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Foreword
Research Conference 2011 is the sixteenth national Research Conference. Through our research conferences, ACER provides significant opportunities at the national level for reviewing current research-based knowledge in key areas of educational policy and practice. A primary goal of these conferences is to inform educational policy and practice.

Research Conference 2011 brings together key researchers, policy makers and teachers from a broad range of educational contexts from around Australia and overseas. The conference will explore the important theme of Indigenous education. It will draw together research-based knowledge about the environmental conditions, pedagogical strategies and curriculum approaches that create pathways to success for Indigenous students. The conference will explore our understanding of the role of language and story telling in supporting access to the curriculum and it will consider directions from research studies in the key areas of early-years education, literacy and numeracy learning, attendance and retention of students and successful post school transitions.

We are sure that the papers and discussions from this research conference will make a major contribution to the national and international literature and debate on key issues related to Indigenous education.

We welcome you to Research Conference 2011, and encourage you to engage in conversation with other participants, and to reflect on the research and its connections to policy and practice.

Sincerely,

Professor Geoff N Masters
Chief Executive Officer, ACER
Keynote papers
Educational Success: A sustainable outcome for all Indigenous Australian students when teachers understand where the learning journey begins

Abstract

The statistics for educational outcomes for Aboriginal and Torres Strait Islander students continually reinforce the notion of ‘failure’, of a specific cohort of students who are ‘not coping’, of the majority of teachers at a loss concerning what to do. Overall, it is a picture of doom and gloom, clearly demonstrating that education in this country has failed to live up to its promise for all students. In this presentation, research outcomes will be used to construct a different picture, a paradigm for a better future built on a strong foundation of sustainable education outcomes for the descendants of this nation’s First Peoples. The evidence presented will highlight what can happen when the learning environment is developed, nurtured, maintained and led by teachers who understand and value the importance of their role in providing a range of opportunities that will enable students to evolve into highly motivated, autonomous learners.

Introduction

In considering the theme for this conference, ‘Indigenous Education: Pathways to Success’, this paper will begin with an introductory discussion aimed at contextualising its focus within the overall conference theme. This introduction will provide a brief outline of the critical issues that research has revealed to be the possible causes underlying the way in which education for Aboriginal and Torres Strait Islander peoples has been positioned within Australian education. The presenter will draw on her own research over the past two decades to reveal these issues and their impact upon the educational positioning of this nation’s First Peoples. This is an essential first step in enabling conference participants to make the connections between the realities of what has been delivered to Aboriginal and Torres Strait Islander students in the name of education and the educational outcomes those students have been able to acquire as a result of such education provision.

While this discussion will provide a reflective analysis of a wide range of qualitative research data, it will also include an extrapolation of relevant statistical data, which is intended to provide an additional frame through which to consider and focus upon those factors which have had the greatest impact upon the capacity of Aboriginal and Torres Strait Islander students to access and effectively participate in the educational programs offered across all levels of learning within our education systems. Making these connections between qualitative and quantitative data at the beginning of this paper is a crucial element in creating a starting point for the discussion, a lens through which participants will be able to acquire a more in-depth insight into the issues.

Hence, the introduction builds the framework through which the paper will then pursue the question ‘Is success a matter of choice?’ This is the key question that underlies the title of this paper, ‘Educational Success: A sustainable outcome for all Indigenous Australian students when teachers understand where the learning journey begins’. Similarly, it is a critical aspect of the notion that ‘Indigenous Education’ can provide the ‘Pathways to Success’ highlighted in the conference theme. It is the question that, ultimately, at the conclusion of this conference, participants should have acquired the knowledge and understanding to
be able to answer for themselves. It is a question that, in its relevance in enabling us to engage with all learners, is quintessential to our capacity to be effective educators.

**Examination of the issues**

A critical component of any examination of issues in Indigenous education in this country requires some consideration of the role of government in developing, implementing and driving the overall agenda that determines the direction of Indigenous education. A brief investigation of the major reviews and reports that have been undertaken by the Australian Government since the 1990 implementation of the National Aboriginal and Torres Strait Islander Education Policy will be included in this presentation. The focus in this area will be a consideration of those strategies that successive governments have implemented as a means of improving Indigenous access, participation, retention and achievement. This discussion will provide an additional lens through which to analyse the research outcomes.

In examining the issues, the focus will be on identifying those factors that, according to research, have had the greatest impact upon the access, participation, retention and success of Aboriginal and Torres Strait Islander students. The implications of those issues will then be critically examined in order to:

- develop a comparative overview of past and present practices
- clarify effective practice within the context of what needs to be done to overcome the long-term, compounding effects of what has been persistently perceived as ‘Indigenous failure’ in education.

This section of the paper will draw upon the findings of various research projects that have been undertaken in recent years, thus providing participants with access to evidence that will inform them and enable them to:

- reflect upon previous perceptions about Aboriginal and Torres Strait Islander student achievement
- recognise, understand and accept the current reality as the essential platform upon which to build deeper insights into the reality of Indigenous educational achievement
- develop a better understanding of what needs to happen to effect the much-needed change that will create more positive attitudes toward education for Aboriginal and Torres Strait Islander Australians and realise that such attitudinal change is critical to creating more positive mind-sets in both teachers and learners
- identify what, according to the research, it is that works for Indigenous students across the various levels of education
- determine why some strategies have been successful
- consider the messages emerging from the research and the implications such messages have for future education in Australia.

It needs to be stated that the focus in examining the issues is directly linked to research findings; hence, the discussion about those issues will reflect the individual studies being considered. Experience reveals, however, that some issues have a currency, and a degree of urgency, across a variety of educational situations. The presenter will, therefore, examine such issues prior to the more in-depth consideration of individual case studies. The importance of the following issues will be included in this discussion — relationships based upon an equality of regard; willingness to develop a capacity for meaningful engagement; building on strengths; resourcing; quality of educational programs; and commitment to building a better society for all Australians. These are issues that premise the capacity of this nation to deliver on the theme for this conference, ‘Indigenous Education: Pathways to Success’. And because of their vital connection to our nation-building capacity, these are also issues that ultimately depend upon teachers to make them workable. Teachers need to know and understand these issues so that they are able to:

- relate to them
- recognise their importance in terms of their capacity to do their job well
- accept responsibility for making them work for them
- value the reciprocal nature of their role within and beyond educational settings
- demonstrate respect not only for the issues, but also for the people whose lives are so dependent upon their ability to address these issues effectively.

Case studies demonstrating the value of using research outcomes as a tool for change

In this section of the paper, case studies across various levels of education, in a diversity of geographic locations, will be used to demonstrate how education can be a tool of empowerment. Each case study will be outlined and considered individually to demonstrate the value of the research within both individual and collective contexts. It is these findings that will then be discussed in relation to their contribution in terms of enabling effective change and the implications of this for individual students and the wider society, both now and in the future.

It is through this section of the paper that the presenter will utilise research
outcomes to construct a different picture and demonstrate how some Indigenous students are making the transition through the various levels of education by traversing a range of pathways that have been designed to cater for the specific learning needs of individual students. It will be through the revelations of such successful educational practice that participants will gain some valuable insights into ways in which many Indigenous Australian students are transitioning into educational success that builds their individual capacity to make those ‘life changes’ that are critical to effectively engaging in the education process that is central to all of our lives and essential in equipping us to build better futures for ourselves and our families. A central focus of this picture will likely be the importance of relationships and the quality engagement, within both individual and collective settings, that identify strengths and provide valuable guidance to those with a genuine desire to know how to work with those strengths.

The case studies will be used to demonstrate how a paradigm for a better future is possible. The firm foundations are already in place and it is through heeding the outcomes of research such as those discussed in this paper that we as a nation can achieve sustainable education outcomes for the descendants of this nation’s First Peoples.

It must be realised, however, that this is not simply going to happen without a concerted effort from all Australians – those who constitute the First Nations of this land and those who followed later and who now call this country theirs. The evidence presented will highlight what can happen when the learning environment is developed, nurtured, maintained and led by teachers who understand and value the importance of their role in providing a range of opportunities that will enable students to evolve into highly motivated, autonomous learners.

**The challenge of the future?**

In summarising the value of research as a means of enabling participants to empower themselves for their own futures, the presenter will use the evidence of her own research to respond to the question ‘Is success a matter of choice?’ The research has demonstrated that, where success has been a matter of personal choice, Aboriginal and Torres Strait Islander students across various levels of education have taken control of their lives and achieved the educational achievements that they wanted in order to take them where they want to go. Importantly, education providers need to acknowledge the learner’s personal agency in defining ‘success’ within the parameters of their own values and beliefs systems. Effecting change in such decisions, is a matter for negotiation between the learner and the person who would seek to influence such decision making.

While the case studies were used to explore individual achievement, this summary will provide a broader overview of the research outcomes to demonstrate where Aboriginal and Torres Strait Islander students are currently positioned within our education systems. In reflecting upon the changes that have occurred in Indigenous education in recent years, the discussion will be expanded into a consideration of the implications of such change for the future of education in this country. Within that context, the question ‘Is success a matter of choice?’ will be used to turn the lens back onto this nation’s educational providers – our institutions and the people who develop and deliver the educational services – for a final consideration of their current positioning in relation to their capacity to deliver on the promise of education for all Australian students, including those who are descendants of our First Nations. This is the question that ultimately determines whether or not our educational providers have the capacity to meet the challenge of the future.

**Conclusion**

Finally, this paper will provide a brief snapshot in time of what is currently happening in this nation in relation to the nation’s capacity to deal with the cultural diversity that is a feature of our society. This discussion will be used to reflect upon the capacity of our educational providers to accept the challenge of preparing the nation for its future as a culturally diverse nation. This is a vital issue for Indigenous education, for unless this nation can transition its peoples into a harmonious, democratic society where all people are treated with respect regardless of their cultural values and beliefs, then Aboriginal and Torres Strait Islander students will continue to struggle to achieve their rights and ensure that their success is a matter of choice – their own choice. This is a transition that has the power to change this nation’s history.

The question is ‘Are our educational providers up to the challenge?’ Can they provide the education that all citizens will require if success is, in fact, going to be, a matter of choice.
Indigenous education: Creating classrooms of tomorrow today

**Abstract**

Engagement or participation in education is a key factor affecting the life chances of all Australians. What will this look like in the future for Indigenous children who have an overall lower level of participation in education than non-Indigenous Australians? 21st century schooling for Indigenous students in the next decade will look very different to today. This paper discusses the characteristics of curriculum, policy and pedagogy for future schooling of Indigenous children. It uses national and international literature to explore 21st century learning that seeks to revolutionise the way we educate teachers and students. It highlights that Indigenous students live in a multi-tasking, multifaceted, technology-driven, diverse, rapidly changing world which is far removed from the world faced by most of their teachers at the time they entered adulthood. 21st century learning requires new spaces that are culturally safe, coherent and consistent. They do not override Indigenous cultures, but draw upon them as a source of learning foundation on which to build new digital learning structures. They connect school, home, country and community learning in successful ways. A key purpose of the paper is to evaluate the quality of available evidence regarding strategies for improving school attendance, retention and outcomes.

**Introduction**

Learning through a quality education has substantial positive social and economic effects for children, including: greater academic achievement; increasing schooling interest and attendance; easing school transition; and raising the self-esteem of all children (Buckskin, Hughes, Price, Rigney, Sarra, Adams, Hayward, Teasdale, & Gregory, 2009; Barnett, 1995, 1998; Buckley, 1996). In Australia, schools maintain a poor record in the education outcomes of Aboriginal and Torres Strait Islander children. Current education policy, with good cause, is firmly fixed on closing education gaps between Indigenous and non-Indigenous children. However, the world is moving into cyberspace through the growth of mobile devices and the digital age that signals yet more challenges for schools that are already under pressure. What is the future of Indigenous education? Can 21st century learning revolutionise the way we educate teachers and students? What advantages can we gleam from digital literacy through greater access to technology? Indigenous education and its future is a sizable issue and one worthy of further exploration.

21st century schools the new challenge: are we ready?

Schools have seen a recent influx of new devices – such as the iPad, new T-Touch Tab, iPhones and Smart phones, all of which can connect to the internet over 3G mobile networks. Can these technologies develop an entirely new way of teaching and learning that is better, more successful and more affordable? Are schools ready for these new challenges? Some schools are, but most are yet to fully grasp the technological changes in the digital revolution. Professor Martin Westall reminds us that ‘despite changes, schools still, by and large, look similar to the schools of the 20th and even 19th century, and that if schools are to ‘maintain relevance’, they must ‘bridge the gap between how students will live as adults and how they learn’ (2008, p. 1–2).

Westall of the Flinders University Centre for Science Education in the 21st century argues that ‘Young people in the 21st century will spend their adult lives in a multi-tasking, multifaceted, technology-driven, diverse, rapidly
changing world which is far removed from the world faced by most of their teachers at the time they entered adulthood’ (Westall, 2008). Others like Harvard educator Dr Tony Wagner claim that despite the best efforts of educators, schools are ‘dangerously obsolete’ and he is puzzled why even the best schools do not teach the new survival skills our children need for the future (Wagner, 2008). Wagner calls for the reinvention of schools for the 21st century for the sake of our children who need skills and knowledge to address the successes and ills inherited from the previous generation. New mobile devices and access to the internet in schools is ‘becoming a magnet for students’ with new scholarly debates about what ‘facilities are adequate to achieve educational equality and true opportunity’ (Wilhelm 2004, p. 31). The educational changes brought on by the technological revolution in the last ten years are far greater than the previous two hundred. Opportunities abound for Indigenous education in the 21st century and the potential is great for welfare reform, health care and workforce growth. Indeed, these are the right goals for public policy to pursue. However, the challenge of bringing schools with high Indigenous populations into digital learning is made complex when Australia is caught in a historical moment of trying to close basic educational gaps between Indigenous and non-Indigenous students.

Current and future challenges in Indigenous education

It is not a ‘natural’ phenomenon when Indigenous students fail school, but a combination of poor social policy, unfair economic arrangements and an ‘inclusive curricula’ wilderness (Fordham & Schwab, 2007). Matters beyond the school gate need recognition and resolution if the crisis is to be addressed. There is a current crisis in Indigenous Education (Rigney, Rigney, Hughes 1998). For example, the Productivity Commission reported nationally in 2008, 63.4 per cent of year 5 Indigenous students achieved the national minimum standard for reading compared with their non-Indigenous counterparts of 92.6 per cent (SCRGSP, 2009, 4.41). The crisis is also emphasised in the latest research that indicates that Indigenous children (Rigney, 2003; Rigney 2006; Worthy & Rigney 2006; Butterworth & Candy, 1998; SCRGSP, 2009; Fordham & Schwab 2007):

- live in poverty
- suffer higher rates of child abuse and neglect
- are less likely to receive an early childhood education, especially 3–5-year-olds
- are well behind in literacy and numeracy skills
- have poorer health
- have less access to secondary school
- are less than half as likely to proceed through to Year 12.

Because the crisis in education is considerable, it could be argued that technology is a luxury, a tool inessential for basic living and survival. In his book *Digital Nation* Wilhelm (2004) counters this and argues that in the 21st century the capacity to communicate will almost certainly be a key human right where the right to telecommunicate will be as important as drinking water. This premise is predicated on the belief that ‘emerging information and communications technologies are essential for individuals and communities to fulfil their life pursuits in an e-enabled world (Wilhelm, 2004, p. 30). Indigenous students must possess these 21st century capabilities in order to participate in e-commerce and digital economies. If Indigenous Australian societies are to move forward, then schools have a responsibility not only to close the gap, but also to develop in students a deep understanding of technologies. The analytical and policy issues that arise from this poses a conundrum for current Indigenous education policy whose evidence about Indigenous populations are unreliable, not e-enabled but purely focused on closing gaps. These policy tensions need to be resolved.

21st century policy and evidence implications

It is without question that 21st century Indigenous education requires 21st century evidence and policy. However, recent research has called into question the orthodox source of evidence centrally used over the past two decades for Indigenous reform, the Australian Census administered by the Australian Bureau of Statistics. Analysing the 2006 Census results, Taylor and Biddle (2008; 2010) found large discrepancies in population figures in what are called ‘Indigenous Areas’. The results revealed that in many remote towns, and in many outstations, the change in the census count of Indigenous population between 2001 and 2006 was substantially deficient.

In contrast, in most regional towns, and in particular suburbs of major cities, the change in the count was greater than expected after considering the contribution to population change from net migration and natural increase’ (Taylor & Biddle, 2008, p. v). As a consequence, they conclude, ‘in many remote locations we cannot use 2006 Census counts at face value and in such places, the census is more like a sample survey of the Indigenous population that will need to be carefully adjusted to assist informed policy-making’ (Taylor & Biddle, 2008, p.v).
One drawback according to Taylor and Biddle is the fact that we have no data on the characteristics of those not counted. Because of faulty census data informing Indigenous education, health and social service provision Indigenous communities fiscal settings based on such estimates have been ‘commensurately undervalued over the past 35 years’ so that ‘services and programs provided to remote communities on the basis of official population estimates have been chronically inadequate’ (2008, pp. v–vi). Such imprecision and substantial ‘under-counting’ give rise to issues of public policy concern. Projections for 21st century Indigenous populations and their digital needs require greater accuracy in evidence for public policy to guide fiscal settings.

The current COAG ‘Closing the Gap’ campaign complements the Draft Indigenous Education Action Plan developed by the Ministerial Council and embodies a welcomed new approach to Indigenous education. Because of its infancy, it remains to be seen if 21st century Indigenous education will be assisted favourably by other recent campaigns, including National Curriculum, the Digital Revolution and Building the Education Revolution. Today’s Australian students represent the first generations to grow up in a world in which information and communication technologies are everywhere. While governments need to be commended for their current attention to the crisis in Indigenous education, we still have much work to do in preparing Indigenous children for the 21st century.

Indigenous knowledge, skills and attributes for tomorrow

Many views abound about what skills are needed for tomorrow’s classrooms. Wagner’s (2008) work examines why parents and educators alike are concerned that the majority of students are ill-prepared for life and work in our current world, let alone the next ten years. In his book, The Global Achievement Gap, he outlines seven essential 21st century Survival Skills that children will need for their future:

1. Critical thinking and problem solving
2. Collaboration across networks
3. Agility and adaptability
4. Initiative and entrepreneurialism
5. Effective oral and written communication
6. Accessing and analysing information
7. Curiosity and imagination

Wagner informs us of the changing nature of students. Similarly, a leading US advocacy organisation Partnerships for 21st Century Learning has written a report titled Framework for 21st century Skills (PCS, 2009). The 21st century interdisciplinary themes include:

a) Global awareness
b) Learning and thinking skills
c) Financial, economic, business and entrepreneurial literacy
d) Civic, health and environmental literacy
e) Information and communication technology (ICT)
f) Life skills
g) Modern assessment of 21st century skills

The report argues that to ensure student mastery of 21st century skills, new 21st century standards, assessments, curriculum, instruction, professional development and learning environments must be aligned to support systems that produce 21st century outcomes for today’s students. These aspects are a good starting point for discussions on 21st century Indigenous education. From an Indigenous perspective, for implementation to be applied in Australia, Indigenous interests, cultures, languages and literacy’s must be explicit and sustained in the curriculum core. Other priority areas include: community engagement; access and affordability to technology; more inclusive and diverse public policy; digital and health literacy; and environmental literacy. Modern 21st century learning requires new spaces that are culturally safe, coherent and consistent. They do not override Indigenous cultures, but draw upon them as a source of learning foundation on which to build new digital learning structures. They connect school, home, country and community learning in successful ways. The future of digital technologies in Indigenous education is upon us. However, it is important to remember that Indigenous perspectives of Indigenous education in the 21st century are under-theorised in Australia. We have little knowledge of what parents of Indigenous children think about digital education or their needs and aspirations that an ICT education can provide into the 21st century. We have limited knowledge of how to integrate technology into non-English speaking Aboriginal communities. We also remain unaware of its cultural, ethical, moral and socio-political consequences.

Conclusion

Without modernising Indigenous education for the 21st century teachers face a class of students who: live in digital ghettos; are not e-enabled; whose age in web years is in single digits; and who remain a generation divided. The desires of parents for 21st century Indigenous classrooms require teachers, governments and policy makers to re-think the state of Indigenous education toward bridging any future digital divide. The time to act is now.
References
Key factors influencing educational outcomes for Indigenous students and their implications for planning and practice in the Northern Territory

**Abstract**

This presentation considers the intrinsic link between health and education and the benefits of collaborative research for improving the education and life outcomes of Indigenous children. The Council of Australian Governments’ Overcoming Indigenous Disadvantage framework and the Closing the Gap generational strategy have resulted in significant new funding through a range of national partnership agreements to improve Indigenous child health, development and education. The focus of these reforms is consistent with the human development paradigm now advocated by international agencies such as UNICEF, WHO and OECD. They are also informed by recent advances in scientific knowledge regarding the developmental origins of adult health and disease and new understandings of the importance of early life environmental influences on children’s success in school learning and their subsequent opportunities for participation. The implementation of these policy initiatives has highlighted the need for a higher level of collaboration between education, health and other areas of research relevant to development of Indigenous children. It is in this context that the research methodologies derived from population health and evidence-based medicine are proving useful in building the evidence base for Indigenous education. The presentation will discuss the implications of these developments for policy and practice in Indigenous education and conclude with a description of some recent collaborative research supporting the implementation of Indigenous education and other service reforms in the Northern Territory.
Summary

There is no other more important determining factor which needs to be addressed in breaking the inter-generational cycle of poor health and disadvantage of Indigenous Australians than improving the current poor levels of school participation and academic achievement of Indigenous children. Advancing population level outcomes in education is a central feature of the Council of Australian Governments’ (COAG) Overcoming Indigenous Disadvantage framework and the Closing the Gap national strategy to eliminate the Indigenous disparity gap within a generation. It is also a key element of the human development paradigm now advocated by international agencies such as the UN, the WHO and the OECD as one of the most effective means presently available to governments for eradicating poverty and advancing societal wellbeing. Implementing a human development approach in the Australian Indigenous context entails significant long-term investments to support families and communities in strengthening early child development, improving the effectiveness of school education and creating new training pathways into employment. It also requires better coordination of strategies to address the known determinants of child development and education, as well as addressing the social and health problems associated with severe disadvantage, such as parental substance abuse, family violence, mental health and child maltreatment.

The direct and indirect links between health and education have long been recognised in the international health, education and human development literatures. For example, almost all developing countries have shown a linear relationship between increasing levels of education of parents and rates of infant mortality. Cleland et al.’s 1992 analysis of WHO and other international data on the median 50 decline in infant mortality observed across 12 developing countries in Latin America over the 20-year period from 1965 and 1985 showed that in all but one of these developing countries improvements in maternal education accounted for 202–20–35% of the national decline in infant mortality.

Increased educational levels are associated with better health, social and economic outcomes across all populations. The ways in which education contributes these gradients of population wellbeing have traditionally been attributed to the cascading benefits generally afforded by education — such as better vocational opportunity, improved income, health literacy and health behaviours, and greater empowerment (i.e. personal agency) in accessing and utilising health care when needed. More recently, the burgeoning research discoveries in the neurosciences and epigenetics have expanded scientific understandings of the importance of the nature of gene-environment interaction in children’s years of maximum brain growth and development of skills. These findings highlight the significant effects of education on cognitive and emotional development, which in turn have enduring effects for lifelong learning and adaptive functioning, such as problem solving and emotional resilience (The Royal Society, 2011).

It is well understood that much of the variation in the high rates of chronic disease among adult Indigenous Australians is attributable to their social determinants. Social determinants are factors characterising environments that individuals are ‘exposed’ to and that can have a lifelong influence. They act at different levels of influence, interact with one another, and represent a broad array of characteristics that are not of a biological or genetic basis, but rather are evident in the interactions between individuals and their social and physical environments. They include living conditions, interpersonal relationships within and between families and their communities, the social demographics of the family, learning environments and opportunities for children, the quality of housing, community amenities, neighbourhood safety, as well as the broader socio-political context. Social determinants have a disproportionate influence on human development in the earliest years of life. Some early life environmental factors have immediate influences on the biological development of the child, others have an ongoing cumulative effect on health and wellbeing, while others have a latent effect on adult health outcomes, for example in adult onset diseases such as type II diabetes.

Epidemiological studies have been valuable in advancing understanding of the ways in which social determinants appear to account for a large proportion of the explained variation in the rates of complex chronic diseases between different segments of the population. These studies offer insights into the mechanisms through which social and other environmental factors appear to become ‘embodied’ or biologically embedded in health and disease outcomes. Epidemiological studies have been vital to the development and implementation of evidence-based policy and practice for the prevention and reduction of such adverse health outcomes. In the Australian Indigenous context this means that progress in reducing the life-expectancy gap and burden of chronic ill-health will be extremely slow unless some of the most pressing social determinants are more effectively addressed.

At the same time it is equally important that education policy and practice is informed by a proper understanding of the social determinants which have greatest influence on children's
education outcomes. This requires knowledge of how these determinants are distributed, how they co-occur and interact, and how they might be avoided or their influences modified. One of the few existing sources of epidemiological data regarding the population level determinants of the educational outcomes of Australian Indigenous children is the Western Australian Aboriginal Child Health Survey (WAACHS). The WAACHS involved a cross-sectional survey of representative population sample of 5600 Western Australian Aboriginal children aged 0–17 years. The data were collected in households from parents/carers and young people aged 12–17 years by trained Indigenous and non-Indigenous interviewers. With family consent, data were also obtained from school principals and the teachers of 2739 of the survey children who were enrolled in school.

Half of all the Aboriginal students in the WAACHS had attended school for at least 87.5% of the school year. In other words, the median number of days absent was 26 days. In contrast, the median days of school absence of their non-Indigenous counterparts was 8 days. The large scale and comprehensive scope of the WAACHS enabled logistic regression modelling to be used to investigate how a range of child, family, school and community factors operated singly and in concert to predict the likelihood of a student having had more than 26 days of school absence. No less than eight factors were found to be independently associated with an increased likelihood (i.e. odds ratio) of a child missing more than the median (26) days absence in a school year. They included children whose carers had ‘Year 9 or fewer’ years of schooling (OR = 1.5); children with clinically significant emotional or behavioural difficulties (OR = 2.0); children in families where 7 to 14 life stress events had occurred in the past 12 months (OR = 2.0); students whose main language spoken in the playground was Aboriginal English, Creole or an Aboriginal language (OR = 2.4, 2.9 and 1.3 respectively); students whose parents reported they had trouble getting enough sleep (OR = 1.5); students who had never attended day care (OR = 1.5); students whose primary carer had needed to see the school principal about a problem the student was having at school (OR = 1.5); and students in schools with a high proportion of Aboriginal students, or in schools that had Aboriginal and Islander Education Officers (OR = 1.4).

These determinants of school attendance highlight the need for current reform initiatives in Indigenous education being linked and developed in synergy with the broader reform initiatives in Indigenous affairs. They also suggest that strategies to improve school attendance will be more effective if they can address certain community and family factors which are outside schools’ traditional areas of influence. Strengthening school–community partnerships and mobilising community action to support school attendance is clearly vital to the success of school and welfare reforms seeking to improve student attendance.

The greater emphasis on accountability in professional practice in health, education and other areas of public sector management has brought with it the notion of ‘evidence-based practice’ (EBP) as a means of ensuring the quality, efficiency and effectiveness of policy, programs and services in achieving desired individual and population outcomes. This has its origins in ‘evidence-based medicine’ (EBM) first advocated by the UK epidemiologist Cochrane who suggested that “… because resources would always be limited, they should be used to provide forms of health care which had been shown in properly designed evaluations to be most effective” (Cochrane, 1972).

Medicine has had a long history where practice was based on loose bodies of knowledge, or simply lore that drew upon the experiences of generations of practitioners, with much of it having little, or no, scientific evidence on which to justify various practices. The rapid recent advances in medicine and health care are now generally accepted to be due to the widespread adoption of EBM. It has also been of value in protecting the public from the risks of unfounded ‘treatments’ as well as identifying risks associated with ‘established’ and unfounded ‘treatments’. Put simply, it has shown the value of identifying what actually works so it can be improved and promoted.

Evidence-based practice (EBP) has also become a major influence in education in recent years. In a similar fashion it has been suggested that the limited progress in improving educational outcomes can, in part, be attributed to instructional practices derived from the unconnected experience of thousands of individual teachers, each ‘re-inventing the wheel’ and failing to adapt their practices in the light of the cumulative scientific evidence regarding ‘what works’. Opponents the EBP model suggest it is not an appropriate method for knowing whether a particular teaching method works, as this will depend on a host of specific contextual factors, not least of which are those to do with the style, personality and beliefs of the teacher and the specific needs of the particular children in a class.

Modern evaluation theory stresses the need to consider the various types of evidence which are appropriate to their intended purpose when evaluating programs and practices with different populations and in differing practice settings. Rather than reaching policy conclusions and deciding actions on the basis of the evaluation of single studies.
or programs, evidence-based policy and practice now generally assumes that it is necessary to aggregate results from a range of different evaluations through systematic reviews in order to produce reliable and comprehensive evidence. This entails locating the evidence, critically appraising its relevance, consistency, quality and value, then synthesising and disseminating the conclusions with recommendations (or requirements) for improving practice. In appraising and ranking the value of the available studies, a number of different evidence hierarchies have been found to be useful according their intended purpose. One such evidence hierarchy was recently proposed for Australian policymakers by the Australian Treasury (Leigh, 2010). This ranks the evidence from different study methodologies in the following order:

1. Systematic reviews (meta-analyses) of multiple randomised trials
2. High-quality randomised trials
3. Systematic reviews (meta-analyses) of natural experiments and before-after studies
4. Natural experiments (quasi-experiments) using techniques such as differences-in differences, regression discontinuity, matching, or multiple regression
5. Before–after (pre-post) studies
6. Expert opinion and theoretical conjecture

In the area of Australian Indigenous education there are relatively few published studies and systematic evaluations of policies and programs that would satisfy the higher levels of this evidence hierarchy. Given the unprecedented new investment now being made to improve Indigenous education outcomes, it seems more important than ever to ensure this is matched by high priority being given to building the evidence base for effective policy and practice as well as improving public accountability in the monitoring and reporting of how these initiatives are tracking in achieving their intended aims. The presentation will conclude with examples of collaborative health and education research which is guiding service reform in Indigenous education and helping to build partnerships between communities, schools and other service providers in tackling the root causes of Indigenous disadvantage.
Indigenous Education: Finding face, making space, having place

Abstract
This article uses an Indigenous storytelling methodology to relate the success factors that institutions, policy makers, administrators, teachers and communities can attend to in making changes to support the achievement of Indigenous learners. It draws on what Indigenous students, families and communities themselves have attributed their educational success. The article serves as a witness to their stories.

Introduction
Last night I attended a graduation recognition ceremony at the university and was witness to the successful completion of university degrees by Indigenous students. Their stories demonstrate the complexity and intricacies of the word ‘success’ for Indigenous students. And their stories illustrate the treacherous and heroic journey to successful academic attainment while maintaining their identity and values as Indigenous peoples. Their stories exemplify what I mean by ‘Finding face, making space and having place’ to support Indigenous student success.

The first story is the ceremony itself. It began when there were only a few Indigenous students at the university, mainly in one faculty. That faculty had been actively promoting and developing programs focusing on service to Indigenous communities for many years. The annual celebration to recognise, witness and acknowledge the students’ achievement is a faculty and family affair. Over the years as more students graduated from other faculties, they too were invited to the celebration, following the Indigenous tradition of inclusion and the honouring of relationships. Today the celebration takes place in the First People’s House which opened in 2009 and is hosted by the office of Indigenous Affairs with the guidance of the university’s elders in residence. It follows the protocols of the local First Nations ceremonies on whose land the ceremony takes place. We sing, pray, tell stories, cry, laugh and eat foods from the land and waters. There is a speaker following the custom in all big houses in the south island. He makes sure that everything goes smoothly and we conduct ourselves in an appropriate way.

Each graduate selects someone to speak on their behalf, to introduce them to the community and to name their achievements. It is in these stories and more stories during the open session that we hear about the student’s courage, unique personality, their perseverance and hard work on their path to graduation. In the stories I hear in these ceremonies the students had support from family, community and institution to encourage them to keep on going, to hold them up when they wanted to fall. We heard about the multiple responsibilities held by the students in addition to their studies – family, children and community responsibilities. We heard that each graduate had many people who cared about and supported their success within the program, school and community. A crucial aspect of the pathway to success is to have a network of caring and attentive, firm and affirming support. When I listen to students, as I have over many years, talk about what they attribute to their school success – it is the same. This ceremony demonstrates that our achievement belongs to a community beyond ourselves and acknowledges that each graduate is actively engaged in their success. ‘Family’ means the extended family, grandparents, aunts, uncles, siblings or adopted families stepping in when a parent is not present. ‘Community’ refers here to leaders, elders, youth and children.

We heard stories of the students taking on more responsibilities within the university – being actively involved...
in the life of the program and school. Being part of the life of an institution is a factor for success. The office of Indigenous Affairs implements programs to enable students to be involved in teaching or research projects conducted by university faculty or community led research projects. Counselling services are available in the First Peoples House by conventional western trained counsellors or counselling with the elders in residence, who are available everyday. The service that is offered is culturally consistent with an Indigenous standpoint. In this way, the Indigenous community on campus has a place that is consistent with their cultural values and they can find themselves reflected in the activities and services offered there.

Establishing a welcoming space takes time, careful tending and a shared commitment at all bureaucratic levels in an institutional environment that is well grounded in a modern corporate Euro western structure. The commitment must be clearly stated in the working documents, as well as evident in the daily practice of an institution. The First Peoples House first appeared in the strategic plan of the University of Victoria in 1999. In the following years the retention and recruitment of Indigenous students was listed as a priority. Each year built on the success of the previous years, but not all of its efforts paid off immediately. If an educational institution does not indigenise its practice and structure, it will continue to carry out the assimilationist policies of a colonising standpoint. In this way, the Indigenous community on campus has a place that is consistent with their cultural values and they can find themselves reflected in the activities and services offered there.

When the students in the Masters in Counselling in Aboriginal Communities spoke, they shared their journey in completing their degree successfully. What can we learn from them? They were ready for the program to progress in their chosen careers; most of them were already working in the field and needed to study and to gain the necessary credentials. They wanted to participate in this particular program because of the program’s stated goal to prepare people to work in Indigenous communities.

The program promised the students would study in an Indigenous environment. Each of the students spoke at length about this promise. First they spoke about selecting the program because they needed to learn and study in a way that respected their heritage and the population they were planning to work with. They spoke of their hopes that the program would live up to its promise and their fears that it wouldn’t because they had attended many programs that made the same promise but failed.

They spoke of their surprise when they attended the first course and they were told that there would be no books, articles, paper, pens or computers. They would learn sitting in a circle and in ceremony, pulling their knowledge from deep within their memories, drawing on their experiences and knowledge of traditions. Their first task was to construct an Indigenous healing environment, with roles for each member of the class including the instructors, as it would exist in the community and family. The graduates related how difficult it was to stay in the Indigenous model of a healing community; changing habits of mind requires practice, self-checking and the feedback from the group and instructor. They also shared that the class was a safe place to state their fears, hopes and confusion. Many of the students grew up outside their communities and felt that they didn’t know enough of their traditions. In the beginning they didn’t feel confident in their knowledge. They could begin to try new ways of thinking and behaving, knowing they were accepted and not judged. The instructors held fast to the Indigenous values and principles identified for the program but they were compassionate, making certain that there was ample time for discussion, querying, explaining, exploring and silence. One of the activities students remembered was finding metaphors from their own Indigenous world to describe models of healing. In all their following courses as well as in their final exam, they drew on these early metaphors. In this safe environment the students were able to support one another and build on each other’s knowledge. They also held each other responsible for participation in all activities.

The community members related the growth they observed in the students as they progressed in their programs. They commented on students’ diligence, studying late into the night after they put their children to bed. They told stories of how the family and community stepped in to help when students wanted to give up. They also spoke at length of how these students will offer the needed support to the wellbeing of the families and communities in their chosen professions. For Indigenous students learning must be connected to meaningful purpose, it must make a difference in the lives of family and community. Learning is not only for the individual student. Both students and workplaces value programs that have an experiential component. Practicum supervisors told stories of how individual students impacted the organisations where they were assigned, bringing innovation and new understandings regarding decolonised practices. When I asked a group of high school students what supported their school success, they spoke of the elders who were prominent in their lives, giving them advice and encouragement. They also cited the programs in the community. For example, the community leaders gave funds to older students to design and deliver after school and summer youth programs. This practice is a common traditional
practice, creating opportunities to youth to plan and engage in responsible community-building activities, practising leadership and service, by working independently but with the watchful support of community leaders and family.

One of the protocols of First Nations ceremonies is to name witnesses. The role of the witness is to remember all the details of what transpired and to step forward if there is a dispute over what transpired and to share the details of the events when appropriate to keep the community informed. This is a powerful way in an oral culture to record history and to publicly report transactions and changes in the community. Knowledge is shared and accumulated in the hearts and minds of community members.

Conclusion

The telling of stories in the Indigenous world serves to inform, instruct, reflect and challenge. In the Indigenous world the teller would leave the story to the listener to take from it what they need, immediately or at a later time. Here I’d like to highlight some areas that need to be considered for planning for the success of Indigenous students.

• Teachers who are caring, warm and who are a supportive guide. Teachers who are firm but non-judgmental, teachers who affirm and recognise students’ efforts. For students it isn’t only the achievement that is important, but the effort and challenge of attaining the achievement. Comments from students about teachers to whom they attributed their success include: ‘he believed in my potential and was always encouraging me’; ‘she inspired me to work harder’; ‘they build on my strengths’. Educators need to experience Indigenous ways of learning and teaching to understand what they can do to incorporate these practices into their classes.

• Establish and maintain support networks with students. This might mean support from peers and classmates. Cohort models work extremely well when there is time built in for relationship building and maintenance. Building mentorship or apprenticeship opportunities into a program is a powerful way to enhance intergenerational support.

• Protecting, maintaining and enhancing the identity development of Indigenous students is crucial, especially in places where the cultures, knowledge, values and languages of Indigenous people are devalued or rendered invisible in a country. Students must perceive their school learning as adding to their knowledge, not obliterating their own Indigenous wisdom and values. Indigenous people have survived by resisting assaults on their identity. Programs can be developed to maintain relationships with the land and communities. Students can see themselves reflected in the curriculum and in the day-to-day practices in the school. Reconciling two worlds, two ways of being is challenging, and having a strong sense of identity can help to negotiate between the two worlds.

• Give careful attention to transition points. Transitions between age/grade levels, transitions to post secondary and from post secondary back to the communities. Indigenous students are immersed in a foreign and alien environment when they are in school; social rules and interactive behaviours are different. When they return to their homes and communities they are different. Although the community appreciates the knowledge and skills they have acquired, it takes attention to resocialising back into the community with a new identity.

• Institutional spaces where students feel safe and accepted, and feel like they belong promotes success. Institutions can review their policies and practices through a decolonisation lens to create a welcoming environment.

• Connecting learning to the community so that learning is seen as purposeful and meaningful is critical; achieving high marks is not the only benchmark for success. In Sencoten, the word for education is ‘eltelniwt’ – to become a whole human being. That means that learning involves the heart, mind, body and spirit, and it is for the self, family, community, the land, ancestors and descendants.
Concurrent papers
Success in the early years for remote Indigenous children

Abstract

The factors most likely to impact on human growth and development and learning are well understood across populations, including the long reach of early childhood experiences and their interplay on adult health and socioeconomic outcomes. The effectiveness of interventions to address risk factors and promote protective factors is also well understood, in particular contexts with particular populations. So what do we mean by 'success in the early years for remote Indigenous children'? How is it measured? And what do we really know about the context of remote communities and the population of remote Indigenous children? The work of Menzies School of Health Research and many other organisations has helped to develop much clearer understandings of these questions in the interest of more thoroughly understanding how particular interventions can make a difference to specific outcomes in certain contexts. This presentation aims to highlight key distinctions about working in remote Indigenous contexts and the key lessons from a number of interventions that will enhance success for remote Indigenous children.

Presentation summary

This presentation is underpinned by an ecological model of child growth, development and learning that contributes to school readiness and success in the early years of school engagement. Investment in the early years is underpinned by an increasing understanding from four convergent areas of research evidence:

1. the overwhelming empirical evidence from the neuro, behavioural and social sciences for maximising human capability potential

2. longitudinal and ecologically based studies of the outcomes across the life course

3. intervention studies of proven and promising programs or strategies

4. economic or cost-benefit studies of implementing programs or strategies.

This evidence base for the effectiveness of early childhood investment in reducing inter-generational disadvantage and improving social inclusion and participation is particularly relevant to remote Indigenous children.

This presentation will build a narrative in four parts for participants to reflect on their own as well as the general body of evidence about policy, programs and practice that promote success in the early years for remote Indigenous children. The presentation is structured to address the following:

1. What do we know about remote Indigenous children and the contexts in which they live?

2. What are the measures of success, relevance and baselines?

3. How do we measure the success of interventions? And what are some interventions that promote success?

4. What are the key lessons from the convergence of evidence?

The presentation is paced to appropriately engage participants in some dialogue and reflection, including some challenge to assumptions and biases that prevail in popular and professional media.

Each of these parts or elements are summarised below.

1. What do we know about remote Indigenous children?

Over recent years the major reforms and subsequent investment in closing the gap between Indigenous and non-

Indigenous Education: Pathways to success
Indigenous Australians has drawn on high-level aggregations of indicators such as infant mortality, three national literacy and numeracy assessments and employment. When it comes to researching the impact of policy, programs and practice in remote and very remote communities, there are a number of challenges. These challenges are relevant and perennial to all disciplines and include establishing a denominator for study populations, small and very widely dispersed communities, and the data collections systems available.

The presentation will review who we see (who gets counted, weighed and measured) and who don’t we see in a range of data collections relevant to 0–8-year-olds. The assumptions and limitations of a range of data sources now commonly used for baselines in impact studies will be discussed. These will include the importance of going beyond simplistic measures such as community or school size, and Index of Community Socio-Educational Advantage (ICSEA) to understand the diversity of remote contexts in which remote Indigenous children live. The presentation will feature a pilot study comparing 60 Western Australian, Queensland and Northern Territory Indigenous communities.

2 How is success measured? What are the baselines and characteristics of Indigenous children in remote contexts? Are these the best measures with the right calibrations?

Most definitions of success in the early years are biased toward what the educational systems value most, literacy and numeracy. There has been work over the last two decades to shift the balance to incorporate measures of the competencies in early years known to contribute to school engagement, retention and success. This element of the presentation will compare some of the current assessment activities for when, what and how measures are undertaken. There will be some discussion of appropriateness and the level to which these assessments are applied to addressing the needs of learners in the remote Indigenous contexts, including the prevalence of English as an additional or foreign language.

3 What interventions have achieved or appear to be achieving success? How is the success of these interventions measured? What can be learnt about the standards of evidence?

A selection of programs in each of three key stages in the early years will be outlined and their evidence base explored. This presentation will give emphases to the standards of evidence provided by these programs, in particular, study design, sufficient description of what children and families experience, understanding of context, and the use of valid and reliable measures. Programs discussed may include:

- 0–3 years: Care for Child Development, Strong Women Strong Babies Strong Culture, Walk to School, Families as First Teachers
- 3–5 years: Mobile Preschool Program, ABRACADABRA, Let’s Start

The ever-increasing demand for interdisciplinary approaches, particularly for interventions with populations experiencing multiple and complex disadvantage has resulted in a methodological paradigm stand-off. This presentation will briefly acknowledge the relevance and importance of improving awareness across diverse disciplines of the benefits and limitations of a range of methodologies beyond just the randomised control trial through to case studies continuum. Applying lessons from intervention or program research requires the standards of evidence to be interrogated for efficacy, effectiveness and dissemination of findings. In critiquing the evidence from a range of interventions for remote Indigenous children’s success in development and learning, we have used health and medical, preventative science and educational standards with varying success.

4 What are the key lessons about achieving success from the convergence of evidence?

The major challenges facing most remote Indigenous children in achieving success in readiness for school, academic engagement and life outcomes are multiple and complex, for each child, their family and the communities in which they live. While there is still a paucity of rigorous research evidence, there are some key and indicative lessons for policy, programs and practice in how to maximise success for remote Indigenous children.

Building the evidence base across this dispersed and diverse population will take considerable attention and effort to methodologies, even if testing out a proven, let alone promising, program or practice from another context to another population. Further, collaboration across sectors and disciplines is critical to research findings more successfully being transferred to policy, programs and practice directly impacting remote Indigenous children.
Aboriginal Languages Reclamation: Countering the neo-colonial onslaught

Abstract
The level of Aboriginal community responses to the ongoing issue of language loss can be considered an indication of Aboriginal people’s growing assertion of their right to maintain their unique linguistic and cultural identities and heritage. Governments have long been accused of paying lip service to Aboriginal aspirations for languages reclamation; while they have sought to justify the establishment of such programs in order to continue the longer term colonial project of cultural and linguistic assimilation. However, while many language workers are tied by grants to the very agencies that hold such views, their work is clearly drawn from a different space. Through their agency, work on the reclamation of these languages has had a significant impact on the wider Aboriginal community’s aspirations for the reclamation and use of their languages. This effort has had the impact of critically repositioning the legitimacy of these aspirations, and places this activity in a political and moral space in which Aboriginal language advocates and communities challenge the view that they and their languages are linguistic and cultural artefacts that have little use or purpose in a postcolonial environment. This paper argues that community agency in this matter is a part of a larger project of Aboriginal resistance to the postcolonial environment in which they have been positioned as an ethnic minority within their own Country.

Introduction
The aspirations of Aboriginal people and their communities to take on the task of the reclamation of their languages is driven by range of complex, interlinked but sometimes contradictory and competing issues that mirror the lived experiences of Indigenous peoples. Engagement, however tentative, in language learning is based on an assertion of an unbroken cultural connectedness to ancestral knowledge, of a desire to avow an authentic Aboriginal identity in the face of mounting cultural atomisation, of giving voice to the uniqueness of Aboriginal languages, the knowledge embedded within it, and to honour the keepers of language whose efforts to keep this knowledge alive are a testament to the resilience and struggle against the continued onslaught of colonisation. Within these multiple and complex contexts, the efforts of language reclamation programs is more than just second language learning, it is one of colonial resistance.

At a point along the Darling River a small town sits alongside a low-lying outcrop of stones that, on closer inspection, reveals the remnants of a once sophisticated series of stone fish traps constructed and reconstructed over many thousands of years by the ancestors of those still residing along its banks. The town has been increasingly left to its own devices, as government and private enterprise have deserted the town and surrounding region – the dual outcome of a debilitating decade-old drought, the ‘rationalisation’ of government services and a generational drift to larger rural or urban centres. However, while the town has been increasingly deserted by its non-Aboriginal population, paradoxically, the quickening pace of ‘white flight’ (Daily Telegraph, 1 May 2008) from this town, has provided a unique opportunity for the school and the Aboriginal community to work towards establishing an Aboriginal language program within the school’s ‘mainstream curriculum’. An acute understanding of its importance to both the students and the wider Aboriginal community has motivated the establishment of the program, the value of which:
… is for the children to have the opportunity, which I never had, to learn language in their own community, in their own school, where they are going to be spending most of their days, simply to have that opportunity and to learn the language of their ancestors, which I never had, and to do it in an environment where it is encouraged, actively participated in by as many people as possible and reinforced in a way that makes it relevant. Not only relevant but a whole action of a person through their own language expressing their identity, coming to understand their identity. [School Language teacher]

(Lowe, 2008, p. 44)

While the language teacher spoke of its extended purpose, there is also a legitimacy that resides in the private space—a fundamentally deep personal yearning among individuals for reconnecting across generations to meet the needs of community and individual well-being. Anderson (2010) identified the journey of connecting to language as a powerful force in his re-birth:

Wiradjuri language in some areas has not been spoken for two generations but in some areas has just been hidden. I feel I am now trying to bridge the gap and fill in a void—a void within myself and also other people. I have been trying to bring back unspoken words and I have met people who will want nothing to do with it, but also people like me, wanting more and more of filling the black hole within the soul.

(G. Anderson, 2010, p. 73)

The aspirations centred on the reclamation of tradition languages are acute for Indigenous communities worldwide, as ancestral languages of the land struggle to survive the onslaught of colonial cultures that have now become truly globalised, while local programs that endlessly struggle to be established are treated with indifference, discouragement or administrative obstruction by government agencies (Henderson, 2000). Both the purpose for establishing these languages projects, and the efforts required to maintain them is a study of Aboriginal people’s efforts to forge a legitimate and sovereign place for themselves and their communities within the colonised state in which they are forcibly situated by the historical circumstances of colonisation.

This paper looks to explore these aspirations through the voices of Aboriginal people working to reclaim their languages and to make this unique knowledge available to the schools and their wider communities. The voices of these language advocates are but a sample of the voices of Aboriginal people who want their views heard by those who have the capacity to support their difficult journeys. These narratives will explore the views of these Aboriginal language teachers and advocates using a framework developed out of the post and neo-colonial literature. A recent collaborative project (Hobson, Lowe, Poetsch, & Walsh, 2010) to capture these voices has been unashamedly influenced by the text Hinton and Hale (2001) edited, 'The Green Book of Language Revitalization', and has sought to contextualise the work of community language workers, teachers, academics and linguists who are actively engaged on a small number of the many hundreds of unique Aboriginal and Torres Strait Islander languages within Australia.

The language projects explored within this text are underpinned by a belief that the reclamation of Australia’s unique languages provides a platform to express the uniqueness of Aboriginal identity, to reconnect language to Country in traditional and contemporary forms, and to establish programs that re-establish positive self-esteem and identity through the self-assurance of being unique and sovereign peoples. As Brown (2004) explained, the power of connection to both her past and present are focused on her multiple activities as a learner, speaker, teacher and language advocate.

The strength of this is knowing that I’ll be able to sit down with my grandchildren and children, speak language, not just stuff that I’ve been talking, but stuff that we’ve reclaimed through this program. I think it’s a sense of pride. I think that can only be one of the biggest points of reconciliation, to go through the schools; and I’m just glad to be part of the team.”

(Brown, 2004)

The corollary of this connection is an increase in the level of community resilience, which has enabled sustainable and purposeful resistance to dominant language and cultural ways. Learning and using traditional languages, and developing a keener understanding of the similarities of the colonial experiences of other Indigenous communities have proven, in so many cases, to be restorative for the community’s soul (Reyhner, 2001). These issues challenge the certainties that the modern ‘postcolonial’ state has erected for itself, and opens the door for Aboriginal people to question the colonial morality that is based on of the cultural subjugation of others.

Post or neo-colonialism

The construct of ‘Postcolonialism’, originating in the writings of Gramsci (2006; Gramsci & Buttigieg, 2002), was later picked up by historians and political theorists from within Asia and Africa (Spivak, 1993) who had sought to understand and combat the impact of the colonial cultural oppression on the lives of the colonised peoples. It had been argued that while the
The decolonisation process had essentially brought the first phase of imperialism to a close, many of the assumptions that underpinned the initial colonisation period were deeply embedded within the constructed relationships and structures between the old empires and the newly free nations. Postcolonial theorists, many of whom came from the colonised elites, understood that as they looked to understand the development of their contemporary postcolonial identity, they were ironically using the language, and studying and working within the colonial institutions left as their legacy to the empire (Gilbert & Tompkins, 1996).

While acknowledging that it is contentious to attempt to define a social theory that seeks to explain the colonial experiences of so many in such diverse spaces, postcolonial theory has sought to address diverse matters such as identity, cultural affiliations, social structures, gender and racial affiliations, and the means by which the colonisers used their knowledge of these to subjugate and divide the colonised against themselves (Gandhi, 1998). By their nature, these relationships are cast as binary oppositional structures between the centre and the empire, and are used to justify the use power and control to de-legitimate the aspirations of the oppressed. In particular, this binary became a three-way discourse between the centre and coloniser immigrants and the Indigenous peoples. In both cases, the relationship moved beyond the establishment of imperial hierarchies based on a connection between the centre and the empire, to a deadly discourse based on de-humanising the native to justify the stripping away of prior ownership or sovereign rights in favour of the invader/coloniser.

While it is possible to find a generally adopted understanding of post-colonialism, the fact that it has emerged from the two critically antagonistic theories of Marxism and post-structuralism has seriously confounded the establishment of a similarly agreed-to articulation of the theory’s underpinning premise. Postcolonial studies had a history that was born from the work of Spivak (1988, 1993), and Said (Said, 1988) and others who had commenced investigating the processes of the decolonisation of the 19th century European empires in Africa and Asia. Much of the initial theoretical framework, developed from earlier Marxist theoreticians like Gramsci (2002), argued that it was both possible and necessary for the colonial subalterns (the colonial under-class and oppressed majority) to expose the consequences of the imperial project on their lives. Gandhi (1998) has pointed that though the initial intention of this exposure of the vagaries of the subaltern experience was to legitimate their voice, the debate became a substitute for a wider discussion on the postcolonial theory across and within the newly created states. Gandhi (1998) claims that this analysis has become mired in non-productive debates on which group suffered the most under the colonial regimes, or which resistance movements were the most significant in challenging colonial rule. I would suggest that in part, these contortions are based on internal theoretical tensions as exemplified in the confusion of its name, as well as its actual nature, form and focus. On one level, this has centred on the uncertainty of its nomenclature – whether in its hyphenated form it represents a temporal point of a state’s decolonisation, with an implied chronological separation between the act colonialism and a postcolonial aftermath; or as others have argued a ‘postcolonial’ timeframe that doesn’t begin with the finalisation of the decolonisation process, but instead begins at the very point of the colonial occupation (Gandhi, 1998).

Bell’s (2010) foreword to the text on re-awakening languages clearly identifies the commonalities of wider struggles of Indigenous people as they look to restore their sleeping and fragmented languages.

What each language or family group does is critical to the bigger picture of what we all are trying to achieve in terms of cultural maintenance and survival as the first people of the land. Each contribution, big or small, is part of an ongoing struggle facing all Indigenous people around the world. In the midst of globalisation we strive to maintain and strengthen our identity and connection to country through our language, cultural practices and values for present and future generations … The contribution of Aboriginal and Torres Strait Islander people in Australia to linguistic and cultural diversity worldwide is essential and is happening through the important work we are all involved in.

(Bell, in Hobson, Lowe, Poetsch & Walsh, 2010)

In opening postcolonial studies to the possibility of an earlier temporal allows an interrogation of the experiences of the Indigenous populations of the ‘New World’ as they confronted invasion and colonisation. Goldberg and Quasyson (2002) have suggested that postcolonial theory provides a theoretical vehicle to explore these experiences by providing a framework to challenge the powerful orientation of colonial studies that have constructed their histories in the image of their colonial masters (Henderson, 2000; Yazzie, 2000). As Battiste (2000) noted, postcolonial studies must become a simultaneous study of both the temporal and philosophic spaces of European imperialism, and the contemporary neo-colonial state so that Indigenous peoples are enabled to critique their own unique experiences in the light
of a comparative understanding of the methods of the colonial invader.

Gandhi (1998) has argued that the actual moment of arrival of true independence of once colonised states is predicated upon those state's capacity to at first imagine and then successfully execute a decisive departure from its colonial past. She suggests that where this rupturing of the state's past history does not occur; there is a fundamental moral disjuncture where the move from colony to statehood is not accompanied by a legal, constitutional and moral acknowledgement of its Indigenous peoples' sovereign rights. Gandhi (1998) argues that not achieving this accord with Indigenous peoples has left the colonisers as pyrrhic victors in an ongoing colonial conflict that constrains its capacity to claim freedom from its previous colonial masters when its very foundation is built on the ‘concealed persistence of its own and Indigenous peoples’ "unfreedom"'. Memmi (2003) supports this contention by arguing that the perversely symbiotic relationship of indifference between the coloniser and the colonised demonstrates the false temporal space of postcolonial independence for those nations which grew into statehood on the back on denying authentic freedom to its Indigenous citizens. The choice of the policies of subjugation and assimilation instead of an authentic accommodation of the rights of Indigenous people which has created an illusory independence in the minds of the coloniser, but in reality is based on a ‘dreadful secondariness of the Indigenous (Gandhi, 1998) and a eternally disjuncture between the structures of the state and Aboriginal social and cultural structures (C. Fletcher, 1999). It could be argued that while these states are chained to this history of Indigenous peoples’ dispossession, they remain unable to change either the nature or the dynamic of their relationship with Indigenous peoples. The test for postcolonial inquiry is whether it has the capacity to explore this fraught interrelationship between the colonisers, their now independent scions and the state’s Indigenous peoples. A central consequence of the complexity of this neocolonial environment has been the significant, ongoing impact on Indigenous peoples' identity construction.

**Aboriginal identity**

*Our languages are the backbone of Australian languages, to confirm peoples’ place, their culture and their nation. To have a more friendly society that have better relationships and understanding, it is important that everybody learns our languages, so that there is a greater appreciation of who we really are and what holds us together.*

(Ashby, 2004)

This terrain is characterised by both the centripetal forces of globalisation and the centrifugal forces of localisation. On the one hand, theorists (Castells, 1996) have argued that the traditional cultural resources deployed in the work of identity construction are shifting. Ethnicity and nationality, once historically the solid grounding point of identity, is changing as the nation state transforms and the information age emerges. Hirst (2007) counters by suggesting that increased uncertainty and change has heightened the importance of traditional ways of grounding identity in new discourses as people seek meaning in traditional cultural and social connections.

Levi and Dean (2002) have also noted the profoundly paradoxical nature of indigenous identity – cultural authenticity that sits in the human rights discourse. They suggest that the enunciation of Indigenous rights has the potential be politically hazardous as it axiomatically signals a willingness to concede the possibility of autonomy for the subaltern groups within the newly created (or liberated) postcolonial state. However, Ashcroft (2001) has posited that in those locations colonised by mass migration, two concurrent developments occurred – first the newly established state emerged, taking a form and nature that was remarkably like that of the coloniser; and second the new state’s cultural authority and legal legitimacy was almost exclusively delivered into the hands of the established hybrid elites. The moral right to occupy this new alien space was forever linked to a denial of prior occupation and the sovereignty rights of its Indigenous peoples – a right they would now assert for themselves as the new masters of this once ‘uninhabited’ land. While Bhabha (1994) has suggested that the European colonisers demanded nothing less than cultural emulation from their colonial outposts, Hall (2003) has argued that there was a level ambivalence to direct mimicry and that this was in itself a part measure of colonial resistance. However, while the settler colonists were able to choose the level of tension between their mimicry/resistance to the centre, this was not a choice that they afforded Indigenous peoples. Their ‘right’ to maintain an independent cultural identity was inimical to the interests of the decolonised state, which eagerly sought to create a new national identity by minimising the Indigenous presence (Grande, 2009). Conversely, an insistence in maintaining their own cultural identity puts Aboriginal people on a collision course with the stated interests of the neocolonial state and remains at the centre of their cultural resistance.

The ability to negotiate one’s own identity has long played a fundamental role in the resolution of a critical issue of modernity: how individuals, families and groups and larger social networks reconcile their place within...
a hierarchy and equality between fellow citizens (B. Anderson, 2007). This is of particular importance for those whose identity is problematised within the national discourse on nation building. The struggle to affirm that identity which is central to Aboriginal peoples’ efforts to maintain a separate identity separates them from the cultural locations in which governments have attempted to position them (Castagno & Brayboy, 2008).

I get really pissed off with taken inclusivity. You look at the language that’s utilized around it and this town has internalized that language you know, people don’t talk about tools anymore people talk about ‘artifacts’. This is Aboriginal people. Call our own tools artifacts. What’s an artifact? It’s a fossil of a dead culture, it’s something that’s left behind after that culture’s gone.

“… I come here and I get shocked because I see this living part of my culture being called an artifact by my own countrymen who basically don’t have the critical faculties to be able to stand within their own ethnic standpoint, ethnic viewpoint and say “hey, this language is killing me, all these words in this foreign language English that I’m using are killing me, they’re placing me as a stone age person who’s culture’s finished who’s going to be wiped out”.

(Aboriginal consultant, NSW Department of Education. Personal correspondence, 2007)

Central to Aboriginal and other Indigenous communities’ endeavour to create a legitimate and sovereign space within the neocolonial state, has been an increased sense of the need to act to support their language’s reclamation from the moribund state that they have often fallen to. In their recent chapter on Indigenous students language rights, Aguilera and LeCompte (2009) have argued that language preservation is critically important to the present and future lives of Indigenous communities. Dehyle and Swisher (1997) have shown that Indigenous student achievement and school completion rates are linked to their positive cultural identity, while Aguilera and LeCompte (2009) reported that students accessing language immersion programs outperformed their grade-level peers in English instruction programs in most subjects. This they attribute to students being grounded in cultural knowledge, which was embedded in a culturally rich and responsive pedagogy. Yet not withstanding this research that clearly highlighted the value for student immersion in their traditional tongue, communities are increasingly being affected by a reduction in the number of Indigenous languages being spoken. This reduction of speakers has sharpened the urgency for Aboriginal communities to deal directly with language loss, its impacts on community strength and resilience.

**Challenging dominant cultural views through language**

The value of the program is for the children to have the opportunity which I never had to learn language in their own community, in their own school, where they are going to be spending most of their days, simply to have that opportunity and to learn the language of their ancestors which I never had and to do it in an environment where it is encouraged, actively participated in by as many people as possible and reinforced in a way that makes it relevant. Not only relevant but a whole action of a person through their own language expressing their identity, coming to understand their identity.

(Language mentor and teacher, NSW Western Region)

The dominant approach to the contemporary challenges of multiplicity and difference is to think of ‘culture’ and ‘identity’ within the crisis language of imaginary unity, singular origins, a singular ancestry and bounded nationality. This culture reaches back neither to its indigenous past, nor to the multiple cultural ancestries of its population, but to their western eurocentric cultures (Henderson, 2000). This idealised notion of a national eurocentric culture places it on a collision course with the cultures of those who draw their epistemological and ontological standpoint from their own sense and space (McCarthy, Giardina, Harewood, & Park, 2005). The dominant socio-cultural group views of national cultural indivisibility is played out within the educational enterprise of schooling. While schools variously pay attention to the cultural diversity of the students in their classrooms, the underpinning priority of schools has been to disappear authentic narratives of Indigenous people, their stories and connectedness, and replace it with caricatures and epistemological artifacts, which they have struggled to maintain their culture against the meta-national narratives so popular in post-industrial nations (Grande, 2000). These new narratives deny Indigenous intellectual legitimacy and their status has been attacked as being subjective, having little relevance and being just one view or constructed of reality.

**Education**

Well if I look at all these issues, I think it’s all coloured by one thing, which is colonization, and the colonial discourses that run through curriculum, community, everything. It’s kind of like a virus. Where I see change being necessary is the need for de-colonizing, real de-colonization, in the curriculum but also in the community. I mean we look at talking about Aboriginal knowledge...
Mass education has been developed in the 20th century as a reflection of the aspirations of the aspiring middle-class who saw education as a way of ensuring upward mobility, economic security, and the legitimacy of their values and worldviews, language and culture. However, for those children whose languages and cultures were significantly divergent from the mainstream, this instructional system has been critical to the state’s cognitive imperialism. Battiste (2000) argues that schools have been a central location for the ongoing social, cultural, linguistic and economic subjugation of Indigenous people. As such, education is far from a benign process, as it is used to perpetuate myths about Aboriginal people in both schools and across the wider community (Battiste, 2000).

The place and role of education is debatable and highly contested within Aboriginal communities, for while parents have often articulated their high educational aspirations for their children (NSW AECG & NSW Department of Education & Training, 2004), below average educational outcomes has had the effect of questioning its significance to the lives of Aboriginal students. While the modern ‘postcolonial’ state has moved past practices of denying access to education, it still holds a similar place in the minds of Aboriginal parents, with its failure to develop effective strategies to address the particular learning needs and aspirations of students (J. J. Fletcher, 1989).

Harris (2004) has noted that while physical barriers were once used of deny Indigenous people a presence and legitimacy within the schooling system, contemporarily these methods enforce their acculturation to cultures and identities that support the hegemonic controls set by the colonial state. The pervasiveness of these processes have been driven from a destructive neo-colonial paradigm that Battiste (2000) and Smith (1999) have both termed ‘cultural imperialism’ or what others have commonly understood as cultural and linguistic assimilation.

Postcolonial writers such as Edward Said (1993, 2007), Battiste (2000) and Kelsey-Wilkinson (2010) have suggested that there is a complex and dynamic relational treatment of culture and identity that can be located in current curriculum and pedagogic practices. Pinar (1993) and McCarthy and colleagues (2005) have identified the absence of any substantial examination in how the curriculum has essentialised dominant epistemology, ontology, while other policy arms of governments continue to claim that they are supportive of cultural inclusivity (Yunkaporta, 2009). McCarthy and colleagues (2005) have argued that the curriculum is a central tool of racial and cultural oppression and a primary vehicle for privileging and maintaining authority, by authoring and regulating that knowledge which is legitimised for students to be taught and assessed against. As such it is argued that this must be confronted so that the marginalised can be properly reflected within the social, ethical and economic domain of education. McCarthy and colleagues (2005), Battiste (2000) and Kelsey-Wilkinson (2010) have all argued that curriculum change is paramount to addressing the new challenges of cultural identity, and in establishing a new and inclusive social authenticity.

McCarthy, Giadina, Harewood and Park (2005) and Young (2010) suggest that education authorities need to support the development of inclusive pedagogic practices that are both inclusive and relevant, and that facilitate student critical inquiry.

I would contend that if educational content and practices are not decolonised, then Aboriginal students will continue to suffer the debilitating impacts of cognitive imperialism which underpins the unwillingness of curriculum and educational authorities to engage students by developing a high quality and contextually appropriate curriculum (Battiste, 2000). The validation of the dominant worldview comes through their tight control of the education system and its privileged curriculum which avoids critical scrutiny of its essential tenets of government, its institutions, its national identities and cultural mores.

**Conclusion**

If Aboriginal students were taught using appropriate pedagogic practices, you’d see a community that had the ability to engage in its own ethnic viewpoint and to state clearly who they are in the world and state clearly what their values are and debate that within family groups. But then also who are able to critique the dominant culture and who are able to understand the ways in which the government organisations in their community are operating on those people and therefore able to have more say, therefore able to have more autonomy and therefore able to recover land, language, culture and recover identity.

(Western Region language consultant 2008–10)
The capacity to authentically use language has become a central endeavour for those educators who wish to see Aboriginal students access their histories and stories. It is posited that the act of language reclamation goes to the heart of Indigenous resistance to their cultural assimilation and is an act of intellectual agency. Indigenous scholars (Grande, 2008, 2009; Henderson, 2000; Rigney, 1997; Smith, 1999) have recognised the centrality of the need to resist those efforts of the state to reframe them so that their voices and their traditions are lost in the constant welter of colonial noise. The once distant sounds of ‘subaltern’ voices (Spivak, 1988, 1991, 1993), are to be represented by the hundreds of Indigenous language speakers communicating through song, storytelling, dance, poetry and rituals, the knowledge and stories of their communities. The policies of colonial ‘linguicide’, which have proven in the past to be such a powerful force of imperialist power, has become the central battleground in the cultural war between Indigenous peoples and the colonial state (Swadener & Mutua, 2008). The reclamation of the Indigenous Language of the Country is an act of intellectual agency. The act of language reclamation goes to the heart of Indigenous resistance to their cultural assimilation to self-determination. Research in American Indian and Alaskan native education: From assimilation to self-determination. Review of Education Research, 22, 113–194.


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Research Conference 2011
Numeracy, mathematics and Indigenous learners: Not the same old thing

Abstract
This paper begins with two narratives: the first from an Aboriginal mathematician and the second from a non-Aboriginal teacher. The two stories are woven together to draw out the notion of culturally responsive mathematics pedagogy and what this might mean for educators working with Indigenous students in the teaching of Western mathematics to close the two-year gap in learning outcomes. At the same time, consideration is given to what ‘the same old thing’ is and why we need to be doing something different. The Make it count project, funded by the Commonwealth Department of Education, Employment and Workplace Relations (DEEWR) and managed by the Australian Association of Mathematics Teachers (AAMT), is attempting to do something different. Three case studies, drawn from the project’s eight Clusters, illustrate significant and transformative change in students, in teachers, and in the curriculum.

Chris’s story
The story of my education is one of survival by thriving in mathematics. I experienced racist attitudes from teachers and particularly from students which were publicly humiliating. My Aboriginality was often questioned and generally not supported. I was lucky that I was good at mathematics which gave me a safe haven from dealing with race and culture, plus my success within the subject built my self-confidence academically. My academic success allowed me to go to University to follow my interest in mathematics (and computing), and to eventually obtain a PhD in applied mathematics. What is interesting about my education is that my Aboriginality and mathematics was kept separate and, consequently, I continued to question why an Aboriginal person would undertake a
career in mathematics. How will this benefit my community?

**Caty’s story**

My teaching career began with the offer of a permanent position in an isolated Aboriginal community. My first year in this community was very bumpy and very difficult. I was offered advice by the non-Aboriginal principal and time and again it didn’t seem to work. For example, even though the community was predominantly Aboriginal, the Western culture dominated the school and I was expected to teach Western things in Western ways to non-Western children. I knew I couldn’t keep on doing ‘more of the same’.

Fortunately, a new principal arrived and big changes were soon in place. At last I was able to observe and participate in local cultural practices (Gutiérrez & Rogoff, 2003) in both the classroom and the community, and bring students’ lived experiences into the classroom. Every day I would wake up to a new experience and I thrived on the never-ending cycle of teaching and learning with my students. I was able to tap into local funds of knowledge (Gonzalez, & Moll, 2002) and try different ways of teaching and, because of this, became a better teacher (and a better person). My students became a lot more engaged in learning and classroom dialogue, and their confidence and learning outcomes improved.

These two stories not only provide the reader with the standpoint of the two authors (Nakata, 2007), but also show an interesting juxtaposition in mathematics education. Chris’s story is from an Indigenous perspective where there is no relationship between mathematics and Aboriginality, while Caty’s story, a non-Indigenous perspective, demonstrates that meaningful educational outcomes can only occur when the teacher has an understanding of Indigenous students’ lived experiences. Caty’s story is one of growth from transformational experiences that have provided her with insights into a different world view. Chris’s story is about survival and trying to find a place even at the cost of his Aboriginality. These two stories highlight the need to ask the question: ‘Is it important to connect Indigenous cultures and mathematics to improve educational outcomes for Indigenous students and, if so, how can this be achieved within Australia’s education system?’

**What is mathematics?**

First, we must ask a foundational question: ‘What is mathematics?’ Recognising that this is a difficult question to answer, the Australian Mathematics Society, through its gazette, sought the views of their members. As expected, the answers were varied, but what is interesting is that members used expressions such as ‘it [mathematics] is a social construct’, ‘symbolic expression of relationships’, ‘abstracted natural patterns’, ‘a way of looking at the world’. These types of statements indicate that mathematics is a cultural practice and the mathematics itself (e.g. symbols and language) is a cultural product.

The mathematics that is experienced by most people (through our education system) does not provide any cultural connection, nor does it provide connections with the students’ world view. Mathematics is often portrayed as objective, with little connection to people and their experiences, resulting in responses like ‘Why are we learning this?’. As argued by Matthews et al. (2005), the mathematics (and science) curriculum has devalued Indigenous cultures by directly and indirectly positioning Indigenous cultures as primitive. This view was expressed by Deakin (2010) when questioning the inclusion of Indigenous Mathematics in the National Curriculum. Deakin (2010) states that Indigenous Mathematics ‘does not exist’ and it is not ‘beneficent to bestow on aspects of Aboriginal and Islander cultures a significance that they do not, in fact, possess’.

We would argue that maintaining such a disconnection between Indigenous people and mathematics is detrimental to the educational outcomes for Indigenous students, and we need to explore the notion of culturally responsive mathematic pedagogy.

**Culturally responsive mathematics pedagogy**

While there has been a significant amount of research internationally about culturally responsive mathematics pedagogy (CRMP) (e.g. Gutstein et al., 1997; Malloy & Malloy, 1998; Matthews, 2003; Tate, 1994; Wagner et al., 2000), very little has been done in the context of urban and regional classrooms with Indigenous students in Australia. What has been done is usually based on remote contexts, or lacks clear articulation into the classroom.

We know, however, that at the heart of quality teaching of students in mathematics are the professional judgements about teaching and learning; judgements based on teachers’ knowledge, experience and evidence in relation to pedagogy, their students, and mathematics. If teachers are to provide quality experiences in mathematics, they will need deep content knowledge and deep pedagogical knowledge. However, for many Indigenous students, this is not enough and mathematics remains a disconnection to future prospects. A teacher’s approach to teaching Aboriginal students’ mathematics needs to take into account Aboriginal people and their culture, Aboriginal children’s mathematics understandings and explicit mathematics teaching (Perso, 2003). We suggest that using this as a starting point we have a basis for what we are calling Culturally Responsive Mathematics Pedagogy (CRMP).
There is very little research about what constitutes a highly effective teacher of mathematics in the context of Indigenous learners. What we need is teachers with high levels of mathematical pedagogical content knowledge, but beyond this are able to teach in ways that are ‘relevant and responsive to social realities and cultural identities’ (Martin, 2007) of their students. Make it count is developing its own ideas in relation to this and encouraging people to tell their stories of transformation. We are very aware that we don’t want ‘more of the same’ and heed Harrison’s (2007) timely advice as he warns researchers that research in Indigenous education:

… is at a dead-end. Researchers are still heading out into the field to look for new knowledge to answer old questions. The same epistemology dominates how we look, and where, while the methodology provides the research with a forced choice, one where either the students or the teacher is blamed for the lack of outcomes in Indigenous education.

(Harrison, 2007, p. 1)

He challenges us to find something different. It would seem that the generation of new questions are therefore vital to the generation of new knowledge in this field.

**Make it count: Numeracy, mathematics and Indigenous learners**

*Make it count* is a national project striving to improve the learning outcomes of Indigenous students in mathematics. It is part of the Australian Government’s ‘Closing the gap – expansion of intensive literacy and numeracy programs initiative’. The project has established eight clusters of schools across Australia to find something new that will make a difference through the development of CRMP as illustrated in Diagram 1 below. We want to make it clear that when we talk about CRMP, we do not mean maths worksheets with boomerangs around the border. Make it count is a work in progress and the following three case studies illustrate current progress in developing new thinking, new language and new practice in relation to evidence-based CRMP.

### Three case studies

#### Student transformation: Andrew switches on to mathematics

Ruby is a middle primary teacher in an urban school. She is very experienced in using the Accelerated Literacy (AL) pedagogy and explicitly teaching the cultural orientation necessary to engage in school learning. (For example, in literature she draws attention to why authors choose particular adjectives – so the reader will like the main character.) Ruby has the results to show that she is making a difference in the literacy outcomes of her Aboriginal students. Her Cluster is applying AL principles to the teaching of mathematics through the use of explicit, scaffolded and highly sequenced pedagogy. Ruby discusses the change in one of her Aboriginal students:

At the beginning of the year and throughout most of term one Andrew, a Year 4 Aboriginal boy, presented as a quiet, under achiever who was lacking in confidence particularly in the area of mathematics.

Towards the middle of term one I changed my pedagogy in this subject area and brought it into line with how I taught Accelerated Literacy. For our maths lessons my teaching Mentor and I planned a series of scaffolded, sequential lessons in the area of ‘place value’ … We noticed immediate results in both enthusiasm and confidence building within the classes … Andrew in particular, began to shine in the lessons. He gradually became more confident to offer answers. He now asks questions when he doesn’t understand … He goes home and shares what he knows with his parents who have been delighted with this transformation. They have written notes in his diary that confirm this:

### Teacher change: Aaron’s story

Aaron is an experienced teacher. He describes how he used to feel about maths. ‘I really hate maths. Maths Sucks’. Aaron knows that this stems back to the way he was taught maths as a student and says that, ‘The old way of learning through equations didn’t work for me.
and I just turned off … Incredibly, this became the way I taught maths to my students. I repeated the cycle … and wanted to break this cycle … by trying to come up with new ways to teach maths’. Aaron is a skilled teacher of Visual Arts and after a challenging discussion with his principal, settled on teaching mathematics through Visual Arts and using this as a means to encourage students to become numerate. An example of this was through teaching mathematics through Visual Arts and using this as a means to encourage students to become numerate. An example of this was through teaching the golden ratio. Aaron ‘was able to overcome many of his misapprehensions and find meaningful situations for the processes of mathematisation and contextualisation’ (Thorton & Statton, 2011).

Aaron’s transformation was also affirmed through the data he collected. Base-line data collected early in the year about what students’ thought maths and numeracy were included, ‘Involving numbers’, ‘Shapes, plus, take and times tables’. Towards the end of the year typical replies included, ‘Maths is things like measuring, adding, take away, times, shapes and other stuff. Learning how do those things’ and ‘Numeracy is using maths, so like using measuring when you do cooking and if you were building, you need to be able to add and measure and we have done lots of art where we have used maths like measuring, times tables, adding, odd and even numbers, patterns’. Aaron thinks it is significant that, although in his class they hadn’t considered cooking, the students made that connection for themselves.

Curriculum change: Camping out with mathematics

One of the Clusters held a mathematics camp to build and connect both mathematics and cultural identity in Indigenous students. There were several activities at the camp, but one notable activity was learning mathematics through Aboriginal dance – a new approach being trialled for the first time. Students, working in groups, were challenged to create stories from mathematical equations (Matthews et al., 2007) and create a dance about these stories. From a survey conducted at the end of the camp, ten students from a total of 28 made explicit statements about ‘a new way with maths’. Some of the statements from the students were:

‘I like dance and the culture of the maths we are learning.’

‘I learnt that maths does not have to be about sitting at a desk looking and copying off a board.’

‘We mixed our culture and maths together and it surprised me. I can now walk away with a different understanding of Math and my Aboriginal heritage.’

From the evaluation of the camp we also know that not all students respond positively (5/28) and more needs to be done to engage non-Indigenous teachers in activities, to explicitly and specifically identify and draw out the mathematics in cultural activities and how such activities translate into the classroom.

Summary

Make it count is working at the ‘ground level’ with educators of Indigenous students as an alternative to the ‘top-down’ approach. Clusters are working as professional learning communities. Developing an evidence base and planning for sustainability are foregrounding their thinking. With the help of their Critical Friends (university-based researchers), some are re-interpreting and reconstructing what is already there, or taking ‘more of the same’ and re-purposing

Diagram 2: Andrew’s diary with comments from his mother
resources, strategies and approaches. Others are working in completely new domains such as the development of mathematics resilience in Indigenous learners and the development of cultural competency that enables educators to better respond to the learning needs of their Indigenous learners.

The full evaluation of the project will be critical to establishing the evidence base. This includes student achievement, attitudes and experiences; teacher and school change; school–parent partnerships; and cultural competency of teachers and schools in relation to mathematics and numeracy.

It is becoming clear in Make it count that teachers who engage in culturally responsive mathematics pedagogy possess deep knowledge of mathematics content. They have (a) deep content knowledge, (b) strong pedagogical content knowledge, and (c) a strong culturally relevant pedagogy (Gay, 2000; Ladson-Billings, 1994). They have a deep commitment to Indigenous students and these students are empowered as a result of their mathematical experiences (Ernest, 2002).

References


Successful post-school transitions for Indigenous youth

Justin Brown
Australian Council for Educational Research (ACER)

Justin Brown is a Senior Research Fellow in the Teaching, Learning and Transitions program at the Australian Council for Educational Research (ACER). Justin has led a range of ACER projects including a state-wide review of post-school transitions of Indigenous youth for the Victorian Ministerial Taskforce on Aboriginal Affairs and a review of support models to support disadvantaged learners in the Australian VET system for the National VET Equity Advisory Council.

In 2009, he collaborated with CEET on a project for the Australian Qualifications Framework Council (AQFC) examining funding arrangements in VET and higher education. In 2010–11 he collaborated with Peter Noonan Consulting and CEET on a series of projects for Skills Australia that examined financing of the VET system.

Prior to joining ACER, Justin was a part of the PhillipsKPA consulting team and contributed to policy and strategic advice for a range of government agencies and universities in Australia, New Zealand and Hong Kong. Justin contributed to over 30 PhillipsKPA projects, including a review of the Dare to Lead program (2008) for the Commonwealth Government Department of Education (DEST and DEEWR).

Justin is a member of the Australian VET Research Association and the VISTA Association of VET Professionals. Justin holds a Bachelor of Business from the University of Technology, Sydney, a Graduate Diploma in Education and a Masters in Education from Monash University.

Gina Milgate
Australian Council for Educational Research (ACER)

Gina Milgate is an Aboriginal woman from the Kamlari and Wiradjuri clans of New South Wales. She is the Indigenous Liaison Officer at the Australian Council for Educational Research (ACER). A key part of her role at ACER is to provide knowledge and guidance on a wide range of Indigenous issues to her colleagues. Prior to her appointment at ACER in 2006, she was an academic at the University of New England for six years. Gina has a strong understanding of the issues surrounding Indigenous education and communities, and the importance of consultation and respect for cultural sensitivities. Having resided in regional and metropolitan Australia and working in remote and very remote communities, Gina has a considerable understanding of the diverse range of community dynamics and the cultural protocols pertaining to communicating and consulting with Indigenous communities, and sensitivities within the personal, community and organisational contexts.

Gina has established close working relationships with key Indigenous experts and peak bodies. She has been a member of the NSW Native Title Board of Directors and is a member of the ACER Standing Committee on Indigenous Education. She has also been part of the National Schools First project team which involved facilitating workshops with schools and communities across the country. She provides cultural advice and cultural brokerage throughout ACER.

Introduction

Somehow we have to stop the cycle … We have to stop the scattergun approach … We need to integrate services more. Often things may seem to be micro, but they work. It’s the one to one relationship.

Case study interview

In 2008 the then Ministerial Taskforce on Aboriginal Affairs established the Victorian Aboriginal Economic Development (VAED) Group to advise the Taskforce on ways to improve economic outcomes for Indigenous Victorians. The Australian Council for Educational Research (ACER) was engaged by the Department of Planning and Community Development (DPCD) in May 2009 to conduct the Indigenous Youth Transitions research project to contribute to that advice.

The project objectives were to identify common factors underpinning the programs that have demonstrated success, and suggest ways in which Victoria could replicate these successes more generally across the state. The research aimed to identify programs that demonstrated successful outcomes in their objectives to:

- re-engage Indigenous young people in education, training and/or employment.
- increase enrolment and improve retention and achievement in tertiary (VET and university) education by Indigenous young people
- provide supported pathways for Indigenous young people from education through to sustainable employment.

Research method

Literature review

The objective of the literature review was to outline factors affecting
and improving Indigenous student attendance and engagement in education and training, both in school and tertiary education and training.

The review was divided into sections that reflect key transition points: Early schooling years; Transition to post-compulsory schooling; Transition to tertiary education (VET and higher education) outside school; Re-engagement with education and training; and Transition to employment from education and training.

The literature review was drawn from a wide range of resources, including academic and published research from the ACER Cunningham Library and online resources. The review has been supplemented by materials provided by case study participants.

Case studies

Five case studies that showcase illustrative examples of good practice occurring in regional and metropolitan Victoria were selected in consultation with the project reference group. These case studies should be considered as illustrative examples and should in no way be considered representative of all programs in operating in Victoria. A number of stakeholders were invited to participate in interviews and forums across the various sites.

Where possible, the research conducted on site was supplemented by additional materials provided by the participants. In the school environment, discussions were held with principals, Koorie Education Development Officers (KEDOs), support staff, teachers, students and parents. Outside the school environment, ACER researchers met with a range of stakeholders, including local community organisations, employment networks, universities and TAFEs.

Semi-structured interview questions were informed by the literature review, discussions with the Department of Planning and Community Development (DPCD) and the project Reference Group.

Findings and discussion

Victoria has a well-established network of support programs delivered through government and non-government service providers. The following key elements highlight the characteristics of effective models in supporting the transitions of young Indigenous people.

Effective models embed cultural inclusion into positions, structures and organisations

In order to address some of the transition gaps, models must be built on a foundation of embedded cultural awareness and understanding before additional support structures are considered. The provision of a culturally aware and safe learning, training and working environment is a necessary starting point to ensure appropriate and sustainable student, family and community engagement. The provision of a strong Indigenous presence, both in teaching and support roles, individuals who are appropriately trained, resourced and connected to networks, is a key enabler of sustainable success.

Effective models make successful transitions a responsibility for all participants

Effective models are able to build and embed advocacy, accountability and coordinating responsibilities into roles, position descriptions and across organisations to ensure that success is not dependent solely on the personal commitment of a ‘transition champion’, but is made a responsibility and desired outcome for the entire organisation. These models support a coordinated commitment for follow-up, placement or referral of young people disengaged or ‘at risk’ in the transition process regardless of how, why, when and where they disengaged.

Effective models support individual pathway planning from education to employment

Effective models have a comprehensive understanding of the theoretical concepts that underpin student, family and community engagement of Indigenous young people. These models respond to the needs of the individual by promoting and connecting supportive pathways across education levels and providers, employment agencies, support networks and jurisdictions.

These models also recognise the additional obligations and needs of Indigenous young people without diminishing the importance of high expectations, engagement and achievement in the learning and working environment. Through intensive and effective community engagement, such programs are a magnet for sustainable student, parent and community engagement in areas with relatively small and dispersed populations, both in regional and metropolitan locations.

Building on preventative supports in the early schooling years, effective re-engagement programs provide students with ‘pathway signposts’ and multiple entry and re-entry points into education, training and employment. Such models also have the necessary supports in place for students at risk of disengaging to ensure they are supported into a positive pathway.

Effective models link current education and training concepts to future employment pathways

The importance of introducing work concepts, job information and work experience prior to post-compulsory schooling years is a key success factor.
in improving transitions in later years. Relationships that education providers and employment brokers build with industry and local employers have been most successful where there are individualised preparation supports in place to ensure students can meet the responsibilities of the workplace.

Within the working environment, successful models provide access to support from a trusted adult, ideally a mentor, role model or pastoral caregiver. Victoria has a suite of alternative pathways emphasising vocational and work-oriented pathways through post-compulsory schooling. However, for many Indigenous young people this may need to be introduced earlier than is currently the case under traditional VET in schools and school-based apprenticeship models.

Effective models facilitate innovative approaches to industry and philanthropic support

There is scope for government to further facilitate industry and philanthropic involvement through programs to support access to part-time work and employer events. More generally, there is a need to better understand the job placement and referral networks, formal and informal, that are demonstrating success but lacking long-term support to sustain further development and expansion.

Effective models re-engage through multifaceted, integrated and innovative approaches

Of the programs that use sport, music and art as vehicles for engagement, the most effective programs integrate these interests into the curriculum. Successful models are designed to have an appropriate balance of educational, vocational and recreational content to attract and re-engage young people, male and female, with diverse needs, achievement levels and interests while they are in the program. These programs also provide for ongoing support following completion by facilitating and funding pathways to employment.

Effective models inform practice with a robust, current and informed knowledge base

Effective programs are able to demonstrate ways in which information can be captured and reported to better monitor and track young people as they transition. In doing so, the information can be used as a means of raising awareness and building a knowledge base at the local, regional and state-wide level. The ability to access accurate and current information can then provide a starting point for further discussions and the building of networks of persons in similar roles. When such networks are formed there is opportunity to provide channels for dissemination of good practice, to strengthen the knowledge base and to better inform policy and practice.

Regardless of the model or combination of models that are implemented, any solution will require a coordinated effort using a whole-of-government approach that ensures cross-agency collaboration with close regional and local contact with the community. It is of vital importance that progress is monitored and reported against target outcomes to ensure continuous improvement, demonstrate program effectiveness and build a knowledge base for future planning, policy and research.

Although key success factors can be transferred at a generic level, each initiative must be tailored to the environment in which it operates for it to become sustainable and effective in the long term.

Conclusions

Drawing on the literature review and case studies conducted for the project, it is possible to identify a number of common characteristics that may improve transition outcomes for young Indigenous people in Victoria. In order to address some of the transition ‘gaps’ for Indigenous young people, the programs, models and initiatives must be built on a bedrock of embedded cultural awareness and understanding. In demonstrating success, effective models can:

• build and embed program advocacy, accountability and coordinating responsibilities into role/position descriptions and across organisations.
• build and embed requirements for cultural inclusion programs into all roles and across organisations.
• build a critical mass and be a magnet for ongoing engagement in a relatively small and dispersed Indigenous population with marked differences in student needs, achievement and outcomes from region to region.
• ensure success is not dependent solely on the personal commitment of ‘transition champions’, but rather make successful transitions a responsibility and desired outcome for the entire organisation.
• facilitate the introduction and engagement of students in early secondary school to further education, work and career concepts, e.g. part-time work, VET taster events, TAFE/uni open days.
• integrate community engagement, industry needs, student demand and sustainability into funding models.

• ensure sustainability into funding models.
to increase confidence in long-term planning

• facilitate sustainable and reciprocal partnerships with industry and philanthropic funding sources

• assist with mapping government and non-government networks and programs targeting young people, Indigenous and non-Indigenous, at risk of disengaging from education and training

• raise awareness and build networks of persons in similar roles and provide channels for dissemination of good practice

• demonstrate good governance through effective planning and reporting at the regional and local level that is responsive to local labour market needs and expectations

• demonstrate ways in which data and evidence of program effectiveness can be captured and reported to inform ongoing continuous improvement.

While the specifics of programs may not be transferable, many of the general focus areas are. In short, the same principles underpin successful programs, even if the specifics of the programs differ.

Acknowledgments

The project team would like to acknowledge the Indigenous participants for sharing their personal journey with us. To listen to their successes, challenges and motivations was an empowering and moving experience. It is these stories that will help to inspire other Indigenous people to achieve their dreams and aspirations.

The project team would like to thank all participants at each of the case study sites for their time and generous support of the project.

The assistance of the Aboriginal Affairs Taskforce, the project Reference Group, and the Victorian Aboriginal Economic Development Group is gratefully acknowledged. The researchers express warm thanks to Greg Leahy, Jenny Samms and Gina Hanson from the Taskforce and Sarah Davies from the VAED for their encouragement and input throughout the project.

The views expressed are those of the authors and not necessarily of the Department of Planning and Community Development, the Aboriginal Affairs Taskforce, the project Reference Group or any other organisation or individual.
Incorporating and understanding different ways of knowing in the education of Indigenous students

Abstract

This presentation considers what Indigenous students need in order to achieve their full potential within Australia’s education system. The presentation draws on the success of programs for young Indigenous people and school leavers that enable them to complete university, including elite professional degrees, despite limited success or even failure in secondary schooling. If it can be turned around at this level, why can’t it be done earlier? Equity in educational achievement, after all, is not just about reaching the same end point, but about whether the journey there is also equitable and not unfairly prolonged. If we all agree western education is necessary, and if we could achieve this, the next question is, will western educational success be enough for Indigenous students? Is this Indigenous students’ full potential and if so, will these ‘successful’ Indigenous students be enough to sustain whole communities? This of course is the ultimate aim of education systems. This presentation therefore considers how Indigenous people might define ‘full potential’ differently for Indigenous students and this includes not just education, but also future employment. From an Indigenous point of view Australia has two competing knowledge systems, only one of which is officially acknowledged, valued and resourced to succeed within Australia’s education sector. Indigenous ways of knowing are integral to Indigenous student success and to cultural continuity for Indigenous communities, yet scant resources are allocated to sustain them. Without a sectoral and conceptual shift in relation to Indigenous knowledge systems, we are unlikely to achieve sufficient change in Indigenous students’ schooling outcomes for a large enough cohort of Indigenous students over a long enough period of time to tip the balance for Indigenous communities as a whole.

Introduction

The disparity in educational achievement of Indigenous students is clearly evident in state, national and international assessments. Put simply, the Australian education system continues to fail Indigenous students, despite decades of educational research and the combined efforts of dedicated Indigenous and non-Indigenous people within and outside of the education sector. While there are many complex issues that may contribute to this, looking back from an Indigenous higher education perspective, the critical factor I see is the significant and sustained undervaluing of Indigenous students, both in terms of their capacity and aspirations – what they can learn and what they want to learn from Australia’s education system. This is compounded by the failure of the education system at all levels to understand and value Indigenous knowledge as a complete and complex knowledge system or to recognise that Indigenous people, as holders and practitioners of knowledge are expert educators. Neither of these are new ideas, but the way in which they have been understood, articulated and addressed is problematic. Only by addressing both issues simultaneously can we achieve sustained change, and this hinges on non-Indigenous Australians being willing to critically examine their own knowledge and education system.

A note in relation to terminology, the community in Western Australia, generally prefers to use ‘Aboriginal’ rather than ‘Indigenous’ and Education Department reports use follow this. I have used both ‘Indigenous’ and ‘Aboriginal’ depending on the context.
Aboriginal students in Western Australia

In Western Australia, despite improvements, the achievement of Aboriginal students in secondary school remains unacceptably low. While there is an intense focus on retention as the key building block, there has not been as strong a focus on achievement until relatively recently, particularly in relation to educational outcomes in Years 10–12.

The Education Department Annual Report 2009–2010 makes grim bedtime reading in relation to Aboriginal students in government schools in Western Australia. If we consider the paired indicators of retention and Western Australia Report 2009–2010 makes grim bedside relation to educational outcomes in Years 10–12.

However, this isn’t a blame game; it is until relatively recently, particularly in relation to educational outcomes in Years 10–12.

The apparent retention rate for Aboriginal students from Year 8–12 in Western Australian government schools in 2009, though significantly improved, was still only 37.5% compared to 66% for non-Aboriginal students.

For Aboriginal students who made it to Year 12, less than half met the requirements for a Year 12 certificate; the majority didn’t actually graduate. This again was an improvement on 2008.

If we take ‘success’ one step further and look at the implications for higher education, only 7% of Aboriginal secondary graduates achieved a Tertiary Entrance Rank high enough for university entry, just 17 Aboriginal students.

I am not intending to be overly critical of the Education Department or of government schools, who cater to the overwhelming majority of Aboriginal students in Western Australia. The data for Aboriginal students in independent private schools aren’t readily available for comparison but anecdotally, they don’t appear to be substantially better. However, this isn’t a blame game; it is an intensely perplexing and despairing situation for us all, for schools, educators and Aboriginal communities. We must collectively find urgent and creative solutions, and while the task is immense, there are things that Aboriginal people know we can do, but they don’t seem to be taken up.

Expectations and aspirations

I am speaking from more than 20 years engagement in higher education providing programs for young Indigenous students. More than 60% of Indigenous students at the University of Western Australia (UWA) are aged 21 years or under. This is different to most Australian universities, where the age demographic is reversed and a majority of Indigenous students are mature age. While many of the Indigenous students have completed Year 12, not all have achieved secondary graduation or results in Tertiary Entrance Exams that are sufficient for university entry or for the course they want. Overall 70% of Indigenous students will use some form of special entry to enter UWA and for courses such as Medicine and Law this rises to 80%.

To achieve this result, UWA offers a comprehensive set of secondary outreach, transition and pathways for Aboriginal secondary students that start in Year 8 and go through to Year 12. The programs may focus on particular professions (e.g. Medicine), year cohorts (e.g. Year 9 Science and Engineering) or skills (e.g. TEE revision). Programs have strong regional student engagement, generally have residential components and most students attend more than one. In fact, once one member in a family attends a program, younger siblings often follow. The programs are individually and collectively designed to raise aspirations to university, but also give students some of the tools they need to choose the right subjects and achieve at a higher level. A key component of raising Aboriginal student expectations is meeting UWA’s young Aboriginal students in all fields of study, who often simply say, ‘hey I did it, so can you’.

While there are multiple issues that impact on outcomes for Aboriginal students, the comment most often made by Aboriginal secondary students is that they never imagined they could go to university let alone become a doctor; a lawyer, an engineer; and that schools rarely told them they could either. In fact Indigenous students will often say they are discouraged from university and ‘given the TAFE booklet’. Schools often appear to have low expectations of Aboriginal students and this reinforces lower student aspirations and ultimately lower achievement. Unfortunately, when we look at the VET in schools in relation to Aboriginal students this appears to be the case and VET participation is increasing. Aboriginal students are already twice as likely to participate in VET in schools as other students and less likely to combine it with TEE study. This is not intended as a criticism of VET in schools – it has an important role. However, we do need to know if the increase in VET in schools is about bringing low-achieving Aboriginal students up or actually taking the Aboriginal students out of the higher end?

Resourcing Indigenous knowledge and education systems

In order to still be here and recognised as the oldest living culture in the world, it must be understood that Aboriginal peoples had and need to continue to have a complete knowledge system and a successful way of transmitting this knowledge through an education system, in order to ensure not just survival but a rich and sustaining life.
We always had high expectations and high outcomes from our knowledge systems.

It is asserted that educational success for Aboriginal students is about high achievement in western education systems while maintaining Aboriginal identity and cultural connection. The difficulty with this is that the two aims have never really coincided and most often they actually pull against each other. The other difficulty is that while we recognise the systems and infrastructure in which western success is to be achieved (the ‘collective’ of Australian state and territory education systems) it is not clear what the plan is and where the infrastructure is for Aboriginal knowledge systems to be able to provide the same level of education. The expectation appears to be that it is something that Aboriginal families and communities can deliver in their spare time, holiday, weekends, etc.

This is coupled with the underlying assumption that Aboriginal knowledge systems only benefit Aboriginal people and that therefore we are the only ones who need to protect and maintain them. However, Aboriginal people no longer have the resources to protect, sustain and continue to develop their knowledge systems. All knowledge systems and the education systems that flow from them need protecting, nurturing and ‘resourcing’ to continue to thrive and continue to develop. It is becoming increasingly difficult for Aboriginal peoples and communities to protect their knowledge systems in face of the relentless onslaught from mining and development.

While perhaps not enough in relation to the size of the task, massive resources have been poured in Indigenous education in western systems. Perhaps if a comparable amount was also allocated to Aboriginal knowledge systems, we may not be in the predicament we are today. We also might have non-Indigenous Australians recognising that Aboriginal knowledge systems are not just for Aboriginal students but the fundamental way in which all children learn to know their country.

**Summary**

Aboriginal parents have a right to have their children educated and Aboriginal children have a right to have their parents educated. This makes a whole community and a community whole.

**References**


Education Department of Western Australia. (2009). *An Evaluation of Vocational Education and Training in Western Australian Schools*, East Perth Western Australia.
Indigenous curriculum is out there but lacking a quality teaching base.

Abstract

As the principle researcher on the Review of Aboriginal Education Policy in NSW in 2004 it was evident that significant Aboriginal Studies curriculum had been developed and commenced implementation along with ever increasing quality resources to match the development. Unfortunately, the Review further pointed out that the quality of the delivery of these new won curriculum and resource gains were not being maximised in classrooms where Indigenous students in particular were not being engaged in education. An increasing quality curriculum and resource base isn’t going to replace quality inclusive pedagogy. Teachers’ must carry their weight if we are to close the gap. Education for Indigenous students shouldn’t rely on a ‘lucky dip’ of those fortunate enough to find themselves in classes with quality inclusive teachers.
Research Conference 2011

Research-based literacy and numeracy resource for Indigenous students

Cath Pearn
Australian Council for Educational Research (ACER)

Cath Pearn is a Teaching Fellow of the ACER Institute where she teaches postgraduate courses in Mathematics Education. Cath is also a lecturer in Mathematics Education at the University of Melbourne where she teaches early childhood, primary and special education students at both undergraduate and postgraduate level. Cath was part of the team from Melbourne University to write the Mathematics Developmental Continuum. She has also been a lecturer in mathematics education at La Trobe and Deakin Universities. Cath has had extensive teaching experience in primary schools and tutored many secondary students across a range of mathematics subjects, including Year 12. Prior to starting at the University of Melbourne she was a Mathematics/Numeracy Education Officer with the Catholic Education Office, Melbourne.

Since 1992 Cath has been involved in research projects investigating how students learn mathematics at the early childhood, primary, secondary and tertiary levels, particularly students mathematically “at risk”. She has a particular interest in how Indigenous students learn mathematics and has presented a number of papers on this topic. In 1993 she developed Mathematics Intervention for Year 1 students. She has been an advisor for a variety of Early Years, the Primary Years and the Middle Years Numeracy Research Projects.

From 1997 to 1999 Cath was involved in the Australian Numeracy Benchmarking Project. Initially she represented both the Australian Mathematical Sciences Council [AMSC] and the Mathematics Education Research Group of Australasia [MERGA]. She was employed by Curriculum Corporation to advise the writers of Numeracy Benchmarks and give feedback for all draft numeracy benchmark documents.

Cath has been an invited participant on several important federal and state government groups. She assisted with the writing of the Australian Numeracy Benchmarks and the rewriting of CSF2 and Course Advice for Victoria. She was the numeracy expert for the School Entry Assessment project in Victoria. The most recent invitations as a member of the Mathematics Expert Panel for the Department of Education and Early Childhood (DEECD) and as a member giving feedback to the draft Australian Curriculum documents.

Margaret James
Yipirinya School, NT

Margaret James has been involved in Indigenous education in Central Australia for 9 years, in schools and at Tertiary level. Her passion for, and expertise in, early literacy, language acquisition, English as an Additional Language Dialect (EALD), singing and Aboriginal English – inspired the development of ‘The Honey Ant Readers’ – a unique reading program for Indigenous EALD learners, written in collaboration with Indigenous elders and community, in the ‘language of the playground’. Margaret has developed a compendium of songs, rhymes and jingles to teach Standard Australian English (SAE) phonemes, which is being recorded for use in schools.

Abstract

This paper combines the demonstration of a literacy resource developed specifically for young Indigenous students in collaboration with Indigenous elders with an understanding of how these students also acquire mathematical knowledge and how literacy resources, such as this one, can also be used to teach numeracy to young Indigenous students.

Margaret James will discuss the inspiration for the development of the Honey Ant Readers which uses language and themes young Indigenous students will find familiar – many based on their own stories and true to life experiences – combined with pedagogically sound practice such as phonics and compounding vocabulary and the research into the language and original recordings of speech and stories underpin the project. She will discuss the process of consultation and collaboration in the development of these readers and the outcomes that have been evidenced in her school through the use of this resource.

Cath Pearn will discuss the research that explores how young Indigenous students learn mathematics and will demonstrate how this knowledge can be applied to teaching mathematics through the use of concrete resources including literacy resources such as Honey Ant Readers.
Literacy and numeracy learning: What works for young Indigenous students? Lessons from the Longitudinal Literacy and Numeracy Study for Indigenous Children

**Abstract**

The Longitudinal Literacy and Numeracy Study for Indigenous Students (ILLANS) tracked the growth in literacy and numeracy skills of a group of Indigenous students from 27 schools across Australia from the beginning of primary school until the end of Year 6. At the time the study was conceived, longitudinal studies on the school achievement of Indigenous students were comparatively rare. A desire to develop a broader picture of primary school experiences motivated data collection that included a range of other data from a variety of informants in addition to academic achievement data. ILLANS commenced in 2000, with the first phase of the study (2000–2002) reported in the monograph Supporting English literacy and numeracy learning for Indigenous students in the early years (Frigo et al., 2003). The current paper is a summary of the main findings from Phase 2 of the study (2003–2006) reported in the monograph Literacy and Numeracy Learning: Lessons from the Longitudinal Literacy and Numeracy Study for Indigenous Students (Purdie et al., 2011).

**Context for the study**

Most children develop literacy and numeracy skills throughout primary schooling, allowing them to transition successfully to secondary school and to fully access post-school opportunities. For some children, however, the development of literacy and numeracy is more problematic; Indigenous students are over-represented in this group. On nationally agreed benchmarks for literacy and numeracy, fewer Indigenous students meet agreed standards compared with non-Indigenous students (e.g., De Bortoli & Cresswell, 2004; De Bortoli & Thomson, 2009; Rothman, 2002; Rothman & McMillan, 2003). The reasons for Indigenous educational disadvantage are complex, entrenched, and require concerted and sustained efforts to address. The six Closing the Gap targets set explicit deadlines for making substantial improvements in education and employment outcomes for Indigenous people, including halving the gap in achievement for Indigenous students in reading, writing and numeracy by 2018. In this context, the Longitudinal Literacy and Numeracy Study for Indigenous Students (ILLANS) is important in documenting the academic achievement of a group of Indigenous Australian students over the course of their primary education. At the same time, in developing this study there was recognition that supplementing academic achievement data with additional measures on student background and attitudes would help to develop a more complete picture of the primary school experiences of Indigenous students.

**Approach**

ILLANS sought to monitor the growth in literacy and numeracy achievement of a group of Indigenous students from school commencement until the end of primary school. Schools that participated in ILLANS were purposively selected based on...
nominations from state education departments as exemplifying good practice in the education of Indigenous students. Overall, each state and territory of Australia was represented by schools located in metropolitan, regional and remote areas (as shown in Table 1). Comparisons were made between Indigenous and non-Indigenous students completing the same assessments and surveys as a means of drawing conclusions about the school experiences of this group of Indigenous students. It is also important, however, to acknowledge the diverse backgrounds and experiences of students in this study who identified as Indigenous.

The research was conducted in two phases. In the first phase, undertaken from 2000–2002, 152 Indigenous students from 13 schools across Australia, completed literacy and numeracy assessments that were designed for another ACER project: The Longitudinal Literacy and Numeracy Study (LLANS). Students who participated in the LLANS study provided a comparison group for Indigenous students who participated in Phase 1 of the ILLANS study. Unexpected attrition of students between Phase 1 and 2 of ILLANS necessitated additional recruitment to the sample. Thus, for Phase 2 of ILLANS, an additional 14 schools were recruited, joining 11 of the 13 original schools. Non-Indigenous students from the same schools participated in Phase 2 of the study as they were deemed to be a more appropriate comparison group than the main LLANS sample. Across the four years of Phase 2, 287 Indigenous students completed one or more assessments in literacy or numeracy. Table 2 shows the maximum numbers of literacy and numeracy assessments completed by students across the four years of Phase 2. Achievement on the literacy and numeracy assessments for each year of ILLANS were modelled using Rasch techniques to place students’ performances and the difficulty of items on the same interval.
Underlying the approach of the ILLANS study was recognition that the development of literacy and numeracy skills is fostered by a range of factors – both those that are intrinsic to the child and those that are characteristic of the child’s broader environment (e.g., their school and family). Thus, in addition to standard assessments of literacy and numeracy conducted annually from Years 3–6, a range of other data, both qualitative and quantitative were collected. A number of informants provided these data, including individual students, their teachers, Australian Indigenous Education Officers (AIEOs) and school principals. The main emphasis each year for students was the completion of literacy and numeracy assessments adopted from the LLANS study. Teachers also assessed participating students’ achievement (as achieved, developing or not achieved) in specific areas of literacy and numeracy at the beginning of Phase 2, as well as assessing their overall achievement against their peers and against the curriculum. A five-item measure of student attentiveness (Rowe & Rowe, 1999) was completed by teachers during each year of Phase 2. Students also completed questionnaires during the final year of the study that focused on their attitudes towards reading, their perception of their school’s climate, and their evaluation of their own personal achievement in learning. Background variables to the study provided by principals, teachers and AIEOs included data on student absenteeism, the main language spoken by students at home, the percentage of Indigenous students attending the school and parental occupation.

Site visits were undertaken annually during Phase 1 of the project to each of the 13 participating schools. The approach to case studies changed in the second phase of the project as individual visits were no longer possible because of the expanded number of schools and students. Preliminary analyses of student achievement data collected in 2004 provided a basis for selecting five case study schools to visit during 2005. Choice of schools was motivated by a desire to visit schools with quite different patterns of literacy and numeracy achievement among their Indigenous students. The purpose of visits to schools was to gain further insight into how these schools operated their literacy and numeracy learning programs and to explore the different approaches they used to support the learning of Indigenous students. Major areas of discussion during these visits included culturally inclusive curricula, teachers’ professional learning, and partnerships between home and school.

**Selected findings from Phase 2**

**Patterns of achievement**

Quantitative data on student background, achievement in English literacy and numeracy, and student attitudes towards school and learning collected throughout Phase 2 of ILLANS were useful in describing the achievements of a group of Indigenous students from Years 3–6. Indigenous students continue to improve their literacy and numeracy skills over the last four years of primary school at a similar rate to their non-Indigenous peers; however, the gap in average achievement between Indigenous students and their non-Indigenous peers evident at the start of Year 3 remains until the end of primary school (see Tables 3 and 4). There is, however, enormous variability in literacy and numeracy achievement within as well as between groups. Although the average achievement for Indigenous students overall is lower compared with non-Indigenous students, many Indigenous students achieve at a high level in literacy and numeracy relative to their peers. Moderate associations between literacy and numeracy achievement are evident at each year of the study, indicating that students who achieve highly in literacy also tend to achieve highly in numeracy. Substantial between-school variation in achievement was also evident. It was clear that in some schools in the study, Indigenous students are performing as well as or better than their non-Indigenous peers. In other cases, the gap in achievement between Indigenous and non-Indigenous students paralleled the overall pattern, with Indigenous students recording lower average achievement than non-Indigenous students at the same school.

Patterns of teacher ratings, both at a global level and for the development of specific literacy and numeracy skills tended to reflect the overall trend of the student achievement data. Teachers rated fewer Indigenous students as having developed specific literacy and numeracy skills compared with their non-Indigenous peers, and tended to provide lower ratings of the achievement of their Indigenous students against their peers and the curriculum. On five elements of attentiveness (concentration, curiosity, perseverance, attention span and purposefulness) teachers also tended to provide lower ratings to Indigenous compared with non-Indigenous students.

On a number of different measures of engagement with reading, Indigenous and non-Indigenous students expressed similar opinions. Indigenous students reported similar attitudes across the majority of reading attitude items. Differences in reading attitudes were evident only where Indigenous students were more likely to agree that they read only if they had to, and...
to agree that they read only to get the information they needed. These results are comparable with those found in the PISA study (De Bortoli & Cresswell, 2004). Non-Indigenous students were also more likely to agree that they often read in bed compared with Indigenous students. A higher proportion of Indigenous students did not spend any time each day reading; in other respects, the amount of time spent reading was very similar for Indigenous and non-Indigenous students. Indigenous students tend to have fewer books in the home than non-Indigenous students, but they borrow books from the library as often as non-Indigenous students. Students tended to provide favourable ratings of their schools’ climate and of their own personal learning achievement and there were no differences in the ratings provided by Indigenous students and their non-Indigenous peers.

Factors related to achievement

Multiple regression analyses were conducted to explore the relationship between student achievement in literacy and numeracy in the final year of the study and selected school- and student-level factors. School climate emerged as an important predictor of student achievement in both literacy and numeracy with students who provided favourable ratings of their school’s climate recording higher achievement. Of the student-level factors, attentiveness, language spoken at home, absenteeism and parental occupation were associated with both literacy and numeracy achievement. Students rated as more attentive by their teachers tended to record higher literacy and numeracy achievement, while students who spoke Standard Australian English at home also tended to achieve more highly in literacy than students who spoke other languages at home (including an Indigenous language). Higher levels of student absenteeism were associated with lower achievement in literacy and numeracy, whereas students whose parents were in professional occupations tended to achieve more highly in literacy and numeracy.

Case studies

Case study visits to five schools participating in Phase 2 of ILLANS provided a medium to explore in-depth issues surrounding some of the pronounced between-school variability in literacy and numeracy achievement. Each of the schools experienced challenges in attempting to engage parents (both Indigenous and non-Indigenous) in the life of the school. There was also evidence that notions of a culturally inclusive curriculum varied widely and practices to support the integration of different cultural perspectives were quite different between schools. Each of these schools had diverse communities and experienced unique challenges associated with their school communities. The case study visits

Table 3: Means, standard deviations, and medians for English literacy achievement for Indigenous and non-Indigenous students (2003–2006)

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<td>97.0</td>
<td>99.0</td>
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Table 4: Means, standard deviations, and medians for numeracy achievement for Indigenous and non-Indigenous students (2003–2006)

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identified a clear need among staff at these schools for ongoing, relevant professional development to empower them to work with Indigenous students more effectively.

**Challenges**

Undertaking the ILLANS project highlighted some significant challenges associated with conducting longitudinal research generally, and with Indigenous students specifically. The commitment of schools to the research meant that ten of the original schools remained in the project throughout Phase 1 and Phase 2 (a period of seven years). Fourteen schools that joined the project in Phase 2 supported the research for the final four years of the project. The commitment of school personnel to the project was instrumental in achieving the goals of the project. The enormous mobility of the sample, particularly between Years 2 and 3, when many students moved schools and left the study, made it extremely difficult to track children across all of the assessments. As a result, and in conjunction with absenteeism during assessments, many students missed one or more assessments, and very few completed all assessments across Phases 1 and 2. For this reason, modelling growth across the entire seven years of ILLANS was not possible. Even within the two phases of the study, slightly different groups of students completed assessments at each year level as few students completed both assessments at each time point. Comparisons between Indigenous and non-Indigenous students undertaking the same assessments provide an estimate of the achievement and attitudes of Indigenous students in this study; acknowledged diversity in the experiences of students who identify as Indigenous should be recognised in interpreting the findings of the study.

**Conclusions**

The ILLANS project followed Indigenous children from their first year of school in 2000 through to the end of primary schooling in 2006. Phase 1 of ILLANS compared the achievement and growth of Indigenous students in the early years of school with the main LLANS group. Phase 2 of ILLANS summarised in this paper followed Indigenous students through the final four years of primary schooling and compared their performance in literacy and numeracy with a sample of non-Indigenous students drawn from the same schools. In conjunction, both phases of ILLANS illustrate a gap in achievement between Indigenous and non-Indigenous students for both literacy and numeracy that widens over the course of schooling. Yet the data also clearly showed enormous variability both within and between the groups. Many Indigenous children succeed at school and are achieving as well as, or better than, non-Indigenous students at the same schools. This research has also made some progress in exploring those factors that support Indigenous students to achieve highly in literacy and numeracy. Developing stronger links between schools and Indigenous communities, promoting attendance among Indigenous students, quality teaching, ensuring a good start to schooling, and developing a school culture in which Indigenous students feel included and supported to learn are key aspects of closing the gap in educational achievement for Indigenous students.

**References**


‘Hearing the Country’: Reflexivity as an intimate journey into epistemological liminalities

Abstract

When approached from a critical pedagogical perspective, Indigenous Australian Studies necessarily addresses emotionally difficult topics related to race, history, the ongoing power of colonisation and our identities as Indigenous and non-Indigenous Australians. In this paper I will contend that in PBL (problem-based learning) personal and emotional responses become dialogic and discursive, intellectualised and theorised, and that the resulting new awareness translates into positive thought, practical actions and change with the potential to build a more socially just Australian society for Indigenous Australian peoples. This paper explores how PBL is being used in a third year class at Monash University called ‘Hearing the Country’. It discusses how PBL is used to construct scenarios in which the students are not only exposed to forms of Indigenous knowledges but, through guided reflexive practice, become aware of their own ways of knowing themselves as individuals and how they respond to particular and sometimes confronting ways of understanding other ways of knowing Australia. PBL then provides a platform from which students experience decolonising methodologies first hand and this then may challenge their ways of knowing.

Introduction

I discuss problem-based learning (PBL) and reflexivity in a university environment when answering the question of how we most successfully transfer knowledge about the presumed Other into our own cultural space without reducing, fragmenting, and exoticising complex knowledge systems. My goals are to stimulate in students an awareness of, and empathic engagement with, Indigenous epistemologies and Indigenous perspectives on environment, other species, moral ecology and cultural and commercial activities undertaken on Country. I use ethnographic scenarios as learning triggers for weekly workshops to provide a multi-sensorial and experiential style of learning. The process draws on my own 32 years of experience working with the Yanyuwa peoples of the south-west Gulf of Carpentaria in the Northern Territory. Topics range from the construction of ethnoclassificatory systems to the construction of kinship as an expression of moral ontological frameworks.

Central to the success of the course is that the li-Yanyuwa li-Wirdwalangu (Yanyuwa knowledge holders), the core group of senior men and women who play an active daily role in the maintenance and dissemination of Yanyuwa knowledge systems, is increasingly becoming a site of their own empowerment. In consultation with this author, they have selected and annotated core ethnographic information then developed these into PBL triggers for the course.

This paper reveals the means by which students from various disciplines at Monash University explore the relationship between themselves as reflexive learners and the knowledge systems in which they are embedded, and other knowledge systems to which the course ‘Hearing the Country’ exposes them.

In this unit, the question is posed as to whether it is possible to contextualise Indigenous ontology and epistemology into a Western classroom setting, and if so, how best can we most successfully transfer knowledge about the presumed Other into our own cultural space without reducing, fragmenting and exoticising complex knowledge systems.
To this end, we have been privileged and fortunate that the Yanyuwa families are fearless in their openness and willingness to work with aspects of outside cultures in an attempt to demonstrate as much as is possible the fabric and value of their own identity and Law. They have made three award-winning films: *Two Laws* (1981), *Buwarala Akamiya* – Journey East (1989), and *Ku-Way-way-wama* – Aeroplane Dance (1994), and more recently a suite of seven animations incorporating narratives and song lines. They have also developed a website in collaboration with academics from Deakin University and Monash University in Melbourne, and Australian National University in Canberra; the site (http://arts.deakin.edu.au/Diwurruwurru/) is part of a process of self-representation and education (see Bradley, Devlin-Glass & Mackinlay, 1999). The Yanyuwa families developed materials with me that they consider suitable and valuable as vehicles for cross-cultural instruction. Many of them are based on real-life situations experienced both by members of the Yanyuwa families and myself. The material was gathered during the course of a 32-year collaboration between myself and the Yanyuwa families that continues to this day.

I have also had my own powerful experiences as the Other in both national and international contexts (Australia, Africa, Israel, Europe and Tibet). In the process of mentoring students into the emotional and intellectual landscapes of disorientation, bewilderment, provocation and intellectual interpretations of material, we break through formal veiners surrounding the performance of the role of instructor in the university environment in a particularly intimate way. To disclose elements of the self requires the investment of a degree of trust in the students on our part. I believe that by investing trust in the students I introduce them to a system that one of our students has called ‘guided freedom’.

### Reflexivity

The students undertake a variety of assessable activities, including traditional essays situated firmly within a realm of contest between Indigenous and Western scientific knowledge systems. The essay topics act to direct and focus the understandings and discourses and personal experiences the students have developed throughout the semester. I have struggled over the appropriate assessment modes for ‘Hearing the Other’, given the power of the class experience and the way that assessment invokes and reinforces the very institutional constructs of which I want students to gain a critical understanding.

In response to my own unease regarding traditional assessment, I have chosen to give much attention and weight to each student’s reflexive journal as I have found reflexive writings a rich and inclusive mode of engaging with students in their deep learning. Each student participates in a private dialogue (Boud, Keogh & Walker, 1985; Lee & Barnett, 1994) with me through weekly reflexive responses to the trigger material and set literature. Therefore, I give weight to the value of students’ reflexive practice by adding it to performance evaluation. I adopt a model of awarding marks not for reflection content or structure, but for the actual submission of reflexive text on a weekly basis (e.g. Bawden, 1991; Boud, Keogh & Walker, 1985; Butler, 1996; Hogan, 1995; Mezirow, 1990; Morrison, 1996; November, 1996; O’Connor, 1997; Ross, 1989; Schön, 1983 & 1992; Stockhausen & Creedy, 1994; Sykes, 1986; Walden, 1988). I present the students with a guide to reflexive writing and then we respond to their reflections individually on a weekly basis over the course of the semester. Again, as with the PBL triggers, there is no ‘right’ answer in the reflexive text. I explain to students that I do not just want them to defend their intellectual interpretations of material, but that I want them to acknowledge their emotional responses as well. I stress to them that our emotions are real and we need to learn to deal with them in all of our work situations; they are, after all, a part of the real world. The conversation that develops tends then to reflect the anxieties and tensions sometimes felt by the students during the semester.

I ask students to write 500 to 1000 words per reflexive exercise, which forms the basis of reflexive journal as a part of their major assessment. However, it is more common to find students write several thousand words in response to reflections, thus demonstrating a meaningful commitment to their own self, their own journey and their own desires to engage with the world, no longer accepting the common discourses about learning, self and Other, the nature of knowledge and knowing. Instead, they explore the situated legitimacy of knowledge.

Impassioned statements and declarations are important elements of reflexive writing as they frequently flag momentous points of provocation on the journey of self-discovery. The majority of students experience such moments as they experience shifts in their understandings of the Other as much as of themselves and the world they experience. Figure 6 is reflective of the kind of cognitive dissonance many students experience when presented with the position that both Western and Indigenous knowledge systems are equally legitimate. Many students experience dilemmas when faced with a way of thinking that does not reify either Western or Indigenous knowledge. However, I propose...
that as educators, rather than mask the dilemmas individuals generally encounter when they first work with the Other, we encourage students to experience some element of those feelings before leaving the learning environment. In order to deconstruct the Other, I have to deconstruct myself, and develop an interior dialogue that forces the question: What or who is the Other?”

I cannot bring the totality of Indigenous lives, knowledge and Law into the classroom, but through the relationship established with the Yanyuwa families I have been able to introduce real-life scenarios that trigger the same disorientation, fear and insecurities, as well as humour and joy that most students do not experience until they work with Indigenous peoples. At that point, traditionally, the individual ‘manages’ their responses according to their own reflexive capabilities, which have often not been developed adequately, if at all. Unfortunately, they therefore invoke the position of expert acquired through their university degree rather than explore their lack of expertise in a given scenario because of the traditional notion of education. In their resulting practice, they continue to fulfil the colonial pedagogies that impose on the Other rather than the self, a form of practice we seek to challenge.

It is inevitable that the institution constructs the student as expert and that the student will perform this role in their working life. ‘Hearing the Country’ constantly challenges this position by providing a learning environment that allows students to understand that a position of ignorance is not threatening and does not necessarily imply a lack of intelligence or respect. As the mediator in this class, I am constantly learning from the students as well, as many of their questions asked in ignorance are actually profound. They tend to generate animated conversation and reflection on my part. The learning environment becomes dynamic and responsive for everyone involved. I do not simply follow the ‘chalk and talk’ formula to ‘complete’ the course and to groom future experts. An individual is able to shift from a position of ignorance to a position of awareness, given time, opportunity and a respectful environment in which to do so.

Conclusions
I cannot attain certain learning experiences without a mentoring process that provides the safety that facilitates honesty and opportunity. The act of mediation also acts to diffuse the intensity of emotional, physical and intellectual response to circumstances outside of the norm. This process requires a certain confidence on the part of the educator: I need to trust in the students, I cannot fear them and their responses. I no longer see them as passive consumers, but active, intense agents responding eagerly, even tempestuously as we discuss how the knowledge we are experiencing connects with our actual lives.

An important element of this course is our approach to the academic performance. Rather than seeing myself as responsible for relaying information, transferring data to students, I choose to mentor students as they explore their responses, emotional and intellectual, to carefully selected exemplar triggers. In so doing, I free myself from traditional roles, as do the students. We collaborate in creating a liminal space in which the diversity in perspective and knowledge amongst students becomes the strength of the learning experience, rather than the barrier. Students then model for themselves the means by which they may engage in cross-cultural discourse when relating to and working with Indigenous peoples in the future.

I argue that we can only source true reflection in actual experience. We can think about information all we like, but it ultimately remains abstract and dislocated from our being until we have the essential and embodied experience of other knowledge systems from which we are then able to reflect. Students inevitably experience themselves consciously because of reflexivity. The role of the objective observer is challenged. They discover themselves as emotional as well as intellectual beings, who cannot position themselves as separate from the world in which they exist. In gaining insights about themselves, they are transformed sometimes, uncomfortably. Transformation in this context assists in equipping students for later professional experience. I hope to equip them with a means by which to acknowledge and reflect on events they may experience in the future, thus providing them with the opportunity to explore their own practice as a part of those experiences.

The course remains one that generates intense response. Some students continue the discursive reflection for years afterwards. In 2010, I received an intimate and honest reflections squeezed onto a number of large postcards from a student travelling from northern China to El Salvador to work with Indigenous peoples. I felt compelled to respond even though I lacked any formal forum to do so and found myself laughing and glowing over the moment. The honesty is crucial. If students are able to break through their fantasies, their expectations, their assumptions about the world, they are able to see, hear, feel and think differently.

References

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Abstract
This summary provides an overview of how a change in school leadership can successfully address competencies in complex situations and thus create a positive learning environment in which Indigenous students can excel in their learning rather than accept a culture that inhibits school improvement. Mathematics has long been an area that has held back Indigenous students in improving their learning outcomes, as it is a Eurocentric subject (Rothbaum, Weisz, Pott, Miyake & Morelli, 2000; De Plevitz, 2007) and does not contextualise pedagogy with Indigenous culture and perspectives (Matthews, Cooper & Baturu, 2007).

Introduction
In Australia, Indigenous students continue to be the most educationally disadvantaged group within the area of mathematics education, with performance lagging two years behind that of non-Indigenous students according to the testing programs in numeracy (MEECDYA, 2008). Only 23 per cent of Indigenous people aged 15 years and over complete school to Year 12 compared to 46 per cent for non-Indigenous students, and young Indigenous people record the lowest levels of post-compulsory school enrolments (Lamb, 2009).

Of importance for educators is the recognition that for change to occur in the academic performance of Indigenous students, schools need to change their deficit views about what our Indigenous children can achieve. There is also the need to change the mind-set of Indigenous children about what they can achieve.

YuMi Deadly Maths is a unique mathematics program for Aboriginal and Torres Strait Islander students that aims to:

- enhance mathematics learning outcomes
- improve participation in higher mathematics subjects and tertiary courses
- improve employment and life chances.

The YuMi Deadly Centre
The YuMi Deadly Centre is a new centre that focuses on pedagogies for Indigenous learning. It is a combination of a Torres Strait Islander word (YuMi) meaning ‘you and me’ and an Aboriginal word (Deadly) meaning ‘smart’. It bases its activities on the slogan ‘building community through learning’. It was begun by mathematics educators, but has since joined with educators specialising in Indigenous philosophy and pedagogy and school change and community involvement strategies. Although based at Queensland University of Technology, the centre also has staff at Griffith University. It can be contacted at www.ydc.qut.edu.au.

The philosophy of YuMi Deadly Maths is based on a realisation that mathematics is an abstraction of everyday life which empowers people to solve their problems, and this abstraction has to take account of local culture and context. This cultural and contextual abstraction is enhanced if it is integrated with positive identity change with respect to school, heritage and ambition. This unique program presents mathematics in a new way that views mathematics as a living, growing creative act in which Aboriginal and Torres Strait Islander students can excel through active participation and valuing of Indigenous communities’ ways of knowing and doing.

YuMi Deadly Maths is centred on a whole-of-school change, and has been influenced by the philosophy and success of the Stronger Smarter
Institute. Its approach is underpinned by five key objectives:

1. acknowledging, embracing and developing a positive sense of Aboriginal and/or Torres Strait Islander identity
2. acknowledging and embracing Indigenous leadership in schools and school communities
3. building and maintaining strong community–school partnerships
4. changing beliefs, and ensuring ‘high expectations in leadership’ and ‘high expectations in classrooms’
5. ensuring productive teaching and learning pedagogy is meaningful to the social and cultural contexts of the Indigenous learner.

The YuMi Deadly Maths program can help to overcome systemic issues whereby many Indigenous students perceive mathematics as a teaching area in which they must become ‘white’ to succeed (Matthews, Watego, Cooper & Baturo, 2005), and as a subject that can challenge their identity (Pearce, 2001). Deficiencies or under-performance in mathematics for Indigenous students is not due to their innate intelligence (Cooper, Baturo & Warren, 2005), nor is their social and cultural background at fault (Sarra, 2003). What is needed is for educators to examine the structures and cultures of the education system (Cronin, Sarra & Yelland, 2002) that are the link between school practices and Indigenous student outcomes.

What is mathematics?

Dr Chris Matthews is an Indigenous research mathematician at Griffith University who is developing new pedagogies that focus on mathematics structure and that contextualise mathematics learning to Indigenous culture (Matthews, 2008). Figure 1 illustrates Matthews’ views of the epistemology of mathematics.

According to Matthews:

Mathematics starts from observations in a perceived reality. The observer chooses a particular part of the reality (represented by a grey circle in Figure 1), and then creates an abstract representation of the real-life situation using a range of mathematical symbols, which are put together to form a symbolic language we call mathematics. The observer uses the mathematics in its abstract form to explore particular attributes and behaviours of the real life situation and to communicate these ideas to others. From the mathematics, it is essential that the observer critically reflects on their mathematical representation to ensure that it fits with the observed reality. Consequently, the abstraction and critical reflection processes form an important cycle where mathematics and its knowledge are created, developed and refined. I would argue that most students only experience mathematics in its abstract form (ie, they stay within the cloud in Figure 1) and do not experience and obtain an appreciation for the cycle of abstraction and critical reflection. I believe that developing pedagogy that is centred on this cycle will lead to an authentic mathematical literacy and allow students to achieve at a high standard (p. 48).

There are three main features of the model that need to be considered when developing effective pedagogy in mathematics, particularly for Indigenous students (Matthews, 2008). These are:

1. creativity as an essential component of the abstraction and critical reflection cycle. Allowing students to engage in this cycle gives them an opportunity to create their own mathematical representations, explore solutions to problems on their own terms and relate mathematical representations to other situations within their world view
2. symbols are the product of the abstraction process and, consequently, hold the meaning behind the real-world concept that is being modelled. It is therefore important that we teach the meaning behind mathematical symbols, instead of simply presenting them, so that students can recognise how mathematical concepts are related to their own perceived reality
3. the recognition of cultural bias within the practice of mathematics. Cultural bias exists in every aspect of the cycle – how we perceive reality, why we select a certain part of reality, what we deem to be important, and the symbols we create to represent meaning.
In short, an effective pedagogy will 'allow students to learn mathematics from their current knowledge (i.e., from the students' social and cultural background), thereby providing agency through creativity and ownership over their learning' (Matthews, 2008, p. 48). From this ownership, we aim to foster a positive sense of identity for Indigenous students as learners of mathematics and provide an avenue for Indigenous people to relate mathematics to their reality – that is, their world view – which in the long term will shape the teaching and learning of mathematics.

Creating a positive school culture through change

There is a need for educators to deconstruct their deficit thinking about the underachievement of Indigenous students and to examine the role that schools and practitioners play in low achievement and failure (MACER, 2004). Garcia and Guerra (2004) have suggested that school reform often fails for students from low socioeconomic status and/or racially or ethnically diverse backgrounds because educators are unwilling or less likely to examine the causes of their underachievement and failure and, instead, have a tendency to blame the students, their families and their communities for poor academic results. Betsinger, Garcia and Guerra (2001) suggest that this is because educators believe that these children commence school without preparatory knowledge and skills to assist them in their formal years of learning as parents do not value or support their children's education.

Educators must be willing to assume some responsibility for the failure of Indigenous students, and change their beliefs and assumptions that Indigenous students and their families are responsible for poor academic results (Garcia & Guerra, 2004; Sarra, 2007). Effective leadership is crucial in a school in which Indigenous children continue to fail academically due to disengagement, poor attendance, low expectations and a lack of student pride in self, school and their identity as an Aboriginal or a Torres Strait Islander. Strong and effective leadership can create and change the culture of a school, from dysfunctional to functional elements (Schein, 2004; Sarra, 2003) that encourage improved school attendance, deliver high expectations and instil a sense of pride in a child’s heritage of Aboriginality or of being a Torres Strait Islander.

Organisational culture and leadership

The organisational culture and leadership in a school begins with the principals or the leaders who impose their own values and assumptions on a group. If the school is showing success and the underlying assumptions of members of the school community come to be taken for granted, a culture is created that will define for later generations of members the kinds of leadership that are acceptable. The culture now defines the leadership. But if the school runs into difficulties, if its environment changes to the point where some of its assumptions are no longer valid, leadership is evident once more. Leadership is now the ability to step outside the culture that created the leader and to start evolutionary change processes that are more adaptive.

This ability to perceive the limitations of one’s own culture and to evolve the culture adaptively is the essence and ultimate challenge of good leadership (Schein, 2004).

If the culture of a school displays shared beliefs and assumptions that:
- are anchored in high expectations
- deliver productive and meaningful teaching and learning practices
- acknowledge and embrace Aboriginal and Torres Strait Islander identity
- build and maintain strong community relationships
- acknowledge and embrace Indigenous leadership

then deficit thinking will be replaced with solutions that will provide real and meaningful change and the opportunity to see transformative change in classroom practices and in the school.

Bringing about change: Teachers and researchers

The YuMi Deadly Centre is involved in a number of projects designed to improve outcomes for Aboriginal and Torres Strait Islander students in numeracy to assist them in gaining employment and life chances. Some of these projects are discussed below.

Early language and numeracy

Research findings from a project that focused on language and early numeracy (Sarra, 2008) have highlighted the importance of creating a learning environment that is caring, colourful, exciting, stimulating and reflective of possibilities that will engage children and adults in a collaborative approach to provide opportunities for Indigenous students to learn, no matter how diverse their cultural and social backgrounds.

The overall aim of this project was to identify and explain prior-to-school-age Indigenous students’ ways of knowing and not knowing, learning and not learning early number language and processes, in order to obtain information on the prior-to-school activities that will best prepare these young students for success in school mathematics (in this application, prior-to-school encompasses the 2–4 age...
group in home, daycare, play group and kindergarten settings).

**The Tagai Maths for Employment project**

In a project that focused on contextualising mathematics to culture and home language in the Torres Strait Islands (Ewing et al., 2009), the results indicated that before an Indigenous teacher could address the process of contextualisation and teaching mathematics to her students, she needed to understand the mathematics and contextualise it to her culture. For this teacher, the process was emancipatory, that is, it afforded the articulation and interchange between mathematics and her culture – the Torres Strait Islands (Ewing et al., 2010). Conversely, an Indigenous teacher aide viewed mathematics as something taught in school only, and thus disconnected from her culture.

DET TIME: Teaching Indigenous Mathematics Education project

The aim of the Department of Education and Training’s Teaching Indigenous Mathematics Education (DET TIME) project is to increase the capacity of schools with high enrolments of Aboriginal, Torres Strait Islander and low socioeconomic background students to teach mathematics effectively to these students (Cooper et al., 2009), both to ‘close the gap’ between these students and other students and to increase the number of mathematics-trained people in Australia.

The DET TIME project is based on professional development and teacher change as part of a cycle of students’ affective readiness, relevant external input, effective classroom trials, positive student responses, and supportive reflective sharing (Baturo, Warren & Cooper, 2004) that leads to further student readiness.

**Skilling Indigenous Australia project**

Indigenous Australians in regional and remote communities have high unemployment despite shortages of skilled workers in local industries. Due to previous low achievement in numeracy, Indigenous VET students fail to graduate from courses that would allow access to these industries and benefit their community. The Australian Research Council’s linkage project ‘Skilling Indigenous Australia: Effective numeracy learning for employment by regional and remote Indigenous students in vocational education and training courses’ aims to study Indigenous students’ learning of numeracy to develop theory regarding appropriate instructional methods. Significantly, it focuses on numeracy in relation to Indigenous knowledge, cultural empowerment, and community and employer involvement. Expected outcomes are increased Indigenous graduation and employment rates, and reduced welfare dependence in regional remote areas.

**Conclusion**

As educators it is important that we recognise the rich and dynamic culture of Aboriginal and Torres Strait Islander students and ensure that the construction of mathematics does not devalue it. A combination of student pride, high expectations, embracing Indigenous leadership, maintaining positive school–community relationships, and effective teaching and learning pedagogy that considers the social and cultural context of the learner is essential to make a change that will achieve equal and positive educational outcomes for Aboriginal and Torres Strait Islander students.

**References**


Reporting against the National Indigenous Reform Agreement: what have we learnt so far?

Kate Connors
COAG Reform Council

Kate Connors has been a Senior Adviser with the COAG Reform Council since May 2009. Prior to this she held positions at the Australian Law Reform Commission and the NSW Cabinet Office.

Introduction

The COAG Reform Council’s core business is monitoring, assessing and publicly reporting across a wide range of COAG’s agreements, including competition and regulation reform, healthcare, education and skills, disability, Indigenous reform.

This paper discusses the council’s role in publicly reporting against the education targets under National Indigenous Reform Agreement (NIRA) and the opportunities and challenges that arise for the council in fulfilling this role.

Reforming federal financial relations

The COAG meeting of November 2008 welcomed a ‘new era in federal financial relations’, with the Intergovernmental Agreement on Federal Financial Relations coming into effect on 1 January 2009.

According to COAG, the Intergovernmental Agreement:

… represents the most significant reform of Australia’s federal financial relations in decades. It is aimed at improving the quality and effectiveness of government services by reducing Commonwealth prescriptions on service delivery by the States, providing them with increased flexibility in the way they deliver services to the Australian people.

(COAG 2008, p. 2)

There are three main elements of the new financial arrangements: National Agreements; National Partnership Agreements; and a performance and assessment framework to support public reporting and accountability.

National Agreements establish the policy objectives, outcomes, outputs and performance indicators for each sector. Through these agreements, the Commonwealth and States have agreed to greater accountability through simpler, standardised and more transparent performance reporting, and ‘a rigorous focus on the achievement of outcomes — that is, mutual agreement on what objectives, outcomes and outputs improve the well-being of Australians’ (COAG 2008, p.5).

The National Indigenous Reform Agreement

At the core of the NIRA are six ambitious targets aimed at improving life expectancy, reducing child mortality

- Close the life expectancy gap within a generation
- Halve the gap in mortality rates for Indigenous children under five within a decade
- Ensure all Indigenous four year olds in remote communities have access to early childhood education within five years
- Halve the gap for Indigenous students in reading, writing, numeracy within a decade
- Halve the gap for Indigenous 20 to 24 year olds in Year 12 attainment or equivalent attainment rates by 2020
- Halve the gap in employment outcomes between Indigenous and non-Indigenous Australians within a decade

Box 1: National Indigenous Reform Agreement: targets
rates, and improving education and employment outcomes for Indigenous Australians.

To monitor and assess the performance of governments against the targets in the NIRA, COAG has agreed to a further 27 performance indicators. The difference between Indigenous and non-Indigenous outcomes against each of these indicators are used to help assess progress towards the targets.

A unique feature of the NIRA is the inclusion of trajectories to monitor the performance of governments in reaching the six targets within COAG’s timeframe. The purpose of the trajectories is to provide guidance as to whether current trends are on track to achieve the targets within the timeframes set by COAG.

The role of the COAG Reform Council under the National Indigenous Reform Agreement

The COAG Reform Council assists COAG to drive its national reform agenda by strengthening accountability for the achievement of results through independent and evidence-based monitoring, assessment and reporting on the performance of governments. The council is funded by all governments but is independent of individual governments and reports directly to COAG.

For each of the six National Agreements, the council provides annual reports to COAG based on a comparative analysis of the performance of governments against agreed indicators. The reports are made public.

The NIRA outlines two specific roles for the council in regards to the six Closing the Gap targets and trajectories. First, the council is required to assess annually whether there has been genuine improvement against each target by determining if the change is statistically significant. Second, the council is required to assess whether the pace of change, if maintained, is sufficient to meet the target.

The council’s analysis compares the performance of jurisdictions against each other and also against their own year-on-year performance, reflecting the importance of achieving continuous improvement against the targets and performance indicators.

To help understand performance, the council is also required to highlight contextual differences between the jurisdictions which are relevant to interpreting the data, such as differences in populations. In the NIRA, the council highlights three factors in particular — the size of the Indigenous population, where Indigenous Australians live and the proportion of Indigenous Australians who speak an Indigenous language at home — to demonstrate important differences between the jurisdictions, which, in turn, influence the performance of governments. For example, in the Northern Territory, nearly 80 per cent of Indigenous Australians live in remote and very remote areas compared to just over 5 per cent of Indigenous Australians in NSW (ABS 2009).

Analysing change over time

With the baseline data published, the second year report shifts to assessing governments’ progress against agreed objectives, outcomes and outputs. The shift to assessing progress means a focus on assessing change over time.

‘Change over time’ can be described as progress, improvement, decline or failure to progress, depending on the direction of change and other considerations. Within the council’s comparative analysis framework, change over time is a dynamic construct as it involves analysing change within and across jurisdictions.

The next part of the paper looks at the council’s analysis of change over time for the two education targets under the NIRA.

Halving the gap in reading, writing and numeracy

Literacy and numeracy achievement is a key determinant of successful schooling and transition outcomes and a component of the schooling ‘building block’ under the National Indigenous Reform Agreement. To measure progress, COAG agreed on two performance indicators which report participation and achievement in NAPLAN at Years 3, 5, 7 and 9. These performance indicators are also reported in the National Education Agreement.

The national minimum standard is a measure of basic literacy and numeracy achievement in NAPLAN testing. Due to the smaller proportions of Indigenous students achieving the national minimum standard or above, it is a very important measure in reporting on progress to close the gap in literacy and numeracy achievement. An analysis of the size of the gap over time allows improvements in Indigenous students’ achievement to be judged against improvements of the non-Indigenous student population over the same time period.

While the COAG target to close the 2008 gap between Indigenous and non-Indigenous students may be attained over time, the gap may in fact widen as improvements are accelerated in the non-Indigenous student population.

In its second year report on the NIRA, the council found that between 2008 and 2009, there was some decrease in the gap between Indigenous and non-Indigenous students at or above the national minimum standard in Reading and Writing, and to a lesser extent in Numeracy, mainly in the primary years of schooling.
As well as the national minimum standard, the council has also chosen to report on changes in NAPLAN mean scale scores in the NIRA. Figure 1 gives an example of change over time analysis in the second year report, showing an indication of the size of the difference between Indigenous and non-Indigenous students’ achievement in Reading across 2008 and 2009. Although the mean scale score for Indigenous students is generally higher in 2009 than in 2008, the same is true for non-Indigenous students, resulting in almost no change in the size of the gap in achievement.

**Halving the gap in Year 12 attainment**

Increasing the attainment of Year 12 or its vocational equivalent (Certificate II) plays a vital role in reducing disadvantage amongst Indigenous Australians. While school participation has increased for Indigenous young people over the past decade, in 2006 only 47.4 per cent of Indigenous 20–24 year olds had attained Year 12 or its equivalent compared to 83.8 per cent of non-Indigenous people of the same age (ABS 2006, Census of Population and Housing).

Under the NIRA, Indigenous Year 12 attainment is reported using the Census, with supplementary data available from the National Aboriginal and Torres Straight Islander Social Survey. Apparent retention rates and attendance rates are used as supplementary progress indicators to provide yearly data.

The council has expressed caution in looking at changes in apparent retention rates over time as the data are influenced by a number of factors which affect accuracy (such as school enrolment policies, repeating students, interstate migration and students moving between government, Catholic and independent schools).

Nationally between 1995 and 2009, the retention rate to Year 12 for Indigenous students increased from 30.7 per cent to 45.4 per cent, an increase of 1.2 percentage points each year. The rate for the non-Indigenous population also increased, from 73.2 to 77.3 per cent, but at a slower rate of 0.3 percentage points per year.

Between 2007 and 2009, there was no improvement in Indigenous students' attendance in Year 10 in government schools.

Figure 2 presents data for all school years for government schools in 2009. It shows, the decrease in student attendance rates is marked at Years 7 and 8 – the first years of high school – in all States and Territories. Overall,
there was a decline in attendance rates after Years 7 and 8 until the lowest rates recorded in Years 9 and 10.

In its reports, the council has noted that the measure of Year 12 attainment could be based on the actual number of Year 12 completions by Indigenous students as identified through certificate information, allowing yearly reporting of progress. Currently, however, although this information is collected by each jurisdiction, it is based on different definitions and is not comparable across jurisdictions. The council would like to see the development of a comparable measure of Year 12 attainment based on administrative data. This would provide a more robust and timely measure of this important performance indicator and target.

**Highlighting good practice and performance**

In analysing performance, COAG has clearly stated that the council does not have a policy advising role, meaning it does not analyse the effectiveness of the governments’ policies and programs behind the results of performance. However, the council does have a role in highlighting good practice and performance. The aim of reporting on good practice and performance is that, over time, innovative reforms or methods of service delivery within a jurisdiction(s) may be adopted by other jurisdictions.

In the context of National Agreements, good practice and performance emerges from the comparative analysis of jurisdictions’ performance against nationally agreed performance indicators. It is intended to identify good performance as high relative achievement, or progress or improvement over time, in relation to COAG objectives and desired outcomes. Good practice is achieved through innovative reforms or methods of service delivery that are known to be linked to the attainment of high-level outcomes.

The council has developed a framework that involves a two-stage process for identifying good performance and reporting on good practice. In Stage 1, the council, with external assistance if necessary, undertakes in-depth analysis of performance information in selected areas to better understand variations in performance across and/or within jurisdictions.

If a jurisdiction is identified as a high performer (when contextual factors are accounted for), the council will proceed to Stage 2. In Stage 2, jurisdictions with high relative performance are further examined to identify good practice – for example, strategies or interventions – that has helped steer systems or service providers towards the achievement of improved outcomes.

In the second year report on the National Indigenous Reform Agreement, the council reported analysis undertaken by the Australian Council for Education Research (ACER) to examine the performance information relating to the Year 12 (or equivalent) attainment of Indigenous students.

From the council’s baseline report it is clear that outcomes for Indigenous students compared with non-Indigenous students varied across the States and Territories. In 2006, the proportion of Indigenous 20–24 year olds who had attained Year 12 or equivalent ranged from only 18.3 per cent in the Northern Territory to 66.2 per cent in the ACT (ABS 2006, Census of Population and Housing).

The broad aims of this project were to better understand variations in performance across and/or within jurisdictions, explore the role of key contextual factors in such variations and provide advice on a set of possible good practice drivers for development in Stage 2.

Key findings of the ACER project were:

- Nationally, between 1995 and 2009 the retention rate to Year 12 increased from 30.7 per cent to 45.4 per cent, an increase of 1.2 percentage points each year. The Northern Territory and South Australia were exceptional cases in improvement (ABS (2010) National Schools Statistics Collection)
- For all Australia in 1996, there were 1,400 Indigenous students completing a VET qualification; by 2008, there were 10,800. This is nearly an eightfold increase. Total VET attainments for the period 1996 to 2008 show a pattern of increasing enrolments for Indigenous and other students, irrespective of the state or territory in which the students reside (ACER analysis of NCVER Students and courses data)
- In exploring different influences on Year 12 or Certificate II attainment, only two factors – achievement and educational intention – were significant predictors for Year 12 attainment for Indigenous students.
- Factors affecting the intention to complete Year 12 itself were higher achievement (nearly twice the chance), gender (Indigenous females nearly twice as likely to report plans to complete Year 12 as Indigenous males) and parental education. For non-Indigenous students, socioeconomic status, geo-location and language spoken at home were also significant.

It became clear to ACER and the council that any model of attainment which is driven by the data remains fledgling. The development of such a model is currently hindered by lack of both statistical data and robust program evaluations. Further analysis, both statistical and program evaluation,
may be required before there can be a clearer understanding of Indigenous Year 12 attainment. In particular, further analysis would be needed to determine if any identified interventions are applicable across jurisdictions.

Conclusion

The council’s role in holding governments accountable to progress under each of the six targets introduces a stringent level of public accountability and transparency to performance reporting. However, the effectiveness of the council’s public accountability role is dependent on the strength of the performance reporting framework – that is, the agreed objectives, outcomes, outputs and performance benchmarks and the associated information and data against which the council makes its assessments.

For many of the targets under the National Indigenous Reform Agreement, comparing the performance of jurisdictions and reporting on change over time presents a number of practical difficulties. As well as the overarching issue of Indigenous identification, for many of the targets and related performance indicators, year-to-year analysis of change is not possible, as data are not provided annually or limitations with the data mean that it is hard to detect change over short periods of time.

However, the data limitations under the NIRA are widely acknowledged and considerable work is being undertaken to address these difficulties. The shift to a focus on outcomes under the NIRA will significantly influence the development of data, and particularly of administrative data which hold great potential for measuring outcomes. As more data become available and longer term trends can be discerned, the council is confident that richer and more comprehensive assessments of progress will be able to be made, indicating how successfully governments are tracking towards closing the gap.

References


ABS (2010). National Schools Statistics Collection

ACER (2011) Analysis of Year 12 or Certificate II attainment of Indigenous young people – Stage 1, Australian Council for Educational Research, Melbourne

COAG (Council of Australian Governments) 2008, Intergovernmental Agreement on Federal Financial Relations, Canberra

An investigation into the attendance and retention of Aboriginal and Torres Strait Islander students: Research and theory about what works

Stephanie Armstrong
Australian Council for Educational Research (ACER)

Stephanie Armstrong is a Gamilaraay woman from northern New South Wales, from a large extended family. She has been committed to working within Aboriginal education all of her working life. She has had opportunities to teach across all sectors, from universities, TAFE to early childhood directorates in a number of states.

Stephanie is currently working at the Australian Council for Educational Research (ACER) within the Policy Analysis Program. A key part of her role at ACER is to provide leadership to projects focusing on Aboriginal education, and to provide knowledge and guidance on a wide range of Aboriginal issues to her colleagues.

Teaching in schools for over 20 years in rural, remote and major centres has provided Stephanie with skills and experiences that she has used in recent consultancy work. During the last eight years, she spent five years as a curriculum consultant. During this time she built relationships with key players to support agencies of change in schools in the Kimberley region of Western Australia. Key focus areas were Literacy and Numeracy and community engagement to improve outcomes for Indigenous students.

From 2007 to August 2010, Stephanie worked as a consultant with the national project, Dare to Lead (DTL). DTL is a project that aims to improve the outcomes for Indigenous children in Literacy and Numeracy, and to support reconciliation. With 28 years of experience in Indigenous education, Stephanie brings many skills and considerable insight into best practice, and an understanding of the disadvantages and layered effect of barriers in education for Indigenous children.

Sarah Buckley
Australian Council for Educational Research (ACER)

Dr. Sarah Buckley is a Research Fellow at the Australian Council for Educational Research (ACER). During her time at ACER, Sarah has been involved with the Programme for International Student Assessment (PISA), the Trends in International Mathematics and Science Study (TIMSS), and the Progress in International Reading Literacy Study (PIRLS). Sarah was second author on the 2010 Closing the Gap Clearinghouse Issues paper Indigenous School Attendance and Retention with Nola Purdie and recently co-authored a discussion paper for the Longitudinal Study of Indigenous Children (LSIC).

In early 2011, Sarah was part of an ACER team commissioned by the COAG Reform Council to investigate Year 12 attainment rates for Indigenous students.

Prior to working at ACER, Sarah completed her PhD in psychology at the University of Melbourne, investigating the effects of peer relationships on adolescents’ academic motivation using contemporary social network modelling. Sarah has presented at national and international conferences and in 2008 won first prize in the Australian Association for Research in Education’s annual student travel awards. In addition to this, Sarah has been a guest lecturer at the University of Melbourne in the education department, a data analyst for the education department at Monash University and a research assistant in the psychology department at the University of Melbourne.

Abstract

This presentation is based on an Issues paper commissioned by the Closing the Gap Clearinghouse (Purdie & Buckley, 2010). This paper was designed to inform policy makers and service providers in the area of Aboriginal and Torres Strait Islander students’ school attendance and retention. During the presentation, we will highlight issues in analysing school attendance and retention for Aboriginal and Torres Strait Islander students; the gap in school attendance and retention and the causes of this gap; and the success or otherwise of the various programs and initiatives designed to reduce the gap. Issues in the quality of the data and research will also be considered.

The presentation will incorporate an opportunity for audience members to reflect on and discuss the issues presented.

Introduction

Engagement or participation in education is a key factor affecting the life chances of all Australians, and it is particularly important for Aboriginal and Torres Strait Islanders who overall have a lower level of participation in education than non-Aboriginal Australians. Higher levels of educational attainment improve employment opportunities, are associated with higher income and promote participation in all societal activities. The current presentation is based on an Issues paper commissioned by the Closing the Gap Clearinghouse. This Issues paper, written by Nola Purdie and Sarah Buckley, and published in September 2010, was designed to inform policy makers and service providers in the area of Aboriginal and Torres Strait Islander students’ school attendance and retention. During the presentation, we will highlight issues in analysing school attendance and retention for Aboriginal and Torres Strait Islander students; the gap in school attendance and retention and the causes of this gap; and the success or otherwise of the various programs and initiatives designed to reduce the gap. Issues in the quality of the data and research will also be considered.

The presentation will incorporate an opportunity for audience members to reflect on and discuss the issues presented.
Indigenous Education: Pathways to success

Throughout this report, the terms ‘Aboriginal’ and ‘Torres Strait Islander’ are used when referring to Australia’s First Nations people. When the term ‘Indigenous’ is used it is from an excerpt from the previous paper for the Closing the Gap Clearinghouse, which uses the term to refer to Australia’s First people.

Methodology

For the construction of this paper, data and information were collected via an initial literature search conducted using several key databases: Family and Society, Australian Education Index (AEI), Education Resources Information Centre (ERIC), American Psychological Association database (PsycINFO), SociINDEX Database (SocINDEX). Key search terms included: school attendance, school retention, school participation, school readiness, educational participation, educational aspirations, absenteeism, truancy, attendance patterns, dropouts, and school holding power.

Through the database search, relevant Australian and international literature published in the last ten years was identified. This core literature was supplemented with literature identified through internet searches and reference lists within the initial publications consulted. The identified literature included reports of large-scale data collections and interpretations thereof, as well as single case studies that were essentially qualitative in nature, and which may have adopted an action-research approach. In addition, and which may have adopted an action-research approach. In addition, relevant personnel in state and territory education jurisdictions and independent organisations/foundations were contacted to seek material that was not publicly available but which documented strategies, programs and practices that had been implemented, and potentially evaluated.

This presentation will highlight the issues in analysing school attendance and retention for Aboriginal and Torres Strait Islander students, including the reasons and potential consequences of non-attendance and non-completion. A combination of home, school and individual factors are involved in students’ decisions to miss school, although the causes of non-attendance are contested. While parents and students tend to stress school-related factors as the main cause, staff in education jurisdictions and teachers tend to believe that parental attitudes and the home environment are more influential (Gray & Partington, 2003; Malcolm et al., 2003). School non-attendance has significant consequences, with children who regularly miss school more likely to experience significant disruption to their education. A student who misses more than one full day per week on average would lose two years of education over a ten-year period (Western Australia: Office of the Auditor General, 2009). Many reports highlight the importance of regular school attendance in order to achieve core skills, such as literacy and numeracy, and note that achieving adequate levels of education is one of the key contributors to overcoming Indigenous disadvantage.

Measures of school attendance and retention

The difficulties in collecting, collating and comparing information on school attendance and retention at a national level have been well documented (Boulden, 2006; Bourke, Rigby & Burden, 2000; Gray & Partington, 2003). Reasons for this difficulty, especially as it relates to attendance information, revolve around the different ways in which student attendance/absenteeism is recorded in the different states and territories and across the different education jurisdictions. More detailed information on the broader concepts of participation and engagement is even harder to locate.

There are sufficient data from sources like the Ministerial Council for Education, Early Childhood Development and Youth Affairs (MCECYDA) and the Australian Bureau of Statistics (ABS) to indicate a gap between non-Indigenous and Indigenous school attendance rates, although the data are insufficient to demonstrate if the gap has increased or decreased over time. In 2008, Indigenous students attended school at lower rates than non-Indigenous students, with a difference of up to 10 percentage points common in all States and Territories, and a tendency to rise in the later years of schooling. However, in the Northern Territory and Western Australia, the difference was well over 10 percentage points across all years, rising to over 20 percentage points by Year 10.

Similarly, although Indigenous student retention rates are increasing, they are still lower than those of non-Indigenous students. In 2009, 45 per cent of Indigenous students were recorded continuing on from the beginning of secondary school to the end of Year 12 compared with 77 per cent of non-Indigenous students (ABS, 2010). This rate of apparent retention through secondary school had increased by 11 percentage points from the 1999 rate for Indigenous students compared with 4 percentage points for non-Indigenous students (ABS, 2010). It should be noted also that apart from statistics that indicate, on average, the gaps in attendance and retention are greater in remote locations, the data are insufficient to show if there are pockets where gaps are less pronounced or non-existent. Issue like
this and others relating to the quality of available data will be discussed in this presentation. These issues include the impact of migration on student attendance and retention, in particular in smaller jurisdictions, which can lead to misleading data.

What has been tried?
The presentation will present examples of initiatives or programs that aim to increase the attendance and retention of Indigenous Australian students in schooling, including the sources and types of initiatives. For example, these initiatives include those which are government-based that have been developed in response to broader policy consideration around social inclusion, or school-based approaches. Categorisation of programs into ‘types’ is difficult because the various components of programs can be targeted individually or they can be combined in different ways. Many schools use ‘hooks’, which are incentives and rewards to target a particular interest to improve Indigenous student’s attendance and engagement. For example, sport can be used as the ‘hook’ to connect with some students’ interest. There are numerous sporting programs that are widely used across Australia that are now under the auspices of the Sporting Chance Program.

Recognising the pivotal role that culture and pride in identity play in these programs is also another approach that is widely used. Whether it is a school-based program or a high profile festival like Vibe Alive, the importance of cultural identity and its celebration is used to engage and motivate Aboriginal and Torres Strait Islander students. Two national initiatives that have broad objectives of improving the educational outcomes of Aboriginal and Torres Strait Islander students are What Works and Dare to Lead. They are aimed at raising the awareness of educators about actions and the planning that is required to achieve successful educational outcomes.

What works?
A key question for researchers and policy makers seeking to address the Indigenous disadvantage in education (indeed, in any area of Indigenous disadvantage, including health, housing and employment) is: What constitutes reliable evidence to evaluate programs and initiatives so that good policy and actions can be formulated to effect change? A key purpose of the presentation will be to evaluate the quality of available evidence regarding strategies for improving school attendance, with particular weight attributed to research that is higher up the evidence hierarchy. Evidence hierarchies reflect the relative authority of various types of research. The best evidence for policy recommendations is based on studies that draw on a strong conceptual framework, and valid sampling and methodologies (Daly et al., 2007). These studies can be used to understand processes operating across multiple contexts.

The consensus of both national and international research is clearly that non-attendance and non-completion of school causes harm (Reid, 2008; Zubrick et al., 2006) and it is important to implement policy and practice that will work to minimise this harm. Most harm is to the non-attenders themselves, but there can also be an adverse effect on teachers who become demoralised, attending students who receive less attention when non-attendees re-enter the classroom and require extra help, jurisdiction personnel who face the increased costs and time related to dealing with the consequences of non-attendance, and families and communities who face the stigma of deficit.

What does the evidence show?
Although reasons for non-attendance are complex and contextual, the national and international literature commonly cites four contributing factors: the individual, the family, the community and the school.

Implications for policy and research
Robust evidence-based research with a prominent Indigenous component is particularly contentious. The term ‘research’ has a poor reputation among many Indigenous people and communities, not least because much of it has been conducted from an etic (outsider) perspective rather than from an emic (insider) perspective. Regardless of who has conducted the research and what methodologies have been used, the appropriateness of policy recommendations drawn from research must adequately reflect the experiences and world views of Indigenous peoples and communities (Martin, 2003).

According to Patterson (2006), research and practice indicate a number of key components for increasing engagement in learning and therefore school retention over the longer term. These components include those that are specifically school focused, those that are community focused, and those that are inter-agency focused. In this presentation recommendations of ways to improve attendance will be proposed. Particular emphasis will be given to strategies that acknowledge the complexity of the area and understand the importance of a whole school/whole community approach (for instance, inter-agency partnerships that go beyond the educational arena) (e.g. Bourke, Rigby & Boulden, 2000; Boulden, 2006). The importance of factors like health and housing will be considered, as will the need to...
appreciate early childhood development for Aboriginal and Torres Strait Islander children when aiming for successful educational development.

References


Poster presentations
Innovative Literacy Approaches: A Test of the Effectiveness of a Multimedia Tool to Engage Aboriginal Youth in Learning Basic Reading and Writing

This research project seeks to address the gap in literacy provision for Aboriginal youth who are increasingly at risk of marginalisation due to their poor literacy skills. The aim of the project is to develop and test the effectiveness of an interactive CDROM designed to improve the literacy levels of Aboriginal youth aged 15-25yrs in NSW. The educational content of the CD will be based on well established findings on the successful use of explicit teaching methods including instruction in phonetic awareness, syllable breakdown, word families, sight words, vowels, and sound blends. The interactive program will incorporate Aboriginal humour and expressions through use of animation, graphics, sound recordings and video clips thus seeking to engage an otherwise disengaged audience and increase their motivation to learn to read.

Revisiting the Notion of ‘culture’ within our Classrooms

Culture is a word often discussed in Indigenous education. This post revisits this notion of ‘culture’ within our classrooms, through incorporating and exploring teacher culture and particularly how this impacts on pedagogy. The focus is on how we as teachers negotiate and adapt our pedagogical responses to the intersection of teacher and student cultures.

The Honey Ant Readers – A culturally appropriate pathway into print literacy for Indigenous Students.

Demonstrating the benefits of teaching Central Australian Indigenous students to read from books developed specifically for them in collaboration with Indigenous elders – using language and themes they find familiar, based on their own stories and true to life experiences, but combined with pedagogically sound practice such as phonics and compounding vocabulary. Research into the language and original recordings of speech and stories underpin the project.
RoleM is significant for four reasons:

1. Its focus is on mathematics, an area that many teachers experience difficulties in teaching and an area that is strongly related to future employment opportunities.

2. It is situated in the early years of schooling (success builds on success especially with regards to mathematics, a very hierarchical discipline area).

3. The participating schools are some of the most disadvantaged in the country in terms of participants and location.

4. The focus is holistic with strong emphasis on sustainability, and on maintaining momentum (stopping the yo-yo effect).
Conference program
### Sunday 7 August

- **6.00 – 7.30 PM** Cocktails with the Presenters – Darwin Convention Centre, Level 2, Waterfront rooms
- **7.00 PM** Book launch of ‘Two Way Teaching and Learning – Toward culturally reflective and relevant education’ – Darwin Convention Centre, Level 2, Waterfront rooms

### Monday 8 August

- **7.30 AM** Conference Registration – Darwin Convention Centre, Ground floor
  
  Entertainment by Korama Primary School, NT
- **9.00 AM** Welcome to Country – Blawara Lee, Elder of the Larrakia Nation
  
  Lecturer Elder on Campus for the Northern Territory Medical Program
- **9.15 AM** Conference Opening – Professor Geoff Masters, Chief Executive Officer, ACER
- **9.30 AM** Keynote Address 1 – Educational Success: A sustainable outcome for all Indigenous students when teachers understand where the learning journey begins.
  
  Professor Jeannie Herbert, Charles Sturt University
  
  *Chair: Dr Sue Thomson, ACER*

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- **9.00 AM** Welcome to Country
  
  Blawara Lee, Elder of the Larrakia Nation

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- **6.30 PM** Predinner drinks
  
  Darwin Convention Centre, Exhibition Concourse, Ground floor

- **7.00 PM** Conference Dinner
  
  Darwin Convention Centre, Exhibition Concourse, Ground floor

  Entertainment by Shellee Morris
Tuesday 9 August

8.30 AM  Keynote Address 3  
*Key factors influencing educational outcomes for Indigenous students and their implications for planning and practice in the NT.*  
Professor Jonathon Carapetis and Professor Sven Silburn  
Menzies School of Health Research

A 2  
Chair: Dr Sue Thomson, ACER

9.45 AM  Morning tea and poster presentations

10.15 AM  Concurrent Sessions Block 3

Session K  
**Fairy Stories or Images of Identity? Indigenous knowledge and the place of animation as a transformational tool.**  
Associate Professor John Bradley  
Monash University

A 2  
Chair: Kerry-Anne Hoad, ACER

Session L  
**Indigenous Mathematics: Creating an equitable learning environment.**  
Dr Grace Sarra  
Queensland University of Technology

WFR 1  
Chair: Ralph Soubren, ACER

Session M  
**Reporting against the National Indigenous Reform Agreement: What have we learnt so far?**  
Ms Kate Connors  
COAG Reform Council

WFR 2  
Chair: Suzanne Meller, ACER

Session N  
**An Investigation into the Attendance and Retention of Aboriginal and Torres Strait Island Students: Research and theory about what works.**  
Dr Sarah Buckley and Ms Stephanie Armstrong  
ACER

WFR 3  
Chair: Marion Meiers, ACER

11.30 AM  Keynote Address 4  
*Indigenous Education: Finding face, making space, having place*  
Professor Lorna Williams  
University of Victoria, British Columbia, Canada

A 2  
Chair: Dr Sue Thomson, ACER

12.30 PM  Lunch available for those who are able to stay
Conference delegates
### Dinner Table No. | First Name | Position | Delegate Organisation
---|---|---|---
5 | Mr MD Farid Ahmed | Teacher | IRDS-BD, Bangladesh
9 | Mrs Lynne Akhurst | Indigenous Liaison Officer | ACER, VIC
5 | Ms Stephanie Armstrong | Middle School Coordinator | St Patrick's College, NSW
9 | Mr Paul Ashkar | Senior Education Officer | Selective Schools Unit, NSW
5 | Ms Liliana Barclay | Delegate Organisation | Remote Indigenous Services, NSW
5 | Ms Rebecca Barnes | | East Tamar Federation, TAS
5 | Mr Adrian Baron | | Narara Valley State School, NSW
5 | Ms Hannah Rachel Bell | Consultant | ACER, VIC
9 | Mrs Tracy Bellamy | Regional Officer | Catholic Education, Lismore, NSW
5 | Ms Anna Bellert | Manager | DET, NT
9 | Mrs Jeannie Bennett | Primary Sales Coordinator | Cengage Learning Pty Ltd, VIC
14 | Ms Alyson Betrami | AEO | Karabar High School, NSW
11 | Mr Scott Blakemore | ACS Project Officer | DECS, SA
9 | Mrs Justine Bomm | Indigenous Education Coordinator | OLSH College, NT
14 | Ms Mignon Bonwick | Coordinator | Youth off the Streets, NSW
2 | Associate Professor John Bradley | Head of Special Education | Trinity Grammar School, VIC
| Ms Dianne Braine | | Gunbalanya School, NT
5 | Miss Catherine Breen | Teacher | Katherine School of the Air, NT
12 | Miss Kellie Brennan | Teacher | Kingston State School, QLD
8 | Ms Jane Bridges | Advisor Aboriginal Education | Catholic Education Office, NSW
7 | Mr Justin Brown | Senior Research Fellow | ACER, VIC
11 | Mrs Peta Bruce | Teacher | St Laurence’s College, QLD
9 | Mr Matthew Bruid | Teacher | Yakanarra Community School, WA
9 | Mr Mark Brusasco | Deputy Headmaster | Brisbane Grammar School, QLD
7 | Dr Sarah Buckley | Research Fellow | ACER, VIC
5 | Ms Leanne Bugg | Assistant Principal | Katherine School of the Air, NT
| Mr Patrick Burford | | DEEWR, ACT
5 | Ms Veronica Bugg | Learning Support Coordinator | St Dominic’s College, NSW
12 | Ms Bev Byrnes | Secondary Teacher | Bremer State High School, QLD
10 | Mrs Debra Cain | Literacy Numeracy Consultant | Armidale Catholic Schools Office, NSW
| Mr Benjamin Calleja | | La Salle College, WA
| Mr Bruce Campbell | | Nambour Christian College, QLD
| Mrs Katherine Campbell | | Nambour Christian College, QLD
7 | Ms Keren Caple | Director | AITS, VIC
| Professor Jonathan Carapetis | | Menzies School of Health Research, NT
| Mrs Sacha Carney | | Mt Alvernia College, QLD
| Ms Sandy Cartwright | | Clyde Fenton Primary School, NT
| Mr Glenn Chippendale | | Benowa State High School, QLD

Indigenous Education: Pathways to success
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<td>Mrs Jody Clarke</td>
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<td>Christ Church Grammar School, WA</td>
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<td>Mr Jim Clifford</td>
<td>Pastoral Care Coordinator</td>
<td>All Saints Catholic College, NSW</td>
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<td>Miss Ruth Clothier</td>
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<td>Aboriginal Independent Comm. Schools, WA</td>
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<td>Mrs Rosalind Coleman</td>
<td>AERT</td>
<td>Salisbury High School, SA</td>
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<td>Ms Nita Combeer</td>
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<td>Salisbury High School, SA</td>
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<td>1</td>
<td>Ms Kate Connors</td>
<td>Senior Adviser</td>
<td>COAG Reform Council, NSW</td>
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<td>Ms Doreen Conroy</td>
<td>Deputy Headmaster</td>
<td>Portland Central School, NSW</td>
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<td>Mrs Susan Considine</td>
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<td>DET, NT</td>
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<td>Ms Jocelyn Cook</td>
<td>Manager, Assessment &amp; Reporting</td>
<td>ACER, WA</td>
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<td>Mr Alan Curtis</td>
<td>Principal</td>
<td>Newman S.H.S., WA</td>
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<td>Mrs Valerie Crowley</td>
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<td>Graham (Polly) Farmer Foundation, WA</td>
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Educational outcomes for Aboriginal and Torres Strait Islander students can be improved only when the process is informed by Indigenous culture, and teaching and learning become part of an equal and genuine cultural exchange. Such is the central tenet that underpins this thought-provoking, sometimes confronting yet ultimately optimistic publication.

Two Way Teaching and Learning addresses the interface where two cultures meet – in the classroom, the school and the community. Most of the contributors to this book are Indigenous, and all are highly experienced practitioners drawn from academia, the teaching profession and the community. Together, and through a diversity of voices, they put the spotlight on policies and processes that facilitate informed, respectful relationships in education, as well as those that reinforce cultural inequity and inequality. The implications of policies that can be liberating, or devastating, for Aboriginal and Torres Strait Islander students at all levels are exposed and explored.

Each contributor clearly articulates specific problems in complex areas such as school retention, literacy and numeracy, self-concept and identity, and each offers practical strategies for teachers, policy-makers, academics and administrators that address these issues. Two Way Teaching and Learning works toward embedding a more culturally reflective, relevant and inclusive agenda in places of learning for the benefit of all.

About the editors
Nola Purdie is a Principal Research Fellow and Coordinator of Indigenous Education Research and Development at the Australian Council for Educational Research.
Gina Milgate is an Aboriginal woman from the Kamilaroi and Wiradjuri clans of New South Wales. Gina is the Indigenous Liaison Officer at the Australian Council for Educational Research.
Hannah Rachel Bell lived and worked with the Ngarinyin people of the Kimberley, WA for over thirty five years. A retired high school English teacher, she is now a full-time writer and policy consultant on Indigenous affairs.

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Chapter 1 History: The real gap between black and white, Bruce Pascoe
Chapter 2 A critique of school and Aboriginal community partnerships, Kevin Lowe
Chapter 3 Indigenous education and tomorrow’s classroom: Three questions, three answers, Lester-Irabinna Rigney
Chapter 4 A bilingual education policy issue: Biliteracy versus English-only literacy, Brian Devlin
Chapter 5 Indigenous retention: What can be learnt from Queensland, Chris Bain

Part 2 Strategies to improve outcomes
Chapter 6 Impediments to educational success for Indigenous students, Clair Andersen
Chapter 7 Transforming Indigenous education, Chris Sarra
Chapter 8 Bemal Gardoo: Embedding cultural content in the science and technology syllabus, Lynette Riley and Michael Genner
Chapter 9 Aboriginal self-concept and racial identity: Practical solutions for teachers, Cheryl Kickett-Tucker and Juli Coffin
Chapter 10 Indigenous mathematics: Creating an equitable learning environment, Grace Sarra, Bronwyn Ewing, Chris Matthews and Tom Cooper

Part 3 Towards two way teaching and learning
Chapter 11 Indigenous studies: Teaching and learning together, Juanita Sherwood, Sarah Keech, Tessa Keenan and Ben Kelly
Chapter 12 Yarning up indigenous pedagogies: A dialogue about eight Aboriginal ways of learning, Tyson Yunakporta and Melissa Kirby
Chapter 13 Personal perspectives from the cultural littoral, Hannah Rachel Bell
Chapter 14 Talking the talk: The soft tissue of reconciliation, Stephanie Armstrong and Denise Shillinglaw

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