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Cooper, Thomas J. and Baturu, Annette R. and Warren, Elizabeth and Doig, Shani M. (2004) Young white teachers' perceptions of mathematics learning of Aboriginal and Non-Aboriginal students in remote communities. In Hoines, Marit J. and Fuglestad, Anne, Anne Berit, Eds. *Proceedings 28th Annual Conference of the International Group for the Psychology of Mathematics Education (PME) 2*, pages pp. 239-246, Bergen, Norway.

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YOUNG WHITE TEACHERS' PERCEPTIONS OF MATHEMATICS LEARNING OF ABORIGINAL AND NON-ABORIGINAL STUDENTS IN REMOTE COMMUNITIES

Tom J Cooper & Annette R Baturu
Queensland University of
Technology,

Elizabeth Warren
Australian Catholic
University

Shani M Doig
Queensland University of
Technology

Despite a plethora of writings on Australian Aboriginal education (Craven, 1998; Fanshawe, 1999; LeRoux & Dunn, 1997; Malcolm, 1998; Malin, 1998; Morgan & Slade, 1998; Partington, 1998; Russell, 1998; Stewart, 1998), little has dealt with how teacher perceptions of Indigenous students differs from that of their white counterparts. This is despite fairly wide acceptance that the way teachers perceive students will impact on the teaching, learning and assessment outcomes that students receive (Wyatt-Smith, 1995). The research reported was conducted in remote Aboriginal communities throughout Queensland. It addresses how white teachers, who are usually young and newly graduated, view the mathematics learning of Aboriginal students and how these perceptions differ from white students.

It is commonly accepted that education functions to reproduce social inequalities and that teachers have a role in this process (Bowles & Gintis, 1976). In Australia there is no greater case of social inequality than the gap between the Aboriginal and non-Aboriginal citizens of the country. In the 200 years since Invasion, Aboriginal culture has been systematically disavowed, disempowered and displaced. Despite often well meaning rhetoric, this degradation of Aboriginal populations has, in many instances, not improved since the Referendum of 1967. Government after government has successively failed to rectify the mistakes of the past, instead using welfare and monetary reparations as a way of attempting to silence Aboriginal voices. Recent High Court decisions, councils on reconciliation and more recent revelations about the current living conditions of many of Australia's Aboriginal peoples have gone some way to making governments and oppositions alike realise that Aboriginal voices will not be silenced. Despite which, the policies and decisions of the past and those that continue have left many Aboriginal communities existing in a kind of limbo – existing neither within the traditional parameters of Aboriginal culture nor as part of the Western capitalist system which contextualises most of Australian society. This situation potentially provides one reason why Aboriginal communities are still plagued by issues of poverty, alcoholism, domestic violence, high mortality rates, high teenage pregnancies and a range of other social and health issues which ultimately threaten the survival of these communities (Fitzgerald, 2001).

Aboriginal Education in the Australian Context. Education has not only failed to level the playing field between black and white Australians, it has in fact widened the

gap between the two groups. According to a government report (Australian Government, 2000):

In the 1996 National School English Literacy Survey, approximately 70% of students in Year 3 met the identified performance standards in reading and writing. However, less than 20% of students in the Aboriginal sample met the reading standards and less than 30% met the writing standards. Similar results were obtained for Year 5 students, which suggests that the lowest achieving Year 3 Aboriginal students make little or no progress over the following two years (p. 9).

In total, these general issues in Aboriginal education may be seen as relating to the historical and continuing negative treatment of members of the Aboriginal community by Anglo-Australian society. In particular the non-Aboriginal culture of the country has not recognised the various cultures of the Aboriginal communities. Education with its typically Eurocentric values have cemented this treatment by not acknowledging the knowledges that Aboriginal students bring to schooling and by further expecting 'black' Australians to jump through 'white' hoops in terms of achievement and assessment. Issues in education in Aboriginal communities are further complicated by growing health and social issues that leave many students unable to engage with school at the level required for success. Despite these obstacles, many Aboriginal students do negotiate the education system successfully. While this is due to many factors, it is no doubt helped by teachers who have taken the time to understand Aboriginal students and the way in which they learn. Developing effective teaching strategy that leads to effective outcomes for Aboriginal students has its origins in the ways in which the teachers perceive their students and the way in which they learn.

Teacher perceptions of students. While much has been written about teacher perceptions, surprisingly little concerns teacher perceptions of their students and the implications of these judgements and even less deals with teacher perceptions of mathematics learning and Aboriginal students. The literature instead deals with how teacher perceptions of curriculum alter the way it comes to be implemented in classrooms (McLeskey & Waldon 2002) and of the impact of teacher beliefs about the administration of a school on its successful organisation (LoVette & Watts, 2002). Writings about teacher perceptions of students occur largely in assessment theory where discussions tie perceptions to student achievement and in particular how knowledge about students become part of what Wyatt-Smith (1995) described as the "teacher knowledge files" utilised when teachers are making assessment judgements.

Some studies do deal with teacher perceptions generally, examining the various different perceptions that teachers have of their students. A study by Uhlenberg and Brown (2002), for example, looked at teacher perceptions as the reason for the black-white achievement gap in the United States. Of interest to this study is that while black teachers tended to lay the blame at the doorstep of schools and educational systems, white teachers tended to focus on students, parents and home environments.

A further study by Drame (2002) collected data from 63 teachers to determine the extent to which socio-cultural variables affected teacher perceptions of classroom behaviour. The study concluded that teacher perceptions, particularly of learning disabilities and academic performances, affected teachers' instructional patterns and their dealing with students. A study conducted across four countries (Woolman, 2002) – India, Nigeria, United Kingdom and the United States – into dropout prevention discovered that reversing negative teacher perceptions about minority children was one of the factors essential in keeping at-risk students in the education system. A further study (Mavropoulou & Padeliadu, 2002) found that rather than teacher perceptions of students being the primary determinant in affecting their behaviour in the classroom, it was in fact their own sense of behaviour and control that determined their treatment of students.

While few studies have been conducted into teacher perceptions of Australian Aboriginal students, Green (1982) did examine the influence of the classroom teacher on the performance of Aboriginal children. In this study, a group of 15 Aboriginal teachers were asked to list the major differences between teaching Aboriginal and non-Aboriginal students. The teachers were drawn from classrooms where the Aboriginal population varied from between five to sixty percent. The responses of the teachers were separated into five separate categories. All of the categories developed worked out of a deficit model whereby Aboriginal students were seen as having some form of 'insufficiency' that caused their low academic performance. Of the eighty responses coded, forty-eight of them felt that the students themselves were deficient - lacking interest and language skills, and not having proper behavioural skills, adequate nutrition and proper school socialisation skills. Eleven of the responses blamed familial difficulties including low parental expectations, little parental support and a transient lifestyle as being the cause of the school problems experienced by Aboriginal students. Six responses suggested that there was a cultural gap between Aboriginal and non-Aboriginal students and that this gap made it difficult for the students to assimilate into the schooling system, while four of the responses believed that the schools could be effective in teaching Aboriginal students if they received more assistance from government agencies. Few teachers saw the school having any responsibility. As Green described,

Eleven of the responses attributed the child's learning problems to factors for which the school could be deemed responsible and six of those were written by one teacher. The most common responses were 'Aboriginal children are ignored ... reading materials are inappropriate ... prejudice by teachers and non-Aboriginal children ... teachers do not have special training to teach Aborigines ... a lack of Aboriginal support staff ... inadequate extra curricular activities'. (p. 111)

Generally, working as they were from perceived deficiency models, none of the teachers appeared to expect Aboriginal students to achieve at schooling. Similarly, not one of the teachers involved in the study suggested that, potentially, their own beliefs that students would fail was a contributing factor in that failure. There is no

sense in the data presented that the teachers felt that they could make a difference to the way Aboriginal students learnt and the success that they experienced.

The view that teachers cannot improve the quality of Aboriginal education is directly contradicted by Malin's (1998) case study of a teacher who had an outstanding record of success teaching Aboriginal students. According to the parents of one of the Aboriginal students in her class:

[Mrs Banks] had something interesting every day for the kids there and they really wanted to go to school [my son] talked a lot about school then, and he never wanted to come shopping with me because he was going something at school and he was really excited about it. It was the same when I asked him to stay home and look after the baby. He did it but he never wanted to. But now [he's not in Mrs Banks' class] he wants to stay home and look after the baby and he'd rather do that than go to school. (p. 245-246)

Malin attributed Mrs Banks' success, in part, to her innate knowledge of the students and her belief that students could learn if she supported them. Therefore her success along with Green's teachers' lack of success supports that teachers' perceptions of Aboriginal students and their learning – in particular seeing them positively and believing in their ability to learn - has a huge impact on the success that the teachers can achieve in a classroom.

The focus of this paper. This paper reports on the perceptions held by teachers in schools with 50 to 100% Aboriginal populations of Aboriginal and non-Aboriginal students as mathematics learners. The interviews that gathered this data were part of a larger project dealing with the mathematics professional development of teachers in remote North-Western Queensland schools.

METHOD

As part of the data collection to evaluate the effectiveness of the mathematics professional development program, 12 teachers at three schools in the remote North-West of Queensland were interviewed on two separate occasions, once early in the academic year and then again towards the end of the same year. The topics covered in the interview ranged from teachers' perceptions of mathematics teaching and learning to what mathematics curriculum content should be taught and what the teachers felt needed to be done in order to improve mathematics classroom teaching. It should be noted that all the teachers interviewed were white, young and inexperienced-having only graduated from university **within the last three years**.

At the second interview, teachers were asked to identify the mathematics learning differences between Aboriginal and non-Aboriginal students. This data was examined to identify any common threads that were apparent and whether or not there was any correlation between the responses of these teachers and the ones studied by Green twenty years ago.

RESULTS

The data indicated that some of Green's (1982) findings were still prevalent in modern teachers' talk about the differences between Aboriginal and non-Aboriginal students as mathematics learners, but there were some surprises.

Deficit perceptions. Six out of the twelve teachers' comments could still be classified as originating from a 'deficit' model particularly with respect to the students and/or their families. The two main deficits referred to by teachers were school readiness and attendance. Teachers believed that Aboriginal students were not able to adapt to the culture of school because of what was described as a *lack of school readiness*. According to one teacher:

So you have to work so kids that come already knowing that you read, you listen to words and that you turn the pages, you know all that stuff that the kids do from 3. Where they can tell you, "I'm reading you the story!" They don't have any of that. And they haven't been read to and all that sort of stuff. So you've got to do so much work on school readiness! So that they're behind the 8 ball from the start. So that is, what I find is the biggest thing.

As well, teachers saw lack of attendance and their transient lifestyles as a reason for Aboriginal students' mathematics and general learning difficulties and a major difference between Aboriginal and non-Aboriginal students.

The teachers attributed the lack of school readiness and attendance to a lack of interest in learning in the home environment. More than one teacher suggested that the real problem was that there was *no support for learning in the family* and that students were only sent to school to *get them out of their parents' hair* and that the only reason that the students themselves stayed at school was *to be with their friends*. According to one teacher:

I visited everyone of my kids' homes last year, I have never done that before, but I did it because I wanted to see where these kids were coming from. Eight or nine years of age, the home life that these kids are coming from, no wonder they would want to come to school. Just to get out of the house, no wonder they don't have that fostering of further education, they do home, ride their push bikes around, there is no place where they can just sit and talk because Mum and Dad are not interested or don't have the knowledge themselves.

The teachers believed that Aboriginal students identified school not as a place to learn but as a place to socialise. This was seen as occurring because of deficiencies in both the students and the family.

Teachers referred to stories of Aboriginal students, for example, coming to school not only unable to read but without any knowledge of what a book is and that you had to turn the pages to support their perceptions. One teacher even stated that lack of interest in learning was a general characteristic of Aboriginal students except for one student who had been brought up by non-indigenous foster parents. The teacher

referred to this student as non-Aboriginal because of her *European upbringing*. From the perspective of this teacher, “black” children have to be brought up “white” in order to succeed in education.

Teachers believed that Aboriginal students’ lack of preparedness or knowledge of school meant that students were behind in comparison to their non-Aboriginal classmates who generally came with knowledge of ‘school’ and what happened there. There was a perception in some of the responses that the lack of readiness for school gave rise to behaviour problems such as the inability to sit still.

Non-deficit perceptions. While some of the comments above reflected similar attitudes to those uncovered by Green (1982), comments 6 teachers indicated that some progress had been made in understanding the way in which Aboriginal students learn. The comments that showed progress referred predominantly to the differences in mathematics learning style.

The most common perception was that Aboriginal students were *hands-on learners* in mathematics. Two teachers used the term *kinaesthetic* to describe the way in which Aboriginal students learn with one stating that *I have noticed with place value charts and things, making them touch, really made it sink in*. This teacher suggested that the tactile nature of the way in which students learnt mathematics was not given enough consideration in the design of lessons. Another teacher stated the same position but in a negative manner, stating that Aboriginal students found pen and paper work difficult and had low tolerance for board work and copying information.

One of the teachers interviewed believed that Aboriginal students tended to be more visual learners as a result of their hearing disabilities due to Otitis Medea, an inflammation in the middle ear that an estimated “30% and 80% of all school-aged children in remote Aboriginal communities” have (Queensland Government, 2001). However, she also said that while auditory instructions were problematic, Aboriginal students *don’t like writing they would rather discuss things*.

Other comments referred to lesson organisation. One of the teachers commented that *Aboriginal students learn best in structured learning environments* rather than undertaking work that required independent learning. Another teacher’s comment suggested that Aboriginal students were not risk-takers with their learning and preferred guidance and support.

Interestingly, two teachers said that they found no real difference between Aboriginal and non-Aboriginal students in mathematics classrooms. One teacher, who taught mathematics to only four non-Aboriginal students out of a class of twenty-three, reported that all the students were there all the time regardless of their background, were equally keen and showed no *big gap* between the students. However, there was an inference in this teacher’s comments that absenteeism was a problem for some of the students and created a gap in achievement. Another teacher stated *I don’t really think of them as being Aboriginal or non-Aboriginal. I just try to think of them as each person, their standard and how I can teach better each and every one of them at*

their level". Finally, a third teacher felt that the students themselves weren't intrinsically different but they became different as result of the way they were treated. This teacher felt that educationally Aboriginal students became self-fulfilling prophecies because white teachers didn't believe they had academic abilities. His perception was that low expectations in mathematics learning are producing low results but that if teachers raised the bar, Aboriginal students would rise to meet the challenge.

CONCLUSIONS AND DISCUSSION

Interestingly, when the teachers in this study were asked whether or not there were any mathematics learning differences between Aboriginal and non-Aboriginal students, many of the teachers spoke of achievement related issues such as attendance and school readiness rather than actual learning styles. Those who did speak of learning, however, stated that Aboriginal students appeared less interested in written work and more motivated by hands-on activities. They also suggested that Aboriginal students were visual learners and coped better with structured supported learning as opposed to individual, independent learning.

With the exception of Green (1982), it is difficult to view the findings of this presented here in the context of other literature as at this stage no correlation has been done in this study between teacher perceptions and their impact upon students. In comparison to Green's research, while some teachers did identify with the deficit models that suggest that problems that Aboriginals have with education are a result of their own limitations and that of their families, many teachers now do seem to acknowledge that Aboriginal students have different styles of learning that should be acknowledged. There is also less blame accorded in this study either to the system or the environment than in Green, but similar to Green there was only one comment that indicates that the curriculum adopted by the school does not provide enough for Aboriginal learning styles.

Three distinct categories of responses have emerged in this analysis of teacher perceptions of Aboriginal learning styles. In the first category, teachers retain a stance that the problems of Aboriginal learning have causes that are deep seated and cannot be solved by the school. In the second category, teachers identified that Aboriginals do have different learning styles. In the third category, teachers indicated that they saw no great difference between Aboriginal learning styles and those of non-Aboriginal students. How these perceptions come to affect teaching and learning and ultimately assessment outcomes is the subject of future analysis.

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This is the author-manuscript version of this paper. Cite as:

Cooper, Tom J and Baturu, Annette R and Warren, Elizabeth and Doig, Shani M (2004) Young white teachers' perceptions of mathematics learning of Aboriginal and Non-Aboriginal students in remote communities. In Hoines, Marit J and Fuglestad, Anne B, Eds. *Proceedings 28th Annual Conference of the International Group for the Psychology of Mathematics Education 2004*, Vol. 2, pages pp. 239-246, Bergen, Norway.