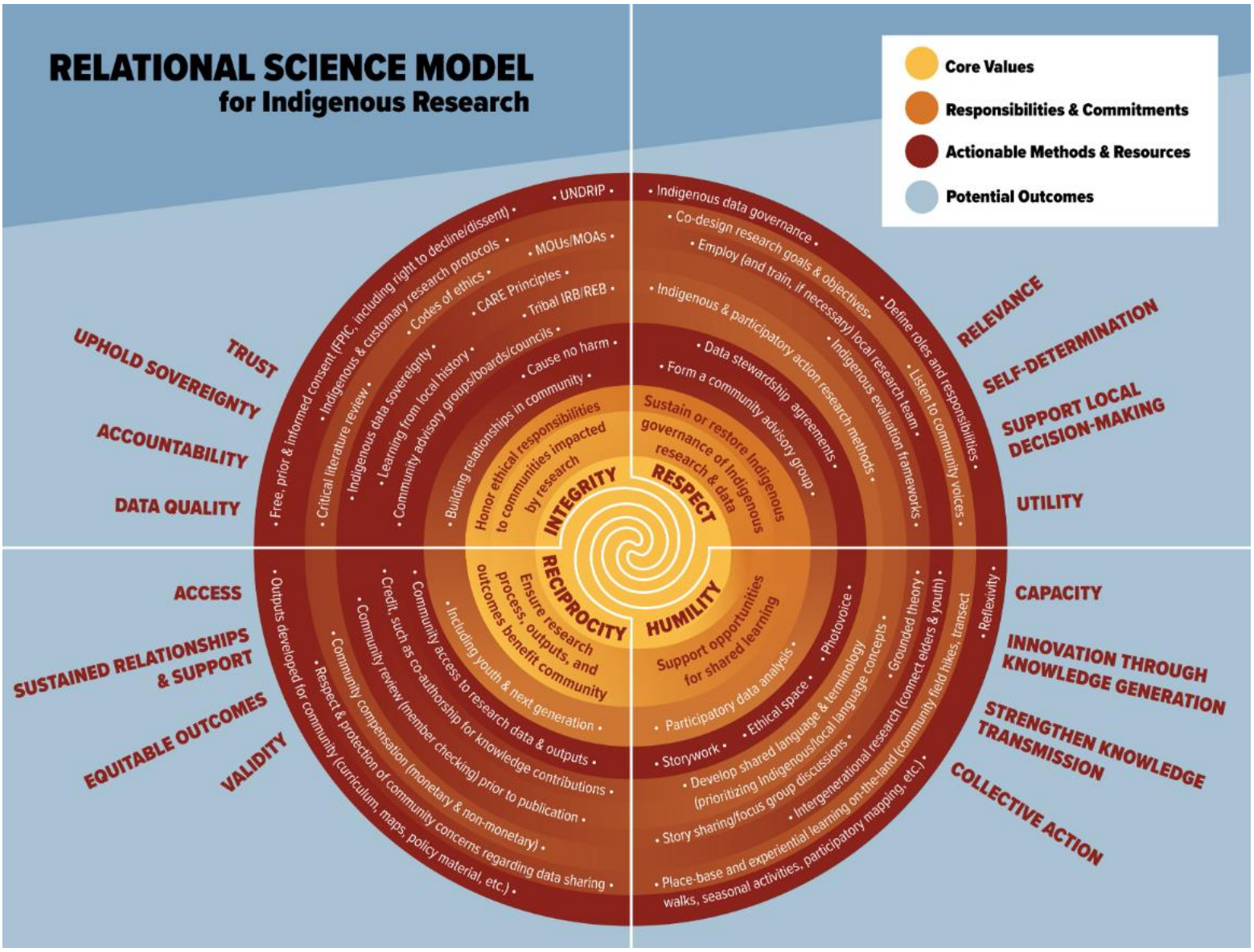
Dr.D
@Indiginerd

New pub drop! So excited to share this work and relational science model of practice (see visual map 🌀). "A values-centered relational science model: supporting Indigenous rights and reconciliation in research" ecologyandsociety.org/vol29/iss2/art...

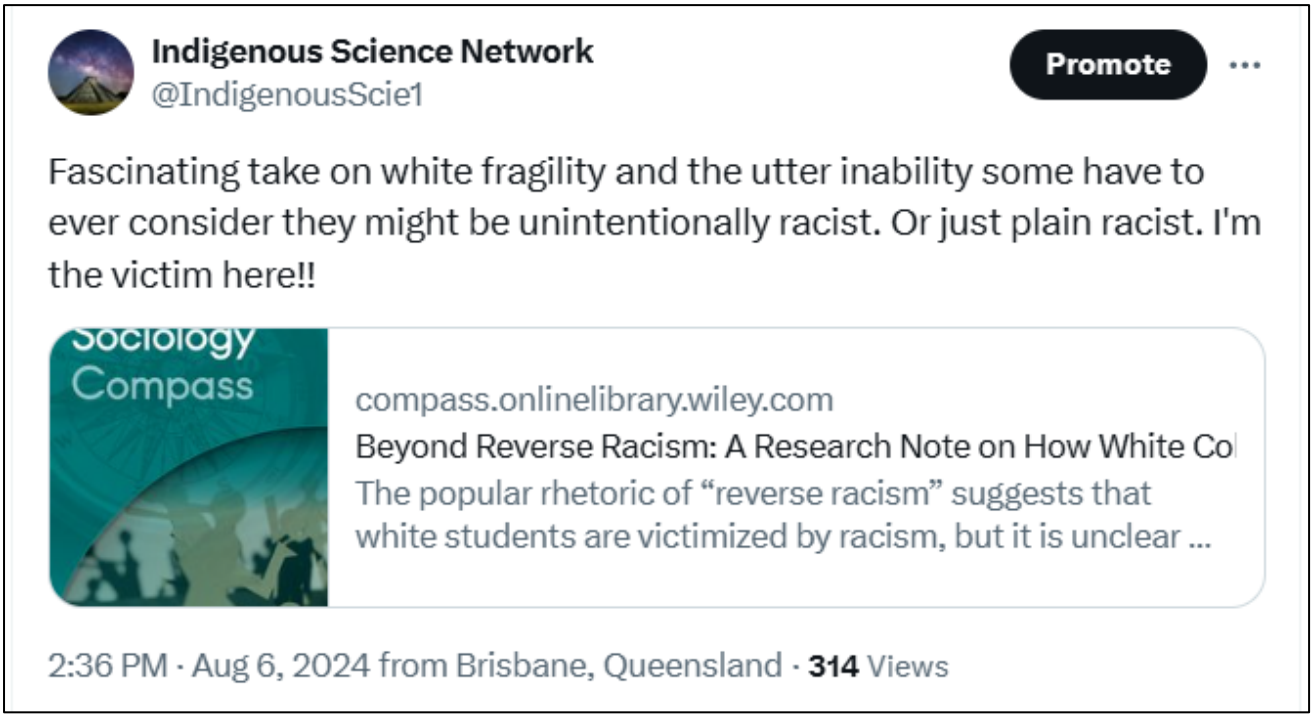


1:33 PM · May 24, 2024 · **8,475** Views


RELATIONAL SCIENCE MODEL
for Indigenous Research
Core Values
Responsibilities & Commitments
Actionable Methods & Resources
Potential Outcomes
TRUST
UPHOLD SOVEREIGNTY
ACCOUNTABILITY
DATA QUALITY
RELEVANCE
SELF-DETERMINATION
SUPPORT LOCAL DECISION-MAKING
UTILITY
ACCESS
SUSTAINED RELATIONSHIPS & SUPPORT
EQUITABLE OUTCOMES
VALIDITY
CAPACITY
INNOVATION THROUGH KNOWLEDGE GENERATION
STRENGTHEN KNOWLEDGE TRANSMISSION
COLLECTIVE ACTION
INTEGRITY
RESPECT
RECIPROCITY
HUMILITY
• UNDRIP •
• Free, prior & informed consent (FPIC, including right to decline/dissent) •
• Indigenous & customary research protocols •
• MOUs/MOAs •
• Critical literature review • • Codes of ethics •
• CARE Principles •
• Indigenous data sovereignty • • Tribal IRB/REB •
• Learning from local history •
• Community advisory groups/boards/councils •
• Cause no harm •
• Building relationships in community •
Honor ethical responsibilities to communities impacted by research
• Indigenous data governance •
• Co-design research goals & objectives •
• Employ (and train, if necessary) local research team •
• Define roles and responsibilities •
• Indigenous & participatory action research methods •
• Indigenous evaluation frameworks •
• Listen to community voices •
• Data stewardship agreements •
• Form a community advisory group •
Sustain or restore Indigenous governance of Indigenous research & data
Ensure research process, outputs, and outcomes benefit community
• Including youth & next generation •
Support opportunities for shared learning
• Participatory data analysis • • Photovoice •
• Ethical space •
• Storywork •
• Outputs developed for community (curriculum, maps, policy material, etc.) •
• Respect & protection of community concerns regarding data sharing •
• Community compensation (monetary & non-monetary) •
• Community review (member checking) prior to publication •
• Credit, such as co-authorship for knowledge contributions •
• Community access to research data & outputs •
• Develop shared language & terminology (prioritizing Indigenous/local language concepts •
• Grounded theory •
• Story sharing/focus group discussions •
• Intergenerational research (connect elders & youth) •
• Place-base and experiential learning on-the-land (community field hikes, transect walks, seasonal activities, participatory mapping, etc.) •
• Reflexivity •


Dr.D @Indiginerd · May 24
We offer this relational science model as a necessary intervention for harmful extractive colonial science models. Centered in relational values of integrity, respect, humility & reciprocity, this model of practice bridges across disciplinary and cultural contexts.
1
2
4
298

PAPERS



LINK to paper

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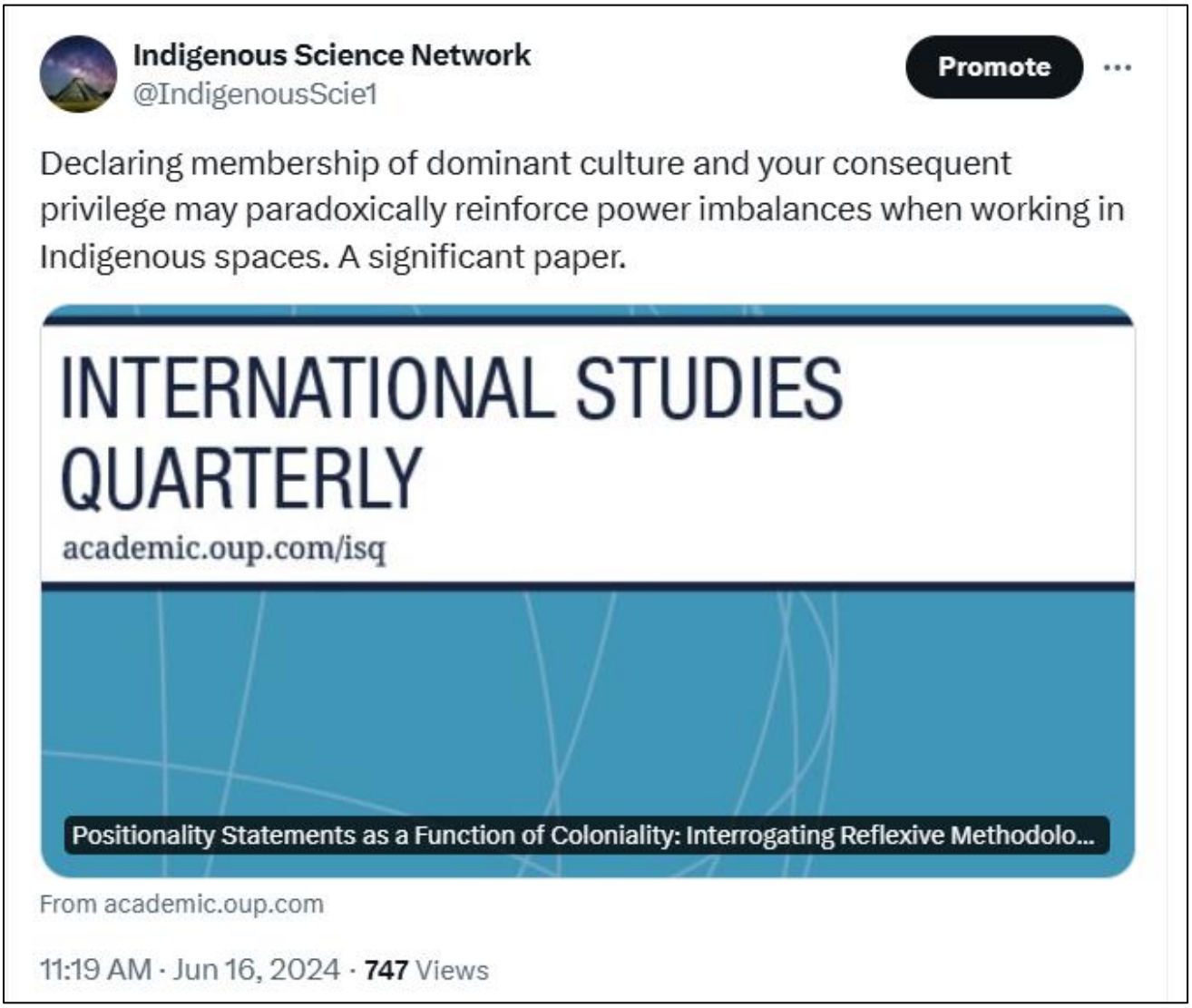

LINK to paper

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LINK to paper

INDIGENOUS ASTRONOMY

Indigenous Science Network
June 29 ·

"See this path of stars?" Domingo Moreira said softly, pointing up at the sky. "In Guaraní, it is called Mborevi Rape – the road of the tapir god."
It was a warm summer night and we were stargazing on a strip of sand at the centre of Iberá National Park, a wetland area in northern Argentina. There was no light pollution and the stars spread brightly across the sky, melting into Iberá's flat, marshy horizons.

"The tapir is a nocturnal animal that always walks the same path between its den and points of food or water," Moreira explained. "At night, the dry leaves trampled by the tapir shine in the moonlight. Our ancestors placed this shining path into the sky. In Spanish, you call it La Via Lactea (the Milky Way)."

Moreira is the second chief of the Yvytu Porá Guaraní, an Indigenous community of about 25 families whose lands fall within the jungles of what is now Argentina's north-eastern Misiones province. In recent years, the Yvytu Porá have been working to save and share their ancestral knowledge of the night sky. Surrounded by light pollution from Paraguay and Brazil, the largely rural and forest-covered Misiones – home to Iguazu Falls in the far north – is a corridor of darkness. It lies on the Guaraní peoples' ancestral lands.

BBC.COM
The remote Argentinean community that is saving the stars
In the jungle of Misiones, Argentina's northern green thumb, one Indigenous community is wo...

LINK TO ORIGINAL STORY

LINK TO ORIGINAL STORY

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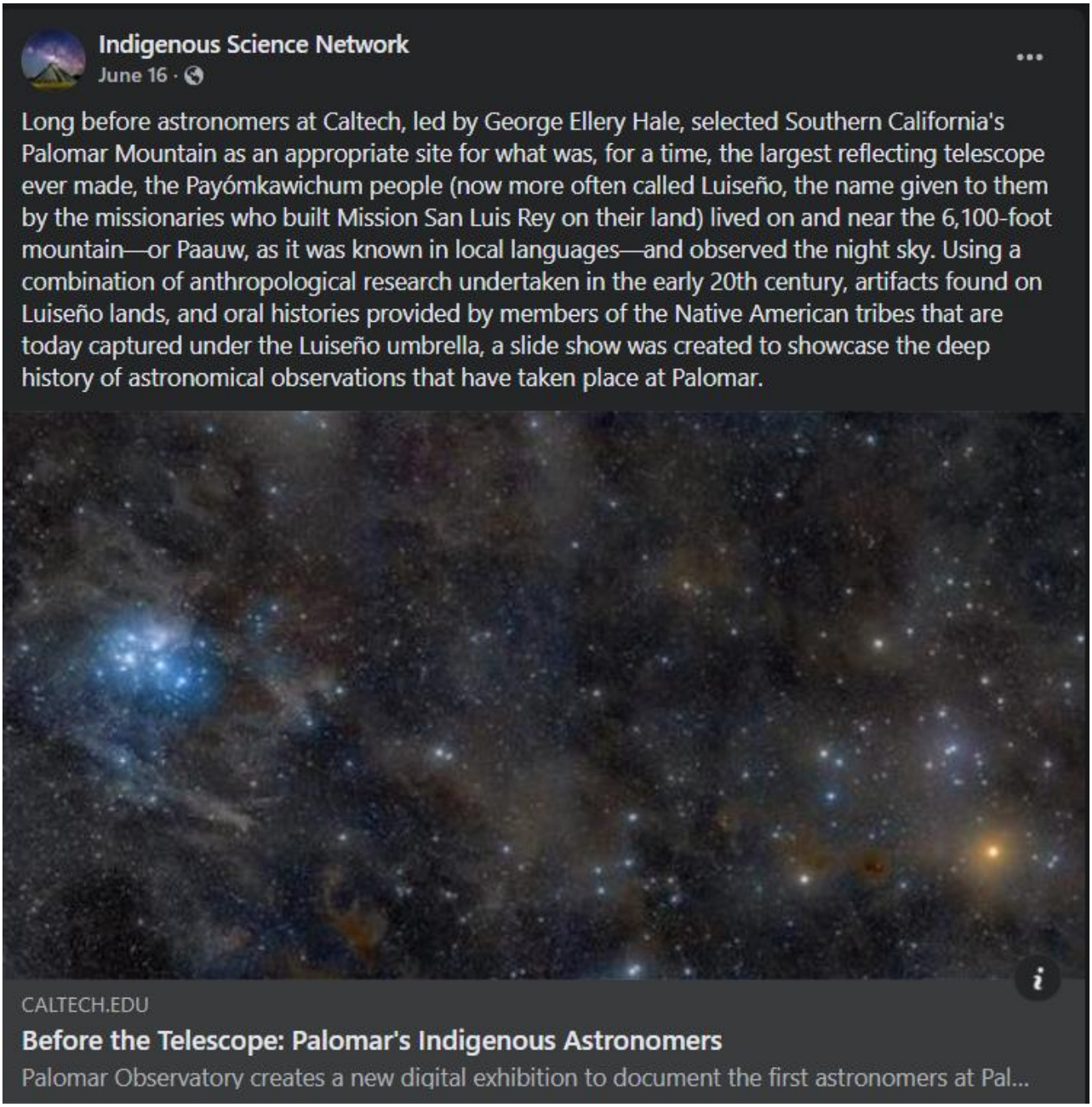

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Indigenous Science Network
August 4 ·

8 April 2024

Manitoba's foremost expert on Indigenous astronomy will be sharing his traditional knowledge with a crowd in New York state Monday. Wilfred Buck, of Opaskwayak Cree Nation in northern Manitoba, will be viewing and discussing the eclipse at the University of Rochester.

"It's two full days," Buck told APTN News. "One day I'll be speaking with the university faculty, and the next day the community itself and invited guests."

Interest in Indigenous knowledge of the skies has never been higher, added Buck. Parts of New York state, including Niagara Falls and Buffalo, are on the path of totality Monday afternoon.

"I started researching about the Cree people in 2006; about the stars and constellations and all the planets up there – astronomy, in general. I found all kinds of information." Buck interviewed knowledge keepers, participated in traditional ceremonies and practised fasting, vision quests and interpreted dreams.

"People understood about the eclipse; it's not like you see in Hollywood movies where non-European cultures view the eclipse and they get all googly-eyed and they get scared," he said. "For a lot of our people, it's a time of renewal, a time of rebirth, a time of letting go of all your old habits and grudges."

APTNNEWS.CA

Wilfred Buck is known as "the star guy"

In this eclipse year, Wilfred Buck says interest in Indigenous knowledge of the skies has never ...

LINK TO ORIGINAL STORY

The Conversation: Articles on Indigenous astronomy

https://theconversation.com/au/topics/indigenous-astronomy-14123

WEBSITES

To learn more and attend upcoming events, please follow social media and visit these websites

- www.aboriginalastronomy.com.au
- www.facebook.com/AboriginalAstronomy
- https://openculturalastronomyforum.github.io/
- https://www.archaeoastronomy.org/iaus399

UPCOMING EVENTS

LINK TO REGISTRATION PAGE - Registration Opens on 15 February 2025

EVENTS ALREADY HELD

National Indigenous Science Education Program
July 26 ·

Come along Saturday August 17 for our Indigenous Science Experience @ Redfern Community Day, hosted by the National Indigenous Science Education Program of Macquarie University. Engage with Clarence Bruinsma of Bush to Bowl and Macquarie University's Chiropractic team, along with many other fantastic presenters.

With Macquarie University's Chiropractic Science (https://www.mq.edu.au/.../depa.../department-of-chiropractic) students explore the human body with fun activities and interactive sessions. Learn how your bones, muscles, and joints team up to keep you moving. Discover exercises that help you stand tall, move with ease and improve balance. It's all about learning how your body works and feeling super empowered about your health. Let's dive in together and start our journey to healthier lives through exciting science adventures!

Join Clarence Bruinsma from Bush to Bowl ((https://bushtobowl.com/) for a hands-on experience in which you can touch, smell and taste native flavours. Bush to bowl is a social enterprise aimed at creating a healing space and platform for First Nations people by connecting to Country and their traditional foodways.

Thank you Inspiring Australia NSW and the Australian Government for supporting this initiative as part of National Science Week.
For more information of our free Community Day go to:
https://events.humanitix.com/indigenous-science...

Science Ignite

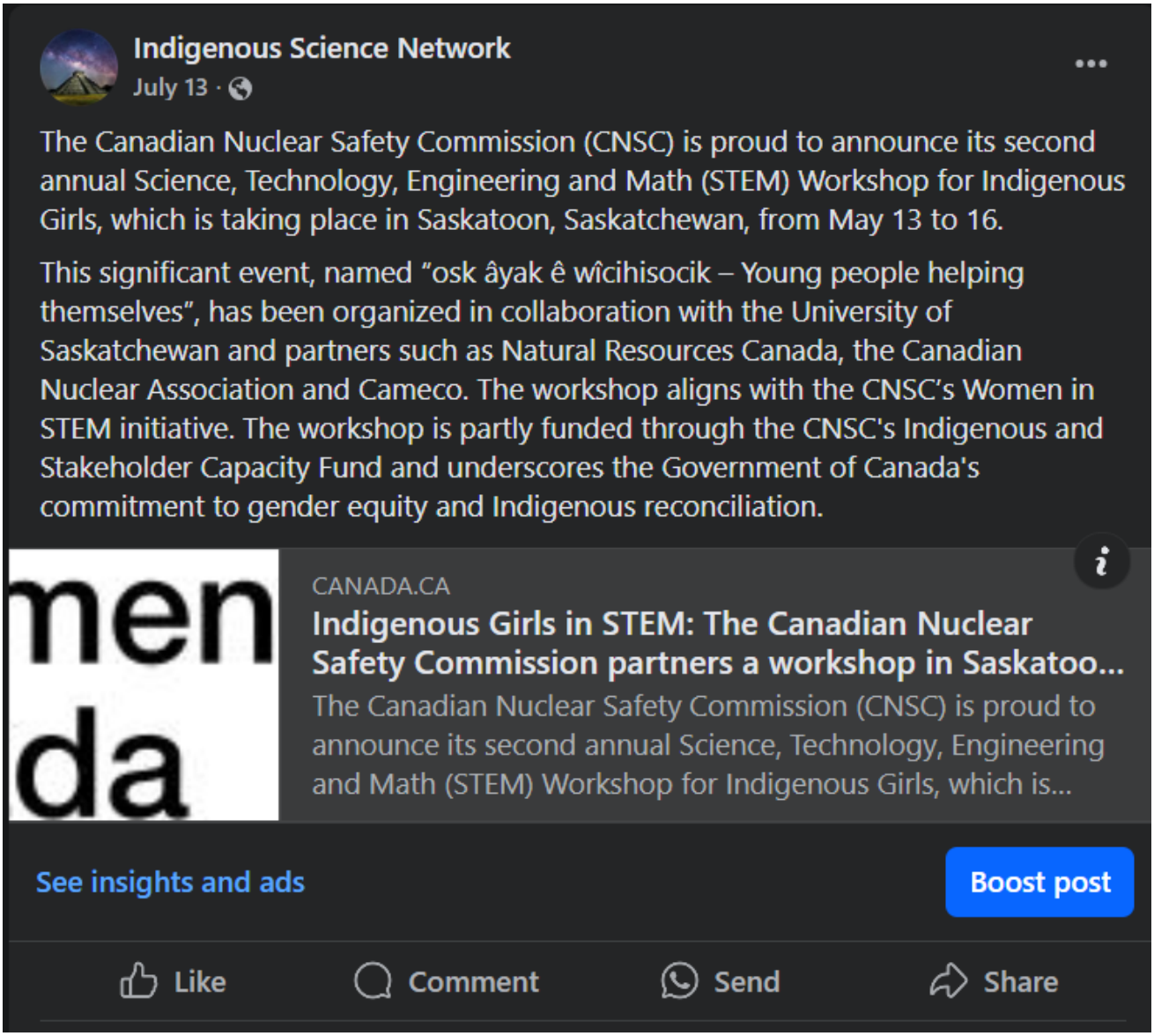
#scienceweek

LINK TO ORIGINAL STORY

UPCOMING EVENTS

Members please send in notices for upcoming events.

EVENTS ALREADY HELD



LINK TO ORIGINAL STORY

Indigenous Science Network
August 25 at 9:16 AM ·

Grade five Karonhianónhnha Tsi Ionterihwaienstáhkhwa student Kiyedinaci Ottereyes-Lahache went to the Quebec Indigenous Science Fair in Gatineau last Thursday hoping to impress – both with his dapper burgundy velvet suit, and with his project, "The Science of Scents."

And impress he did, netting both the first-place prize in his age category and a special award for communication – awards that come with combined prize winnings of $1,000.

"The first time they called my name I was like, 'Oh my God, life can't get any better.' Then they called my name a second time, and I thought 'Oh, life can get better!'" Ottereyes-Lahache said. "Everyone at school is calling me the champ and calling me the king. And asking me what I'm going to do with my $1,000."

Ottereyes-Lahache said his first purchase will be a new cologne, in keeping with his scent-based science project, which sought to examine the difference between natural and synthetic scents.

EASTERNDOOR.COM
Kahnawake wins big at Indigenous Science Fair
Grade five Karonhianónhnha Tsi Ionterihwaienstáhkhwa student Kiyedinaci Ottereyes-Lahache ...

LINK TO ORIGINAL STORY

CSEE_SCEE
@CSEE_SCEE

The Turtle Island Indigenous Science Conference will be hosted by First Nations University of Canada (@FNUNIVCAN), University of Regina (@UofRegina), and File Hills Qu'Appelle Tribal Council Centre from 21-23 May 2024. For more information: event.fourwaves.com/2024tiisc/pages

3:27 AM · Mar 12, 2024 · **1,237** Views

Journal of Applied Ecology
@JAppliedEcology

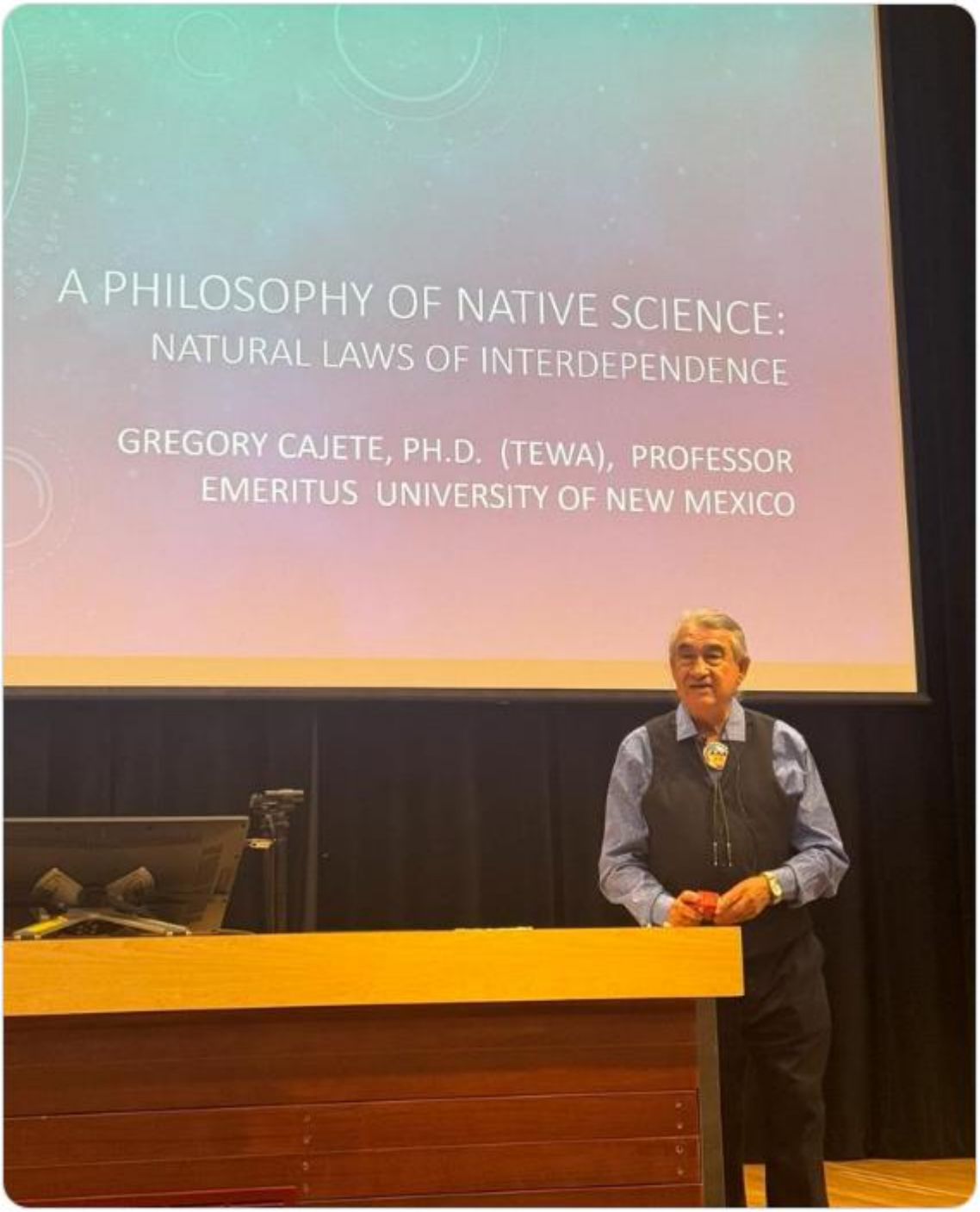
Great plenary talk by Dr. Jessica Hernandez at the Turtle Island Indigenous Science Conference in Canada

Indigenous science is fundamental to solve many of our current ecological challenges

3:20 AM · May 22, 2024 · **943** Views

Journal of Applied Ecology
@JAppliedEcology

Another wonderful plenary at #TIISC by Dr. Gregory Cajete on interdependence in the natural world
Is there another way to do science?
Lots to think about...



6:49 AM · May 22, 2024 · **809** Views

Indigenous Science Network
June 16 ·

The First Nations University of Canada, the University of Regina Faculty of Science, and File Hills Qu'appelle Tribal Council held the second inaugural Turtle Island Indigenous Science Conference at Regina campuses and in Fort Qu'appelle at the Treaty 4 Governance Centre from May 21st to May 23rd.

The now-biennial conference—the first of its kind across Turtle Island—brought together over 300 Indigenous Scientists, supporters and promoters of TEK-driven research, and students and teachers in Indigenous science and STEM education from many communities and multiple countries. TIISC 2024 was a tremendous success: The next conference installment will be at the University of Waterloo in 2026.

Plenary lectures and Circle Talks, led by esteemed speakers such as Dr. Jessica Hernandez (Fresh Banana Leaves), Dr. Gregory Cajete (Native Science and Igniting the Sparkle: An Indigenous Science Education Model), Chief Matthew Todd Peigan (Pasqua FN), and Elder AJ Felix (Sturgeon Lake FN), underscored the importance of Indigenous Science in the classroom, laboratory, field, and community. They also provided valuable insights on how we can strengthen these elements for future generations, inspiring a sense of responsibility and commitment in all of us.

FNUNIV.CA

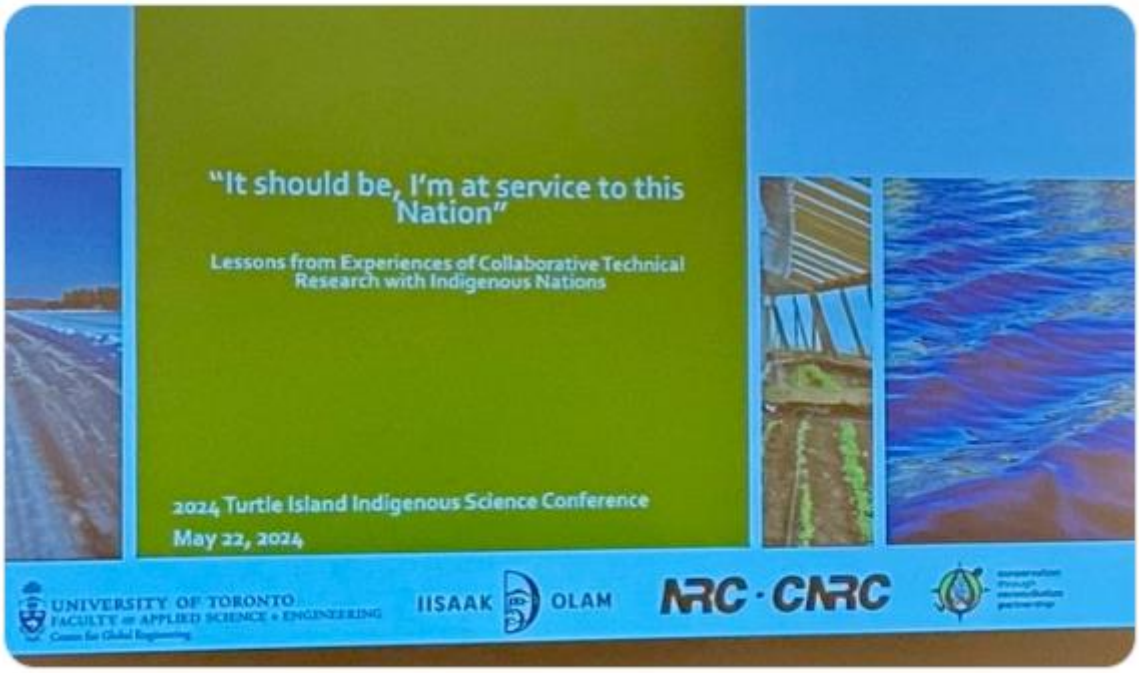
The Biennial Turtle Island Indigenous Science Conference Made Its Mark in Treaty 4 Territory - FNUniv.ca

LINK TO ORIGINAL STORY

Journal of Applied Ecology
@JAppliedEcology

Two-Eyed Seeing approach: using indigenous knowledge and western science
Great way forward!

Another inspiring talk by Roxanna Dehghnan



3:38 AM · May 23, 2024 · **855** Views

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UR Faculty of Science
June 19 ·

🌟 Free Science Camp for Indigenous Youth in Saskatchewan! 🌟

📅 Deadline to Apply: Thursday, June 20, 11:59 PM

Are you ready for an unforgettable summer experience? 😁 Join us at our completely FREE Science Camp designed exclusively for Indigenous youth in Saskatchewan!

Learn from a unique blend of traditional knowledge and modern science! Our camp features esteemed elders, knowledge keepers, and University of Regina scientists. Dive into hands-on activities like:

🌿 Identifying Native Plants
💧 Analyzing Your Community's Water Quality
💻 Computer Coding Workshops

🔬 Embrace the opportunity to blend cultural wisdom with cutting-edge science, making new friends and discovering exciting career paths.

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