Innovation
at Newrybar Public
School

STEM - K-2 Slideshow

Our sample slideshow documents the learning journey in a typical STEM lesson sequence. Our slideshows are shared with parents and a hard copy is displayed. Stu- dents proudly share their finished products and design processes with peers, teachers and parents.

Planning for STEM learning is informed by deep understanding and knowledge of in- dividual student wellbeing and learning needs. Our Science and Technology pro- gram is delivered using an Inquiry-based/STEM approach and evidence–based teaching. Students effectively develop their knowledge, understanding and skills. Teachers provide a high expectations framework through the lesson design, monitoring and reviewing curriculum provision to meet the changing requirements of individuals, targeting problem solving and critical and creative thinking.

STEM activities are adjusted to meet individual student needs, ensuring that students are challenged and adjustments lead to improved learning. In the STEM learning sequence, expected outcomes are differentiated, teacher support and intervention is adjusted to support access to the curriculum for all students. Within the sequence of lessons, students share, test and reflect on their original design, demonstrating learning progress through adaptations made to products.

Our school is well managed using a consistent, school–wide approach in developing positive behaviour expectations. This ensures all students can engage in productive learning with minimal disruption. During STEM lessons, students work independently, collaboratively and cooperatively with the teacher as a facilitator.

A copy of the slideshow is displayed for parents and the community.

STEM - Photos

In addition to weekly STEM lessons, at Newrybar Public School we have organised dedicated STEAM days which involved parents and community members as participants and facilitators.
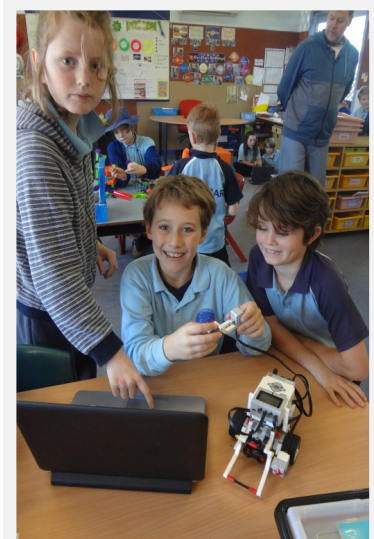
Robotics

To effectively utilise resources across all schools, we worked closely with three other schools in the VOSS learning community, pooling our money to allow us to purchase school sets of robot kits. This enables us to have the kits in our school for one term per year. The P and C have also given funds which has allowed us to purchase and replenish kits after use.

We made this a priority because as robotics and technology become increasingly prevalent in students' lives, they will need to understand programming, coding and programming concepts. Coding is continued throughout the year using computer based programs and planned activities.

Sharing the learning with a younger or older buddy proved to be a fun, easy and effective way to learn about computer programming. Once building was complete expectations were differentiated with the younger buddy familiarising themselves with basic robotic concepts and sequencing a basic program in a syntactical way. The older students moved past foundational concepts and were able to spend time learning how to manipulate different sensors, repeat loops and use conditional statements to create more complex programs.

The Robotics program is delivered over the term with all students' working together in a shared learning space. Once the robots were completed, parents and the community were invited to interact with students as they shared and explained their programming successes.

Power Standards - Narrative Power Standards

Power Standards-towards writing a paragraph

ES1														
identify and use words around the classroom and in books during writing														
compose texts using some sight words and known words														
participate in shared editing of students' own texts for meaning, spelling, capital letters and full stops														
identify the difference between a question and a statement														
compose texts using drawings and other visual media to create meaning														

We have a Power Standard rubric for every stage. This is a sample of the ES1 PS which will include achievement successes for each child as they demonstrate each skill.

Part of our journey towards excellence in teaching and learning saw the introduction of Power Standards. Our commitment to ensure high levels of learning for all students in a culture of collaboration, has a focus on results and all students achieving core competencies. As a school team we share the responsibility for learning as a whole school.

Data continued to show that writing was an area that many students were not achieving the expected outcomes. Consequently teachers developed Power Standards around the core competency of independently constructing a complex paragraph. Using syllabus outcomes all key skills and competencies from Early Stage 1 through to Stage 3 were analysed and included in the continuum of learning.

As teachers, there is demonstrated commitment that all students will meet stage expectations in these competencies. Once students have achieved these outcomes, individual learning will be supported to master expectations beyond these. The Power Standards are the focus skills that are non-negotiable for all students to master by the end of the teaching cycle.

Teaching and learning activities are planned to enable students to learn, practice and master the necessary components of writing a paragraph. This method of teaching also allows for students to access additional support and opportunities to practise component skills until mastery is achieved.

Introduction of Power Standards began with one standard in English and will expand to 1 standard per term in English and Maths. Parents will be included in the process after initial trials in the classroom.

Inquiry Based Learning - Going Further Program

An Inquiry-based approach is taken during History, Science and Geography learning at NPS. This process has proven to increase deeper knowledge of content as students grasp larger contextual concepts and gain greater understanding through well-planned learning experiences.

Through inquiry learning and active learner involvement ,students are actively making observations, collecting, analysing and synthesising information, drawing conclusions, and developing useful problem solving skills.

Students at NPS are currently investigating the drastic decline in the health of our oceans, the challenges we are facing and the opportunities for positive change.

Students have commenced learning by **Tuning In** to define and focus on the issues they will be dealing with. The next phase of the learning journey is **Finding Out-** through investigations students obtain more information, gather data, using appropriate methods to present and communicate what they have found. In the next phase, **Sorting Out,** students further develop their ideas and opinions, identifying, examining and justifying different points of view.

In the final stage of learning, **Going Further,** students are provided with learning opportunities to apply their knowledge to real world situations. Our Going Further stage will see students taking social action by becoming 'Ocean Guardians'. They will be given opportunities to become sustainable users of the ocean, gathering succulents with local foragers and preparing this for consumption in an environmentally friendly manner, in the local Newrybar Café.

Gather—
Learning about foraging in our environment. Developing a relationship with our environment through recognizing flora/animals/insects, their past and present benefits/uses. As well as their importance within Bundjalung culture and history within this community.

Workshop 2 – 4th September 2018 (Term 3 week 7) 9.30 – 11.30 am Lennox Head Beach
Ocean awareness and sustainability. Developing knowledge of our environment, culture and how we can learn from/utilize our surroundings. Discovering foraging in our environment. Developing a relationship with our surroundings through recognizing flora/animals/insects, their past and present benefits/uses. As well as their importance within Bundjalung culture and history within this community (including Harvest). Recognizing the elements and what they mean in terms of our environment and our health.
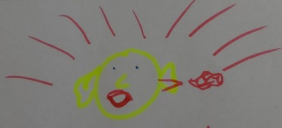
Eat—
Encompasses/ references all of the above key areas. Using prior knowledge and awareness, create a feast and a celebration of our local environment and history.

Workshop 3 – 11th September 2018 (Term 3 week 8) 9.30 – 11.00 am Harvest Newrybar
Facilitated by Harvest Chefs, students will utilize prior knowledge surrounding, foraging, sustainable practice and harvesting to produce a meal. Students will develop skills around food safety, preparation and handling.

Visible Thinking Routines - Wall Displays/Student Samples

Topic: The Stolen Generation   Name: Ruby

COLOUR	SYMBOL	ANIMAL
I chose the colour blue because knowing what happened makes me sad.	I chose a broken heart because I think the parents of the children would be heart-broken.	I chose to draw a whale because whales are the same as way as hunted exactly the Aboriginals.
I chose black because black can be an over-whelming colour and I get overwhelmed at the number of kids taken.	I chose the sybol of brain-popping because the number of kids taken by the GOVERMENT!	I chose a black panther because they are ferosious the same as the goverment was.

A student sample of a CSA which shows a shift in thinking.

I see
- A person wearing armour.
- A man holding a gun.
- An old-fashioned photo
- Steal and heavy armour
- A bucket used as a helmet
- Stephand stones

SEE What do you see?
THINK What do you think?
WONDER What do you wonder?

I think
- He is fully protected
- He is dangerous with a gun
- He is a bushranger
- He is hunting
- He is trying to protect himself
- He is ready to shoot because he may be being followed.

I wonder
- Why he has a gun?
- Why such heavy armour.?
- What is he looking at?
- Why arent his legs protected?
- Is he a goodie or a baddie?
- What is he going to shoot?
- Why is he in the bush?
- Is he being followed?
- Why is he posing like that?
- Where is he?
- What and why he steals.?

# Visible Thinking Routines - Wall Displays/Student Samples

At Newrybar Public School, students use Project Zero **Visible Thinking Routines,** which is a broad and flexible framework that enriches classroom learning in the content areas, fostering students' intellectual development at the same time.

The key goals for using the routines at school include:

• *A deeper understanding of content*

•*Greater motivation for learning*

•*Development of learners' thinking and learning abilities.*

•*Development of learners' attitudes toward thinking and learning and their alertness to opportunities for thinking and learning (the "dispositional" side of thinking).*

•*A shift in classroom culture toward a community of enthusiastically engaged thinkers and learners.*

Teachers use with their students a number of "thinking routines" -- simple protocols for exploring ideas -- around whatever topics are the focus. Visible Thinking emphasises several ways of making students' thinking visible to themselves and one another, so that they can improve it.

The idea of visible thinking helps to make concrete what a thoughtful classroom might look like. At any moment, we can ask, *"Is thinking visible here? Are students explaining things to one another? Are students offering creative ideas? Are they, and us as teachers, using the language of thinking?"*
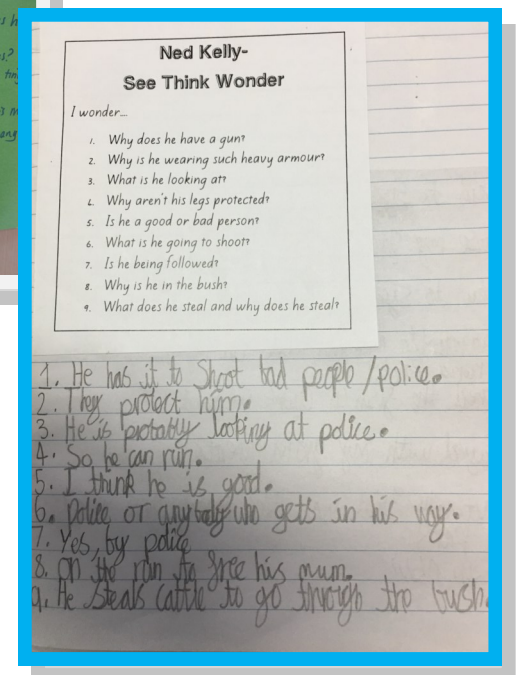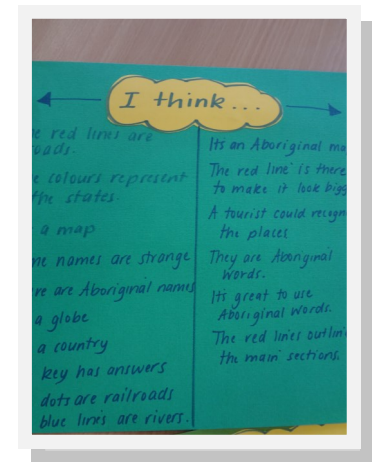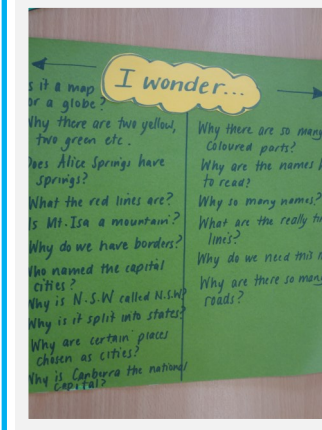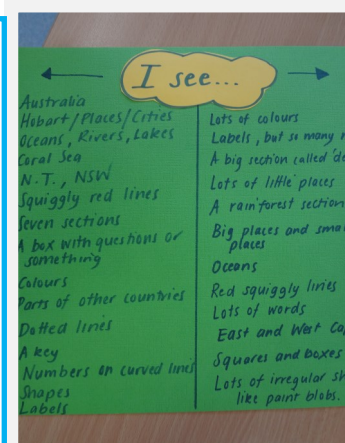
Visible Learning- Continuums, Feedback
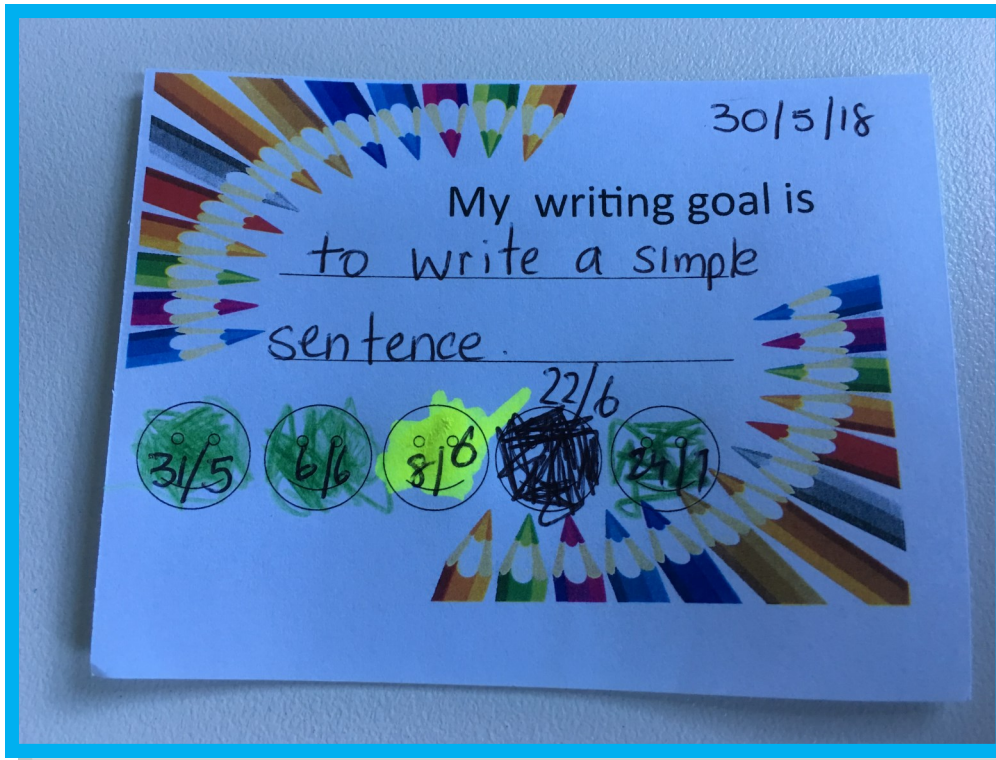
Year 2 Maths Checklist

Name:		Date:

Number - Number and Place Value
I can:

|	
count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.	
recognise the place value of each digit in a two-digit number (tens, ones).	
identify, represent and estimate numbers using different representations, including the number line.	
compare and order numbers from 0 up to 100; use <, > and = signs.	
read and write numbers to at least 100 in numerals and in words.	
use place value and number facts to solve problems.	

Visible Learning- Continuums

Students and teachers track where students are on the continuum and identify what they need to do to move to the next level. The position on the continuum assists in writing goals that align with each cluster.

There is demonstrated commitment within the school community that all students make learning progress. Partnerships with parents and students support clear improvement aims and planning for learning. The school's curriculum provision and evidence- based teaching practices provide a high expectations framework, within which all students effectively develop their knowledge, understanding and skills.
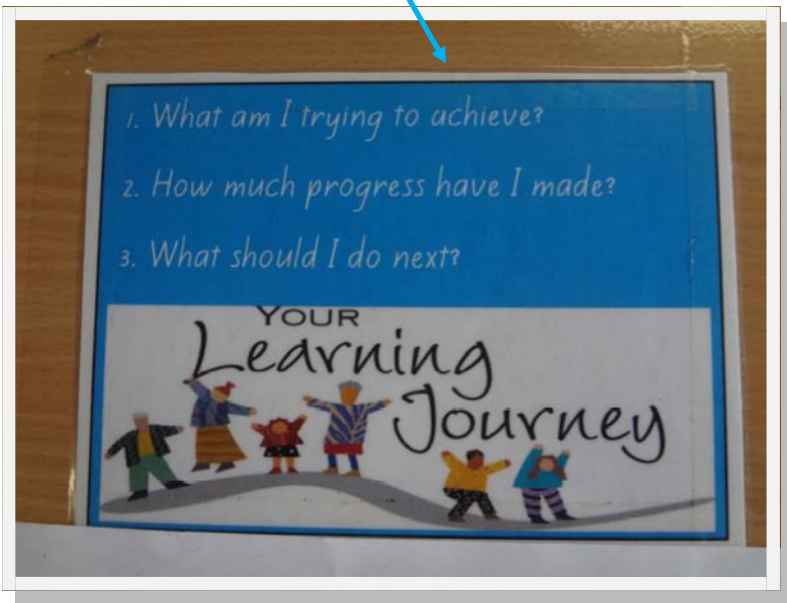
The school monitors and reviews its curriculum provision to meet changing requirements of the students. Teaching and learning programs describe expected student progression in knowledge, understanding and skill and the assessments that measure them.

The school collects and analyses information to inform and support students' successful transitions.
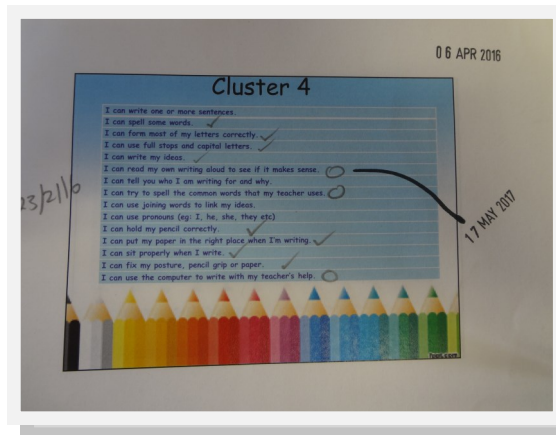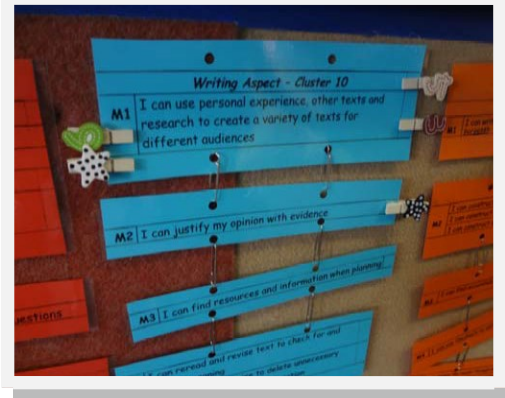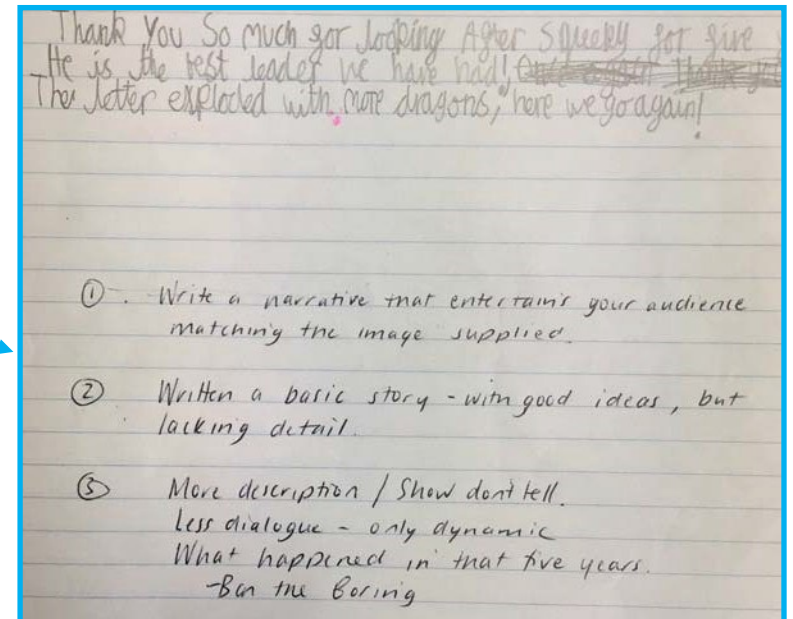
Visible Learning- Feedback

NPS we ensure that appropriate feedback is provided to students on work in order to facilitate improvement and promote learning. Feedback is related to the assessment/success criteria, which helps students to identify areas for improvement. Feedback also commends evident achievement.

1. What am I trying to achieve?

2. How much progress have I made?

3. What should I do next?

YOUR Learning Journey

Teacher feedback relates directly to the three Feedback questions.

Thank You So much for looking After Squeaky for give. He is the best leader we have had! Cut out Thank you. The letter exploded with more dragons, here we go again!

① Write a narrative that entertains your audience matching the image supplied.

② Written a basic story - with good ideas, but lacking detail.

⑤ More description / Show don't tell.
Less dialogue - only dynamic
What happened in that five years.
- Ban the boring

Analysis of Innovation

STEM has developed critical, creative and problem solving skills across all year levels. Anecdotal and teacher assessment demonstrate that students have a deeper understanding of the engineering design process. Students are engaged in cooperative learning tasks where collaboration is fostered.

Skills knowledge , understanding of coding and programming have continued to increase due to the **Robotics** program. Collaboration between the schools has been refined.

Power Standards , whilst in the initial stages, have resulted in a focus on keys skills and competencies, improved writing out- comes and collective teacher efficacy.

Inquiry Based Learning has resulted in higher levels of student engagement. Learning has been enriched through the development of inquiry , investigating, researching and analytical skills. Students are applying these skills in understanding and solving real world issues.

Using **Visible Thinking Routines,** students are now able to articulate their thinking and how it has developed as a result of their investigations and research as part of the learning journey. They are beginning to understand their bias and assumptions and how thinking changes with deeper knowledge.

Students have continued to understand how the use of *Learning Intentions and Success Criteria* gives their learning a specific focus. The **Visible Learning** journey has been enhanced by the use of WAGOLLs and effective feedback.