UNIVERSITY OF CANBERRA

Celebrating success:
Numeracy in remote Indigenous contexts

What makes for successful numeracy education in remote Indigenous contexts: An ethnographic case study approach

Stories on remote indigenous mathematics successes compiled by Professor Robyn Jorgensen

2015

Better Together

Yarrabah State School

Yarrabah State School is located within the Yarrabah community approximately 52 kilometres south-east of Cairns. Yarrabah means "meeting place'. To travel to Yarrabah involves passing through the beautiful and very winding Murray Prior Range. In the past, with the community isolated from Cairns, students could only access secondary school via boat but now the community is connected by road. Yarrabah SS caters for students from pre-prep through to Year 10. It has three campuses – a pre-prep, a primary and a junior secondary campus. Students attend until Year 10 and then have to option to undertake senior studies at nearby Gordonvale High School.

The traditional owners are the Gunggandji and Yidindji people. The language spoken across the community is Yarrie-lingo – a creole. The school has introduced a LOTE program which is delivered by a local indigenous teacher who is also a traditional Owner and supported by local elders.

The Yarrabah community was initially an Anglican mission established in 1893, but in 1957, the inhabitants staged a strike to protest the poor living conditions imposed by the Mission. A few years later the Queensland government assumed control over the community. In 1986, the community was granted a Deed in Trust and were able to assume some control over their governance. By 2007, the community achieved self-governance and established its own council. The 2008 census lists the community as having an official population of 2600 but this is seen to be serious underestimation of the actual population. The community is served by the Yarrabah Aboriginal Shire Council, a local store, two takeaway shops, a health clinic, ATODS, an arts centre and museum, aged care centre, women refuge and a service station.

Background to the School or Initiative

Yarrabah seeks to develop strong partnerships with and between teachers, students and the community. The underlying approach adopted at the school is working together; that when people work together, there are better outcomes – for all parties. The school is strongly located within a strengths-based paradigm and this underpins the approaches taken at the school. Recognising and valuing the culture/s of the community and students is touchstone to the practices adopted at the school. Developing students who are two-ways strong is a key approached taken at the school. Finally, the school uses data and research to inform the decisions and work undertaken by staff. Collectively these practices form the basis of much of the work undertaken at Yarrabah State School. The school has an explicit improvement plan. Based on a three-part model – ABC – where the first priority is attendance, then behaviour, and finally curriculum. In this model, the school seeks to increase attendance, and then to ensure that when the students are at school, they behave well. With engaged learners, then the curriculum can be developed to cater to the needs of the students. There is considerable interaction among the actions taken at the school.

Defining Success

Yarrabah State School has achieved numeracy success over an extended period of time in the area of NAPLAN numeracy when compared with like schools.

	2010	2011	2012	2013
Year 3	■		■	■
Year 5				
Year 7			■	■
Year 9	■	■	■	■

One of the goals of Yarrabah is to compare itself with schools in the region rather than comparisons with ACARA-like schools. Many of the students are working at benchmark (and attend regularly), and so there are clusters of classes that are effectively mainstreamed. Yarrabah also undertakes moderation with other schools in the region and have found that the students' grades (and assessments of the students) are comparable with other schools so teachers and administrators are confident of the levels of assessment of Yarrabah students.

Initiatives

The initiatives at Yarrabah fall into two quite distinct areas – first at the level of building a culture for learning, then three pillars upon which explicit action is taken – Attendance, Behaviour and Curriculum. These four key areas of practice are collectively informed by the underlying principles of the school so there is considerable cross-referencing in this case study.

Creating an Environment to Enable Engagement and Learning

Over an extended period of time, and with stable leadership, Yarrabah State School has worked to change the culture and behaviours of the students so that they come to school ready and able to learn. Drawing on a number of theories to inform practice, the school has created significant shifts in the learning environment at the school that has resulted in higher engagement of students. Maslow's hierarchy of needs has provided the basis for the school to meet the needs of the students by local and outside community agencies offering breakfast programs and lunches for students who need food, while also recognising that security and safety are also a priority that must be met before learning can occur.

Teachers acknowledge the importance of being open to seeing and understanding the lives of their students, without judgement of what students bring (or not) to school, in order to provide an environment for learning. The lives of the students can be very complex and as a result, there are many challenges that students (and families) confront on a daily basis. Being at school can be a celebration. Understanding the complexities of community life and building structures and practices within the school to enable learning has been a touchstone to the Yarrabah State School approach to learning.

Relational Leadership

Across the school and community, the focus on positive relationships among people is evident. Creating positive relationships within the school and the wider community has been a key to the successes of the school. At the community level, the school supports the community in building its capacity, and seeks input from the community in the operations of the school. Many local people have important roles within the school.

There has been a strong intention to bring about change within the practices of the school and wider community. It is important that all members of the community feel valued and respected so that the team can move forward together. Teachers feel that the leadership team values their work, and many of the staff feel strongly about their worth, so that they remain at the school beyond their initial contract.

The model of leadership puts the focus on relationships but also means that leadership is highly devolved. In the Yarrabah model of leadership, people within the organisation assume responsibility for various aspects of school management. The management/executive team is relatively large for the school of this size but the intent is that the roles cover areas of strategic need. The school has a principal, and then two deputy principals (education services and student services). A series of Heads of Curriculum (HoC) who work with the senior leadership team. There are HoCs, PP-10 for English, Reading and Phonics, Maths and Science, Student

Attendance, Wellbeing and Student Leadership. There is also a Head of Campus for the junior secondary campus. All positions are full time and have been funded through either the school funding model or through special programs. There is a culture at the school that teachers and staff are the most important resource at the school, so most funding is channelled into the development of staff (in line with the relational leadership model). While there is a turnover of staff at the school, the model also seems to have created a very positive and highly supportive workplace so there are many staff who have remained at the school for extended periods of time – as many as 12 years for teachers and 33 years for teaching assistants. Overall staff felt very supported by the relational leadership model adopted by the school and reported that they were very happy in their positions.
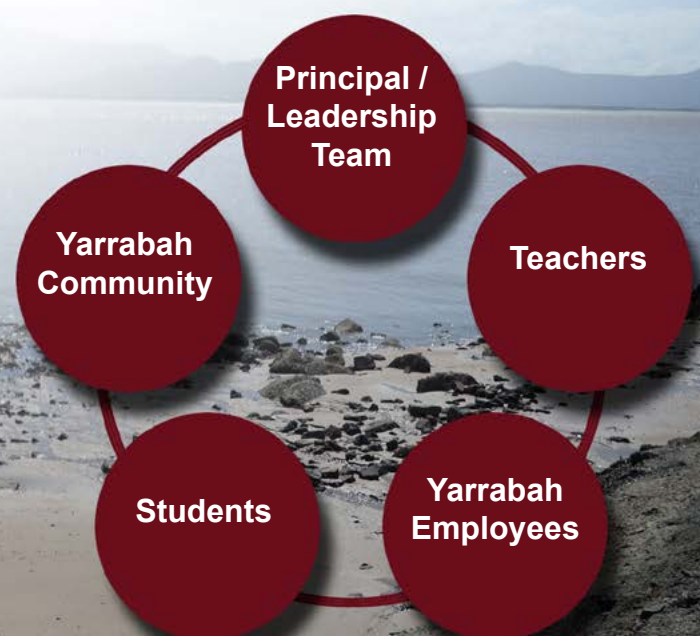
Aspirations and High Expectations

A culture of aspiration for students and teachers, alongside having high expectations of both students and staff is part of the work at Yarrabah. There is zero-tolerance of deficit thinking. Staff are expected to 'aim high" as per the school motto and ensure that students are extended in their development.

The curriculum offered at the school is age-appropriate and draws from the National Curriculum and supported by the Education Queensland C2C resources. Teachers are expected to teach to the outcomes specified in the national curriculum for mathematics and check their students' comprehension of those outcomes. Where students are at (or beyond) level, then practices are put in place to build that knowledge. Where students are not at the level expected, then teachers are expected to scaffold and expedite learning so that students are able to reach benchmark. Teachers can seek support from the leadership team HoC (Maths/Science), HoC (English/Reading/Phonics) or Deputy Education Services to help them with planning for the diversity of needs of students.

High expectations are also made of teachers, staff and the wider community. Teachers are supported in their transition to Yarrabah by both the leadership team (for educational and professional issues) and the wider community (for cultural and community issues). Teachers are well supported to adopt the practices valued at Yarrabah. There is also a social program for staff so that people feel like they belong to the team at Yarrabah.

Strength-Based Model

Yarrabah adopts a strength-based approach to its work. The strength-based approach applies to teachers as well as students and community members. Strength-based models adopted by the school have seen that teachers with particular strengths are able to move into areas of expertise to support their peers. The relational leadership model promotes the staff to excel in areas of interest, passion and strength. Teachers are expected to develop personal development plans so that their strengths can be recognised and built on.

Attendance

In concert with the relational leadership model, teachers work with the Yarrabah teaching assistants and attendance team to create positive relationships with families. The Student Attendance team are self-funded through school funding models. Teachers make home visits, initially with positive news to share with parents and families, with the intent to share students learning and behaviour. Initially the Yarrabah attendance team will make contact with the families to indicate that the teacher will be visiting the home and will give some information about the purpose of the visit. Sharing good news helps to create positive relationships with the families and the school. Once families come to see the teachers as coming from a position of strength in relation to their children, better communication is possible. Families appreciate hearing the successes of their children, which creates a much stronger bond between the families and the school, and thereby creates a stronger attendance record for the students.

"Today is a School Day"

There are many reasons for non-attendance and the school works solidly with Yarrabah staff to understand the reasons for non-attendance (and behaviour) so they have insights into the reasons why students are not coming to school. "Today is a school day" is adopted as a motto across the school and community. Having this approach means that when students are not at school on a designated school day, staff can come to families' homes and ask why students are not at school. Often the student will attend when they are asked to come to school, but where there are other problems, then the personnel will help the family. The model supports families to address the problems that are the cause for non-attendance. Where there are problems for families to enable the children to come to school – such as food, or clothing, or bullying – the school proactively supports the family to work through the challenges so that the students can attend school. This process helps to create the acceptance that there is no excuse for not attending school. This also helps to support the school's high expectations of students and families related to attendance.

Around community there are various signs on buses, walls or bus shelters so that families are reminded that there is an expectation that on school days, students must be at school. By focusing on the idea that every day is a school day, then the school (and its attendance staff) are able to work with families to bring students to school, and to offer support for families who may have challenges in getting their children to school.

Behaviour

There have been significant changes in the behaviours of the students at Yarrabah so that classes are very positive learning environments at this point in time. There has been a concerted effort to shape the behaviours of the students so that they are very aware of what are seen as appropriate school behaviours.

Positive Behaviours

The school has introduced a wide range of practices to build positive behaviours at the school. This has been a slowly-slowly process and taken some time to build the changes that are now an embedded part of the school. It has been a multi-pronged approach, and has largely sought to create a supportive environment where students can learn explicitly what appropriate school-behaviours are expected within the school context. Recognising that there are often significant difference between the social norms of the home/community and those of schools, students need to be scaffolded in developing appropriate school-wide behaviours. The high expectations ethos of the school is also part of the behaviour programs.

Developing Positive Behaviours in the Classroom

Yarrabah has adopted a number of supportive strategies to help teachers with developing positive behaviours in the classroom. Teachers are regularly profiled using a tool that identifies a comprehensive range of strategies to help with behaviour in the classroom. This profiling is undertaken by members of the leadership team within a very supportive, collegial and confidential context. The tool is designed to help teachers and profilers to identify the strengths of the teachers along with areas that they can develop further. This tool is also aligned with the Essential Skills for Classroom Management (an EQ initiative) so that teachers are offered a very comprehensive profiling of their classroom management techniques, and ways to enhance their skill base.

Gotcha Reward System

Across the school is a rewards system where behaviours are named and rewarded. Teachers can give students 'gotcha' tokens for when positive behaviours are observed. Naming the behaviour is a key part of the strategy so that students know what they have done to be rewarded. The gotcha rewards are recorded on a school wide system and displayed in the front office so that students, teachers and community members can see the good behaviours of the students. Students are also presented with Gotcha certificates at parade when they reach particular milestones – 50 points, 100 points etc. At the end of each term, the gotcha tokens are placed in a large container and winners are drawn. The community has a project to rebuild bicycles so two bikes have been donated and will be prizes for the end-of-term draw.

Behaviour Team

Yarrabah has a comprehensive group of local people directly associated with the building of positive behaviours. The behaviour team at the primary campus is a group of three local people who work with the teachers, students and community to build positive behaviours among the participants. The behaviour team is led by two highly respected "uncles" who have strong links into the community and are leaders within the community. They work with families to help support students at the primary school. The behaviour team work as a group with students to encourage those who are doing well (strength-based system), and to support those who may be having problems in the classroom. Their knowledge of the students, their families and the community is invaluable in supporting and managing behaviour. A child may not be engaged in the classroom and very tired, so a member of the behaviour team may take the child from the classroom. Depending on individual circumstances, the behaviour team will interact with the child according to the situation.
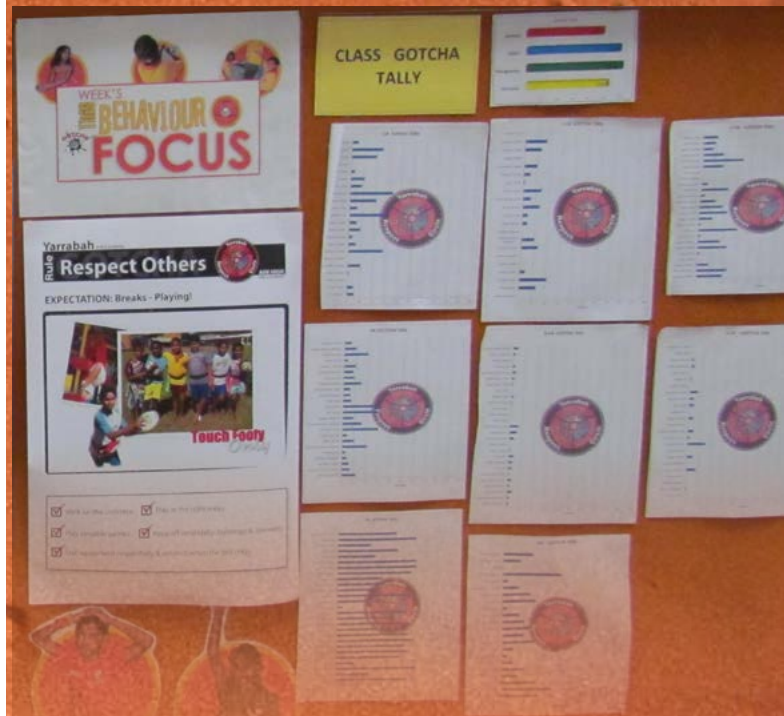
Explicitly Teaching School Behaviours

Students are explicitly taught expected school behaviours. When the culture in the community is different from that of the school, teachers learn that focus on deficit thinking is counter-productive and fails to bring about positive changes. Recognising that the students may have different social norms in community and hence not be aware of the required norms of schools, expected school behaviours are taught to the students. While use of manners may be an obvious choice, more subtle social norms are also taught – such as engaging in social chit-chat –"good morning, how are you this morning?" is an important way to commence an interaction before launching into the direct question that needs to be posed – such as "My teacher needs the maths blocks, where are they please?"

There is a weekly focus on a particular behaviour. This behaviour – named for the students – is a feature of the rewards systems. Students receive tokens for displaying the named behaviour. The tokens can be exchanged for items in the buy at the end of the week. The items that can be purchased are ones that can be used at home or in the school (such as pencils, crayons, books, etc). Within each classroom, teachers are able to choose their own system for explicitly recognising students' behaviours. Displays are visual so that students can see when they are moving up for good behaviours or when they are being reprimanded for misbehaviours. There is a very clear (but supportive) system operating across the school so that students (and community) are aware of how behaviour management is enacted at the school. Teachers are well supported by the various teams within the school to manage behaviours. The Junior Secondary campus differentiates the system to reflect the age of their students. A Behaviour Bank operates at the JS with age appropriate rewards to be purchased with behaviour bank points.

Data are collected for behaviours. Teachers are expected to report all behavioural problems so that the administration team can track and analyse behaviour trends. It was noted that many behaviour problems were reported in the periods immediately after breaks. The school reacted to these data by having students line up in orderly fashions outside the classrooms so that they were calm before entering the classrooms. Short sessions were undertaken after the breaks (such as spelling mastery) so that the students were on task and engaged in a quick activity that helped to focus their attention on the task. Such practices have meant that students engage quickly in learning, and are ready for mathematics (or other curriculum areas) in a speedy manner, and no time is lost managing behaviour – the students are ready for learning.

Curriculum and Teaching

Yarrabah has had a very strong emphasis on literacy. Their NAPLAN data for many years has been a "sea of green" across all measures of literacy, when compared with like schools, suggesting considerable success in raising the literacy levels of the students. More recently, numeracy has become the focus of attention. There is some circumspection among the staff, that the strong emphasis on literacy has had a flow on to numeracy given the highly contextual (and literacy-based problems) now found in numeracy-mathematics.

Many of the teaching strategies used in literacy – such as explicit teaching – are also used in numeracy/ mathematics lessons. This consistency in lesson format is seen to be invaluable for students as they are aware of how lessons – literacy, numeracy or other curriculum areas – will operate on any given day. This helps to enable students to access the lesson without second guessing the purpose or process of a lesson.

A Focus on Number

Recognising that the study of number is essential to the learning of mathematics, the school emphasises number work in the teaching of mathematics. Considerable time in the mathematics block is devoted to number study – particularly number, place value and part number.

Consolidation of Mathematical Concepts (Research Based)

Each day, time is allocated to the consolidation of mathematics. Experiences outside school are often different from those that are integral to mathematics, therefore consolidation is seen as key to mathematics retention. The consolidation phase of the lesson can vary but is usually about 20mins. The lesson is fast paced to keep students engaged and to promote automaticity. The content of the consolidation is varied and covers a range of number facts as well as aspects of other strands (such as time, or money, or length).
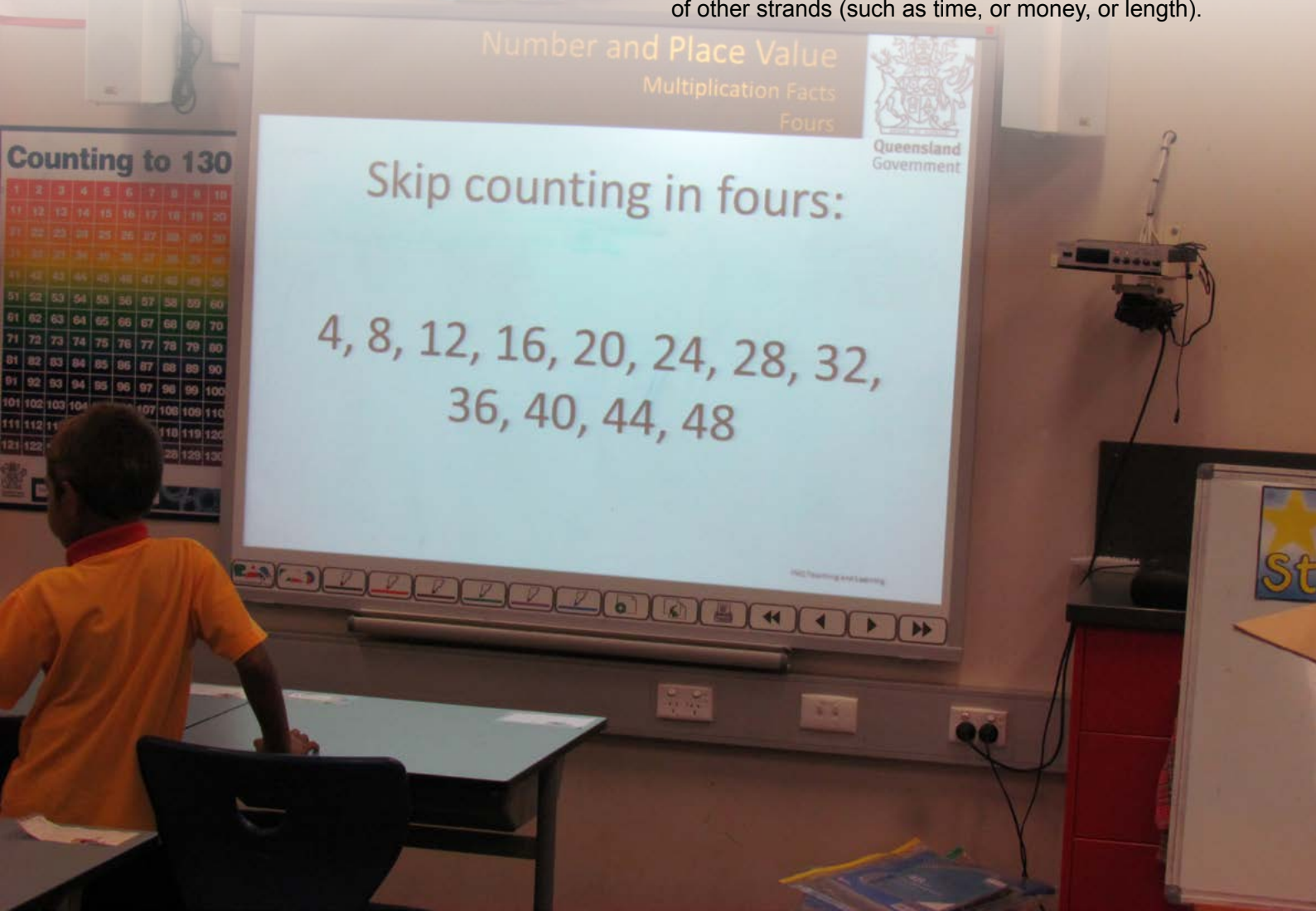
Explicit Teaching

The school has adopted the explicit teaching model throughout the campuses. This model has been very successful with the students as it has allowed them to have consistency across lessons and across teachers/classrooms. This enables students to engage with the lessons rather than trying to work out the intent of the lessons and the actions being undertaken by the teacher. The fast pace of the lessons, and the explicit modelling by the teacher enables engagement by the students.

Numeracy Head of Curriculum

Yarrabah has appointed a HoC for numeracy/mathematics whose role is to work with school data – school wide data through to teacher data – to identify areas of strength and weakness. The HoC for numeracy/mathematics uses the data in two significant ways – first to examine school-wide data to look for trends, and second, to work with classroom teachers on how to use this data to develop their teaching interventions. The data inform teaching and learning to bring about informed and targeted teaching.

Pedagogical Coaching

The HoC observes teachers to provide feedback on their teaching. They model Explicit Instruction lessons to the teachers particularly around the model of teaching adopted by the school.

The HoC also works with teachers in their planning, assessments and pedagogy to help support the development of school-wide practices – namely explicit instruction and the C2C. She works across both the primary and junior secondary campuses. She has a key role in supporting teachers to maintain the vision of the school.

The HoC role serves to support teachers in their work in numeracy/mathematics across the campuses and in doing so, helps to build and maintain the "Yarrabah model" of teaching. Consistency across the teaching of mathematics/numeracy (as well as other curriculum areas) is a priority at the school as it is seen to enable students to engage with the lessons and thus spend more time on learning.

Differentiating learning

Yarrabah has differentiated classes that correlate with attendance and behaviour. Based on testing, students are assigned to classes so that students who are performing well and need extension in their mathematics are based in classes with students who are performing at a similar level. Conversely, students whose needs are greater than their peers receive targeted learning at their levels of needs.

Moderation

Yarrabah teachers are proactively involved in the moderation of student work. This is within the school but also external the school, including more elite schools in the Cairns area. The process of moderation has encouraged teachers to understand the achievements (and levels) of their students work. The moderation process has also enabled teachers to see their students' success relative to their peers in other contexts and have been pleased to see that the students are working at levels commensurate with their peers in other schools.

Benefits for Learning and Learners

For students to be able to learn mathematics, classrooms and schools need to be conducive to learning. Yarrabah has taken an approach to build the behaviours of students so that they can effectively and productively engage in positive classrooms where behaviours support and enable students to engage with content.

The relational leadership model has enabled staff, students and community to feel a valued part of the learning partnerships. Teachers support each other in their learning, and this has created a very happy work environment. Happy teachers make for happy students and quality learning.

The focus on number is enabling students to engage in mathematics. The automaticity and fluency with number flows to other areas of mathematics.

Consolidating learning in the early part of the mathematics lessons helps students remember concepts, reinforces their understanding and success, and helps to orientate for the remainder of the lesson. The consolidation of number concepts – number, operations and place value – help to build on-going understandings and embed concepts in long-term memory.

The pedagogical tools associated with Explicit Instruction have meant that the students are engaged with learning. The behaviour data from the school show a dramatic decline in off-task behaviours since the introduction of explicit instruction.

Advice to Teachers

Relationships are important to success. Being part of the school team, working with the community, and building relationships with students and families, build success and helps to create sustainable practices.

Focus on strengths (of students, of teachers, of community) and build on these strengths. Identify the gaps and build effective strategies to ameliorate these gaps.

Build positive behaviours, informed by data, so that effective strategies can be implemented to achieve outcomes and good behaviours. Students may need behaviours to be explicitly named so that they are aware of the social norms expected in school. By developing positive behaviours, students become learning-ready and classroom environments support learning.

Set SMART goals (Specific, Measurable, Achievable, Realistic and Timely), set strategies that explicitly build towards these goals, and work to progressively achieve them. The goals should be set on paper so that they are visible to self and others and thus a commitment is made to achieve them.

Change takes time so it is essential to keep working towards the end goal. Scaffold students so that they can take slow steps and achieve progressive success. This scaffolding should be explicit so that students are able to make sense of the expectations of them.

Focusing on number as the key learning area for mathematics. This helps students' understandings and fluency (and automaticity) for number study and in flow on to other areas of mathematics.

Key Messages – Summary

Building positive relationships with students, peers and community are important to creating success. Being respectful and supportive of others, is key to building strong relationships.

Change takes time – keeping a clear sense of purpose with clearly articulated goals, along with progressive strategies to attain those goals is central to the change process. Small steps that build towards success – whether around behaviours and/or mathematics – create a sense of success. Within the change process, resilience and a sense of self belief help to maintain the momentum throughout the hiccups in that change process.

Being respectful of the cultures and knowledges that students bring to school, and then scaffolding students into the social and mathematical norms of school, builds success. A process that focuses on the strengths of the partners in the learning relationship, and having high expectations of all parties builds towards success.

Building a strong working knowledge of number aids students' learning in mathematics and for life beyond schools. Number is central and a priority in the learning of mathematics.

Students need to have mathematical concepts and processes repeated regularly. A phase of the lesson needs to be dedicated to consolidation of mathematical concepts, with an emphasis on number work. This process consolidates learning for regular attenders and helps those who have less regular attendance to encounter concepts and processes previoiusly covered in mathematics lessons.

MODELS	Relational Leadership	High Expectations	Strength-based Approach	Data-driven Actions
Learning Culture	✓	✓	✓	✓
Attendance	✓	✓	✓	✓
Behaviour	✓	✓	✓	✓
Curriculum	✓	✓	✓	✓

School Demographics

Year range	P-10	FTE teaching staff	46.1
Total enrolments	484	Non-teaching staff	27
Location	Provincial	FTE non-teaching staff	20
ICSEA (school)	647	Indigenous students %	100%
ICSEA (distribution of students) *(bottom quarter to top quarter)*	86% | 11% | 2% | 0%	Enrolments: Girls/Boys	231/253
		Language background other than English	96%
Teaching staff	48	Student attendance rate %	72%

Contact: Robyn Jorgensen | robyn.jorgensen@canberra.edu.au