
MAKING A DIFFERENCE FOR INDIGENOUS CHILDREN



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The *Make It Count* project aims to provide better mathematical outcomes for Indigenous children, and, to that end, the Swan Valley cluster identified various initiatives. This paper reports on a research project that investigated those initiatives and resultant changes in practice. First, a modified First Steps in Mathematics professional learning program was provided for Education Assistants and Aboriginal and Islander Education Officers to upgrade their mathematical and pedagogical content knowledge. Second, elements of best practice in teaching Indigenous children were investigated. It is apparent that genuine professional learning communities have begun to develop in the wake of the professional learning and that there are clear directions for pedagogical practice that may lead to improved student attendance and engagement.

Introduction

During 2009 and 2010, the Swan Valley Cluster in the *Make It Count* project identified a number of factors having an impact on the mathematical learning of Indigenous children (e.g., Hurst & Sparrow, 2010). It was felt that, unless these factors were addressed, it would likely be difficult to achieve improved numeracy outcomes and that even if such issues could be addressed, the desired improvement in numeracy outcomes may not be immediately evident. Among other things, the professional learning of teaching and support staff was seen as an important factor, as was the raising of expectations for student learning, and these points are the focus of this paper.

First, during 2010, a program of professional learning based on *First Steps in Mathematics* was implemented for teaching and support staff. Second, information was gathered about the practice of the most effective teachers of Indigenous children. This paper reports on the research conducted into these two aspects of the Swan Valley Cluster Plan.

Background

Professional learning and professional learning communities

According to Bolam et al. (2005), professional learning communities (PLCs) have the “capacity to promote and sustain the learning of all professionals in the school

community with the collective purpose of enhancing pupil learning” (p. 4). They include a joint responsibility for student learning, team planning, collaboration across roles, and the involvement of all staff, including support staff, in a range of professional learning. Mutual trust and respect are evident. These features sit well with the mantra of *Make It Count*, the aims of which include working “with all components of the school community—students, teachers and paraprofessional staff, school leaders, parents and parent groups, and the wider community” (AAMT, 2009, p. 1).

Anthony and Walshaw (2009), in discussing the importance of teacher knowledge as a component of effective pedagogy, note how “the development of teacher knowledge is greatly enhanced by efforts within the wider educational community”, and also that “teachers can learn a great deal by working together with a group of supportive mathematics colleagues” (p. 26). Such a group of supportive colleagues might well include paraprofessionals such as teacher assistants and aides.

Mathematical and pedagogical content knowledge

Shulman (1986) identified several categories of content knowledge required for effective teaching. Subject matter content knowledge that constitutes “the amount and organisation of knowledge per se in the mind of the teacher” (p. 9) is much more than just ‘knowing the facts’ about mathematics, but includes why certain facts are as they are and the ability of teachers to explain such things to students. More recently, these ideas have been developed by others including Rowland. In a similar way, Rowland (2005) coined the term ‘knowledge quartet’ to describe different categories of knowledge, these being foundation, transformation, connection, and contingency. The first category, ‘foundation’, is much more than simply factual knowledge in that “the possession of such knowledge has the potential to inform pedagogical choices and strategies in a fundamental way” (p. 4). In other words, it is the key content knowledge of mathematics that underpins the pedagogical knowledge and decisions that follow. It seems reasonable to suggest that strong pedagogical knowledge and skills will be more likely to emerge if teachers and paraprofessionals have strong ‘subject matter knowledge’ (Schulman) or ‘foundation’ knowledge (Rowland).

Cultural competency, awareness, and support

Perso (2003) considered the situation faced by Indigenous children in Australian schools as being similar to being in a different culture, a major reason being that most teachers lack sufficient awareness of Indigenous cultures in order to provide the support needed by those children. Further to this, Perso (2009) developed a *Pedagogical Framework for Cultural Competence*, in which she underlined the need for teachers to develop “cultural competence” in order to “demonstrate behaviours and attitudes that engage, build and maintain relationships with Aboriginal and Torres Strait Islander peoples”

(p. 1). Within the framework, Perso nominated eight categories, including pedagogies related to questioning, contextualized learning, and most significantly, classroom relationships and the identification of expectations. Indeed, Perso noted that the successful learning for Indigenous students “depends to a great extent on the personal relationship of trust and rapport established between teacher and student” (2009, p. 5).

These sentiments are further echoed by Anthony and Walshaw (2009) in discussing the notion of ‘an ethic of care’ as one of ten components of effective pedagogies in

mathematics. They note that students learn best in a harmonious and caring environment in which they feel safe, and where expectations are clear. Indeed, “teachers can help create such an environment by respecting and valuing the mathematics and cultures that students bring to the classroom” (p. 7).

Methodology

A qualitative study was established to consider the two broad areas of content knowledge of teachers and paraprofessionals and links to the development of professional learning communities, as well as the practice of effective teachers of Indigenous children. Specifically, the study sought to answer the following questions.

- To what extent did the provision of professional learning for Education Assistants (EAs) and Aboriginal and Islander Education Officers (AIEOs) assist in the development of professional learning communities?
- What attitudes and strategies are evident in the practice of effective teachers of Indigenous children?

The study was based on two particular initiatives taken within the Swan Valley Cluster. The first was the cluster-wide provision of three half-days of professional learning in mathematics teaching for EAs and AIEOs, conducted by a qualified *First Steps in Mathematics* facilitator. Semi-structured interviews were conducted following the professional learning and included initial questions such as ‘What you have learned and how it has helped you assist children?’ and ‘In what ways has your classroom role changed as a result of the professional learning?’ Data were generated from the semi-structured interviews with principals, teachers, EAs, and AIEOs, and this provided a measure of triangulation as perspectives from a range of people in different schools were sought. In all cases, the discussion that took place following the initial questioning diverged from that point and enabled the generation of rich data from which emerged some strong themes.

The second initiative was a plan adopted by Swan View Primary School where the Indigenous cohort was concentrated in four classes taught by teachers identified as being culturally sensitive and empathetic towards Indigenous children. Again, semi-structured interviews were conducted with principals, teachers, EAs, and AIEOs. These interviews were audio-recorded and transcribed to determine emergent themes. Staff members involved in the Swan View plan provided the initial focus for interviews but those from the other cluster schools were also interviewed in order to gain a wider perspective.

A teacher questionnaire about strategies employed with Indigenous children and attendance records of Indigenous children were used to generate further data. In the data analysis stage, to identify emergent themes, interviewee replies and comments were analysed for key words and then grouped with similar ideas to form categories. The frequency of occurrence of each main idea was recorded for each of the interviewee types (principal, teacher, EA/AIEO). It is important to note that the following discussion draws upon comments made by interviewees that may support more than one of the themes.

Results and discussion

Professional learning and professional learning communities

The four themes that emerged in relation to the first research question are represented in Table 1.

Table 1. Themes related to outcomes of professional learning.

Theme	Frequency
Improved levels of confidence	34
Development of a professional team approach	34
Improved content knowledge and pedagogical knowledge	27
Improved engagement with children	15

Within the first theme, Improved levels of confidence, responses from all participant types were recorded for the key ideas of “being more proactive” (32%) and “having a greater level of confidence” (29%). Other responses related to “having an improved status in the school” (12%), “teachers having more confidence in me” (8%), and “feeling more independent in knowing what to do” (8%). Comments included:

That’s because we’ve been shown the direction and with the confidence we’ve got because we’ve done the PDs, we can keep going with it and not have to look for help and direction all the time. (Lesley—EA).

As well, this was stated with regard to the confidence of the aides following the professional learning:

They’re not just lackeys that don’t know anything; these are now women of confidence, of knowledge, of capacities that they didn’t know they had before. (Megan—Principal)

Indeed, the increase in confidence seems to be reflected in the teachers as well as in their aides, as shown by the following:

I think the teacher has confidence in you because *you* [her emphasis] know what you’re doing and that makes you feel good because the teacher can say ‘You take [children] over there and do ‘blah blah blah’ with them’, and that makes you as a person feel good. (Kelly, EA)

Development of a professional team approach

Within this theme, the key ideas noted were “more a part of a team approach” (32%), “being better able to support the teacher” (18%), “better able to watch the teacher and learn/know” (18%), “more comfortable and at ease with the role” (15%), and “able to step in when the teacher is occupied” (15%). These key ideas were typified by comments such as the following:

You’re more comfortable because you actually know what she [the teacher] is trying to do now ... you know where she’s headed with it and we’re all on that same level—there’s no miscommunication ... because we’ve been shown the direction and with the confidence we’ve got because we’ve done the PDs, we can keep going with it and not have to look for help and direction all the time. (Jenny, EA)

Similarly, this anecdote was provided:

You pick out one child who's not getting it and you're able to go over and say 'What about if it you about it like this?' and the teacher hears and says, 'Oh yeah, can you tell everybody about that?' and so you get up and tell the whole class. (Christy, AIEO)

The previous theme described the development of a greater feeling of confidence, as a result of a change of status. This latter point was echoed in this theme as well, with comments such as:

You're not just the assistant doing the gluing and cutting out and things like that—you're actually helping with the actual learning. (Hayley, EA)

Nobody treats us like we're *just* [her emphasis] teacher assistants. (Shona, EA)

Improved content knowledge and pedagogical knowledge

The key ideas within this theme were predominantly one of two—"better content knowledge/teaching knowledge" (88%) and "aware of other ways of teaching maths" (47%). The first key idea was noted in interviews with all participants. In describing her aide's role, one teacher noted:

She did say that it [P/learning] helped her to understand what I was doing in the classroom. She did comment that 'Oh I know why you do that now'. It's been helpful for her to understand what we do as teachers. (Irene, Teacher)

I know where the teacher is coming from, whereas if I hadn't had the PD, I'd really be in my 'forty years back maths thinking' and wondering what she is doing, but now I do understand. (Annie, EA).

Basically, we're the children aren't we? We've had to go back and re-learn, and a lot of the procedures we learned [in the P/learning] have really helped, so when I see the teacher do it on the board, I think that's the way for them to do it—you're understanding it better; it's breaking it right down. (Rose, EA)

Improved engagement with children

Almost all of the responses within this theme were categorised as "being better able to recognise needs and help children" (80%). Again, this response was noted from all types of interviewees and it is summed up in the following statements.

When asked about being better able to recognise children's needs, one aide said

Yeah, I know what part's missing. I can say 'We need to go back a step further because they haven't got this bit down'. (Shona, EA)

Also, the link with increased confidence and status is clear from this comment:

They [EAs and AIEOs] are more effective on the ground with the kids because the teachers know that they know what to do. (Megan, Principal)

Similarly, the link to increased knowledge is made here:

You write down which child is better at whatever ... so you relate that to the teacher that says 'This child is good at ...' and that's what I do, you know—that one doesn't know this bit much and this one doesn't know that bit much'. (Donna, AIEO)

In summarising responses about the benefits of the professional learning, the four themes (shortened to confidence, team, knowledge, and children) are encapsulated in the following comment:

Teachers have got so many different children with so many different abilities that they're just so happy to have someone in there that they can go, 'This group are all at that level

so you can work with them and I'll work with the rest. They're quite happy to do that because it gives the children better opportunities (Christy, AIEO).

Effective teachers of Indigenous children

As with the first research question, themes emerged from key word analysis of interviewee replies and comments. The four themes are represented in Table 2. Other themes emerged but, for brevity, the discussion here is restricted to four. As was stated earlier, it was considered by the cluster schools that broad underpinning factors supporting teacher effectiveness needed to be addressed before it could be hoped to specifically improve numeracy outcomes.

Table 2: Themes related to effective teachers of Indigenous children.

Theme	Frequency
Building a better relationship through empathy, connection	40
Displaying cultural sensitivity and awareness	37
Support mechanisms	33
Clarity of goals and expectations	27

Building a better relationship through empathy and connection

The key ideas within this theme were “connection” (30%), “empathy/warmth” (28%) and “trust/relationships” (25%). When discussing the question of why they are considered effective teachers of Indigenous children, teachers Dan and Teresa modestly stated that they didn't feel that they did anything different but evidence suggests otherwise. Indeed, their principal, in response to the same question stated:

This may sound a bit fey but these teachers [Dan and Teresa] have an authentic presence in the life of the child. It is the bottom line for me—It's like, “I see the God in you looking at the God in me” ... that's the key. It's the recognition that you are a presence in my life. You might think that's a bit over the top but that's where it is—it's a sense of spirituality with the children, a sense of communion, but the bit I can't stress enough is the presence. (Megan, Principal)

Dan noted that he and his colleague, Teresa, often spent a lot of time talking to their Indigenous children, dealing with social and emotional issues during their recess breaks or planning time and putting ‘school stuff’ to one side. Teresa noted that they both had strong interest in “out of school issues” like sport, adding:

A lot of Indigenous kids connect with that and that works well. I think we're approachable in that sense. (Teresa, Teacher)

Dan's comment provided further insight into what they do:

The key thing is that you've got to have empathy with them. You've got to trust them, then they'll want to come and talk to you and then you're half way there. If you don't have that, then it's “I'm not interested, see you later”. It's a critical thing—be open, let them talk to you, talk back with them. (Dan, Teacher)

Further to the building of a strong relationship, teachers agreed that if the teacher-student relationship is robust, then the teacher can ask students about almost anything:

If you don't have that relationship, then it's like “Why are you asking me that question?” (Max, Teacher)

They probably don't feel like they have to answer you, if there is no rapport" (Linda, Teacher).

Regarding the idea of 'making connections', a number of EAs and AIEOs noted that effective teachers:

... have empathy for and connected with Indigenous children ... who approach them for help because they provide it willingly. (Annie, EA)

This was further expressed as follows:

If you come at them [Indigenous children] on a personal level and you gain one little bit of information so you can ask them how the dog is, or something so that they know you're concerned about them ... connect, yeah. Once you've got that connection, a bit of respect, you're away. (Shona, EA).

Finally, this conversation further underpins the notion of caring and connecting:

I think that showing that you care... that's it, you're part of the family ... I rouse them all the time [laughed] (Donna, AIEO).

They love her because even after she's roused them, they know that she still loves them (Jean, Teacher).

Consistency ... consistency. (Donna, AIEO)

Displaying cultural sensitivity and awareness

The key ideas within this theme were 'being culturally aware and in tune' (frequency 19/33), "public shaming and failure" (8) and "sense of equity" (7). It was noted by a principal that the most effective teachers are aware of the effect of impoverishment on the Indigenous children and that:

They work on the premise that for equity of access to the learning program, it doesn't mean giving every child the same; it means giving them what they need. (Megan, Principal)

It was also noted that the awareness is two way, in that Indigenous children are very much aware of who is supportive of them.

Indigenous kids just know. They come to a Wadgula school with built in crap detectors. They can tell, just the way you look, you smile, you touch. They learn to reach out to people like Dan, Teresa, and Beth. These are wonderful teachers who have a clear, authentic and defined presence in the lives of the children. (Megan, Principal).

Other teachers and aides noted the importance of being aware of what children had experienced the previous night at home, or coming to school, as these events had a profound impact on their in-school performance. Specifically regarding the notion of public shaming and displaying learning in public, several participants noted the importance of teachers being aware of this, but that it is something that can be overcome, as noted by the following comment:

It all depends on the teacher, how they've modelled it, how they've developed those children, what kind of relationship they have. We have encouraged them to do risk-taking and things like that, whereas some teachers *will* put them on the spot and they *will* clam up. (Irene, Teacher)

Support mechanisms

The main key ideas within this theme were “role models/mentors” (33%) “support” (30%), and “success” (24%). Dan’s principal, Megan, noted that teachers like him were successful because they are good role models—important as Indigenous children are “watchers of people more than anything”. Dan agreed that having appropriate role models was crucial for the children:

You’ve got to be really careful with what you do, what you say, because someone is watching all the time. (Dan, Teacher).

Dan also noted that the concentrating of Indigenous children into four classes had made a difference as it had given them a sense of camaraderie, enabling them to compete with one another at appropriate levels, without ‘being blown out of the water’. Beth agreed with this, noting the following:

Most of my Indigenous children have come along in leaps and bounds this year so I think [having them grouped together] is really working. They associate with each other culturally, and they’re more comfortable. They’re more relaxed and you can target their needs ... they don’t have to go outside at lunchtime and prove themselves because they know where each other is in the pecking order, being in the same class (Beth, Teacher).

Specific strategies employed by teachers to provide support included extensive use of peer tutoring and providing ample opportunities for the Indigenous children to succeed.

Clarity of goals and expectations

The key ideas within this theme were simply “clear expectations” (44%), “realistic goals” (26%), and “consistency” (19%). Most participants differentiated between academic goals and behavioural goals noting that the former had to be realistic and linked to success, while the latter needed to be clear and firm. Many comments echoed the Cluster Plan regarding the raising of expectations, encapsulated in the following:

Show that you’re a strong person ... they don’t respond well to weakness. If you go back on what you said you were going to do, you lose so much ground. You have to be very firm, fair, honest, follow through ... they like to know what your expectations are and that they can live up to them as well. (Leanne, Teacher)

Teaching strategies

The interviews highlighted a number of strategies used successfully with Indigenous children, and these data were also generated from the questionnaire. Significant were factors like cultural awareness, teacher student relationships, and support mechanisms. A common discussion point was the use of hands on materials and peer tutoring.

It’s no good giving them book stuff, [they’ve] got to be doing it, touching things ... we use a lot of peer work with them. (Dan and Teresa, Teachers)

They like to make things, build things ... hands-on manipulatives ... they like somebody working with them, but not pushing at them all the time with questions ... it comes in through general discussion and talking, but not direct questioning - they shy away. (Beth, Teacher).

Other teachers noted that their Indigenous children needed time at the beginning of lessons to play with equipment because many had lacked this sort of experience in their home background.

Table 3 contains a summary of questionnaire responses describing effective classroom strategies.

Table 3: Effective practice with Indigenous children.

Identify individual weaknesses and plan for teaching based on learning sequences.
Revise, re-teach, and use continuous reinforcement of key ideas to account for short attention span.
Use oral discussions and drawing to communicate ideas.
Use game playing to teach key concepts
Use rhyme, rhythm and movement in real life contexts
Use hands-on resources and manipulatives.
Use natural resources such as sea shells and familiar resources such as dice and cards.

Conclusion

It is apparent from the evidence presented that the mathematics professional learning for EAs and AIEOs contributed to the development of professional learning communities. As well, it is apparent that effective teachers of Indigenous children have particular qualities and use particular strategies that develop and enhance supportive and empathetic teacher-student relationships, and which will hopefully lead to improved numeracy outcomes for Indigenous children. The Swan Valley Cluster will build on the initiatives described here including an extension of the professional learning program for aides during 2011 and 2012. It is hoped that the anecdotal evidence provided in this paper will be translated into statistical gains in numeracy outcomes reflected in NAPLAN and other assessments during 2011–12.

References

- Anthony, G. & Walshaw, M. (2009). *Effective pedagogy in mathematics*. Educational Practices Series 19. Brussels: International Academy of Education.
- Australian Association of Mathematics Teachers. (2009). *Make it count: Newsletter No.1*. Adelaide: Author.
- Bolam, R., McMahon, A., Stoll, L., Thomas, S., & Wallace, M., with Greenwood, A, Hawkey, K., Ingram, M., Atkinson, A., & Smith, M. (2005). *Creating and sustaining effective professional learning communities*. DfES Report RR637. Bristol, UK: University of Bristol.
- Hurst, C., & Sparrow, L. (2010). The mathematical needs of urban Indigenous primary children: a Western Australian snapshot. In L. Sparrow, B. Kissane, & C. Hurst (Eds.), *Shaping the future of mathematics education. Proceedings of the 33rd annual conference of the Mathematics Education Research Group of Australasia* (pp. 271–279). Fremantle, WA: MERGA.
- Perso, T.F. (2003). *Improving Aboriginal numeracy*. Australian Association of Mathematics Teachers: Adelaide.
- Perso, T.F. (2009). *Pedagogical framework for cultural competence*. Retrieved March 16, 2011, from <http://makeitcount.aamt.edu.au/Resources/Cultural-competency>
- Rowland, T. (2005, January). *The knowledge quartet: A tool for developing mathematics teaching (Considering Chloe)*. Invited plenary paper presented to the Fourth Mediterranean Conference on Mathematics Education, Palermo, Sicily.
- Schulman, L. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15, 4–14.