

Chapter 4

A Design and Evaluation Framework for Indigenisation of Australian Universities

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Introduction

What strategies are Australian universities using to increase Indigenous participation? Do whole of institution approaches work and are they sustainable? Indigenous Australians remain seriously under-represented in higher education (COAG 2008). The barriers to higher education for Indigenous students have been previously identified and well documented (Pechenkina and Anderson 2011). To improve outcomes, the recent Behrendt Review of Indigenous Higher Education recommended the deliberate involvement of Indigenous Australians in the work, study and governance of universities while shifting accountability for Indigenous outcomes to senior university leadership (Behrendt et al. 2012). Behrendt and her colleagues required universities in collaboration with Indigenous peoples to adopt a ‘whole of institution’ approach to improve Indigenous outcomes by using a standardised set of measurable parity targets and strategies (Behrendt et al. 2012, p. 162). Drawing on the work of Behrendt et al., this chapter defines the concept of ‘Indigenisation’ as the institutionalised change efforts towards Indigenous inclusion that uses a ‘whole of university approach underpinned by principles of recognition and respect for Indigenous peoples, knowledges and cultures’. This chapter analyses the development and implementation of the University of Adelaide’s¹ (henceforth Adelaide) whole of institution Indigenous Education Strategy between 2012 and 2014. The author of this chapter was a key architect of the strategy with the responsibility to institutionalise, as normative practice, Indigenous inclusion. This 10-year strategy generated multiple change efforts across five academic faculties and four administrative divisions. This chapter presents a conceptual *Design and Evaluation*

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Framework for Indigenisation (DEFI) that underpins the analysis of institutional change. This DEFI framework has five major dimensions that defined the Adelaide education change: (1) assembling resources; (2) engagement; (3) working together; (4) building confidence; and (5) excellence and equity. This framework is potentially valuable for government and practitioners evaluating university change practices beyond single isolated approaches towards innovative whole of university approaches to improve Indigenous participation.

University Sector Background

Previous research has traced the rapid growth historically of Indigenous involvement in higher education between the 1970s and 1990s (Bin-Sallik, 2000; Biddle et al. 2004). Over the past decade, countless sectorial and government policies as major drivers of external change in universities have concluded that the rate of Indigenous student school completion and transition-to-university remains significantly lower than their non-Indigenous peers (Behrendt et al. 2012; Universities Australia 2011; Department of Education and Training 1989; DPMC 2015). The year 2008 saw a convergence of large-scale mainstream policy change to higher education seeking to achieve excellence and equity; set national innovation priorities; and increase Australia's standings in international higher education. These key sectorial touchstone reports include:

- 2008 Review of the National Innovation System (Cutler Review)
- 2008 The Review of Australian Higher Education (Bradley Review)
- 2011 Universities Australia National Best Practice Framework for Indigenous Cultural Competency in Australian Universities (Universities Australia)
- 2012 Review of Higher Education Access and Outcomes for Aboriginal and Torres Strait Islander People (Behrendt Review)

This chapter is informed by these major government reports and their vast literature sets. It argues that although the plethora of higher education and equity literature reviewed here is insightful, it has dealt little with the implementation of a 'University-wide' approach to Indigenous inclusion towards improvement of outcomes. Theoretical blind spots include a definition of 'Indigenisation' or a 'framework' for its implementation from an Indigenous perspective that privileges Indigenous values, interests, aspirations and epistemologies (Rigney 2001, 2006; Behrendt et al. 2012). This research gap possibly explains why there is no agreed universal definition of Indigenisation or a model of cultural standard that supports it in university.

In response to the Bradley Review for massive expansion, the Government uncapped the number of university places towards a 'universal' higher education system that improved access to students from lower socioeconomic, rural and regional backgrounds. The Behrendt Review goals aligned to Bradley sought to improve Indigenous participation rates to the same level of other Australians. In

2010, Indigenous Australians made up only 1.4% of all university enrolments yet their numbers were 2.2% of the Australian working age population (Behrendt et al. 2012).

To address this challenge, the Australian Government's funding scheme Higher Education Participation and Partnerships Program (HEPPP) financed many successful university outreach activities to improve greater participation of disadvantaged students (especially Indigenous and low socioeconomic status (HEPPP 2016). However, these contributions have often been isolated and difficult to sustain both over time and across the higher education sector (HEPPP 2016).

The Bradley Review (2008) highlighted that the Group of Eight (Go8) universities featured in the 'bottom percentile' of all Australian universities in the enrolment of low socioeconomic status (LSES) students. Adelaide is a member of the Go8 alliance consisting of the largest and oldest Australian universities, intensive in research. While in 2012 Adelaide led the Go8 in LSES and Indigenous enrolment, as an institution it remained below the national average.

Responding to this challenge, Adelaide in 2013 created an improved institutional wide approach to equity, championed by the senior leadership of Professor Quester (Deputy Vice-Chancellor and Vice-President – Academic); and Professor Bebbington (Vice-Chancellor and President). This Adelaide case study is drawn from a distinct period of education change between 2012 and 2014.

University Case Study Context

Adelaide is a public university in South Australia and was established in 1874. Its long-standing commitment to equity and inclusion saw Adelaide become the first university in Australia, and only the second in the world, to admit women to academic courses almost 40 years before Oxford in 1920. Adelaide's first science graduate was also its first women graduate, Edith Emily Dornwell, who graduated in 1885 (University of Adelaide 2016). Adelaide was the first Australian university to recognise Aboriginal and Torres Strait Islander Ethnomusicology by establishing the Centre for Aboriginal Studies in Music (CASM) in 1972.

Building on the success of CASM, Adelaide developed Indigenous access entry schemes and teaching programs throughout the 1980s, leading to the establishment of a dedicated Centre for Aboriginal Education – Wirrtu Yarlu in 1996 and the Yaitya Purrana Indigenous Health Unit in 2003 (University of Adelaide 2013b). The University of Adelaide cumulative change and investment included several initiatives to improve Indigenous staff and student access and success:

- 2003 and 2014 University of Adelaide Reconciliation Statement
- 2009 Aboriginal and Torres Strait Islander Employment Strategy

As predecessors to a whole of institution strategy, these Indigenous initiatives achieved incremental successes yet Indigenous staff and student participation remained under 1% of state population parity of 2% (University of Adelaide 2013a).

To boost change efforts to meet the needs and aspirations of Indigenous staff and students Adelaide put in place effective leadership to manage the reform. In 2012 the causal contract for the Indigenous Employment Senior Project Officer was made permanent. The re-designation of a senior Aboriginal academic to Dean of Indigenous Education resulted in the genesis of the university-wide Tarrkarri Turrka Integrated Aboriginal and Torres Strait Islander Education Strategy 2013–2023 (University of Adelaide 2013a). The Turrka strategy employed a Project Officer to assist the Dean with the reform.

This innovative coalition reported directly to the strong leadership position of the Deputy Vice-Chancellor Academic. While the Dean's position was outside the Indigenous student equity centre it sought change effort from the centre's Indigenous Director and staff. Change efforts and forces would now be shaped and influenced by this new whole of university approach with a philosophical value proposition that 'Indigenous education is everybody's business'.

The goals of greater diversity were reaffirmed in the new University Strategic Plan known as 'The Beacon of Enlightenment' 2013–2023 (University of Adelaide 2013c). The convergence of both 'Turrka' and 'Beacon' strategies co-created internal targets for faculties and administrative units and the normalisation of senior staff accountability for Indigenous education. The Adelaide Turrka strategy incorporated previous Indigenous approaches and actions into one coherent direction and purpose. Priority improvement areas included (University of Adelaide 2013a):

- Significantly improve Indigenous participation from under 1% of state population parity in 2012 to 2% parity by 2024
- Boosting Indigenous research
- Recognising Indigenous perspectives in courses

Definition and Framework for Analysis

Drawing on the work of Behrendt et al. (2012) this chapter defines the concept of 'Indigenisation' as the institutionalised change efforts towards Indigenous inclusion that uses a whole of university approach underpinned by principles of recognition and respect for Indigenous peoples, knowledges and cultures.

Since the Adelaide Indigenisation Strategy involved issues of equity and participation of Indigenous students in university, an innovative matrix designed by the National Centre for Student Equity University of South Australia was adapted for the analysis in this study (Gale et al. 2010). Gale's Design and Evaluation Matrix for Outreach (DEMO) comprises ten characteristics listed under four strategies to evaluate successful university programs designed to improve participation in university for low SES and Indigenous communities. These include (1) assembling resources; (2) engagement; (3) working together; and (4) building confidence (Gale et al. 2010).

Table 4.1 A Design and Evaluation Framework for Indigenisation (DEFI)

| Category | Characteristics | Comment |
|--|--|---|
| 1. Assembling resources, actors, partnership | Actors and people rich | Create a positive organisational culture for improved results. |
| | Building engaged, supportive and collaborative environment | Build leadership team. |
| | Faculty and Indigenous partnerships established | Faculty financial support and/or incentives. |
| | Implement university-wide Indigenous strategy | |
| 2. Engaging learners, faculties, academics and researchers | Build Professional Learning communities for continuous opportunity where teachers can redesign/share curricula and pedagogy to support new alignment of ideas. | What culturally responsive curricula and pedagogies used? |
| | Recognition and validation of diverse epistemologies | Data shared. |
| | Measurable outcomes and impact monitored and reported | Successes replicated and scaled up across the university. Opportunities for cultural competency. |
| 3. Working together | Indigenous community partnerships. | What is faculty university and Indigenous community, commitment to University-wide strategy? |
| | Faculty and administration commitment | |
| | Indigenous staff not left with the burden to do all the work of Indigenisation | |
| | Increasing visibility of Indigenous cultures across campuses | |
| 4. Building confidence | Support faculty and school leadership addresses challenges of Indigenous staff and student retention and success | Empowering all staff and confidence through professional learning communities. |
| | Measurable outcomes/impact | Sustainability of reform. |
| | Scale up and share internal successes | |
| 5. Excellence and equity | Culturally responsive curricula, teaching and research that validate Indigenous knowledges | Excellence and equity basis of strong Indigenous university-wide strategies. Does institutional system rise to the challenge? |
| | High expectation relationships by all parties | |
| | Indigenous STEM participation | |

While Gale's matrix (Gale et al. 2010) provided a robust research and evaluation framework for this Adelaide case study, it required updating to strengthen its matrix to capture a richer set of specific themes that take into consideration the institutional culture of the University of Adelaide. Consequently, Gale's matrix has been adapted and termed A Design and Evaluation Framework for Indigenisation (DEFI) (Table 4.1). The following categories have been added to Gale's matrix to capture complex nuances. These include:

- Engaging learners, faculty, academics and researchers
- Excellence and equity

This DEFI framework offers a useful evaluation tool for institutionalised change efforts towards Indigenous inclusion that involves:

- Aims, goals and targets as drivers of change in these programs
- Actors and stakeholders that develop and maintain programs
- Quantifiable, measurable and clear outcomes

The DEFI framework was used to develop the broad themes and a set of questions that underpins the analysis. The framework includes five major dimensions (Table 4.1):

1. Assembling resources, actors and partners
2. Engaging learners, faculties, academics and researchers
3. Working together
4. Building confidence
5. Excellence and equity

Results

Evidence of results include:

Indigenous Students (2012–2014)

- Overall 10-year target 2013–2020: Achieve Indigenous undergraduate and post-graduate student enrolment rates reflective of state population parity to 2% of total students by 2020.
- 2012 Baseline Indigenous students: 183 total; Commencing 78.
- 2013 Indigenous students: 207 total (Tirrka target 190); Commencing 82. (Tirrka target 102). Largest cohort on record in Adelaide’s history.
- 2014 Indigenous students exceeded: 206 (Tirrka target 202); Commencements 102 (Tirrka target 105). Largest cohort on record in Adelaide’s history.
- 2024 – 2% parity Indigenous students target: 430 total; Commencing 170 (University of Adelaide 2012b, 2013a, b, 2014b).

Indigenous Staff (2012–2014)

- Overall 10-year target 2013–2020: Achieve Indigenous staff employment rates reflective of state population parity to 2% of total staff by 2020.
- 2012 Indigenous Staff: 25 total (Tirrka target 25).
- 2013 Indigenous Staff: 42 total (Tirrka target 30), 16 academics, 26 professional staff; 16 males, 26 females.
- 2014 Indigenous Staff: 40 total (Tirrka target 35), 15 academics, 25 professional staff; 16 males, 24 females (University of Adelaide 2012b, 2013a, b, 2014b).

The previous decade before 2012, Indigenous total student enrolment numbers stagnated to fewer than 180. In 2014 all educational change efforts internally saw Indigenous student numbers reach beyond 200, the largest cohort on record in the University of Adelaide's history. In 2014 Indigenous staff doubled and had already met 2015 annual targets. These snapshot findings indicate how across schools and faculties this internal force of change by a central strategy was responsible for growth that defines a distinct periodization between 2012 and 2014.

The rate of improvement indicates targets were on track to reach parity before 2020. For brevity in this chapter, data on Indigenous staff and student overall numbers are used to tell the story of educational change. Further, data to explain internal Adelaide change forces can be accessed in other publicly available documents (University of Adelaide 2012a, b, c, 2013a, b, c; 2014a, b; 2016).

Assembling Resources, Actors and Partnerships

Adelaide's Indigenisation strategy involved assembling a diverse range of practices, stakeholders and actors to pursue change and vision for equity. This generated cross-faculty response with multiple change efforts and forces deliberately searching for different patterns of innovations.

Whole of Institution Strategy

The Turrka strategy (University of Adelaide 2013a) was embedded in larger University's Strategic Plan (Beacon of Enlightenment) and aligned to government priorities of 'Closing the Gap' on Indigenous disadvantage (Commonwealth of Australia 2015; COAG 2008). These inter-related change forces and their convergence on the institution had an accumulative effect on a standards-based reform to achieve 2% Indigenous parity rate within a decade. An audit of all Indigenous programs identified strengths and areas for improvement with solid agreement by faculty for improvement. Unlike previously, all internal Indigenous student and staff data were shared regularly and located centrally for ease of access by all areas. Annual faculty accountabilities of progress were reported to the Vice-Chancellor and Council. The university-wide strategy relied on finite resources. Increasing faculty understanding of how to leverage and complement their existing resources to fulfil their strategic goals proved to be critical.

Governance

The Indigenous Education and Engagement Committee monitored the implementation of the Turrka strategy. Chaired by the Dean of Indigenous Education, members included faculty representation, Indigenous staff and students and the Indigenous student equity unit. Each faculty and administrative unit had an internal Gender and Equity Diversity Committee chaired by a faculty funded Associate Dean of Diversity and Inclusion to operationalise change action. All faculties developed measurable targets within their faculty strategic plan that aligned to the institution-wide Turrka strategy.

Stakeholder Partnerships

Strong community engagement was established through a Memorandum of Understanding established between the university and the local Kaurna Aboriginal Elders (Kaurna Warra Pintyanthi and Karrpanthi Aboriginal Corporations). Various long-standing and new university-wide Indigenous pilot projects engaged the community in partnership including some areas of the university impervious to change. Briefly these involved reconciliation staff and student awards; Indigenous Law students' entry pathways and pastoral care mentoring; Indigenous law students study-abroad tour; Marni Wingku Indigenous school student outreach program; Indigenous student music showcase; Children's University; Indigenous Community Reconciliation barbeque; the annual Lowitja O'Donoghue Oration; and philanthropic scholarships. Even though most innovations continued over a 2-year period, some were uneven in outcome and did not reach the institutionalisation stage where they became routine and effortless on the part of actors or faculties. This is in large part due to staff leaving, shifting economic priorities and/or faculties' responses to differing change pressures.

Engaging Learners, Faculties, Academics and Researchers

The sustainability of educational change and how institutional forces using a whole of university strategy have exerted their influence is evident in the pursuit of the professional learning community (PLC) at Adelaide. The theory of professional learning communities was central to this project's change effort method to develop faculty and system-wide capacity-building for sustainable teacher improvement and student learning. DuFour (2014, p. 2) emphasises the powerful collaboration that characterises professional learning communities that produce:

a systematic process in which teachers work together in teams to analyse and improve their classroom practice, engaging in an ongoing cycle of questions that promote deep team learning.

Professional Learning Community for Institution Change

An effective professional learning community was established to provide the conditions for teachers to redesign curriculum and pedagogy that focused on improving Indigenous student learner achievement. This enabled continuous opportunity for staff to think, learn and express ideas about the process of greater Indigenous participation. The professional learning community workshops introduced teachers to the ‘Tirrka’ and ‘University Beacon’ strategies and connected to international theory on improving Indigenous outcomes. Utilising action research approaches of professional learning and knowledge production, faculty representatives were trained to implement curricula and pedagogical changes then to in-service their faculty colleagues. These professional learning community workshops created opportunities for dialogue on how to imagine and envision Indigenous presence in the faculty (Rigney et al. 1998; Rigney 2011a, b; Ladson-Billings 1995, 2009; Howlett et al. 2008; Frawley et al. 2015). Indigenous knowledges and epistemologies are valued and represented across the academic agenda (Sarra et al. 2011; Smith 2003; Rigney 2001, 2006; Matthews 2012; Matthews et al. 2005). The key characteristics of this professional learning community include plurality of knowledges, values and ways of knowing; shared values and vision; collective responsibility for Indigenous Education; collaboration focused on learning in curricula and pedagogy; individual and collective professional learning; and reflective professional enquiry and support networks (Kinnane et al. 2014; Miller et al. 2012; Hauser et al. 2009; Gunther 2015). This project built a culture of support, collaboration and collective professional learning. This pedagogical change approach is one well worth pursuing as a means of promoting school and system-wide student improvement.

Indigenising University Curriculum

To increase the depth and breadth of Indigenous knowledges across a range of faculty disciplinary areas, Indigenous Knowledges and Society Studies Major was developed within the Bachelor of Arts. Managed by the Indigenous student equity centre, the new Studies Major was successfully offered on the city campus. An Indigenous University Preparatory Program (UPP) was also offered both at Adelaide and regionally at Port Augusta to increase pathway access for city and rural students. Conceptual pedagogy theory, teaching techniques and research approaches used by experienced staff managing the Studies Major were shared in professional learning community workshops.

University Staff Inter-cultural Competence Workshops

A series of Staff Inter-cultural Competence Workshops were developed to build teacher skills. Practitioner enrolment in inter-cultural competency reached its height in 2014 with 151 university staff members (target 30) participating in workshops, with feedback collected to support the idea that such workshops improved the confidence of staff in Indigenous matters. To develop maximum exposure to inter-cultural competence, an online Aboriginal Cultural Awareness module was developed and included as compulsory in all new staff-induction processes. It was expected by 2023 that over 6000 staff would complete the online induction.

Working Together

One of the historical obstacles to greater Indigenous participation in Australian higher education was that the task for its transformation was left to the few inside universities (Page and Asmar 2008). In contrast, the high importance of relationship building, partnerships and high-quality professional development is a feature of the Adelaide case study. Creating a secure and welcoming learning culture to building staff professional confidence and collaboration was proven to be the most effective.

Higher Burden on Indigenous Staff

The work of Page and Asmar (2008), and Pechenkina and Anderson (2011), suggests that a whole of institution approach to Indigenisation can place a higher burden and multiple demands on small numbers of Indigenous staff and Indigenous equity centres. These staff accept or resist particular reforms according to their perceptions and philosophies of who is responsible for Indigenous matters across the institution. Adelaide's project confirms such challenges exist but can be mitigated when added leadership, staff and resources for the reform are not drawn from Indigenous equity centres. While Indigenous staff are important stakeholders to change processes, the use of an institution-wide reform requires a greater role of the faculty-based staff to be responsible for faculty Indigenous matters. This complemented rather than placing additional burden on Indigenous student equity centres.

Building Indigenous Staff Capacity

Indigenous staff were important stakeholders in internal Adelaide change processes; therefore, retention and building staff capacity were critical change elements. Indigenous staff employment across Adelaide ranged from junior professional staff to early career academics. Most Indigenous staff rarely applied for promotion or tenure. Moreover, junior Indigenous staff did not access internal competitive faculty conference grants crucial to advance their careers. This challenge required change if staff retention was to be achieved. The Taplin Indigenous Bursary for International Education was established with philanthropic support to increase the capacity to retain Indigenous staff (University of Adelaide, 2012c, 2013d). Successful participants accessed these grants to increase publications for promotion and tenure purposes. In 2013–2014, ten staff/students travelled to deliver refereed papers at recognised international conferences at University of British Columbia, Canada; Oxford University, England; The Smithsonian Institute, United States; and the Royal Infirmary Hospital in Edinburgh, Scotland. This innovative reform was open to all areas and complemented localised faculty grants rather than their replacement. Equally, this innovation was a temporary action implemented over 5 years to build enough individual capacity and confidence to apply for prestigious faculty staff grants.

Increasing Visibility of Indigenous Cultures Across Campuses

Studies conclude that culturally compatible environments engage Indigenous students in universities and reinforce their sense of belonging (Biddle et al. 2004; Gale et al. 2010). Adelaide's actions to increase Indigenous participation included continuous improvement to Indigenous students' services and to expand the physical profile of Indigenous cultures on all its university campuses. In 2013 the Indigenous equity centre Wirltu Yarl'u underwent a US\$1 million renovation. Investment in building renovations also occurred in regional Port Augusta that offered the Indigenous University Preparatory Program. The valuable and rich contribution of Indigenous culture to the University and Australian life was celebrated during Reconciliation and National Aboriginal and Islanders Observance Day Committee (NAIDOC) festivals. In 2012 the University of Adelaide's new US\$100 million, 6 Green-Star rating engineering building was given a local Kurna name, Ingkarni Wardli meaning 'place of learning or enquiry'. This naming symbolised the special relationship Adelaide shares with the Kurna people, the original custodians of the land on which the university is situated. These activities all fostered genuine engagement and partnerships with local Indigenous peoples that strengthened the external support for internal changes.

Building Confidence

Building staff confidence to enact a collective institution culture and philosophy for Indigenisation was central to building the confidence of all reform actors.

Empowerment of Staff

Fostering an engaged, supportive and empowered university community at Adelaide centred on respectful communication to build a positive profile of change efforts. However, the innovative reforms at Adelaide were challenged at the beginning with staff surveys indicating high anxiety about lack of expertise, confidence or familiarity with Indigenous knowledges, histories and interests. Change efforts over the first 2 years of Tirkka strategy implementation invested 60% of resources and time-building confidence and developing appropriate skill sets for action. This investment in staff confidence was to ensure that the reform change lasts and spreads.

Inter-disciplinary forums were regularly used to foster a safe, caring and supportive environment to resolve challenges to increase change efforts. Strong collaborative leadership was required from faculty senior management, the Dean of Indigenous Education and the Deputy Vice-Chancellors. Clear concise and regular communication from the leadership on the aims and targets of the change effort was a key feature of the Adelaide reform. This leadership promoted a faculty culture that aligned these change efforts to faculty values, philosophy and graduate attributes. Adopting an educative rather than punitive approach to change behaviour established an appealing physical environment for collaboration through engaging pedagogies.

The change strategy dictated top-down highly prescriptive targets and allowed flexibility for faculties to determine projects. The findings indicate the less experienced the reform actors were with Indigenous issues, the more prescriptive in ideas for change. Collaborative projects in partnership with more experienced practitioners in other faculties produced support for the new alignment culture. These experienced equity actors promoted strong collaborative inter-relationships across the university and took on a role of equity-reform champions and mentors. Leveraging these actors' energy, leadership and power led to cumulative and sustainable improvements in equity structures, systems and progress beyond their faculty borders.

Sustainability

Hargreaves and Goodson's (2006, p. 5) empirical studies on institution educational change over time in the United States and Canada conclude that 'ultimately the sustainability of large-scale education change and reform of institutional culture can only be addressed by examining reform from a longitudinal change over time'. These authors conclude that most institutional reforms have a limited 'shelf life of 5 years'. Hargreaves and Goodson (2006) argue that universities because of their size, bureaucratic complexity and subject traditions have proved to be impervious to change. Challenges to the sustainability of any reform include staff changes over time; student demographic shift; loss of funding and good will; and staff suffering reform fatigue.

During 2012–2014, Adelaide experienced large-scale external change pressures including response to the Bradley and Cutler Reviews and alteration to the Tertiary Education Quality and Standards Agency (TEQSA), Australia's independent national regulator of the higher education sector. Wave after wave of external reforms challenged faculties, their budgets and staff. Yet the Adelaide project only had a small minority of resistant actors. While several large-scale external reforms did impact workloads and human goodwill, the Adelaide findings suggest that a combination of external government forces and key distinct internal institutional characteristics, supported by a coherent university-wide Indigenous equity strategy, holds the strongest promise for designing and implementing effective early interventions. Over a 2-year period (2012–2014) the Adelaide project yielded measurable improvement in Indigenous participation.

Hargreaves and Goodson's (2006, p. 5) findings conclude that many 'innovations can be implemented successfully with effective leadership, sufficient investment and strong internal and external support, yet very few innovations reach institutionalisation stage where they become routine and effortless'. Producing 'deep improvement that lasts and spreads remains an elusive goal of most education change efforts' over time (Hargreaves and Goodson 2006, p. 5). The Adelaide experience indicates that change innovations to university cultures can be implemented but their sustainability and long-term educational change over time are yet to be determined and remain inconclusive. Hargreaves and Goodson (2006) remind us that both top-down and bottom-up approaches combined with both pressure and support are important strategy techniques to achieve change traction.

Excellence and Equity

The research of Pechenkina and Anderson (2011), and Anderson (2014), confirms the need for equity pathways to university to increase Indigenous participation rates. These authors also call for Indigenous STEM Excellence pathways for those

students who excel academically, specifically in the areas of Science, Technology, Engineering and Mathematics (STEM).

Indigenous Participation in STEM Disciplines

For Indigenous students, school completion rates and transition-to-university statistics, particularly in STEM (science, technology, engineering and mathematics)-related programs, remain significantly low (Dreise and Thomson 2014; Sriraman and Steinthorsdottir 2007). Improving literacy and numeracy is considered to be one fundamental element to increasing Indigenous participation in STEM at university, while other initiatives work from the belief that programs traditionally not prioritised by Indigenous students need to become more visible and orientation to these relatively unfamiliar programs made available (Behrendt et al. 2012; Universities Australia 2011; Burton 2004). Dreise and Thomson's (2014, p. 1) research shows that on average 'Indigenous 15-year-olds are approximately two-and-a-half years behind their non-Indigenous peers regarding scientific, reading and mathematical literacy'. Nevertheless, concerning STEM subjects, the Program for International Student Assessment (PISA) data indicates that Indigenous students value mathematics (Thomson et al. 2013) and are more interested in contextualised science content (Woods-McConney et al. 2013) than their non-Indigenous peers.

Indigenous interests in STEM fields have recently surged. For example, in November 2014, the recently formed Australian and Torres Strait Islander Mathematics Alliance held its inaugural conference, bringing together community leaders, educators and the business sector 'to consider ways forward to improving the mathematics outcomes of Aboriginal and Torres Strait Islander students, and hence life opportunities' (ATSIMA 2014). The first National Indigenous Engineering Summit was held at the University of Melbourne in June 2015 as part of the federally funded Indigenous Engineers: Partners for Pathways program. This summit brought together a range of stakeholders 'to exchange ideas and develop strategies for creating and supporting pathways that will assist Indigenous Australians into the engineering profession' (Prpic 2015, p. 2).

Education change at Adelaide for Indigenous STEM inclusion transferred easily to mainstream faculty efforts to internationalise teaching, research and services. For instance, the science, engineering and business areas typically rely on student income from countries around the world, particularly Asia. The specific conditions at Adelaide included a vibrant, complex mosaic of different cultures, religions and identities with over 21,000 students, 6000 international students and over 3500 members of staff across three campuses including Singapore. As a result, intercultural competency was already mainstream in the Engineering Faculty.

At Adelaide, the STEM Faculty areas had low Indigenous enrolments but high retention and completion rates. Adelaide's STEM Faculty leadership and staff were strongly committed to the reform. For these areas, their perceptions of 'excellence' involved getting diversity and equity processes right. Indigenous change efforts

were not seen in isolation from other reforms present in the faculty. These included culturally appropriate terminology reflected in staff work (non-discriminatory language); diversity encouraged and celebrated (religious festivals celebrated), inclusive services and spaces (Muslim Prayer rooms). Adelaide teachers, researchers and faculties responded conscientiously to increased diversity with programs to capture students' interests to strengthen their sense of belonging. When Indigenous students make the transition from school to university and encounter an institutional culture that makes them feel like they belong, they are more likely to succeed and reach their potential (Anderson 2014; Villegas and Lucas 2007). Although the Adelaide case study is a snapshot of short-term education change it does highlight those organisational standards, systems and cultures that are culturally responsive that can accelerate Indigenous success rates.

Summary Case Study Characteristics

A summary of the Adelaide case study characteristics indicate that university-wide approaches can be implemented with the following principles and enablers:

Principles

- Strong leadership
- Development of institution-wide Indigenous strategy
- Internal and external resources
- Indigenous employment
- Foster engaged and supportive university community
- Build internal professional learning communities to share best practice
- Indigenous data shared and monitored regularly
- High expectations of system and staff
- Regularly track progress and performance reporting
- Strong Indigenous community engagement
- Indigenisation of teaching and research programs
- Indigenous knowledges and epistemologies valued and represented across academic areas

Enablers

- Leadership
- Resources to support enactment
- Well-trained high-quality staff
- Foster supportive environment to resolve challenges
- Collaborative staff learning and teaching training
- Inter-cultural competency
- Create a positive institution culture for improved results
- A capable and culturally responsive organisation
- Indigenous success drives all actors and actions

Conclusion

A university qualification is considered one of the main strategies to raise aspirations, build capacity and address Indigenous disadvantage in Australia (Hunter and Schwab 2003). Despite significant public policy attention and effort over the past two decades, Indigenous Australians remain seriously under-represented in higher education (Worby and Rigney 2006). To understand the concept of educational and institutional change in culture for Indigenous improvement, the university-wide reform at Adelaide described in this chapter identifies and describes five change forces that include assembling resources; engaging learners; working together; building confidence; and excellence and equity. The Adelaide findings and evidence suggest whole university initiatives have impacted on influencing the structure, culture and identity of this university during 2012–2014. The chapter finds that there is no simple formula for successful university-wide education change. Strong intervention strategies require a suite of multi-faceted responses to the particular needs of different institution groups. Strategies should be developed and implemented in partnership with a range of stakeholders, supported by secure funding sources and informed by a sophisticated excellence and equity orientation.

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