Kids teach STEM and win War On Waste competition at Prospect North Primary School

Prospect, SA

Achievements

Winner - 2019 Innovation in Practice in SA Public Education Awards

Finalist – 2020 Australian Education Awards - Primary School of the Year (government) and Primary principal of the year (government). Winners will be announced in November.

The Educator magazine's 2020 Hot List – Principal Marg Clark listed as one of 75 of Australia's top educational thinkers.

School characteristics, challenges and goals

The school has a student population of 380 and an ICSEA score of 1020[1]. Approximately 70% of students identify with a non-English culture, 31% are school card holders, 8% are students with disabilities and 9% have an Aboriginal background (as identified on school records). 80% of children come from a lower socioeconomic area, 20% from more affluent suburbs.

In a highly multicultural community, also experiencing high levels of disadvantage, Prospect North PS recognised the need to scale their student agency so that all students in the school could have a voice in their learning and co-design the opportunities for the school to grow and change.

"Our complete focus has been on empowering students," says Principal Marg Clark. "Our big focus is student agency – having students design, deliver and report on their own learning. STEM was a vehicle to help us change the way we work with and empower students. We want our students to become skillful communicators and collaborative learners, who will be digitally literate and resilient to face an every-changing world.

Prospect North Primary School was identified by the SA Education Department as a STEM (Science, Technology, Engineering, Maths) lead learning site in 2017 and joined The Connection SVA as a Bright Spot in STEM School that year.

How Prospect North leads in STEM

Students were trained to become Digital Leaders to run conferences for visiting schools, they make programs for the School's Facebook TV and podcast and run STEM conferences for kids and parents. Prospect North now shares the benefits of its experience with other schools through The Connection.

At the start of their Kids Teach STEM journey, the school set out to increase student engagement in design thinking and STEM. The school adopted the Design Thinking Framework as a whole-school approach to large STEM based units of learning. Staff have ongoing professional development with global leaders in design thinking, NoTosh. This enabled learning to be cross-curricular and designed around exploring real world problems.

[1] The Index of Community Socio Educational Advantage (ICSEA) is a scale developed by the Australian Curriculum, Assessment and Reporting Authority (ACARA). Relative disadvantage is defined as below the average ICSEA score of 1,000.

Through innovative learning spaces and systems, students set their learning goals and work towards achieving them through real-world immersion and small targeted teaching workshops. Design thinking has introduced students to important concepts like 'prototyping' and 'feedforward' as a way for them to take more control over their learning, and increasingly teachers are planning and co-designing learning together with students.

Prospect North Primary School students presenting a session at their Kids Teach STEM conference for neighbouring schools in 2018.

Digital Leaders is a volunteer program for students from Years 2 to 7 who enjoy technology and exploring how new things work. Digital Leaders are given bright yellow lanyards to make them visible in the school community.

The school participates in external STEM enrichment programs and competitions through involvement in First Lego League [2], (a national science and engineering problem solving competition for school students), Junior Lego League and, most recently, the VEX Robotics Competition. This gives students of all abilities the chance to apply their STEM skills to a meaningful challenge and to compete against students from all over Australia.

Improved student learning outcomes

Allowing students more agency in their own learning has led to improved wellbeing, attainment and attendance. Unlocking learning for students, teaching them how to learn and be successful, has set alight their passion and drive. The school has seen increased engagement in learning, leadership opportunities and improvement in wellbeing data for three consecutive years.

According to a 2019 Student Wellbeing survey, 92% of students are in the medium-high range for Academic Self Concept (74% high ranking). An increase from 2016 results of 80% medium-high, with 52% high ranking.

45 Prospect North students have given presentations to over 500 people in 2019 alone – including students, teachers and community leaders. Over the past three years students have led the presentation of five Kids Teach STEM conferences and many adult STEM in Action conference days.

Their increased agency has empowered students to be strong community members, to problem seek and then use the Design Thinking process to find solutions and engage with professionals.

Teachers report a high level of student engagement and awareness of their learning goals. Visiting teachers have commented: 'Whichever class I went to – every student could explain what they were doing and why they were doing it, and explain their learning goals.'

[2] FIRST® LEGO® League Challenge is a competition catering for upper-primary and lower-secondary school students. Every year, teams of up to 10 students build, program and compete with a robot, while also learning about a modern problem in science and engineering and developing solutions for it.

Kids Teach Stem

Principal, Marg Clark

Because empowering students and giving them agency was always the driving force for our engagement with STEM, from the beginning we had students running workshops on technology for other students, teachers and even parents.

Then they started applying design thinking for STEM based projects, and co-designing lessons with teachers on what attributes you need to be a good STEM learner – like problem-solving, creativity, reflection - what the national curriculum calls the 'General Capabilities'.

Once we became a STEM lead site, other schools wanted to visit and see what we were doing differently in the way we teach and learn STEM.

We knew we were going to have many visitors to the school, and we wanted to empower the children to talk about their own learning and take us in a direction that would help them and their communities. So we invited more students to become Digital Leaders and we trained them to lead tours for visiting schools and then to deliver Kids Teach STEM Conferences.

We developed the Kids Teach STEM conference as a way for our students to bring students from other schools along on our transformational journey. So far ten local schools have taken part and we have an ongoing relationship with three of them who want to implement our approach.

Each conference our students set a challenge to the participating students to come up with something happening in their school that they want to change, that relates to Science, Technology, Engineering or Maths.

We presented an example of a project our whole school took on – like our Sustainable City project. Students identified the issue of waste and recycling in our school.

The students brought in an expert from Prospect Council, who helped them to see what changes could be made by our school to save water and reduce waste. They collected data on waste around the school and made a video about recycling. We submitted our project to a competition run by the ABC's War on Waste program and we won! The Presenter Craig Reucassel came to our school to film us and present the award.

Filming Prospect North Primary School's War on Waste Film - their winning entry!

The thing about this project-based approach to learning and empowering students is that teachers have to let go of directing the course, they have to be okay with not knowing where the project will take them – it always goes further than they can imagine. The kids go well beyond the limits of a 'set out' curriculum.

As teachers we become 'weavers of learning' facilitating opportunities as they arise. The kids have an idea and it just grows.

We now produce radio and TV programs – we put out a weekly TV show on 'PNTV' and we're especially proud of our podcast run by indigenous students. They interview significant adults in the community, especially if they visit the school – like the Premier, the Minister for Education, Indigenous elders, footballers. The kids and the indigenous community really love it.

We received funding from Teachers Mutual Bank to produce a YouTube series about STEM careers, and inspired by the collaborative approach of The Connection we brought in 6 other schools from South Australia and New South Wales. The students run Zoom meetings to discuss production and planning – each week a different school will host and show interviews with STEM professionals to give student viewers inspiration to pursue a career in STEM.

Watch the intro video to the new Kids Teach STEM YouTube channel by Tina and Hashir, the 2020 STEM Ambassadors at Prospect North Primary School, a collaboration with six other schools.

Sources:

SVA Alumni Hub

Interview with Principal Marg Clark 19/8/2020

The Connection is a Collaborative Leadership Development Network, created and facilitated by Social Ventures Australia, that has achieved educational improvements in 50 Australian schools, across NSW, SA and Victoria. This network has connected 2900 educators and benefited approximately 50,000 students over five years from 2014-2019.

Participating schools in areas experiencing disadvantage are connected to other primary and secondary schools in the network and learn from each other. They are supported to implement new and innovative teaching practices and approaches to improve learning outcomes for their students.

SVA Social Ventures Australia