

**Closing the educational gap for Aboriginal primary students in low density schools:
A multi-method longitudinal analysis elucidating impact of inclusive practices**

*Virginia O'Rourke, Rhonda G. Craven and Alex Seeshing Yeung,
& Geoff Munns, University of Western Sydney*

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Based on recent research, Aboriginal students still remain the most educationally disadvantaged of all Australian students (e.g. Ritchie & Edwards, 1996). Closing the gap between Aboriginal students' achievement & their non-Aboriginal peers is a matter of national urgency. Culturally inclusive pedagogy is widely assumed to improve Aboriginal students' educational achievement and success but its actual impact remains untested. This research seeks to capitalise on cutting-edge interdisciplinary theory and research and an innovative multi-method & robust longitudinal design to elucidate the impact of specific facets of culturally inclusive pedagogy on Aboriginal students' educational outcomes and well-being in low density schools where most Aboriginal students experience schooling. This will result in a change in the current educational climate whereby those inclusive practices informed by evidenced based pedagogy will enable the strengthening of teaching and learning for Aboriginal students, contributing to closing the gap, and enabling Aboriginal students an education that provides the opportunity to promote sustainable futures. The outcomes of this research have the potential to 'break the cycle' of underachievement by generating new solutions to strengthen classroom & schooling practice of salience to Aboriginal children; increase Aboriginal student engagement in schooling; & build capacity at community, school, classroom, & individual levels.

Despite the growing number of Aboriginal people in Australia who are making outstanding achievements in many fields, severe educational disadvantage of Aboriginal Australians compared to non-Aboriginal Australians exists (Bradley, Draca, Green & Leeves, 2007), hence closing this gap is a national priority. Low success in education, poor health, and high Aboriginal unemployment rates are pervasive and enduring problems that have long-term consequences that limit life potential and result in Australia not optimizing human capital. This inequity in life opportunities and conditions between Aboriginal and non-Aboriginal Australians has seen Australia being labeled as the worst of the first-world countries in its treatment of their Aboriginal peoples (Cooke, Mitrou, Lawrence, Guimond, &

Beaven, 2007; Hill, Barker, & Vos, 2007; Ring & Brown, 2003). A recent Australian Bureau of Statistics Report (The Health and Welfare of Australian Aboriginal and Torres Strait Islander Peoples, 2005) emphasizes a close and causal relation between Aboriginal education, employment, and health, suggesting that education is a vital point of intervention (cf. Craven et al., 2005a; Gray, Hunter & Schwab, 2000). Some research has also been conducted into the motivational forces that repel and attract students to education, as well as the lower rates of educational achievement for Aboriginal populations. For example, Hinkley and McInerney (1998) observed that in the past, it has long been the view of the Australian educational hierarchy that Western values of achievement are poorly suited to Aboriginal students. McInerney (2001), however, demonstrated that Aboriginal students are driven by the same motives and self-beliefs that influence students from non-Aboriginal backgrounds and noted such “results tell a positive story regarding the capacity of Aboriginal children to do well at school given the right sort of motivational school environment” (p. 1). Bempechat, Graham, and Jimenez (1999, p. 139) extended this idea when they found “evidence for the notion that higher achievement is predicted by both cultural universals as well as cultural specifics”. Aboriginal communities and academics have long advocated culturally inclusive practices in the classroom as a catalyst to improved educational outcomes. For example, Ladston-Billings (1995) argued for the centrality of culturally inclusive pedagogy for the academic success of children, especially for those children who are not part of the school’s cultural majority. A decade later, Mellor and Corrigan (2004) emphasised that a failure to acknowledge Aboriginal history and culture as part of the formal curriculum further reinforces Aboriginal peoples’ invisibility and advocated more culturally inclusive practice to help close the gap.

Culturally inclusive pedagogy refers to the practices teachers use to include all children in all the activities and experience of learning regardless of their background and to make classrooms and schools harmonious and interculturally sensitive (Woolfolk & Margetts, 2007). These practices include for example, enabling students to experience academic success, maintain their cultural competence, and develop a broader socio-political consciousness. The Ministerial Council for Education, Employment, and Youth Affairs has also recognised the need for and advocated culturally inclusive pedagogy in their strategic plan for Aboriginal Education 2005-2008. However little is known about which inclusive practices are most effective in relation to Aboriginal students. However, Australian and international educational researchers have now established clearly that teaching is a prime factor in promoting improvements in student outcomes (e.g., Craven, 2007; Hattie, 2003; Hill & Rowe, 1998; Rowe, 2003). This research has also identified the most promising aspects of quality teaching in terms of impact on educational outcomes, and these aspects of quality teaching have been synthesized into the NSW Quality Teaching Framework (Department of Education and Training, 2003). However, very little is known about (a) which characteristics of quality teaching inclusive practices at the classroom level impact on Aboriginal students' engagement, educational outcomes, and well-being; and (b) what specific characteristics of school inclusive practices impact positively on Aboriginal students' outcomes. Hence, what constitutes the best strategies for inclusive educational practices at different levels (e.g. classroom, school) remains to be clearly conceptualised, identified, and the impact thereof demonstrated to result in tangible educational outcomes. This is not surprising given there is a paucity of quality Aboriginal Education research, particularly in the schooling sector as acknowledged by a number of Commonwealth commissioned national studies (Craven, 2006; Craven et al., 2005b; 2005c), leading Aboriginal educators (e.g., Bin-Sallik, 2005; Hughes, 2004), and the NSW Aboriginal Education Review (NSW Department of Education and Training, 2006). This dearth of empirical Aboriginal Education research in the schooling sector is impeding progress in addressing the educational disadvantages that Aboriginal children suffer and the development of new solutions for interventions aimed at enhancing

the educational outcomes of Aboriginal students. It is this gap in research and understanding of what works in relation to inclusive practice that this research aims to fill.

Aims

An overarching aim of the proposed research is to address the paucity of empirical Aboriginal Education research in the schooling sector in general, with a focus on the primary years in particular in relation to the environment where most Aboriginal students experience schooling (80% in NSW, personal communication with DET) – that is in low density school populations where in NSW, Aboriginal students represent only 30% or less of the population. The primary purpose is to elucidate for Aboriginal students in primary schools with low density Aboriginal populations, and performance for Aboriginal students and in the top quartile of value-added schools for Aboriginal students based on the Department of Education National Assessment Program- Literacy and Numeracy (NAPLAN) test results, what works in closing the education gap in relation to:

(a) identifying specific characteristics of culturally appropriate and inclusive classroom and school practices (e.g. culturally appropriate curriculum for Aboriginal students) that are salient to Aboriginal primary students and other stakeholders (e.g. Principals, teachers, parents, school Aboriginal community members);

(c) explicating the tangible impact of specific inclusive practices at both the classroom and school level on educational outcomes, psycho-social drivers of life potential (e.g., positive cultural identity and academic self-concept, learning strategies), and well-being for Aboriginal students in low density settings in NSW (which is the setting in which 80% of Aboriginal students experience primary education) in order to identify specific inclusive practices that result in improvements in concrete and desirable outcomes for Aboriginal students (e.g., numeracy, literacy, attendance, schooling engagement). This will result in new research-identified solutions to underpin innovative and effective educational intervention that will strengthen Aboriginal Education research and outcomes. More specifically, this will be achieved by; testing the salience and impact on multiple educational outcomes of inclusive practices; penetrating the classroom door in low density settings; and maximising the potential of Australia's most educationally disadvantaged group.

Research Significance

Federal and state governments have acknowledged that Aboriginal Australian people are significantly educationally disadvantaged and participate less in education compared to the rest of the population (Commonwealth of Australia; 2002). This is of dire national concern given that educational outcomes predicate success in life opportunities. There is a paucity of empirical research in low density school Aboriginal population settings as most research has focused on high density environments, yet low density schools are the environment that most Aboriginal students experience schooling in. Mellor and Corrigan (2004), in reviewing contemporary Aboriginal Education research have lamented this lack of empirical research noting that: "There is not, in Australia, a research tradition of quantitative measurement in the Aboriginal education literature. To ignore such measurement only continues to do injustice to the gravity of the problem" (pp. 46-47). They also noted that the research methodology employed in current studies is limited by factors such as: small case studies; focusing on a small subset of the population (e.g., communities with a high Aboriginal population); isolating Aboriginal education research from the broader discourses in other disciplines such as psychology, sociology and health; and that the relation between

cause and effect has been asserted rather than demonstrated by research). One of the more significant failures of the research has been the inability to quantitatively examine the interaction between factors. The interactions between poverty, poor health, and social exclusion are as important as the existence of each of these factors. Little has changed since Ainley (1994, p. 5) argued that: “there are few studies in the research literature which probe the ways in which various factors interact to influence the poor education outcomes for Aboriginal and Torres Strait Islander people. Given the magnitude of the differences, this is a major deficiency and there is a need for more thoughtful investigation of these issues”. Given that educational outcomes predicate success in life opportunities, research deficiencies in Aboriginal Education are of dire national concern. This research aims to contribute to addressing this need by clarifying specific inclusive schooling practices and their tangible impact on educational outcomes for Aboriginal students in low density schools, and in so doing generate new solutions for driving effective intervention, Aboriginal Education policies, practices, and programs in primary schools underpinned by evidence-based research and strong theoretical models.

Method

Quantitative Component

The core purpose of this study is to examine and understand the value and impact of culturally inclusive practices as recommended by NSW DET (2006) on educational outcomes for Aboriginal Australian primary students within low density settings. This project seeks to determine what the quality practices within culturally inclusive pedagogy are that make a positive impact on the education of Aboriginal students. The researcher is currently collaborating with the NSW DET Aboriginal Education Unit to develop measures to assess the utility of culturally inclusive pedagogy based on pilot work undertaken. In the first year of the study, data will be collected on three separate occasions (beginning, middle, and end of school year). During the second year, the researcher will analyse the results, disseminate the findings, report back to schools and communities and educational stakeholders.

Participants. In this study, sampling focuses on low density population schools whereby Aboriginal students comprise 30% or less of the population. A minimum of 40 classes from Years 3 to 6 in each of 2 types of educational settings (rural, urban - 80 classes in total) will comprise the sample. This should yield a total sample of 2800 students (35 students x 80 classes) of which up to 30% are Aboriginal. This sample size also allows for the hierarchical structure of the data. A large number of classes need to be assessed to generate adequate sample size of Aboriginal students for statistical analysis and to ensure ecologically natural educational settings for Aboriginal students are being evaluated whereby Aboriginal students are less than 30% in the school population and a true comparison group in the form of actual non-Aboriginal peers in each classroom is established.

DET National Assessment Program data will be used to stratify the total population of NSW schools into 4 distinct quartiles based on educational outcomes for Aboriginal students: (1) the top quartile of schools producing the highest results on the National Assessment Program – Literacy and Numeracy Test for Aboriginal students, (2) the second quartile, producing above average results, (3) the third quartile, producing below average results on the NAPLAN, and (4) the fourth quartile of schools producing the lowest results on the NAPLAN. Schools from urban and rural regions will be randomly selected from the top quartile of schools that have also been identified as value-added schools for Aboriginal students by DET to result in a sample that produces the best available results for Aboriginal

students so that what impacts positively on these students' educational outcomes can be elucidated. The non-Aboriginal students in the same classes as Aboriginal students will serve as a comparison group to enable the elucidation of what works in particular for Aboriginal students in low density settings.

Initially the quantitative component of the study focuses firstly on testing the psychometric properties of the instrumentation for Aboriginal and non-Aboriginal students in Years 3 to 6 to ensure the measures are robust for the sample under consideration. Secondly, to implement the causal modelling component of the quantitative study, the researcher will develop a multi-cohort-multi-occasion (MCMO) design (Marsh, Byrne, & Yeung, 1999; Marsh, Craven, & Debus, 1998), in which pedagogical, schooling, psycho-social, and educational outcomes data are collected on multiple occasions from multiple student age cohorts and their principals and teachers over a one-year period.

Instrument. A new multidimensional measure of inclusive curriculum practices based on the recommendations of the DET (2006) review will be developed. This new measure will include scales such as: Aboriginal perspectives across the curriculum, celebration of special events, school and community educational partnerships; school leadership; quality teaching and inclusive practices etc. Selected short scales from existing instruments with demonstrated psychometric properties for non-Aboriginal populations will also be adapted to measure aspects of quality inclusive teaching and psycho-social constructs —for example, Student Evaluations of Educational Quality (SEEQ) Scale (Marsh, 1991); Classroom Environment Scale (Lee, Lee, & Wong, 2003); PISA scales (PISA/OECD, 2003, e.g., educational quality scale, school environment); and Quality of School Life questionnaire (Linnakylä, 1996). These scales will be orally administered to class groups of about 34 participating students on 3 occasions in 2009 (beginning, middle and end) to enable the causal modeling component of the design. A parallel instrument will be completed by teachers on 3 occasions and a shortened version of the instrument by Principals on one occasion. Teachers will also be asked to rate individual student achievement in maths and reading and student attendance. Principal data will also include background information about the school and community, and the extent to which the school implements specific inclusive practices.

Conventional standardised reading (TORCH) and mathematics (PAT Maths) tests will also be included in addition to teacher assessments (as advocated by Marsh, Byrne, & Yeung, 1999), in order to strengthen the causal modelling component of the research design. In addition, DET will supply available results of the NAPLAN in Years 3 and 5 for participants whose parents agree to allow the researcher access to this data. Measures of psycho-social drivers of life potential will include: multiple dimensions of self-concept (SDQ-I, Marsh, 1990), optimism (Schwarzer & Jerusalem, 1995); enjoyment of school (Craven, Marsh, and Print, 2000), resilience (Academic Resilience Scale, Marsh & Martin, 2006), depression (Child Depression Inventory - Short Form, Kovacs, 1985), and a educational adaptation of the personal/group perceived discrimination scale (Bodkin-Andrews, Craven & Martin 2006).

Analyses. Initial analysis will evaluate the psychometric properties of the scales (internal consistency, reliability, stability over time, factor structure and invariance across groups using CFA of responses for the total sample, the Aboriginal sample, and non-Aboriginal sample and for different groups (e.g., age, gender, geographical location) supplemented by tests of invariance over critical groups and MIMIC models (Marsh, Tracey & Craven, 2006) relating outcomes to background variables. The purpose is to establish a set of measures that is applicable to both Aboriginal and non-Aboriginal students with different characteristics. An established invariance of factor structure across groups would greatly strengthen the validity of comparisons between groups in subsequent analysis. Secondly, Structural Equation Models (SEM) of multiwave-multivariable longitudinal data will be used

to test causal and reciprocal effects models (Marsh, Byrne & Yeung, 1999; cf. Marsh & Craven, 2006) of relations among variables and outcome variables (e.g., the causal ordering of specific facets of inclusive practices, psycho-social constructs, and academic achievement and other educational outcomes) to identify constructs that have a causal relation with outcome constructs for different groups. That is, the research can tease out the specific factors that have significant impacts on educational outcomes after controlling for the effects of other variables and any measurement error. Specifically, the research can identify empirically which aspects of inclusive practice have the greatest impact on specific educational outcomes. Multi-Level Modelling (MLM) will also be utilised to account for the hierarchical nature of school data and to test for the amount of variance explained at different levels (classroom and school level). Taking advantage of recent advances in latent growth modelling analyses of longitudinal data, individual change is represented as functions of time. Typically used in non-experimental studies, grouping variables and contrasts like those in traditional multivariate ANOVAs can easily be incorporated into these MIMIC models (Marsh & Grayson, 1994). Of particular relevance, recent advances (e.g., Marsh, Hau, & Wen, 2004) allow the research to evaluate interaction effects based on latent variables, further strengthening the statistical power. That is, in such situations where a certain variable has an impact on outcomes of the Aboriginal subsample but not those of the non-Aboriginal sample, this state-of-the-art statistical approach can identify variables that may moderate the discrepancy between the two student groupings, thus informing practice such that resources will not be wasted unnecessarily. These analyses provide important advantages in that violations of assumptions of traditional analyses (e.g., sphericity, homoscedasticity) can be overcome, missing data are more appropriately accommodated, and changes found in latent variables are controlled for measurement error. SEMs will be conducted with LISREL8 (Joreskog & Sorbom, 1993) using maximum likelihood estimates derived from covariance matrices with analytic procedures largely following from those demonstrated in our previous work.

Qualitative Component

Participants. Focus groups will be conducted in a random sample of 20 schools (10 from an urban area and 10 from a rural area). At each school: focus groups will be conducted with 4 children (an Aboriginal boy and girl from the lower primary class with the highest DET NAPLAN results, and an Aboriginal boy and girl from the upper primary class), and a focus group will be undertaken with their teachers, and an in-depth interview with the Principal. This will yield a total sample of 80 children (40 boys, 40 girls), their teachers, and 20 Principals (i.e. 60 groups in total: 20 teacher groups, 20 Principals, 20 student groups). The purpose of these interviews will be from multiple stakeholder perspectives to identify perceptions of specific inclusive practices that make a difference, characteristics of quality teachers for Aboriginal students, characteristics of effective schools, and the extent to which these constructs influence educational outcomes for Aboriginal students. Hence the qualitative component of the research design will assist in: further enriching and validating the results of the quantitative component of the study; adding an important dimension to the study in extending our understanding of the nature of inclusive curriculum practice, quality teaching, and schooling for Aboriginal students, and the interwoven causal relations between constructs considered, and other desirable educational outcomes.

Instruments. Data will be collected using 40 minute focus groups or semi-structured interviews.

Analyses. First, the transcribed data will be manually coded utilising an emic approach (i.e., a contextualised approach to reveal the theories and perspectives of the participants) and

the key dimensions identified in this component of the study's conceptual framework. This preliminary analysis will form the basis for collaborative discussion and refinement of initial coding categories. String and pattern searches will then be conducted on the transcripts using NIVIVO 8 to identify additional possible patterns across the transcribed focus group and interview narratives. The data will be further scrutinised to identify the narratives that further extend the findings of the qualitative component in relation to the issues of concern in this component of the study.

Expected Outcomes

The proposed research offers important educational and social benefits for the most disadvantaged group in Australian society on all social indicators (Commonwealth of Australia, 2002). Inclusive practice is of interest worldwide, particularly as a good education is seen as the key to success in later life. Census data strongly indicates that people more likely to consist in the lower achiever group come from cultural minorities, such as Australian Aboriginal people (Gray, Hunter, & Schwab, 2000). Gray, et al. (2000) examined Australian Aboriginal educational participation and attainment from 1986 to 1996 concluding that the Aboriginal population remained severely disadvantaged relative to the non-Aboriginal population. Grey et al. further contended "If they [Aboriginal Australians] do not keep up with the increase in qualifications in the rest of the population, then it is likely that they will remain uncompetitive in the labour market and high rates of Aboriginal poverty will be perpetuated indefinitely" (p. 102). Finding new evidence-based solutions is critical in helping young Aboriginal Australians to maximise their full potential and to achieve healthy, productive, and fulfilling lives. This elucidation will ultimately contribute to the future well-being of the population as a whole, resulting in wide-ranging social and economic benefits and therefore adding materially to national well-being. As such the proposed project will have tangible economic and social benefits for Australia that will flow from the expected results. The proposed project offers substantial educational and societal benefits to Australian society in addition to theoretical advances that include:

- extending understanding of what Aboriginal Australian culturally inclusive practices really work in schools with a low density of Aboriginal students;
- creating more effective teachers and schools and building Aboriginal community capacity which are conducive to producing greater educational and vocational attainment;
- producing findings with practical implications for strengthening education that are of salience to teachers and students and have been developed in collaboration with them;
- improving short-term and long-term educational and life facilitation outcomes for Aboriginal and non-Aboriginal students by directly assessing the impact of culturally inclusive practices on educational outcomes.

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