Focussing on the Early Years

St Joseph’s Wyndham

St Joseph’s school is located in Wyndham in the East Kimberley region. It is part of the Broome Catholic Education Diocese. It opened in 1964 and enjoys a strong partnership with the local community. It provides primary education for around 90 students. The school is located approximately 100kms west of Kununurra. The town was originally gazetted in 1886. It has a strong history linked to the cattle industry – at one time it was the location of the region’s meatworks but this has since gone. More recently the town has relied on the mining industry. It now acts as a port for the iron ore and nickel mining industry. With its strong historical connection to the cattle industry, the town celebrates the important role of the Afghan settlers and cameleers who were an integral part of the town’s development.

The school currently has eight teachers and eight non-teaching staff. According to the publicly available data, the school has 89% Indigenous students with an overall attendance rate of 80% and an ISCEA score of 654. Aboriginal Studies is an integral part of the curriculum, which teaching assistants and teachers plan collaboratively.

Defining numeracy success

St Joseph’s was invited to participate in the study due to their excellent results in NAPLAN. The school has demonstrated very strong and consistent performance in its numeracy scores in NAPLAN for Years 3 and 5 with most years being above or substantially above like schools. This suggests that there is consistency in the school’s approaches to teaching numeracy that is worthy of investigation.

The school employs a number of strategies that help build its numeracy program.
One such strategy is the focus on the Aboriginal English of students and building bridges between their home language and the language of instruction at the school. The school also uses Mathematics Assessment Interview to help identify what maths students know and then create learning opportunities based on their current understandings. The students’ culture and background is considered when teachers are planning activities and programs.

Two-Way Language
The school has a strong emphasis on two-way learning. Recognising that the language and culture of the students is different from that represented in the school, an approach that validates Aboriginal English and then builds bridges into Standard Australian English is a central focus at St Joseph’s. Because the key to education and success is the acquisition of the knowledge represented in and through the formal schooling process, teachers must find ways to scaffold experiences that remain true to what culture and language is brought to school while allowing access to dominant language and ways of knowing. The language used by the children in the home is validated in the school through language boards. ATAs (Aboriginal Teaching Assistants) scribe sentences used by the students as part of their interactions in school, and then translate these to Standard Australian English. These boards are on display in classrooms. Further dialogue is held around the language used. For example, when students talk about ‘big mobs’, teachers will draw on number experiences to create an appreciation of the specific size of the mob.

Aboriginal Teaching Assistants
The school has an Aboriginal Teacher Assistant (ATA) assigned to each classroom. Often the role of the ATA is to translate between Standard Australian English and the home language of the students, and ATAs also assist with behaviour management within the classroom. The ATA is a key support for the teacher, and works alongside the teacher in many of the teaching activities. In one whole-class interaction, for example, the teacher and ATA modelled a novel activity in which the students were to create a new maths game depending on the mathematical thinking that they were to promote (e.g. matching numbers and items, or making tens). The teacher and ATA modelled the thinking, activities and negotiations that they would anticipate the students to undertake. The ATA also takes a key role in the innovations of the classroom by leading small groups in the teaching context.

All of the ATAs were undertaking studies. They were either studying Certificate III or Certificate IV in Education Support through Batchelor Institute of Indigenous Tertiary Education (BIITE). After completion, the ATAs have the opportunity for further study, either converting to a Diploma of Teaching or Bachelor of Education. The role of the ATAs varied across the school but their work was an integral part of two-way learning and central to the school’s operation. When students appeared to be struggling or confused with some aspect of a lesson, ATAs played an important role in translating and so enabling students access to learning.

Further, ATAs feel that they are conduits between the school and the community. The school hosts regular events to which parents, families and members of the community are invited. The ATAs play an important role in building the relationships between the school and its community.

Teaching Partnership
St Joseph’s has been successful in early-years numeracy. The two teachers (in Kindy to Grade 3) have developed a strong working partnership with the more experienced teacher (eight years’ teaching experience in remote education in the local area) mentoring the second-year teacher (first appointment). Together they have created a ‘common experience’ between the two classes so children are able to experience continuity from their preparatory years through their first few years of schooling.

The strong mentoring provided to the recent graduate resulted in the beginning teacher feeling very supported in her transition into the profession, into the community and in her role as a teacher in remote education.
Creating Mathematically-Rich Learning Environments

The teachers used a number of strategies to promote thinking mathematically. Making the thinking strategies explicit to the students through an approach whereby they listed the strategies that good mathematicians use, teachers work hard towards enabling students to articulate their thinking processes. This was an integral part of lessons since the teachers wanted to create deep learning in their children – moving beyond simple drill strategies.

Creating Visual Stimuli to Aid Learning

Visual displays were present in the rooms to prompt and support learning. Teachers articulated the need for the displays to be organised thematically and with clear divisions between themes to ensure clarity of and distinctions between concepts. Teachers felt that the use of highly visual resources helped students to gain cues into previous learning, helped students who may not be regular attendees to recall key information, and helped students whose learning styles were predominantly visual. Such resources were provided so that students could gain access to key information without feeling shamed as a result of showing their loss or lack of knowledge.

Mathematics Assessment Interview

The programs at the school are supported through the regional Catholic Education Office (CEO) of Western Australia. Across the Kimberley region, the CEO has implemented programs to support numeracy teaching. The Mathematics Assessment Interview (MAI) has been the basis of considerable professional development for teachers.

The teachers undertake assessments of the students using a model where key growth points are noted. Using a coding scheme, as shown, teachers were able to see quite readily where students’ learning was consolidated, emerging or non-existent. Using this scheme, they were then able to plan for focused learning for students, depending on their current growth points.

Accurate record keeping of this type enabled teachers to plan for solid and targeted learning in mathematics, ensuring the learning needs of students were planned for and met.

To support this process, a regional numeracy consultant visits teachers twice each term. During visits, she observes the teachers for an hour and then provides feedback on how to improve lessons. Teachers reported this to be a valuable form of professional development. While there is a dedicated numeracy block for one hour there is a strong emphasis on incidental learning throughout the day to consolidate, reinforce and apply many mathematical ideas that are encountered.
Whole-small-whole teaching

St Joseph’s School has a dedicated numeracy block for one hour each day. The core of the teaching strategy employed by the teachers in the early years (and across the school) is a lesson structure that follows a whole-small-whole format. Here, the class is taught as a whole, then the class is broken into smaller groups in which learning is differentiated based on formative assessments and using MAI growth points, and then brought back to a whole-group discussion based on significant learnings experienced by the students. The school numeracy expectation is outlined below:

Before teaching commences, students are assessed, and results are mapped against key mathematical growth points. Observations of the student are a key diagnostic tool used by the teachers, along with other forms of assessment, particularly when teachers work in small groups with students. Careful planning is undertaken so that the activities are designed to match the learning needs of the students. It is not intended that students are always grouped by their learning growth points as this would foster a ‘streamed’ setting, so it was also important for the students to be grouped into peer tutor groups.

The Victorian Department of Education and Employment (2001) outlines the role of the teacher and students in whole-class and small-group teaching situations, along with particular prompts that the teacher can use. This approach is adopted by teachers in the Early Childhood Years (K-3). The whole-class teaching at the start of a lesson can be modelled mathematics (in which the teacher models an explicit lesson focus), or a shared approach (in which students are actively involved in the lesson focus) can be taken. The teacher uses this section of the lesson to make connections between concepts and processes with which the students should be familiar, and to extend these into the new intended learnings. The teacher can prompt the students with questions such as: “Remember when…?”; “What do you know about?”; “Why might that work?”; and “How is this the same/different?”.

Once the key concept/s for the lesson had been introduced and students were orientated towards the intended learning for the lesson, teachers clarified the group tasks. Students were reminded of their groups and who would be working with them. The tasks were organised around the key learning objective (e.g. using informal units of measure of length) and activities were then designed to build this knowledge. Groups were assigned to (a) the teacher who would undertake a direct teaching role; (b) the ATA who would consolidate learning or build new learning; or (c) independent activities. This allowed the teacher and ATA to work with small groups to both build new concepts and to assess learning. During rotations, charts were displayed so that students could easily see what groups they were in, what activities they would be doing and who would be working with them. This helped to guide them through their activities and maintaining flow in the lessons.

### Numeracy Hour

<table>
<thead>
<tr>
<th>Whole class</th>
<th>Small Group</th>
<th>Whole class</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-20 mins</td>
<td>25-40 mins</td>
<td>5-10 mins</td>
</tr>
</tbody>
</table>

- Shared numeracy
- Modelled numeracy
- Numeracy skills
- Numeracy activities
- Guided numeracy sessions
- Independent numeracy activities
- Quality numeracy-focused learning activities
- Share time: students are encouraged to articulate their learning led by quality teacher questioning
- Guided numeracy sessions
- Independent numeracy activities
- Quality numeracy-focused learning activities
- Share time: students are encouraged to articulate their learning led by quality teacher questioning
- Guided numeracy sessions
- Independent numeracy activities
- Quality numeracy-focused learning activities
- Share time: students are encouraged to articulate their learning led by quality teacher questioning

- Guided numeracy sessions
- Independent numeracy activities
- Quality numeracy-focused learning activities
- Share time: students are encouraged to articulate their learning led by quality teacher questioning
- Guided numeracy sessions
- Independent numeracy activities
- Quality numeracy-focused learning activities
- Share time: students are encouraged to articulate their learning led by quality teacher questioning
- Guided numeracy sessions
- Independent numeracy activities
- Quality numeracy-focused learning activities
- Share time: students are encouraged to articulate their learning led by quality teacher questioning
- Guided numeracy sessions
- Independent numeracy activities
- Quality numeracy-focused learning activities
- Share time: students are encouraged to articulate their learning led by quality teacher questioning
The teacher modelled the tasks to small groups of students, drawing on their previous learnings to enable new knowledge to be constructed. In this phase, the teacher articulated the mathematical ideas that were the focus of the learning, supported and encouraged students in their approaches to the problems, and created space for the students to make new connections, generalisations, develop hypotheses and so on. This activity provided a positive space for developing and consolidating the metalanguage of mathematics, particularly for ESL learners.

Once students had progressed through the rotations as planned, determined by the available time for numeracy/mathematics, the class was drawn back to whole-class reflection. In this section of the lesson, students were encouraged to think about their learning. Over time, teachers used focus questions with which students became familiar. Focus questions specific to the topic at hand were clearly displayed for the students. The questions posed included: “What thinking did you have to do in this activity?”; “What did you find easy?”; “What did you find hard?”; “Why do you think the teacher planned this activity?”; “If you were to do it again, what would you do differently?”; “What did you learn today? How did you learn it?”; and “What helped you learn today?” The questions varied and, depending on the class, could be implemented for a week or more. These questions focused the students on their learning and so promoted mathematical discussions about the intention of the lesson. They also helped students to think mathematically. Teachers scaffolded students as to what the questions meant and would often model by discussing their own thinking. For example, if the question was, “What types of thinking did you use to solve the problem?”, then at various points in a day, the teacher would stop and offer comments that showed how she was thinking about something and the types of thinking she was using to solve a problem. This modeling was necessary as there was a tendency for students to describe the activity (e.g. “We cut and pasted squares” rather than “We counted how many squares filled in the shape.”) This shift from recount to metacognition needed scaffolding through modeling.
**Points of differentiation**

Although the “whole-small-whole” approach to teaching may not appear, on the surface, to be particularly innovative, the approach at Wyndham is quite different from the usual practice. What sets Wyndham apart from other schools is the very structured way in which the “whole-small-whole” approach is implemented. The approach is firmly rooted in an informed understanding of the progress of individual students, targeted activities for small groups that are closely monitored and a whole-group session which focuses on the thinking strategies/approaches of students. First, as outlined earlier, the classroom teacher assesses students using the MAI so the lesson can be clearly designed for groups of students. This means that the introduction of a lesson is very targeted and strategic. The whole-group discussion then focuses on orientating the students towards the key concepts – the goals of the lesson are made explicit so that even very young children understand the focus of the lesson. Second, in the small-group phase of the lesson, activities are designed specifically for the current level of students, based on the teacher’s on-going assessment. This means that the activities are specific and targeted for the learners within any one group. They are not about the content per se, but have been carefully chosen based on the assessments of the learners and their needs, unlike some group work where the activities are based on the theme of the lesson. Group work is carefully structured: one group works with the teacher who undertakes instructional activities to scaffold learning while assessing students; the teaching assistant works with another group to ensure that they are engaging with the activities and monitors progress (the teacher and the ATA share this information after the lesson); the other group/s work independently on activities selected at an appropriate level to their assessed understanding and needs. Finally, the children are all brought back into the whole group to work through specific questions that focus their attention on the process of learning. This is again a point of differentiation from “reporting back” sessions in many other classes where students most commonly talk about what they did (recall), which requires a much lower level of mathematical thinking. At Wyndham, these questions (outlined earlier in this report) ask students to reflect on their learning, processes and approaches. This approach requires scaffolding – particularly given the age of these learners – so that students understand the demands of each question. This final part of the numeracy hour is again used by the teacher to assess student learning.

**Benefits for Learners**

While learning mathematics is a focus of the approach, the small-group work allows for teachers to differentiate activities and approaches to cater for the learners. With considerable diversity in a class, teachers were mindful of the need for all students to be provided with appropriate learning experiences, regardless of their attendance rates or learning levels. Teachers at St Joseph’s were cognizant of how poor attendance can be used to explain low learning levels and as an excuse for teachers not to provide quality learning for their students. Teachers recognise that fluctuating attendance may be their reality and find constructive ways of working around it, while constantly looking for new ways to improve attendance.

Having a small-group environment allowed teachers to create learning opportunities so that all students were provided with quality experiences that met their needs.
Advice to Teachers

The approach advocated by the teachers requires considerable scaffolding in a number of areas. Many of the skills that need to be developed by the students are integral to the success of the programs but they need to be carefully planned and built up.

- Teachers need to scaffold their students to learn how to work effectively in groups. This may require some time, preparation and perseverance but it pays off when the students are able to work effectively. Students need to be taught progressively so that eventually, they are able to work in groups.

- Teachers also need to scaffold their students through effective questioning techniques – providing good questions at various points in the lesson helps to develop both cognition and language development. It gives students a way of talking about their learning with teachers and their peers. This scaffolding helps learners to better focus on what the question is actually asking.

- The task management board provides clear information to students about group composition and activities. This enables students to move independently through the rotations allowing for uninterrupted teaching time with the teaching group.

- Working with teachers from other year levels is important. Adopting an approach with which students are familiar helps as they transition through various grade levels. Continuity of teaching and learning experiences as students progress through school is beneficial. St Joseph’s early-years teachers work together so that children make an easy transition from pre-primary into Year 1, as they are familiar with the protocols used.
## Model for Quality Learning

### General principles | Implications for mathematics | Focused strategies
---|---|---
Two-ways approach | Recognise that language of the home is different from that of the school so strategies for learning are based on language differences – recognise difference and build bridges to enable access to mathematical ideas and processes. | • Displays with home language and then equivalent school language. • Specific teaching of language activities to allay any problems with differences between home and school language. |
All students can learn, must experience quality learning | Mathematics Assessment Interview (MAI) – identifies what students know so that planning for learning is based on their current understanding of mathematics. Planning is organised around student learning, so that teachers are able to offer productive ways of learning suited to the students’ needs. The assessment/planning/teaching cycle is key to quality mathematics learning. | • Pre-test students to identify key growth points. • Scaffold learning appropriate to levels of understanding. • Use groups – both homogenous and heterogeneous – to extend student learning. • Provide focused input at the start of the lesson so that students gain entry into the learning. • Allow for consolidation at the end of the lesson. • Create spaces for students to talk and negotiate mathematics learning and concepts. • Allow opportunities for ATAs to work closely with the students on productive learning activities. |
Catering for learning | Visually stimulating learning environments – immersing students in a visual environment provides prompts and reminders for learning. | • Organise learning in clusters so that students can identify the key information. • Create visual stimuli for many aspects of mathematics and mathematics learning. |
Aboriginal Teaching Assistants | ATAs are an integral and valuable part of the learning process and bring strong cultural understanding to the situation. | • Value ATAs as part of the teaching team. • Offer considerable PD for ATAs to build pedagogical knowledge. • Encourage ATAs to act as a conduit between school and community. • Teach aspects of language so that confusing language and interactions can be qualified and cleared. |

## School demographics

<table>
<thead>
<tr>
<th>Year range</th>
<th>K-7</th>
<th>FTE teaching staff</th>
<th>7.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total enrolments</td>
<td>81</td>
<td>Non-teaching staff</td>
<td>8</td>
</tr>
<tr>
<td>Location</td>
<td>Very remote</td>
<td>FTE non-teaching staff</td>
<td>8</td>
</tr>
<tr>
<td>ICSEA (school)</td>
<td>654</td>
<td>Indigenous students %</td>
<td>89%</td>
</tr>
<tr>
<td>ICSEA (distribution of students) (bottom quarter to top quarter)</td>
<td>100% in lowest quarter</td>
<td>Enrolments: Girls/Boys</td>
<td>39/42</td>
</tr>
<tr>
<td>Teaching staff</td>
<td>8</td>
<td>Language background other than English</td>
<td>83%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Student attendance rate %</td>
<td>80%</td>
</tr>
</tbody>
</table>

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