



NPSC1003 Integrating Indigenous Science and STEM

Workshop 2

Ways of thinking and privilege in science

Centre for Aboriginal Studies & Faculty of Science and Engineering Western Australia | Dubai | Malaysia | Mauritius | Singapore

 Curtin University

 Curtin University

Copyright Notice

WARNING

This material has been reproduced and communicated to you by or on behalf of **Curtin University** in accordance with section 113P of the *Copyright Act 1968 (the Act)*

The material in this communication may be subject to copyright under the Act. Any further reproduction or communication of this material by you may be the subject of copyright protection under the Act.

Do not remove this notice.

Acknowledgement

Here at Curtin, we are learning on Whadjuk Noongar boodja. I would like to acknowledge the Whadjuk Noongar people, and their culture and connection to country.

I offer the class's respects to the Whadjuk Noongar Elders, past present and emerging.

! Aboriginal and Torres Strait Islander users of this material are advised there may be images, viewings, stories, photos and written materials of people which could be disturbing and/or of persons who are deceased.



What happened last week?

You have a piece of paper on your table – please share:

- one thing you learnt last week
- one question you have about Aboriginal people or culture in Australia.



What are we doing this week

Looking at the way science differs with different cultures, and how the dominant culture and identity of the people doing science can influence how it is used

The lecture will look at what western science and Indigenous science are, how they work, and how they interrelate

The tutorial will look at concepts of privilege in science and how they have influenced science and society, and why addressing these is crucial in a world where western science and Indigenous science need to work together.

Skills: how to reflect on experience, perspective and learning



What is privilege?....

... And what isn't it about?



What is privilege?....

Privilege (in this context) is possessing characteristics that make passing through society easier, all else being equal.

... And what isn't it about?

Not the same as being rich or powerful

Not about being bad or good. Just about acknowledging how societies favour dominant groups within the population

Some forms can be changed (e.g. education maybe made accessible, wealth can be gained), but key physical characteristics can't – e.g. race.



Privilege example - Alison

Has privilege around:

- Race (white privilege)
- Cultural (dominant culture)
- Educational (free access)
- Health (free access)
- Sexuality (heterosexual marriage)
- Cis (never questioned about gender)



But:

- Female
- Disabled
- Neurodiverse

Most people have some privilege and lack some.



Activity 1

Complete Activity 1 on your worksheet thinking about privilege you have or lack.

Note this is a private activity – you do not have to share with students or staff unless you are comfortable doing so



White privilege

Remember: not about being good or bad

- Not about socioeconomics
- But means people who look like you will be represented everywhere – on tv, in the supermarket, dolls, books etc
- As a member of the majority, you could choose to associate only with your own race
- Danger of being harassed or attacked for your race is massively reduced
- Don't need to think about your race on a day to day basis



“But I don’t see race!”

Not seeing race sounds positive and equal, but is actually a privilege. Why?



Seeing race is not the same as racism, or even labelling people by race – it is acknowledging that our societies have historically classified people by race, and that has ongoing impacts.

Race of life video

<https://www.youtube.com/watch?v=4K5fbQ1-zps>



What do you take from the video?

What do you notice about how different people in the video reacted?

Privilege - summary

Recognising privilege is not about blame or guilt (no one chooses who or where they are born; their skin colour; whether they are disabled).

It is about acknowledging the reality of our society.

Aboriginal people in Australia start from a different point in the race of life because they have been historically discriminated against, and experience ongoing racism today.

Privileges (or lack of them) can also intersect and modify each other.

To lack privilege across multiple categories builds disadvantage.



Activity 1b Privilege and White privilege

You have now been introduced to the concept of privilege and specifically white privilege

What are 5 words or phrases that you could use to describe your thoughts, feelings and insights about these?

Go to www.menti.com and use the code



What does all this have to do with science?

Is western science objective?

Go to www.menti.com and use the code



Western science involves certain objective facts.

For example, if you mix 2M of HCl with 2M of NaOH in controlled conditions, you will get the same result every time.

However, that doesn't mean that all theories or practice of western science are objective

And it certainly doesn't mean scientists are all perfect objective rational beings

Science and scientists exist in a social, cultural, and political context.

They will be influenced by biases, ideologies and cultural perspectives.



Science is not enough

The success and value of science depends on scientists understanding the context in which they work, and the influences they may be subject to.

Focusing on the science alone can lead to an incomplete and distorted picture of the world and nature.

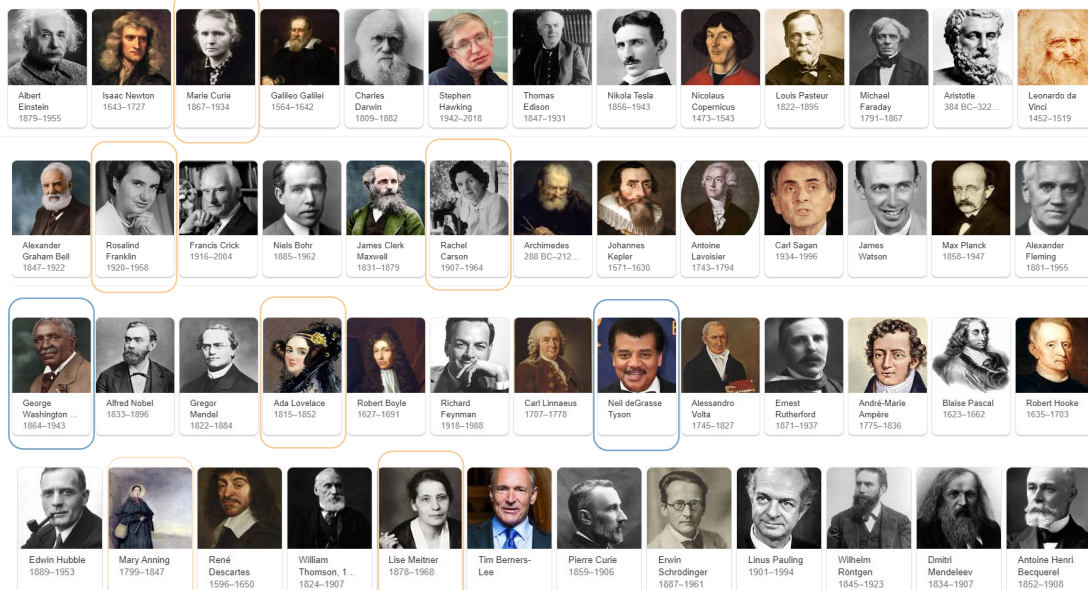
*E.g. a proposal is made to drill for oil in the Great Australian Bight.
What needs to be considered alongside the geology of the area?*

Failure to consider society and ethics alongside to science can also lead to harm, and to the misuse of science to “legitimise” discrimination.

That’s one of the reasons we do this unit.



Scientists



Western science has privileged a single perspective...

[Proc Natl Acad Sci U S A](#). 2016 Apr 19; 113(16): 4296–4301. PMID: [27044069](#)
Published online 2016 Apr 4.
doi: [10.1073/pnas.1516047113](#)
Psychological and Cognitive Sciences

Racial bias in pain assessment and treatment recommendations, and false beliefs about biological differences between blacks and whites

[Kelly M. Hoffman](#)^{a,1}, [Sophie Trövalder](#)^a, [Jordan R. Axt](#)^a and [M. Norman Oliver](#)^{b,c}

JRSM
JOURNAL OF THE ROYAL SOCIETY OF MEDICINE

[J R Soc Med](#). 2007 Jan; 100(1): 2–3. PMID: [PMC1761670](#)
doi: [10.1258/jrsm.100.1.2](#) PMID: [17197669](#)

Gender bias in research: how does it affect evidence based medicine?

[Anita Holdcroft](#)

Why facial recognition's racial bias problem is so hard to crack

Good luck if you're a woman or a darker-skinned person.



Queenie Wong · March 27, 2019 5:00 AM PDT



...And that causes harm.



Activity 2 – Starting your reflections

Reflection is central to the learning process as it allows you to step back from the learning experience and to analyse what you have learnt and how you have learnt it.

When you reflect, you gain deeper understanding of something (**insight**).

Insight is a thought that helps you know something essential. Insight has a place in scientific discovery.

*e.g. to translate large amounts of data into concise and compelling findings in computing and predictive analytics requires **insight***



Western science is not the only way of knowing

All cultures have some framework in which they apply practical knowledge

In Indigenous Australia, Aboriginal and Torres St Island people apply cultural knowledge to sustain their environment and their communities.

This is knowledge handed down from generation to generation based on stories and observations of their world.

Often western knowledge is treated as universal, while Indigenous knowledge is either devalued, or considered as only relevant to Indigenous people.

This is another example of privilege stemming from being part of the dominant culture



Indigenous Science - example

Australia had very bad fires in the 2019/20 summer

Many people are now talking about using Aboriginal techniques to reduce fuel loads and manage burning.

What might non-Indigenous scientists / managers and politicians get wrong in implementing this idea?



<https://www.bbc.com/news/science-environment-51590080>



Indigenous Science - Example

Non-Aboriginal managers and scientists often try and cherry pick techniques from Aboriginal land management to apply as a “recipe”

However, as Aboriginal fire practitioners point out – this won’t work,

Aboriginal science is holistic – it combines multiple types of knowledge, including the practical with the cultural

The core of Aboriginal land management is the connection to and intimate understanding of local country.

Without that connection, it’s just another controlled burn, and won’t necessarily have the desired outcomes.



Integrating Indigenous Science and STEM

Western science and Indigenous science can, should and do work together.

They can complement each other and mutually add value.

However, that can only happen in an atmosphere of mutual respect.

That requires learning about different cultures

And it needs acknowledgement of biases, privileges, and past and present problems in society

These principles are applicable anywhere in the world.

To address global challenges, we need to draw, together, on a wide range of knowledge systems.



A Framework for Academic Reflection

DIET	
Describe	State your insight (deeper understanding). This is something that must change your thinking or behaviour going forward. Provide details about how you gained the insight – when, where and what was the trigger (for example a comment from someone)
Interpret (Analyse)	Discuss what the insight means to you. Explain why it is significant and how it changes your thinking about the topic.
Evaluate	State the value of the insight. How does it change your learning, your perspective and your future actions?
Transfer	How will you apply this insight as you progress through your studies, personal life and your future employment?



Activity 3 – Reflection and Academic Reflective Writing

I grew up on a college campus where my father was a mathematics professor and my mother was a physician involved in research. This provided me with encouragement for academic pursuits and access to many resources. I greatly appreciated this atmosphere, but it was when I started college that I remember first articulating an important aspect of my privilege. I realized that my fellow students were intimidated by faculty members and said to my roommate, "It's hard to be too afraid when you've seen the famous professor down the street shoveling dog poop off his lawn." This seemingly trivial privilege had huge consequences. Early in my freshman year, I reached out to an assistant professor about potential opportunities in his laboratory. A month later, he invited me to help with a collaborative project, initially with menial tasks—tracing computer output onto plastic sheets—but it led to opportunities to learn about the project and to become assimilated into the laboratory environment. Over a short period of time, I was helping with other aspects of the research and handling my own project. More opportunities followed, as did authorship on research publications. My experience illustrates a central aspect of privilege—positive feedback loops. An initial advantage can lead to opportunities that, if capitalized on, can lead to additional ones

Description and Details - Context

Expression of feelings

Trigger

Insight

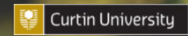
Description – further details to explain context

Insight

Editorial by: Jeremy Berg
Former Editor-in-Chief
Science Journals



Before Next Week



Undertake the SELL diagnostic task with IRIS
(end of week 2)

Complete your reflection (if you didn't finish
in class) – this is not assessed but we will
help you review it and learn for assessed
reflections later in semester

THANK YOU

Make tomorrow better.