

# **Australian Indigenous students: Addressing equity issues in assessment**

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## **Abstract**

This article provides the background and context to the important issue of assessment and equity in relation to Indigenous students in Australia. Questions about the validity and fairness of assessment are raised and ways forward are suggested by attending to assessment questions in relation to equity and culture-fair assessment (Berlack, 2001). Patterns of under-achievement by Indigenous students are reflected in national benchmark data and international testing programs like the Trends in International Mathematics and Science Study (TIMSS 2003) and the Program for International Student Assessment (PISA). The argument developed views equity, in relation to assessment, as more of a sociocultural issue than a technical matter. It highlights how teachers need to distinguish the 'funds of knowledge' (Murphy et. al., 2008) that Indigenous students draw on and how teachers need to adopt culturally responsive pedagogy to open up the curriculum and assessment practice to allow for different ways of knowing and being.

## **Introduction**

Increased accountability, standards-based assessment and equity issues are high on the international agenda. When international comparisons of assessment results are made with other developed countries, Australia has underperformed in terms of equity. Australia has been described as a "high quality-low equity" country. Inequity in Australian education has occurred in the relationship between social background, and achievement, and participation in post-compulsory schooling (McGaw, 2007).

A trend of underperformance in terms of equity has continued over the past six years as evident from the comparative analyses of the Program for International Student Assessment (PISA) results, first administered in 2000, again in 2003, and in 2006. Although caution must be taken to avoid the invalid uses of the results of large scale tests there is consistent data across all levels – school, state, national and international to conclude that Australian schools are not addressing equity issues effectively (Sullivan, Tobias & McDonough, 2006) with Indigenous children scoring significantly lower than non-Indigenous children (Lokan, Ford & Greenwood, 1997). The term Indigenous, with a capital letter, will be used throughout this article to signify respect for Aboriginal and Torres Strait Islander people of Australia.

This article provides the background and context to this issue of assessment and equity in relation to Indigenous students in Australia. Questions about the validity and fairness of assessment are raised and ways forward are suggested by attending to assessment questions in relation to equity and culture-fair assessment (Berlack, 2001).

## **Context and background**

Over the past 200 years the distinct Indigenous languages across Australia have declined from in the region of 250 in number to approximately 50 – 60 (Martin, 2008). The latter have survived despite the constancy of change at both local and global levels. Today, the languages that have survived, as first languages of communication, are passed on from one generation to the next naturally (Department of Education and Children's Services of South Australia, 2008). Many of the remaining languages are still spoken by groups of older people or a small number of knowledgeable individuals. These languages are used in varying degrees dependent on the degree of colonial impact. Words and grammatical elements from the local Indigenous language have been used systematically in the English of individuals, to distinguish their linguistic, cultural and group identity and distinctiveness. Each Aboriginal language group has a responsibility to sustain "its ancestral state, also referred to as *Country*". Country refers to land and includes animals, plants, climate, skies, waterways and people. Aboriginal groups although autonomous are also "interconnected for the purpose of looking after Country, the elements and each other" (Martin, 2008, p. 60).

The revival, maintenance and development of languages are important to the culture of Indigenous peoples for linguistic and group identity reasons. Many Indigenous groups in Australia aim to regain power through language and culture to influence and facilitate Indigenous knowledge systems and cultural and spiritual worldviews. A distinction can be made between remote and urban language needs however all Indigenous Australian languages are considered endangered (Department of Education and Children's Services of South Australia, 2008).

Language and communication in traditional contexts are underpinned by the view that language is a key form of interaction that informs and facilitates personal, social, cultural, political and spiritual connections. Language as used in these contexts is shaped by relations between people, acts as a political tool and is essential in the transmission of knowledge systems. It is seen as the primary means of cultural transmission. Language plays a central role in relationship building. Standard Australian English is not the native language of many Indigenous students. They arrive at school speaking their home language which could be Aboriginal English or a Creole and even one or more Indigenous languages or a combination of these (MCEETYA, 2006, p. 17). Teachers seeking to engage their students at a fundamental level need to have a functional knowledge of Aboriginal English. Warren and de Vries (2007) together with other researchers (Simpson, Munns & Clancy, 1999; Zevenbergen, 2000) have found that the conditions for learning for young Indigenous students, as they enter school, to be out of alignment with their

needs. This mismatch between home and school language has directly impacted on the Indigenous students' achievement in literacy and numeracy in the long term (MCEETYA, 2004; Warren and de Vries, 2008).

The map of Aboriginal Australia depicts the general location of large groupings of Aboriginal people that may include smaller groups such as clans, dialects or individual languages in a group. The boundaries are not intended to be exact.



Figure 1. Aboriginal Australia Map  
 (Source: Aboriginal Studies Press, Australian Institute of Aboriginal and Torres Strait Islander Studies, 1996)

*Australian context*

In the 2005 National Report to Parliament (Commonwealth of Australia, 2007) on Indigenous Education and Training, record enrolments of Indigenous students in Australian schools were reported. There is evidence of an increase at both primary and secondary levels. Indigenous students accounted for 4.6% of all primary school students, 3.3% of secondary school students and in total constituted 4.0% of all Australian school students. Significant differences in the attendance rates and outcomes between Indigenous and non-Indigenous students at both primary and secondary school levels, however, were apparent.

In Australia benchmark testing began in 1999. The nationally agreed literacy and numeracy benchmarks for Years 3, 5 and 7 represent minimum standards of performance. It is accepted that students who achieve below these minimum standards will find it difficult to progress satisfactorily at school. Most students achieve at least the benchmark in reading, writing and numeracy yet a significant proportion of Indigenous students do not. While the pattern of Indigenous achievement generally reflects that of All students (that is, Indigenous and non-Indigenous combined) there are large gaps between the achievement of Indigenous and All students (Commonwealth of Australia, 2007).

In 2005 the gap between Indigenous and All students ranged from 14 percentage points in Year 3 numeracy to 33 percentage points in Year 7 numeracy, with only 49 per cent of Indigenous students meeting this benchmark. In addition, there is evidence that there has been a decline in numeracy achievement in the middle years that is particularly apparent for Year 7 and for Indigenous students. In the 2005 national benchmark-testing program the Indigenous scores were lower than the 2004 scores on eight of the nine benchmarks, and in eight cases the gaps between Indigenous and All students' outcomes widened between the two years (Commonwealth of Australia, 2007).

There appear to be few signs of sustained overall improvement with the gaps tending to widen and to increase with the age of the students. The latest results on the national benchmarks for reading, writing and numeracy in Years 3, 5 and 7 from testing in 2006 again indicate a high percentage of Indigenous students are performing well below the benchmark (MCEETYA, 2008). To illustrate, 63% of Indigenous Australian Year 7 students are achieving the benchmark for reading, 73.8% are achieving the benchmark for writing and 47.5% are achieving at the benchmark for numeracy. Although there is improvement since 1999 there are still equity issues to be addressed. Factors such as absenteeism, social disadvantage and culture have been identified as contributing to such underperformance however, such a paradigmatic view today is considered 'irresponsible' (Warren and de Vries, 2007; Cooper, Baturo, Warren and Doig, 2004) for this is much more an equity issue and needs to be addressed pedagogically and in terms of assessment practices.

On average Indigenous students have lower retention and completion rates than non-Indigenous students. The literacy and numeracy benchmark data for All students by geolocation indicate that those in very remote regions, such as the northern coast or desert areas of Australia, have not met the benchmarks at the same rate as other students in all year levels in reading, writing and numeracy. The National Schools Statistics Collection indicates that while almost all non-Indigenous students complete their junior secondary education, one Indigenous student in seven will leave school even before completing Year 10. The proportion of Indigenous students who achieved a Year 12 Certificate has decreased from 51% in 2001 to 49% in 2005 while the proportion of non-Indigenous students who achieved a Year 12 Certificate increased from 80% to 87% (Commonwealth of Australia, 2007).

These patterns of achievement are reflected in international testing programs like the Trends in International Mathematics and Science Study (TIMSS 2003) and the Program for International Student Assessment (PISA).

#### *International context*

The Trends in International Mathematics and Science Study (TIMSS 2003) reported considerable differences in the level of Indigenous and non-Indigenous student achievement. This finding supports those from other international studies that indicate Australia's Indigenous students consistently perform at levels well below non-Indigenous students across all content domains. The TIMSS 2003 revealed significant State and Territory differences in Australia with students in Queensland falling below others and with Indigenous students scoring the lowest. In mathematics, Indigenous students achieved, on average 79 score points lower than their non-Indigenous counterparts and 38 score points lower than the international mean. In science Indigenous students performed 72 score points lower than non-Indigenous students, and 16 score points lower than the international mean. The low proportion of Indigenous students achieving TIMSS international benchmarks is of concern. More than one third of Indigenous students did not reach the lowest benchmark in mathematics and one-fifth of Indigenous students did not reach the lowest benchmark in science (Commonwealth of Australia, 2007).

The Organisation for Economic Co-operation and Development's (OECD) program (PISA) assesses reading, mathematics and science on a three-yearly cycle. In 2000, reading literacy was the main domain and mathematics and science literacies were minor. In PISA 2000 Australia's Indigenous students performed at a lower level than the non-Indigenous students in the three domains and their results were below the OECD mean. Results using the Reading Proficiency Levels revealed an over-representation of Indigenous students in the lower levels (35 per cent) and an under-representation at the highest proficiency level (8 per cent) (De Bortoli & Cresswell, 2004, p. vii).

In PISA 2003 mathematics was the main domain with reading and science the minor domains and problem solving added as another. The 2003 PISA data indicated in general that Australia is "over-represented in the lowest categories of maths proficiency and under-represented in the highest" (Thomson, Cresswell & De Bortoli, 2004, p. xiii). So, while the achievement of students overall in that analysis was high, there were wide differences between the high and low achieving students. The response by the Mathematics Education Research Group of Australasia (MERGA) to the Council of Australian Government's *National Numeracy Review* suggested that, "even though only six countries outperformed Australian children overall, Australia has a long 'tail' that correlates with socio-economic standards" (MERGA, 2007, p. 14).

This trend appears to persist in PISA 2006 that assessed science as the main domain with reading literacy and mathematics as minor domains. In the analysis of the results with specific reference to Indigenous students, it is apparent that they were under-represented among the highest scoring

students and over-represented among low scoring students. For example, “[i]n scientific literacy 40% of Indigenous students performed below the OECD ‘baseline’ and were judged to be at serious risk of not being able to participate adequately in the 21<sup>st</sup> century workforce or to contribute as productive future citizens.” In mathematical literacy the percentage was 39% and in reading literacy 38% (ACER, 2007).

These latest results from PISA 2006 also show a continued widening of the gap in academic achievement between Australia’s Indigenous students and non Indigenous students with minimal improvement since 2000. In 2006, 1080 Indigenous students of the Australian sample of 14 000 students were assessed in scientific, mathematical and reading literacy. Some Indigenous students performed well however on average they scored 86 points (equivalent to two and a half years of formal schooling) lower than non-Indigenous students (ACER, 2007).

Headlines such as “PISA shows Indigenous students continue to struggle” (ACER, 2007) reflect areas of real inequity in Australia’s education system. Reports (ibid; Thomson, 2008) indicate that Australia’s lowest-performing students are most likely to come from Indigenous communities, geographically remote areas and poor socioeconomic backgrounds. In terms of averages, about 40% of Indigenous students, 23% of students from the lowest category of socioeconomic status, and 27% of students from remote schools are not meeting a proficiency level in science that the OECD deems necessary for full participation in today’s workforce and society. These recent PISA results indicate that in Australia issues of inequity need to be addressed to ensure access to quality education for all students (Thomson, 2008). A note of caution is necessary.

The OECD states the data provides indicators of the quality of educational provision for those countries involved. The implication is that systems that appear successful may have lessons for those systems that are less so. However, the item and test development processes “actually weaken the ability of international comparisons to provide evidence about the quality of educational provision” and therefore the “differences in country scores are the result of differences in the quality of *instruction*” (William, 2008, p. 254). The important question “... to what extent are the assessments used in international comparisons sensitive to instruction?” needs to be considered. William highlights the importance of teacher quality and how in terms of impact this aspect is greater than school or socio-economic factors but is not apparent because of the variability of achievement within a cohort. The procedures of test construction and the development of items in a number of languages “decrease the sensitivity of the tests to instruction in ways that are not fully understood and which may vary in important ways from language to language” (ibid, p. 256). Invalid uses of large-scale tests should be avoided, as there are ethical and social justice issues at stake. The data from such international comparisons and the purposes for which they are used must be treated with prudence.

These cautionary messages are particularly significant in this discussion of equity as it pertains to assessment and the implications for policy and practice in relation to Indigenous students' underperformance.

### **Equity and assessment**

Are assessments equally fair to all groups? And are culture-fair assessments possible? In this section an explanation of equity issues as they relate to assessment will be given.

Equity relates to “fairness” or “the application of the principles of justice to correct or supplement the law” (Allen, 1990, p. 396). Equity or fairness in assessment has recently been defined as “a qualitative concern for what is just” (Stobart, 2005, p. 275) and a key assumption in the discussion of equity in relation to assessment is that it is more of a sociocultural issue than a technical one (ibid). Traditional psychometric approaches to testing operated on the reverse assumption that technical solutions could address equity issues by using “elaborate techniques to eliminate biased items” (Gipps, 1994, p. 149).

Stobart (2005, p. 276) makes it clear that equity is not the same as equality. Rather it is concerned with whether equality in terms of opportunity or outcomes “achieves just (‘fair’) results”. For too long policy reflected a deficit model to address inequality, this approach recommended acquisition of what was lacking. Developments during this time of debate around equal opportunities saw solutions such as compensatory education for disadvantaged groups and a drive for equality of resources and access to curriculum assistance. This approach today is considered naïve given our understanding of the very different sociocultural experiences of students. As identified in the Australasian Curriculum, Assessment and Certification Authorities' *Guidelines for Assessment Quality and Equity*:

Fundamental to equity in assessment is the recognition that the construction of the knowledge and skills to be assessed should involve a critical evaluation of the extent to which the choice of a particular set of knowledge and skills is likely to privilege certain groups of students and exclude others by virtue of gender, socioeconomic, cultural or linguistic background. (ACACA, 1995, p. 1)

Teachers assess students' learning to identify, what they have learned, what they have not learned and where they are having difficulty. Assessment, because of its concern with what students have learned, is also based on a conception of the nature of learning and learners. When considering the fairness of the assessments there is a need then to be clear about these conceptions underlying the specific assessments (Gipps & Murphy, 1994). In addition to these conceptions, of the nature of learning and learners, it is important in terms of equity to consider the choice of knowledge and skills selected for the assessments. To achieve equity the curriculum needs to include valued knowledge and skills consisting of different kinds of cultural

knowledge and experience, reflective of all groups, not privileging one group to the exclusion of others.

In 1989 it was Michael Apple who expressed how important it was for curricular questions to be addressed for equity purposes. In 1994 Gipps & Murphy included assessment questions, to which most recently, Stobart (2005) has added access questions (See Table 1). These questions relate to the concepts of 'cultural capital' and 'social capital' (Bourdieu & Passeron, 1977; Bourdieu, 1986). 'Cultural capital' can take the form of knowledge, skills, education or values that can give an individual, an advantage or disadvantage, or a higher or lower status in society. For instance, if students have not developed certain skills, or have not had access to certain knowledge because of their background, gender or indigeneity, then they are at a disadvantage when those skills or that knowledge is valued and assessed in high-stakes tests. Such examinations for selection purposes can favour those who have access to the 'cultural capital' that is considered of value and in this way privileges the dominant group. Bourdieu's work, for example, illustrates how internal processes of schooling, including assessment for selection purposes and the attainment of formal qualifications, provide for the reproduction of the elite rather than being genuinely meritocratic. His work showed how such processes favoured bourgeois 'cultural capital' and experience such that working class students had to have more persistence and ability than those from a favoured background to reach the same level in the education system (Broadfoot, 1996). These insights have implications for our assessment systems and the need for culture-fair assessment that does not require one group (socio economic, cultural, gender) to have greater resilience, perseverance and competence than another to succeed.

Table 1. Curriculum, assessment and access questions (source Stobart, 2005, p. 279)

Curricular Questions	Assessment Questions	Access Questions
Whose knowledge is taught?	What knowledge is assessed and equated with achievement?	Who gets taught and by whom?
Why is it taught in a particular way to this particular group?	Are the form, content and mode of assessment appropriate for different groups and individuals?	Are there differences in the resources available for different groups?
How do we enable the histories and cultures of people of colour, and of women, to be taught in responsible ways? (Apple, 1989)	Is this range of cultural knowledge reflected in definitions of achievement?  How does cultural knowledge mediate individuals' responses to assessment in ways which alter the construct being assessed? (Gipps and Murphy, 1994)	What is incorporated from the cultures of those attending?



The focus on these curricular and assessment questions has increased awareness regarding the need for strategies to develop assessment practices to address equity issues more effectively. To illustrate, the ACACA guidelines recommend that assessment agencies:

- evaluate the occurrence in assessment instruments of reproductions of gender, socioeconomic, ethnic or other cultural stereotypes;
- conduct equity scanning of assessment instruments before use;
- promote research into the validity and fairness of assessment items for which the agency is responsible;
- employ specialist editors to examine the language of assessment instruments in terms of possible barriers to equal opportunity for all students. (ACACA, 1995, p. 1)

It is further recommended that each set of assessment instruments used to assess a student's achievement in a subject should:

- involve the use of a range and balance of background contexts in which assessment items are presented;
- involve a range and balance of types of assessment instruments and modes of response, including a balance and range of visual and linguistic material and
- involve a range and balance of conditions.

So equity does not mean treating students all the same or equality of outcomes. As is apparent from the guidelines (ibid) there is a need to positively support cultural and social diversity in policy, practice and principles. A fair educational and assessment environment is required and teachers need to have a sense of social and ethical responsibility to promote equity.

One way suggested is by strengthening social capital. 'Social capital' refers to those resources that are derived from ties with a social group, network of influence, powerful people, institutions or agencies. Social networks have value, as do the connections within and between networks and the connections among individuals. Three forms of social capital have been identified: bonding, bridging and linking social capital. It has been suggested that it may be possible for schools to build social capital through bonding social capital by establishing ties with a given social or ethnic group (McGaw, 2007). What then are the implications for assessment and what evidence is there that such strategies are helpful in addressing equity issues for Indigenous students?

### **Culture-fair assessment**

Equity or fairness in assessment is a complex issue. It involves much more than a consideration of the specific design of tests or tasks. Attention to whether all students have access to learning, how the curriculum and/or standards are defined and taught and how achievement in the curriculum is interpreted are equally important considerations. The differential performance of Indigenous students as described in recent national and international tests may not be due to bias in the choice of test content or design alone, but may

be attributable to real differences in performance because of Indigenous students' differing access to learning, different social, cultural contexts or real differences in their attainment in the topic under consideration due to their experiences and sociocultural background. The content and mode of the assessment tasks or tests may be outside Indigenous students' experiences and may limit their engagement with the tasks as they position them as not knowledgeable in this assessment context. The opportunity to participate in learning (access issues) and the opportunity to demonstrate learning (validity and fairness in assessment) are deemed fundamental factors in developing culture-fair assessment.

“What constitutes achievement in terms of how it is defined and assessed reflects the value judgments of powerful groups in society” (Gipps, 1994, p.150). Those who set the standards and the content of the tests have the power to privilege certain knowledge and groups. Those who are not members of these groups, and have different experiences and values, will be affected by those assessments developed using the perspectives of those with power. These differences in values, power positions and barriers will inevitably persist.

The intention of culture-fair assessment is to design assessments so that no particular culture has an advantage over another. The purpose of culture-fair assessment is to eliminate the privileging of particular groups over others. However, as argued it is difficult to claim that assessments can be completely culturally unbiased. It has been further suggested that any attempt to claim that assessment can be acultural is incorrect and naïve (Cumming, 2000, p. 4).

The variables identified as possible influences on student performance include:

- the cultural specificity of how the assessment task is framed;
- the cultural specificity of the normative models of child and adolescent development reflected in the constructs of the assessment or test;
- the linguistic codes and conventions of the assessment;
- the cultural-specificity of content knowledge (Luke, Woods, Land, Bahr & McFarland, 2004, pp.12-13)

These authors suggest that to achieve culture-fair assessment there is a need to address issues in language, cultural content, developmental sequence, framing, content and interpretation and reporting. For example, the sampling of the content for assessment needs to offer opportunities for all of the different groups of students who will be taking the test. Assessment interpretations of students' performance need to be contextualized so that what is, or is not, being valued is made explicit as well as the constructs being assessed and the criteria for assessment (Gipps, 1994). To achieve culture-fair assessment the values and perspectives of assessment designers need to be made more public. Further, to understand how culture-fair assessment practice is developed and attained requires a careful study of how the learning experience is modified by teachers for particular students to achieve engagement, participation and improvement in learning.

## Messages from the research in Australia

Attempts to embed Indigenous perspectives in the school curriculum in Australia are evident (Williamson & Dalal, 2007; Tripcony, 2002) yet there is limited in-depth discussion regarding the indigenising of assessment practices or suggestions about embedding Indigenous perspectives in assessment practices. What is reported is that “the values and practices of education institutions – remain inherently ‘mainstream’ Australian” (Tripcony, 2002, p. 7) and school and classroom assessment practices are highly variable with tests that discriminate against Indigenous students (ibid, 2002, p. 1). Research also shows that “specific test items, . . . test administration and reporting formats discriminate against Aboriginal and Torres Strait Islander students on the basis of culture-specific background knowledge and linguistic background” (ibid, 2002, p. 13).

There is a call for educators and institutions to build bridges between the Indigenous and Western knowledge systems to achieve meaningful outcomes, for Indigenous students in particular but for all students in general (Williamson & Dalal, 2007). The challenge still remains: how does one build bridges between the Western scientific and disciplinary knowledge and the Indigenous “responsive, active eco-logical” knowledge that views “language, land, and identity as interdependent in a unique way ... and constantly renewed and reconfigured” (Christie, 2006, p. 79).

In attempting to embed Indigenous perspectives into educational practices, Nakata (2004, 2007) and, Williamson & Dalal (2007, p. 51) emphasise that such a process runs the risk of promoting “corrupted understandings of Indigenous knowledge”. Further, in this process of indigenising educational practices, well-meaning educators and teachers may unintentionally further perpetuate stereotypical views of Indigenous people. It has been suggested that what is needed, “is a recognition and appreciation of the complexities and tensions at the cross-cultural interface” (Nakata as cited by Williamson & Dalal, 2007, p. 51) where negotiation between the Indigenous and Western knowledge, standpoints and perspectives, can take place to reframe, reinterpret or redefine meanings.

Traditionally, the Australian Aborigines view education as being a lifelong, inclusive and social process where children “acquire knowledge in the company of older family members and the community” (Smith, 1995, p. 25). Holding such different views of education helps explain some of the difficulties that Indigenous Australians encounter on entering the Western schooling environment (MCEETYA, 2006). As mentioned many Indigenous students drop out of school before Year 10 and of the few that do complete Year 12 they seldom have the required score to enter university. These outcomes clearly limit the options which are available to Indigenous students after school and perpetuates “intergenerational cycles of social and economic disadvantage” (MCEETYA, 2006, p. 29). Student and community engagement in learning have been identified as key drivers of Indigenous academic achievement (MCEETYA, 2006). Relationships, and in particular the communication which underpins these relationships, is seen as critical to

classroom engagement - between students and teachers, students and parents, teachers and parents, the school with the community, students with students and students with the curriculum (MCEETYA, 2000; Thaman, 2007).

The bulk of research investigating the impact of teacher quality and high quality intellectual tasks has come from overseas. One difficulty faced by those conducting research with Indigenous students involves the idiosyncratic, highly localised and often difficult to generalise programs being trialed by some educators (Luke et al., 2002). One of the key ideas that can be distilled from research, however, is the need for pedagogy that is high on the dimension of significance. "Significance refers to pedagogy that helps to make learning more meaningful and important to students" (MCEETYA, 2006, p. 25). By making education more significant, educators can help their students to engage in higher order thinking which is a key recommendation of "Australian Directions in Indigenous Education" (MCEETYA, 2006).

One of the purposes of assessment is for selection and identification of students who have been assessed as having the appropriate level of knowledge and skills to enter the workforce (Piper, 1995). Current thinking sees an additional purpose of assessment to include opportunities for all students to learn and achieve at the highest possible level (Estrin, 1993). Social contexts are typically used in assessment items to locate individual meanings within wider social practices to which they apply. Despite this intention, however, Indigenous students do not necessarily have access to the same cultural capital needed to perform well on such assessments as their non-Indigenous classmates. Context is important, as the goal of individual learning is to enable future participation in social collective activities. Winking & Bond (1995, p. 2) affirm, "alternative assessments differ from traditional tests in that they require students to construct responses to open-ended problems that have more than one correct answer." Ultimately however, the type of assessment chosen (e.g. multiple choice or short answer,) needs to match the teacher aims, which include promoting accountability, helping students learn and selection or ranking of students. The use of alternative assessments is particularly useful when both teachers and students wish to gain a better understanding of the process students go through in solving complex, real world problems. They can thus be thought of as a tool to help students learn. In the Australian context, this open-ended approach seems to fit well with certain facets of the traditional Indigenous way of learning which is particularly social and inclusive.

While there is quite a body of research which has examined the cultural bias in standardised screening-tests targeting literacy and numeracy (Fore III et al., 2006; Hadaway & Marek-Schroer, 1992; Prediger, 1994; Thomas-Tate et al., 2006) there is a paucity of empirical research which examines the use of alternative, culture-sensitive assessment in classrooms. Within the Australian Aboriginal context, researchers at the Centre for Aboriginal Economic Policy Research (Schwab, 1999) assert that in order to address "factors that cause low Indigenous retention to year 12" (Schwab, 1999, p. 53), there is great need for standardized, culturally-sensitive literacy and numeracy testing of Indigenous students. Ideally, the results of such findings would inform the

development of alternative, culture-fair classroom assessment practices for Indigenous students.

Importantly, teacher-learner communication is recognized by social scientists as a key to better understanding cultural norms and cues (Thaman, 2007). Given that pedagogy is largely shaped by cultural values and ideologies, this therefore requires cultural sensitivity on the part of teachers who are working in culturally diverse classrooms (Gorinski & Abernethy, 2007; Thaman, 2007). In the Australian Aboriginal context where schools are being judged according to student performance in external tests or assessment tasks, the role of partnerships involving students, teachers, parents, schools as a whole and the surrounding community can thus be seen as a key promoter of cultural awareness as well as student retention. It is this form of social capital and social networking that has provided researchers, teachers and policy officer with insights as to how to address equity issues in assessment policy and practice through culture-fair and responsive means.

### **Culture-fair and responsive practices**

The lessons that can be learnt from other culturally diverse communities highlight some important themes that teachers and children from all cultures can capitalize on in any teaching/learning context. It is important that schools or classrooms provide learning-centred environments that attend to:

the knowledge, skills, attitudes and beliefs that learners bring into the classroom. Teachers ... need to recognise the importance of building on the conceptual and cultural knowledge that students bring with them. From this understanding of where students are 'coming from', the teacher can build bridges to where the students need to 'go' in their journey towards improved knowledge and understanding (Stanley, 2000, p. 57).

A sense of place is fundamental to Indigenous people. An Indigenous colleague expressed this sense of place as had been communicated to her by her father (Arthur Parker) "...if you don't know where you come from then you won't know where you're going" (verbal communication, Thelma Gertz, 6 October, 2008).

Culturally responsive practices emphasise that "the different forms of prior knowledge or the different discursive practices" students bring with them into the classroom aid the building of bridges between mainstream and non-mainstream students, for example, the Indigenous or minority group students (Moje & Hinchman, 2004). The physical setting of the cultural interface has been described as the "tacit and unspoken knowledge" that students bring with them into the classroom (Stanley, 2000; Moje & Hinchman, 2004). Knowing where students are coming from, and knowing the point at which they have entered or arrived will help teachers and educators build bridges to reinforce learning, to expand and extend knowledge, and to assist students in negotiating and navigating their paths and positions through "academic communities" (Moje & Hinchman, 2004).

Culturally responsive practices put emphasis on the development and maintenance of a supportive relationship between a teacher and his/her students. This type of teacher-student relationship may work well for Indigenous students. Stewart (2002, p. 15) cites Fanshawe (1999, p. 41) who advocates that “a balanced formula of ‘warmth and demandedness’ provides for an effective teaching atmosphere for successful outcomes for Indigenous students”. In addition to this, Moje & Hinchman (2004) state that culturally responsive practices recognise and respect that each person, regardless of cultural backgrounds and upbringing can be members of more than one cultural or social grouping because of what they believe in, what they subscribe to, and what they are exposed to and surrounded with. These are experiences that can help teachers and educators build bridges in educational contexts for Indigenous students.

Most recently research has been conducted in the field of mathematics to reverse Indigenous students’ underperformance in Queensland, Australia. In the work of Matthews, Cooper and Baturu (2007) the Eurocentric teaching methods in Australia have been replaced by efforts to contextualise mathematics pedagogy within Indigenous culture and perspectives. Productive relationships have been built between teachers and Indigenous Teacher Assistants (ITAs) who come from the particular Indigenous community. The focus has been on holistic approaches that provide overviews of subjects and conscious linking of ideas to align pedagogy to Indigenous students’ learning approaches. Instilling a sense of pride in the students’ Indigenous identity and culture has encouraged attendance and highlighted the capacity of Indigenous students to succeed in mathematics. These researchers adopted a story telling approach to the teaching of mathematics. This approach involves story telling from the world of Indigenous students through to the world of algebra and the use of symbols that have personal meaning and draw on Indigenous students’ experiences. The story telling starts with simple arithmetic but moves to algebraic thinking, pattern and structure within something that is familiar.

Other researchers also working in the field of mathematics teaching in Queensland, Australia have found that the role of oral language in developing understanding, especially for students whose first language is not English, cannot be underestimated (Warren and de Vries, 2007). Other characteristics that appear to be important in maximising access of the participants to the mathematical concepts include hands on experience and use of a range of representations. Code switching has emerged as an important factor in the acquisition of mathematical language and concepts for Indigenous students. These researchers have highlighted how the link between home environment to school environment is important for Indigenous students’ learning. The notion of semiotic chaining or building links between cultural practices and the teaching and learning of mathematics in school has been used effectively.

## **A sociocultural perspective**

The rationale for culture-fair assessment relates to issues of fairness and access in large-scale testing and assessment within multi-cultural societies. As is argued in this article equity in relation to assessment is more of a sociocultural issue than a technical matter. A sociocultural perspective views learning as socially negotiated and embedded within a cultural community. Learning occurs in many different opportunities in everyday life not just in particular contexts. The focus moves away from the individual as the only determinant of learning to include the many activities in which the individual is engaged, the participants and the actions they undertake, using the resources and tools available (Murphy, et. al. 2008). That is the opportunity to learn. This view challenges the current testing and accountability agenda. Drawing on sociolinguistics, cognitive science, and literacy studies, views about learning, assessment and equity have been used to illustrate how assessment is invalid and unjust if those who are being assessed have not had equivalent opportunities to learn (Gee, 2003). Important ethical and social justice issues are raised. "If two children are being assessed on something that they have not had equivalent opportunities to learn the assessment is unjust" (ibid, p. 28). In addition, assessment practices and tasks themselves are not neutral techniques therefore any performance outcomes have to be interpreted in terms of the opportunities the tasks provide for different learners to respond in the way intended.

Assessment has not yet been theorized from a sociocultural perspective. What is emerging however is the importance in the assessment process of what the assessor and the assessed bring to the assessment task in relation to their social, cultural and historical experiences (Elwood, 2008). For teachers or assessors this implies a consideration of the social and institutional structures that mediate their actions as well as their personal values and beliefs, and exploring with learners their 'funds of knowledge' (Murphy et al., 2008). Negotiation of meaning is central to learning from a sociocultural perspective and in relation to assessment it is as learners interact with assessment instruments that assessment constructs emerge (Murphy, et. al. 2008) and what is of interest is not what is known but what one can do. This is a shift in the view of assessment as something that is being done to students to something that is being done with and for the students requiring the teacher to construct a model of the student's notions and operations.

A sociocultural view of knowing accepts that there are cultural differences in the nature of learning, differences in what is viewed as valued knowledge and the way individuals connect with previous generations, draw on cultural legacies, often mediated by their cultural tools that they inherit (Murphy & Hall, 2008, p. x). To enable learners to develop new insights teachers have to distinguish the funds of knowledge that students draw on and adopt culturally responsive pedagogy that opens up the curriculum and assessment and in so doing allows for different ways of knowing and being.

## Conclusion

It has been discussed that the differences between the Indigenous “notions of knowing and being and the mechanistic and scientific position of Western disciplines” suggest that central to the recognition of curricula is the analyses of the nature of knowledge (Williamson & Dalal, 2007, pp. 55-56). It is also suggested that “the narrow capacity of Western oriented curricula are inevitably more exclusive than inclusive of Indigenous positions” (ibid). What is needed is “the collaborations between different knowledge systems which involve partnerships, that work ‘both ways’, and are consistent with appropriate modes of engagement and negotiation which underpin the secular dimensions of Aboriginal life” (Christie, 2006, p. 79).

A key theme to emerge from this analysis and discussion is that the development of culture-fair assessment tasks is an ongoing process that requires communication between all stakeholders. In an environment where misunderstandings can easily occur, the culturally-diverse classroom requires classroom dialogue where “the students’ prior knowledge and experience is woven into new concepts and ideas” (Nelson et al., 2003, p. 18) This kind of interplay is essential if teachers are to accommodate, encourage and promote culture difference. A strong argument can be made to support the development of alternative assessment practices that promote equity by virtue of their cultural fairness. Indeed, within a collaborative framework and through embedding their perspectives in classroom assessment teachers have a good chance of creating an environment in which Indigenous Australians achieve high quality learning outcomes.

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