ABORIGINAL VOICES IN OUR SCHOOLS

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This paper reports on an ethnographic study undertaken in a rural community in New South Wales. The study investigated the expressed beliefs of Aboriginal parents, Aboriginal educators, Aboriginal children and their teachers towards the learning and teaching of mathematics in Years 5 and 6 of primary school. The researcher lived in the community for a year of the study negotiating appropriate protocols and consulting with various groups before interviewing participants. Where permission was given interviews were audio taped, transcribed and through analysis seventeen categories for classifying participant comments emerged.

This paper reports specifically on the views expressed by Aboriginal educators related to Context, Learning, Teaching and Family Concerns involving Aboriginal children's school achievement. Among several stated issues those of teacher-student relationship, teacher consistency, expectations and learning styles emerge as factors influencing Aboriginal children's learning. Though the comments were in the context of the learning and teaching of mathematics they have significant implications for educators, parents and the community in the overall learning of Aboriginal children.
Aboriginal Children Learning Mathematics: Background Thoughts

Until recent times in Australia, little attention has been given to the contexts in which Aboriginal and Torres Strait Islander children learn mathematics. Social and cultural factors influence the development of people’s beliefs about the nature and learning of mathematics. A prime site for the development of such beliefs is the environment of the mathematics classroom (Lerman, 1994).

Many mathematics educators hold the view that students bring "with them different competencies in, and conceptions and beliefs about mathematics" (Mtetwa & Jaji 1992, p.7). The view that people develop their own perceptions about the nature of mathematics is certainly different from a universal notion of mathematics. All cultural groups have developed their view of mathematics and its relationship to the events that happen within their lives (Bishop, 1988; Lave, 1988; Mtetwa & Jaji, 1992). It is necessary to investigate Aboriginal views of "indigenous mathematics to the new mathematics to be introduced in schools" (D'Ambrosio 1986, p.6).

Most school mathematics requires Aboriginal students to do mathematics that is not related to their world and their everyday experiences (Graham, 1988). By the time that many of these Aboriginal students have reached the latter years of primary school they have been alienated from mathematics. In the past, little value has been given by curriculum developers and educators to appreciating Aboriginal peoples’
views of the nature and learning of mathematics. Aboriginal students have been disadvantaged in their schooling and in the development of their own ideas and patterns of mathematical thinking (Mtetwa & Jaji, 1992). Aboriginal people have called for more appropriateness and relevance within the curriculum as they acknowledge the role of the dominant society in curriculum development and control of the curriculum content (National Aboriginal Education Committee, 1985).

An appreciation of the complex interwoven issues related to Aboriginal students and their learning of mathematics needs to be achieved through shared co-operation between Aboriginal communities, students and school educators. Such co-operation can help bridge the difficult social and learning experiences that many Aboriginal students face in learning mathematics.

Though teachers and curriculum developers are becoming more aware of the cross-cultural contexts in which the learning of mathematics takes place (Howard, 1996), little collaborative study into mathematics has been undertaken with Aboriginal communities in rural and urban locations. Much of the research involving Aboriginal people and the learning of mathematics has focussed on geographically remote communities (Harris, 1991; Harris, 1990; Graham, 1988).

Methodology

The purpose of this ethnographic study was to investigate the held views of Aboriginal educators, Aboriginal students, their parents and their teachers living in a rural community in New South Wales towards
the learning of mathematics in Years 5 and 6. A qualitative research approach was used to gain the personal views of individuals. Throughout the study there was continuing negotiation and consultation between the researcher and the various school and community Aboriginal and non-Aboriginal groups involved (Cutmore & Howard, 1995). These included state and regional Aboriginal Education Consultative Groups, Aboriginal Education Assistants, Aboriginal Student Support Parent Associations, Parent and Citizen Associations, school staffs, New South Wales Department of School Education and individual teachers, parents and students. At this point the willingness, co-operation and trust of all those groups involved with the study is acknowledged.

Interviews were used as the main data collection instrument (Spradley, 1979). These interviews were conversational in nature as it was considered to be the best method for participants to express their views in a way that surveys often do not allow. It was also considered that people would value the opportunity to have their say.

The protocol used for the interviews has to be discussed within the context of the overall research process. This was an ethnographic study where the researcher lived within the community for a year (Howard, 1995). During this time considerable planning was done by the researcher about entering the schools and becoming known by all the participants. Such planning involved classroom visits to talk with the students and extended time spent in the playground coming to know the students and allowing them to come to know the researcher. This part of
the research process could be called the pre-interview stage. Through such planned networking and formation of relationships all the student interviewees had met the interviewer before interviews took place.

During interviews the Aboriginal educator's views towards the nature and student learning of mathematics, were sought. All participants were informed that their ideas would be shared with others and that pseudonyms would be used to maintain confidentiality. Interviews were transcribed and data analysis undertaken to develop categories for reporting the data.

Data Analysis

The categories for the analysis of the data evolved from the interviews and the principles for school mathematics as stated in A National Statement on Mathematics for Australian Schools (AEC 1991, p. 4-24). The National Mathematics Statement provides guidance to the individual Australian states in the development of their mathematics curricula. It is the prime national source of current views on the learning and teaching of mathematics.

The use of the stated national principles for the learning and teaching of mathematics in Australia in the development of data analysis categories for this study provides a relevant framework within which discussion and recommendations can be presented. The interviews were analysed using related grounded theory with the researcher using a constant comparative approach (Glasser & Strass, 1967) to identify
categories which represent major influences in the learning and teaching of mathematics. Each category was defined, related to the National Statement and relevant quotes linked to identify the category. Seventeen categories emerged from the analysis.

Feelings; People; Language;
Context; Relevance; Homework;
Materials; Learning; Teaching;
Structures; Technology; Assessment;
Problem Solving; Family Concerns; Teacher/parent development;
Content; Other.

This paper focuses on the categories of Context, Learning, Teaching and Family Concerns as analysed for the Aboriginal educators. Once comments were categorised a further analysis was undertaken to group these comments into espoused personal belief statements. The categories were defined and contextualised as follows.

Context identifies issues related to the social, cultural, economic, historical and political contexts in which the learning of mathematics takes place.

I think for parents too when they come up to school they think now we've got to behave like this. If kids go into the community and get the parents involved it's in a more relaxing atmosphere, isn't it? (Aboriginal educator)

Carol was saying that at times you have to learn to talk differently in two different systems. Sometimes you even have to think how to say
something before you talk. (Aboriginal educator)

Learning identifies comments related to how people learn mathematics. When I went to school we drilled the tables everyday. We drilled it. Now I knew that and I remembered that. I think that if it worked for me it will work for other people. (Female Teacher)

Yeah. Well ............ um ......... I just mainly listen and keep my ears open so I can learn more than what I've already learnt cause I may think that I haven't learnt enough so I need to learn more so just listening to the teacher and stuff. (Female Student)

Teaching identifies comments related to the organisation and presentation of teaching and learning activities. Now his class teacher is quite soft. In the maths class they're all quiet. None of the kids play up because she expects a lot of them because she's got standards set. (Mother)

Let them say their times tables and give them a maths sheet with a lot of subtractions, graphs and times tables. (Male Student)

Family identifies expressed concerns emanating from the home Concerns related to the nature and learning of mathematics.

Mathematics for Aboriginal kids has always been imaginary, like you had ten little sheep in your mind.... It wasn't related to everyday life.
which drives mathematics home. (Mother)

Mathematics today is not writing a sum down and working it out as a lot of parents who went through school years ago did. (Female Teacher)

The time spent living in the community by the researcher and the researcher's prior connection with the community across 8 years lessens the possibility of bias within the development of the categories though it is still acknowledged that these findings are indicative of these Aboriginal Educators views and may not be generalised.

Aboriginal Voices: What Aboriginal Educators have to say

In New South Wales primary schools there are a number of Aboriginal people employed as Aboriginal Education Assistants (AEA's) and Home-School Liaison Officers (HSLO). AEA's are appointed to schools to assist with the teaching of Aboriginal students and the implementation of Aboriginal perspectives across the school curriculum. They are employed within a school based on the number of Aboriginal students. The HSLO is responsible for monitoring the attendance patterns of Aboriginal students in government schools within a specified region. They are attached to a District Education Office. Though they are often trained teachers, HSLO's have no specific school teaching responsibilities.

In this study eleven Aboriginal Educators in a rural NSW community were interviewed. All names used are pseudonyms.
Aboriginal Education Assistant 8 Carmel, Pat, Phil, Sandy, Tracey, Carol, Michele, Mary
Aboriginal Teacher 2 Penny, Pearl
Home School Liaison Officer 1 Crystal

Context
Carmel believed that Aboriginal children did not achieve their potential in mathematics because it was boring. Carol and Tracey believed it was far more complicated. They saw two systems of learning going on in the school and mathematics classroom. The white system that children have to get used to and the Aboriginal system within which they live and learn. Carol believed that at times Aboriginal students have to learn to talk differently. Students have to think in two different systems, sometimes there were reasons as to why you had to think before you talk.

*TRACEY: Because you'll get pulled up all the time. Especially in a white man's system you have to think.

*CAROL: You're aware of it aren't you.

*TRACEY: You're shamed.

It was suggested that when kids want to ask questions they do not think about how to say it in white terms because they don't even know the white language system. Then they get picked up on how they ask the question, not what they want to know. Tracey believed many of the teachers "just don't understand where the kids are coming from." She also believed that "education was never part of our life until it was forced upon it."
*TRACEY: We survived without that in our own way. I won't say you. I won't point at you. I'll say if they lived under how we was what we had to come up through you'll survive anything.

Phil and Sandy acknowledged that the influence of being Aboriginal affected children's learning.

*PHIL: Different cultures have different ways of saying that kids have to learn this way and that way and with Aboriginal culture I think the most important thing is hands on stuff. Kids learn better I reckon that way.

*SANDY: Yeah.

*PHIL: It just seems clearer to them than all this writing on the board and you know teacher expressions and big long words.

The values that affect Aboriginal behaviour were often reflected in students attendance at school. Aboriginal people value their right not to listen to you. Half way through a meeting someone may stand and walk out. They are not being rude they just do not want to listen anymore. Crystal suggested that this is what Aboriginal children may do at school but she believed it was not right, but placed the dilemma in the context of being Aboriginal.

*CRYSTAL: But it's not all right that they don't come to school.

*I: In their eyes it may well be.

*CRYSTAL: Possibly. I think when so much damage has been done to our
culture over two hundred years. What people don't realise is that our
culture was so different before anyone else was here. I guess I'm in
two cultures. Sometimes I don't know where I belong. Our kids are
disadvantaged because they are not learning and I can see that we're
still going to be the workforce. The reality is that everything points
towards all Aboriginal classes. We have to do something to get our kids
educated. When I came from the Mission I was one of two that went
right through to Year 10 because the others couldn't cope. They got
sick of the racism and the teachers and all that stuff.

Crystal believed that Aboriginal children as young as ten and eleven
identified that life was different for them.

*CRYSTAL: I think that they are more aware that they are black and that
there are differences cause that's when I started to realise that I was
different and that people treated you differently because you weren't
the same colour and the opportunities just aren't there. It's a real
issue. That's what happens.

Many Aboriginal children live in situations where they witness a lot of
unemployment. This context can affect how children come to school and
they reach a stage of what's the point learning at school. Crystal
believed that the impact of becoming educated could have a long range
effect on marriage.

*CRYSTAL: I suppose in some circumstances yes. If they've never seen

their parents in a job. I mean to be real the jobs that you get are

Aboriginal money anyway. You seldom get chosen on your merit.

All the jobs I've had was Aboriginal money. I suppose they get

to the stage of what's the point. Even with our men if they see

educated women they steer away from them. If our girls get educated

what's going to happen to the chances that they get Aboriginal men to

marry and that's what's happened.

School and families have to work together. The Aboriginal educators

find it difficult to get Aboriginal parents involved in the school.

Many schools are bicultural with a huge range of parental

socio-economic backgrounds. Crystal believed that "Aboriginal people

who are in jobs can't get across to parents how relevant school is."

Crystal had begun a university course she felt that she was now seen to

be different to who she use to be. The white fellas treated her and

viewed her as being different to other Aboriginal people.

*CRYSTAL: They see us as different. We're white because you want to be

educated. You leave them because you're educated and you want to live

differently to them. It's all these things. It all comes into play and

it's all these little things that happen and you can see it. When I
first went to uni I hated it because when I came home people treated me differently. My set of friends now are not the ones I used to have. I think it's like when they took the kids away. If you educate their kids you're taking them away. That's a fear that I find with Aboriginal people.

*I: So it's not moving kids from one place to another but with education they separate themselves from others?

*CRYSTAL: Perhaps. I think that's a main thing. It changes their kids from talking the way they do at home. The kids come back different.

Continually, as Aboriginal children attend school and become educated they have to keep asking, "Who am I?" The role of school and its affect on changing Aboriginal children was a critical issue for Crystal.

*I: Are the schools still trying to make white kids out of black kids?

*CRYSTAL: Of course they are and you tell anyone that and they'll say I'm not, I'm not.

*I: To succeed in some schools if you're Aboriginal you have to be more white than black?

*CRYSTAL: Yes. That means that you have to turn your back on your own people in schools.

*I: Some people would say that you have to do that to succeed. Yet you have to maintain who you are.

*CRYSTAL: Suppose our kids got educated who would employ them. I think of the hundred per cent of Aboriginal people in town you're lucky if ten per cent work and all the jobs that are funded are
Aboriginal money. Aboriginal people have been employed for only thirty years. That's not a long time.

*CRYSTAL: If our kids go through and want to be educated they have to see at the end that there is a job. We have Aboriginal teachers who have to go into other things to find employment. We're the minority who aren't getting educated. We're the real problem in Australia.

Crystal was annoyed that many of the intervention programs for Aboriginal children are taught by non-Aboriginal teachers. She believed that "some teachers aren't committed to them and the kids know that."

Crystal believed that most Aboriginal parents want their children to learn and that the myth that they don't needs to be put away. and that "the present situation is not working for the majority of Aboriginal kids." She believed that "often the teachers don't have the knowledge or the experience" to work with Aboriginal communities and Aboriginal students. many have limited expectations of the potential of Aboriginal students.

*CRYSTAL: Nobody expects Aboriginal kids to be anybody. They expect them to be on the dole and stay that way. Kids live up to what's expected of them.

Parents are concerned about what children are learning at school.

Crystal knew that there was "a difference between what's real and what the community sees as important. I send my kids to school but are they going to learn what they need to learn. I mean, we have illiterate kids at fifteen who have been through the school system." There were perhaps several agendas for learning at school.
*CRYSTAL: You could then have three different types of expectations the parents, children and the school. Perhaps four with other parts of the community.

Michele discussed recognition for Aboriginal children and their achievements which lead to issues of self esteem, parental involvement and suspension. She finished by highlighting the need for teachers to visit the homes of the children they taught just to understand from where the children were coming.

*MICHELE: A lot of the parents when they have to come in just won't come. Usually I'll go out and see them and take the stuff to them and talk to them. I've been trying to get some teachers to come but I'm not having much luck. Not many will go out. They have to go to the top camp and Mission. They have to realise that's how the kids live because when I tell them here how the kids are living at home they get shocked. They say that can't be right. They have to go out and see for themselves. They might get shocked to see some of the houses and whatever but so what. Then they might understand some of the kid's problems when they come to school.

When Aboriginal children were placed on suspension Michele often got upset. "I say I wish you had of come to me first and maybe we could have sorted the problem out before we got to suspension. Something might have happened at home at night and you don't know anything about it." There appeared to be an increase in school suspensions with no
apparent reasons. Michele talked of the need for teacher awareness and sensitisation to the issues facing parents and Aboriginal children and parents.

*MICHELE: You see in the past Pete we use to have inservice courses at the start of the year. We'd have different Aboriginal speakers talk about their experiences and what they'd expect from the teachers who are coming in. Lately there's been nothing. It's not only for new teachers.

There have been teachers here for years and they've never been inserviced.

They just go on about their work and don't care about nothing. The minute Aboriginal kids play up they're out of the class. They can't handle it. Then they think send them to the AEA's and it's not my problem.

Michele also believed the issue of body language was important for Aboriginal children and that "Murri kids seem to learn it right from the start of when they come into school. Some Murri kids from preschool seem to know a lot more when they come into primary, I don't know." The issues of language and the two worlds that Aboriginal children live in became a theme in the interview.

*MICHELE: I often talk to them about the language with them here. I say we have to change. We're living in two worlds. At home we can speak the way we always speak but the minute you come
to school they expect you to change and speak the proper way.

Sometimes I forget myself and speak just as I would speak at home.

They should be told all this type of stuff.

There are children who come to a school as new arrivals and the issues that they bring with them can affect their learning. One Aboriginal Educator believed that it was sometimes the little things that put children off, "Do you know my kid was stood up and told that they weren't in school uniform and then they expect them to go and learn maths after they've just been rubbed off?" Michele agreed.

*MICHELE: Exactly. That's a big thing here when they come in new. I know that schools want them to be neat and tidy but I say how's that going to affect student's learning. But that's the policy and I say but they come from a place that's got no money at the moment.

Michele believed that the teachers should come to the AEA's more often because the Aboriginal educators know a lot about the Aboriginal children, the community and strategies to help Aboriginal children learn. at school. However, "there's only a couple who'll come to me and it's only when they're in lots of trouble with a kid. I think they should be using us more."

The Aboriginal Educators emphasised contextual factors as critical in Aboriginal children's learning of mathematics. They believed that there were two systems of learning occurring in the mathematics classroom and that many Aboriginal children have to think in two different ways to
achieve at school. It was the fact of being Aboriginal and the context in which Aboriginal children live and experience life that resulted in many Aboriginal children not achieving to their potential.

Learning

Carmel, Pat and Mary had the view that there are two paradigms of mathematics learning, practical and theoretical and that the practical approach assists Aboriginal students.

*CARMEL: They just go. A practical side! There's no problem but if you sit there and do it in theory you'd probably find that they wouldn't do it.

Children look at mathematics as being fun, easy, boring and hard. The hard maths they do not like doing and some children use the term fun thinking rather than practical thinking. When they play games that was fun. This group of Aboriginal Educators believed that when the children are doing practical work they are not really doing mathematics.

*PAT: Oh yes when they're working with materials. All they think maths is when they're copying things from the board onto their books or doing stencils.

Tracey, Carol and Phil all commented on the importance of humour as an important factor for Aboriginal students in their mathematical learning.

*PHIL: You got to have fun in doing the subjects and that goes right across the curriculum. If all the kids have fun doing their stuff when
they come to class, get down, knuckle down and do a bit of work and
then have free time as a bit of a reward. ..... If you just go into the
classroom and have a dull, old stencil then they'll just sit there and
take their time. You've got to reward them in the end.

Tracey and Carol also believed in the positive influence of humour on
children's learning. Phil went on to say that he did not see much fun
going on in mathematics.

*PHIL: Some of the kids they sort of want to have fun when they are
doing their learning activities and if there were a funny part about
maths they'd learn good.

*I: Do you see much fun going on in mathematics?

*PHIL: None mate, no. (Laughter)

Pearl talked of how quickly Aboriginal children pick up mathematical
concepts, particularly in the younger grade through games such as
Bingo.

*PEARL: We have small groups for maths and we use a lot of games like
bingo. It's amazing to watch the Murri kids. I don't know if they play
games in the senior part of the school. Once they get there I think the
extent of games is the base ten blocks.

This was followed by comments on how well Aboriginal children knew the
value of money and that much of what they knew had been learnt out of
school.
*PEARL: Money, you can't rip those kids off. They say can you mind my money and they tell you how much they've got and the type of coins. And they don't forget. They know the value of money from the day they start school.

The Aboriginal educators believed that Aboriginal children learn by doing. They also believed that humour played an important role in their learning and that many Aboriginal parents were unaware that there was a problem with many Aboriginal children learning mathematics because they had not been informed.

Teaching

Penny believed that, "kids are just different and they learn differently. Teachers should be able to cater for the differences." The Aboriginal Educators acknowledged that Aboriginal and non-Aboriginal children can have difficulties with the names of shapes and counting in the early years of primary school.

*MARY: Well when they have to cut out shapes they ask me questions about the different shapes. Sometimes we help them by naming the shapes and other times they can't recognise numbers so I help them there. Some of the kids in Year 1 don't even recognise the numbers to ten.

*CARMEL: That's true.

*MARY: And it's not just Aboriginal kids.
There was genuine concern related to a mismatch of the mathematics lesson where "some teachers demonstrate and put it up on the board and then the kids know what to do, but in the test they can't." They believed that it was in the tests that Aboriginal children were failing. The other critical factor is in the children's understanding of the mathematical language. One of the AEA's roles is telling the teacher when some of the children are not understanding what is being taught.

*PAT: In some maths classes I've sort of stopped the class and told the teacher that some of these kids don't know what you're talking about. Usually they stop and explain themselves a bit more.

*I: How do you know that the kids don't know what the teacher is talking about?

*PAT: When they have no idea. Like when they're getting new concepts and the teacher's going too fast for some of the kids and they're sort of concentrating on some of the kids and half the class haven't caught onto that concept. They keep going forward without reinforcing or finding out what everybody knows because they're not going around the class as much. Sometimes they're just standing out the front there.

The issue becomes more complicated when one considers that the Aboriginal student may have grasped one meaning but that is not the specific meaning that the teacher has in mind.
*MARY: Then they might listen to what the teacher says and they may be
right but it's not the dictionary meaning. To them the meaning might be
completely different. They might know the meaning of the word like the
way we talk it and then they have to learn the other meaning.

*CARMEL: It has a different meaning.

*MARY: Like shook and shake it's different to how other people think it
is. Cause when they say around they think that there's someone hanging
around and when you say around a shape they get confused.

Penny believed that the children were often given inappropriate
mathematical content particularly stencils when "a lot of the fifth and
sixth grade kids often don't understand what's on the stencils and when
it's explained it's often in the wrong way. You give the kids a stack
of stencils not even related to their experiences. Some of them get it.
They always will but there are many who don't." She firmly believed
that mathematics needed to be far more practical. Penny, also talked
about the variety of teaching styles that the children experienced and
how some were more suitable for Aboriginal children.

*PENNY: There are so many different teaching styles. They are very
different. Even with the same age group teachers don't teach the same
way. I don't think the kids think too much because the teachers often
do the thinking for the kids by answering their questions.

There are also different learning styles but teachers look more at discipline trying to work out the kids who are naughty and trying to control that.

Penny believed that a lot of children get into trouble because they have finished their work and have nothing to do. Such children finish their work and it's really "filling the gap" teaching when some kids finish before the others. What do I do now I'm finished? Thus, there are children who get into trouble for being good at their work and others when they find it difficult to complete.

Sandy and Phil thought it would be good for children to go into the community to identify the mathematics being used. This would be very different to what happened in the mathematics at school which was mainly stencils. There needed to be more thought given to the structure of a mathematics lesson for Aboriginal children.

*PHIL: I think that's where like I was saying before. You need a different view to Aboriginal kids, especially in this school about setting out their lessons. With an example like maths more of a hands on stuff is better than all this stencil stuff. Sure they can have a little stencil there in front of them and they have to do this but it would be better if they could use blocks and money.

*SANDY: Make it enjoyable.

Sandy and Phil believed that children misuse mathematics equipment when
they see other children not doing their work, sometimes as a weapon
when they are having an argument amongst themselves or even when they
carry an argument from out of school into the classroom. They believed
that teachers needed to be consistent in their reaction to this type of
management issue.

*SANDY: Yeah. With a situation like that the teacher has to be consistent.
The students have to get on good with the teacher and know
that teacher if the student tells the teacher that I had an argument
with this fella on the way to school. Then that teacher could say I'll keep an eye on him. If it erupts in the classroom
the teacher can say,
that erupted this morning and they're just finishing it off or
something like that. But then explain it to them that they cannot do it
in the school. You can't throw school stuff about in the classroom.

Phil considered relationships so important in effective teaching and
that it helped the teacher to influence children's thinking

*PHIL: I think the relationship is number one. Then you break down the barriers and you slide it into their system that you can't do this at
school. You don't go off or nothing like this.

He knew that "a lot of kids don't like the teacher cause the way they teach it, or the way they are or the way they look." He also believed
that "if they are consistent with the students they would see down the
road that if you play up you're going to get roused on." Though Phil acknowledged that it was hard being consistent.

*PHIL: It's hard being consistent every time. Sometimes I know that some of the kids want you and they don't want you to be with other kids. You can pick them and sort of dodge them and say I have to look at these kids first I'll come over there in a minute.

Bringing about major change was going to take time for a lot had to be overcome. Phil knew that you could not change quickly what had taken so long to develop.

*PHIL: You can't change things that have been around for ten twenty years in one little short term. But it's got to be a bit lenient somewhere along the line to understand that the kids have to understand and that it has to have a bit more time to do. The teachers have to understand that they have to have a bit more time to do it. You know what I mean. I can't go out there and change it all to Aboriginal language all in one day can I?

*I: No.

*PHIL: That's what I'm talking about.

There was only one Aboriginal child in the higher mathematics classes in the three primary schools in town. This surprised Crystal because she did not know. She thought that a significant reason for this had to do with the "attitudes of the teachers and I don't care how good a
teacher says they are a kid can pick it up if they're not liked. What usually happens is that if a kid plays up in Kindergarten it goes right through with him into Year 6 and even go over to high school." Sadly, she said that it comes down to the fact that teachers "don't really think Aboriginal kids can learn. They don't believe that we have the same IQ as non-Aboriginal kids do. That's the reality of what it is to be black." Crystal raised the issue of teacher's classroom management strategies when teaching Aboriginal children.

*CRYSTAL: They need to be flexible because some kids just learn in so many different ways and you just have to find out which way it is. I find that a lot of the management skills of teachers aren't good if there are a lot of Aboriginal kids in the class. They draw the Aboriginal kids into a behavioural classes which is stupid because how are they going to learn if they all have similar problems.

Penny believed that teacher expectations had a lot to do with the behaviour of Aboriginal children.

*PENNY: Aboriginal kids are expected to muck up so they do. It frustrates me because I know they can do a lot better. I just know they can do better but they don't.

The Aboriginal Educators identified many elements of teaching that
affect Aboriginal children's learning at school. particularly, that
children are different and Aboriginal children learn differently to
non-Aboriginal children. Teaching emphasis needed to be placed on the
practical nature of mathematics. Relationships between the students and
the teachers was viewed as a priority as was the necessity for
Aboriginal children to understand the specific meaning of the
mathematical language being used in the classroom. They raised many
issues that teachers would need to consider in the teaching of
mathematics.

Family Concerns
In each interview there were a number of views expressed by the
Aboriginal Educators related to family concerns. There was the
knowledge and belief that a lot of parents were frustrated when trying
to help their children do mathematics, "mainly because the way they
were taught to do maths and the way the kids are doing maths in schools
today they find it difficult. Not to cope, because they get the right
answers but to show the same way as the school is doing." Too often, it
seems that it is "completely different to what they had done. Once you
leave school you don't keep up with what's going on in maths for the
rest of your life as if you were a teacher."
This could be one reason why parents do not come into the Year 5 and 6
mathematics classes to help, though Pat had additional reasons.

*PAT: Well they're not invited but I think they feel intimidated by both
the teacher and mathematics. I think they think
like all schools it's
the teacher's job to teach their children to do maths and reading. They feel intimidated I suppose and not that welcomed.

Penny believed that there were "a lot of problems that stem from home."

Pearl explained the difficulties that she experienced as an Aboriginal Educator and expressed a number of beliefs about how children's learning was affected.

*PEARL: As you were saying there has to be a link between the teachers and the parents. You have to build up communication so that they are both comfortable with each other and then the parent feels free to come to the school to discuss any problems and to take part in school activities. Going out and getting the parents and bringing them to the school while they still feel uncomfortable isn't going to solve anything.

Pearl was a teacher yet she could pick up the hostility towards her and her child on their first day at school. In discussing the hostility that she felt towards her Pearl raised the issue of body language saying that Aboriginal people "can read the tension basically. They can pick it up without even seeing anything else." However, Pearl persevered for the sake of her daughter.

*PEARL: Yeah. That's right. When my child started school from a mum's
point of view that was a horrible day. It was very hard cause I had not been in a public school. It was foreign to me. Somehow along the line I picked up the feeling that the staff was hostile. I was just another person. I had to be at the school chatting to the staff as much as I could smiling all the time. Eventually they got used to me and it was easier for staff and me. But I had to work really hard at that.

When asked why Aboriginal children did not achieve to their potential, Pearl did not focus solely on the school but discussed the importance of home routines.

*PEARL: A lot of children have no routine at home. The diet is dreadful.

They don't even have to go to bed at a decent hour so they come to school tired. They don't care. They're in a bad mood. Often they are staying at someone else's. I believe that all contributes to their lack of learning. They have so many other issues to deal with before they get to school. The last thing they want to deal with is learning school stuff. They deal with maybe a mum and dad fighting, drinking, nothing to eat and being shoved from relative to relative. Maybe being abused maybe being hit themselves and then they're expected to learn.

Many Aboriginal children are learning to survive, with school learning
coming a long second place. Just adjusting to school and the differences from home is difficult and it can start from day one for many Aboriginal children.

*PEARL: It was interesting the day Kindergarten started. I was floating around. The kids came in and the kids choofed the parents off and they wanted to look at everything. One went over to the toy fridge and said why isn't this turned on. Why isn't it cold? Then he opened the bottom part and said why isn't this working? He tried to turn the taps on and he said there's no water coming out of them. He felt the element on the stove. He said where's the pot I want to cook something.

They came out at recess and called out to all they knew look at my new shoes, my new shirt and chatted away. The class next door the kids were all crying and their parents were still there. The little Aboriginal kids for lunch pulled their lunches out and they were that excited.

Their older brothers and sisters came over and took on the role of the parents. The non-Aboriginal brothers and sisters came over and cried
with the younger ones. It was a real contrast.

They climbed and played and were seen as unruly. They were labelled as unruly from that day. It was also suggested to me that Aboriginal children learn to fend for themselves a lot earlier because they are neglected. They are forced to. I laughed. It's how you choose to bring up your child.

Aboriginal children are often independent. They look after themselves at home and they expect that they can do the same at school. A lot of Aboriginal children take on that role of responsibility at home. "They can put the washing machine on, they can iron, they can sweep, they can cook. They can do the basics." So school does not have much to offer some Aboriginal children. Nonetheless, some do achieve at school.

*PEARL: I guess it depends on their make-up. Some might be so fed up with their life that they decide I'm not going to put up with what mum's put up with. I want better. I don't really know. Some might have a more stable background. There might be someone at home or school who really encourages them. They might get on well with the teacher who brings out the best in them and makes them wanted and they strive.

Aboriginal parents do want their children to learn at school. Phil believed that community involvement in schools as a critical factor in supporting Aboriginal children's learning.
PHIL: More community involvement in the school like in the classrooms.

Teachers and parents coming and sitting in the class and helping them

with their work and saying you did good today with Maths and English.

Being positive always.

Phil and Sandy strongly believed in the school coming together with the community for the benefit of children's learning.

PHIL: I think for the parents too when they come up to school they

think oh we're in school now we've got to behave like this (Said in a whisper). If kids go into the community and get the parents involved

it's in a more relaxing atmosphere, isn't it?

SANDY: It'd be good if the parents could see them out, you know, like
down the street with a teacher doing things whether it be Maths or Science or English. Even just to get a speaker in but that's hard to get them.

Crystal held the view that a lot of children stay at home because they do not see the relevance of school, particularly mathematics. "They can't see mathematics in things they do. I think more so with Aboriginal kids just. They're excellent with money in their head but it's the written work." It would appear that there are many Aboriginal children attending school as a result of a stable family home life,
because the parents see some relevance for school and then there are
those Aboriginal children not attending because little relevance is
seen in what schools have to offer. Crystal believed that there were
other reasons for absenteeism.

CRYSTAL: I think the contributing factors are those kids who haven't
got parents that work. If they come from the Mission and are
protected,
like I used to be, and don't see the outside world as a whole. I think
too the extended families. It's a combination of things.

If you're dependent on welfare and things are coming to you so easily
that the kids can't see that you have to work for life to make ends meet.

The issue of racism amongst people also affects children's learning. It
is still apparent, even though it may be subtle, to many Aboriginal
people. Crystal thought "that the racism is so real in town that people
seem to think that it isn't and that we have come such a long way. We
haven't really. I don't think so since I was a teenager."

Michele mentioned that parents may have done well in mathematics at
school but as they have left and had children they have forgotten the
mathematics. There are a lot of young Aboriginal parents about the
place who need some type of updating on how to help their children.
They want to help their children but they feel shamed that they do not
know the mathematics. Michele could do certain things with her daughter
"like in percentages but then I'm lost after that. She gets wild with me because I'm unable to help her. That's where I've spoken to the teacher. She says they just mark the book but don't tell how I did it wrong. I tell her that she should pull the teacher up in class and say explain it." However, Michele's daughter is "too shy to speak up" even though she was the only Aboriginal student in the highest mathematics class.

*MICHELE: I've often told her to ask the teacher to explain it to you. Otherwise they'll just keep going and it's just like the Murris - left down the back and forgot all about again.

Michele was concerned about her daughter and the males that taught her. She wondered if her daughter was ever embarrassed to ask the teacher because of the teacher's gender.

*MICHELE: I don't know if she feels really comfortable or not. I say go and ask him and she's says no don't worry about it.

This group of Aboriginal educators identified several concerns emanating from the family that may influence Aboriginal children's learning at school. Parents were often frustrated when they tried to assist their children with mathematics homework for it seemed to many that mathematics is taught differently at school to when they attended.
Becoming involved in schools for many Aboriginal people was not easy. They often felt intimidated and could sense hostility towards them when they entered schools. Such family based experiences could have an influence on Aboriginal children and how they related to school.

Discussion

The Aboriginal Educators emphasised contextual factors as critical in Aboriginal children's learning of mathematics. Mathematics learning, for Aboriginal children, was extremely complex and complicated involving critical issues related to learning, teaching and family concerns. They believed that there were two systems of learning occurring in the mathematics classroom and that many Aboriginal children had to think in two different ways. In learning to think in two ways they also had to learn to talk in a way that was acceptable in the school context often different to the language they used in the home and the community. Just in asking teachers questions Aboriginal children were often corrected on the English they used rather than supported in the mathematics understanding that they were seeking. Much has been written about the necessity for Aboriginal children to understand the specific meaning of the mathematical language being used in the classroom. The Aboriginal educators identified the situation of where Aboriginal children do not understand the mathematics, they are unsure of the mathematics language being used but get corrected for their English usage when asking classroom questions.

Aboriginal children live, work and learn within two cultures and
sometimes they do not know where they belong. Being Aboriginal and the life experiences which they encounter result in many Aboriginal children not achieving to their potential at school. Aboriginal children know that they are black and that there are differences for them in the way they are treated because they are black. At school, Aboriginal children are continually asking "Who am I?"

These Aboriginal educators held the views that Aboriginal parents want their children to learn and achieve at school. They identified a significant barrier to this as being the reality that many teachers do not have the knowledge or experience to work with Aboriginal children. Three were also the complicated school based issues of varying learning agendas of differing groups that were often in conflict, the suspension rates of Aboriginal children and the need for an increase in self-esteem programs.

The Aboriginal educators believed that mathematics can be taught in both a practical and theoretical way and that the preferred learning approach for Aboriginal children was by doing and that interactive humour played an important role in their learning. They were concerned that Aboriginal parents were unaware that many Aboriginal children experienced difficulties in learning mathematics because the parents, themselves, had not been informed of the problem. It was believed that Aboriginal parents were often frustrated when they tried to assist their children with mathematics homework. They often felt intimidated when they were asked to the school and could sense hostility towards
them when they entered schools.

Sadly, the Aboriginal Educators believed that racism continued to affect children's learning and that what had developed over many years was not going to be changed in a short space of time. The communication between school and home had to be strengthened so that both teachers and parents feel comfortable with each other to support Aboriginal children's learning. Involvement of Aboriginal parents and the wider Aboriginal community in school decisions was seen by these Aboriginal educators as critical factors in effecting school success for Aboriginal children.

It was through written mathematics tests that many Aboriginal children were failing. This was occurring because of the mismatch between how mathematics was taught and how it was formally assessed. A rethink in how mathematics was assessed or a development of appropriate strategies within the children to feel confident in attempting mathematics tests appears to be required.

The Aboriginal educators believed that a teaching emphasis on the use of stencils was inappropriate for Aboriginal children because the content was not relevant and their presentation often involved language difficulties. Some of the Aboriginal Educators believed that it would be beneficial for Aboriginal children to identify and appreciate the relevance of mathematics through home and community based examples of
A trusting relationship between the Aboriginal child and their teacher was viewed as a priority. So often for Aboriginal children who do achieve it is through the presence of one person at either school or home who encourages the child. Teachers have such an important role to play. They have to be consistent in their classroom management and many have to raise their expectations regarding the academic potential of Aboriginal children.

The home situation for many Aboriginal children was different to many non-Aboriginal children and this was not truly appreciated by teachers. At times, Aboriginal children could be staying with other families and trying to survive. In instances such as this Aboriginal children are really not interested in learning school stuff. Aboriginal children are often independent looking after themselves at home and they expect this to be the case at school which so often it is not. This can create a tension for Aboriginal children in their school involvement.

These Aboriginal educators raised complex issues facing Aboriginal children in their learning of mathematics and the challenges for teachers in developing appropriate teaching and learning programs that brings a relevance to the classroom while at the same time appreciating the learning issues peculiar to Aboriginal children.
Conclusion

Greater knowledge and sensitivity of teachers to the historical, psychological and social contexts in which Aboriginal children learn mathematics could only but benefit the children's learning. The effect of the imposition of a Western education and its mathematics on Aboriginal children is an issue that needs to be raised in teacher education courses, induction programs for teachers and their continuing professional development. Such inclusion would better prepare and develop teachers to understand the complex nature and culture of the mathematics classroom for many Aboriginal children.

Aboriginal children want to learn mathematics, they want to do well and they want to maintain their identity. There are critical implications for the overall mathematics program of any school. Teachers need strategies that address the Aboriginal child's learning of mathematics. The evaluation of the quality, accuracy and appropriateness of the mathematics curriculum for Indigenous students continues to require attention. However, for many Aboriginal children in Years 5 and 6 the mathematics classroom becomes an alien place characterised by tensions and conflicts about relationships and the value of what they are being taught.

The group of Aboriginal Educators reported here have raised the issues of language, relationships, the importance of one's identity and specific pedagogical aspects including fun, teacher consistency and
relevant mathematical experiences as critical elements for consideration in Aboriginal children's learning of mathematics. Through open conversations, both the pedagogical issues and possible solutions as perceived by those involved in the learning process can be voiced.
References


