Process of engagement - First Nations Knowledges in the Engineering and IT curriculum

Cat Kutay and Elyssebeth Leigh

July 2020

Aim

1. Clarify the protocols for incorporating First Nations knowledges in the curriculum using appropriate methods

2. Provide support for staff to incorporate First Nations Knowledges into their subjects and develop student-facing material

Structure

There are various methods developed for teaching First Nations knowledge, at the course/degree level and at the curriculum/delivery level. The aim of this process is to consider:

a what methods suit both the academics delivering (whether Indigenous or non-Indigenous) and their university policy of engagement, and

b how to structure a program that develops throughout the 3-4 years on-campus during a student's Engineering or IT degree

Common Language

As background, the main aspects that have been seen as coming from First Nations knowledges in general is the importance of:

1. **Relationships** as a fundamental starting point for any projects and interactions with community, as it is fundamental to First Nations identity

2. **Co-creation** is crucial to ensure community is authentically engaged in projects, and achieves benefit from these

3. **Acknowledgement** of Australia's historical treatment of our First Nations is important in understanding how to work better in future

4. **Respect** for First Nations is important, as a culture and people with their own history, knowledge system and technology

5. **Primary aspects of knowing being and doing**[1] that are highlighted by working with First Nations are:

   a Knowledge is place based and cannot be easily transferred to other lands

   b Collaboration as a primary focus of management and social interactions

   c Sustainable approaches as a form of Systems Thinking is shared through oral knowledge sharing processes and can be utilised in Engineering and IT courses

Beyond these common aspects there are many that are relevant to each place and peoples who teach into the degrees

Course structure

The structure of the course is proposed around the work of Martin Nakata et al. (2012[2] and 2014[3]) which is designed to assist our students grow in awareness of the issues confronted today by our Aboriginal and Torres Strait Islander Peoples and to position them in a critical thinking framework to collaborate with First Nations at the Cultural Interface. The structure they propose is based around *Continuities*[4].

Year 1
Introduce students to Indigenous people via their knowledge traditions, concepts, values, and practices ... to introduce Indigenous Australia to students on Indigenous Australian terms. p. 8
Year 2
Ruptures, Discontinuities and Convergences that are the result of colonisation and ongoing Indigenous relations with the Australian nation-state, as well as Indigenous peoples 'strategies to maintain continuities with Indigenous knowledge and social practices p.8

---

[1]For example Karen Martin and Booran Mirraboopa https://www.tandfonline.com/doi/pdf/10.1080/1444305030938783

[2]Nakata, N.M., Nakata, V., Keech, S., and Bolt, R. (2012). Decolonial goals and pedagogies for First Nations Studies. Decolonization: Indigeneity, Education and Society, 1 (1), 120–140 https://www.joycerain.com/uploads/2/3/2/0/23207256/decolonial_goals_and_pedagogies_for.pdf

[3]Nakata, M, Nakata, V, Keech, S and Bolt, R (2014) Rethinking Majors in Australian First Nations Studies, Australian Journal of First Nations Education https://www.cambridge.org/core/journals/australian-journal-of-FirstNations-education/article/rethinking-majors-in-australian-FirstNations-studies/9EBF2F62222E114DD94C27BD135A3FFAß

[4]ibid

Year 3
Navigating the Interface engages students to explore the boundaries of Indigenous knowledge, Western disciplines, and the confinements of an unproblematised presence of the Western order of things p.9

For engineering students or IT Honours, Level 4 will be a continuity of level 3 with a practical focus on a project they can engage with community

First Nations Knowledge contribution to units/subjects Course structure

This section presents areas where staff can introduce knowledges into their teaching. This is still at conceptual stage but provides a way to classify subjects and help people group together to support each other in the process.
Ways for integration of knowledge proposed are based around three approaches to knowledge sharing:

a Awareness of History and traditional technology linked to the context of the subject
Level 1
Personal acknowledgement of country and understanding of the significance of the area to First Nations people where a course project is conducted (on or off campus) Narratives from community on traditional technology eg Brewarrina fish traps
Level 2
Case study of community experience in technology eg papers on First Nations Knowledge repositories and the issues these raise over protocols
Level 3
Designing a technology in class within the discipline of the subject/unit with community advice, eg guest lecturers preferred, eg wearable technology, language translation, construction design, collaborative workflow support

b Design and development projects with community representatives to create Technology suitable for the culture and aspirations
Level 1
Student led research into project of their choice with guidance from the lecturer as mentor to guide them to consider critical issue, rather than direct their study
Level 2
Design an artefact with community consultations to develop an understanding of the complexity of co-design skills across culture and understand the effect of history on the technology options now
Level 3

Research Projects developed according to community design and guidelines carried out on location

c Adaptions of First Nations knowledge and processes to modern activities and designs
Level 1
Workshops on some Aboriginal processes and techniques for knowledge sharing as used in the subject (eg Design thinking (see below), deep listening, yarning circle, team work around kinship, narrative learning techniques and sustainability (see videos[5]). This can be extended by looking at work by First Nations around the world.
Level 2
Scenarios or role plays on working with community eg when a project digs up artefacts during construction. Preference is to have a community member guest lecture to explain the context
Use the Aboriginal processes and techniques from level 1 to understand some First Nations responses to the scenario
Level 3
Use the Aboriginal processes and techniques from level 1 to collaborate with First Nations guest lecturer or community around an issue that is topical, hence there will be plenty of resources for students to use.
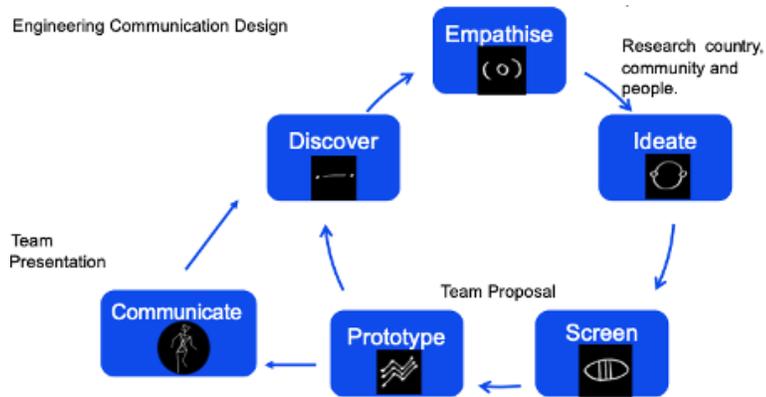
Processes such as Design Thinking from First Nations Perspective

As well as various video resources developed at UTS , there is a Design Thinking model develop with Engineers Without Borders for project work around community issues[6]. The symbols used are the five ways of thinking or knowledge sharing as discussed by Tyson Yunkaporta[7] and map well to the process involved in community engagement around a design project.

---

[5]ttps://www.youtube.com/playlist?list=PLfJn8WgBPkZpAtpeDkvQKzJf3WoqkouMK
[6]https://drive.google.com/file/d/1qp0PAqCQSFYQWgfCCr-zWxnhEQX5U4uT/view?usp=sharing
[7]Tyson Yunkaporta (2019) Sand Talk: How First Nations Thinking Can Save the World, Text Publishing

These ways of thinking are called kinship-mind, storytelling-mind, dream-mind, ancestor-mind and pattern-mind. The sixth symbol for Communicate is a symbol for Corrobboree knowledge sharing developed by Lisa Roberts, UTS Faculty of Science.