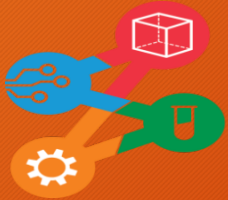


St Ives North Public School



Project FireStorm



STEM | SCIENCE
TECHNOLOGY
ENGINEERING
MATHEMATICS
NSW Department of Education

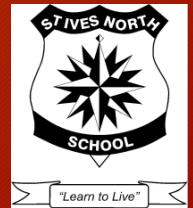
Barbara Ryan
St Ives North Public School

Tony Jarrett
NSW Rural Fire Service



St Ives North Public School

St Ives North Public School is located in the leafy north shore of the Sydney Metropolitan Area adjoining the Ku-ring-gai National Park.



OUR PROJECT



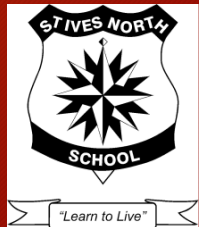
- Devised through a STEM Grant
- Commonality between Geography content and Science content
- Real-life scenario within our local area
- Authentic audience



BIG IDEA → DRIVING QUESTION



How can the community of St Ives
prepare for,
survive or
recover from
a catastrophic bushfire event?



FireStorm & the Geography syllabus



NSW Syllabus for the Australian Curriculum -
Geography

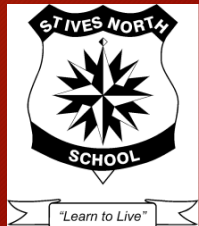
Stage 3: Factors that Shape Places:
particular focus on Bushfire hazard



FireStorm - prior learning



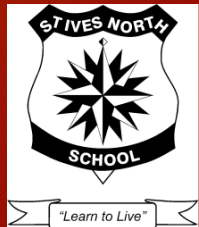
- **Factors that change environments:**
 - Understanding Australia's Geography
- **Environments shape places**
 - Understanding why environments change
- **Humans shape places**
 - Understanding how people change environments



FireStorm - links



- Transition to High School ‘Stage Coach’:
Integrated program supported by
secondary teachers
- Rural Fire Service: personnel, advice,
authenticity, support, interest



PLANNING THE UNIT OF WORK



- Developed the Driving Question
- Prepared the key learning sequence
- Design Thinking strategies
- Planned the necessary materials
- Contacted authentic client - RFS



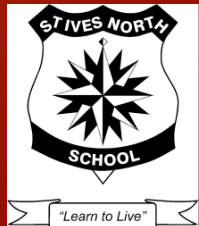
PROJECT IMPLEMENTATION



• *Upskilling Team*

Developed teachers' deep knowledge relating to:

- bushfires and their impact
- the role of RFS
- design thinking framework
- technology



PRELIMINARY STUDENT LEARNING



Small Steps

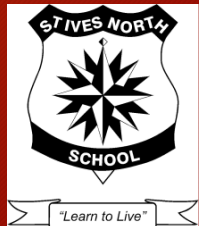
- Introduce the mini-project
- Specific project-based learning

Skill development

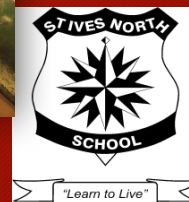
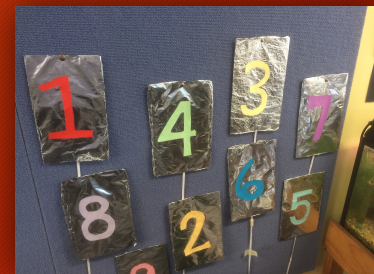
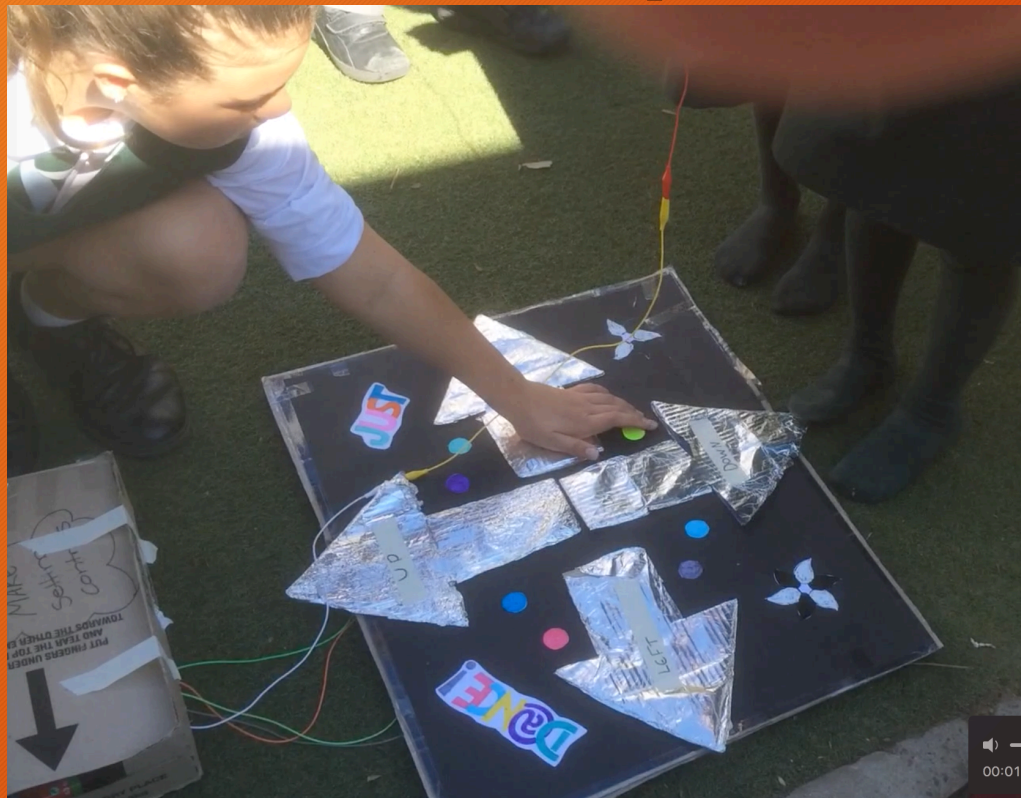
- Coding Classes
- Robotics

Science Support

- *Specialist teacher*



CODING – Skill development



THE LAUNCH



Barbara Ryan
St Ives North Public School

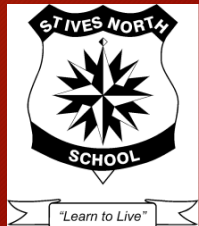
Tony Jarrett
NSW Rural Fire Service



DESIGN THINKING



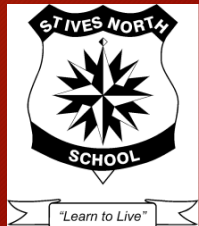
- Phase 1: Empathy: ABC website - interviews, footage, real stories; empathy maps
- Phase 2: Define: review Driving Question; create rubric; mindmaps of *Prepare, Survive, Recover*
- Phase 3: Ideate: add ideas to mindmaps, *Crazy 8s*, visit by RFS
- Phase 4: Prototype - develop ideas with feedback from peers and teachers
- Phase 5: Test



ABOUT THE RFS



- Personnel
- Website
- Background Knowledge
- Mentor



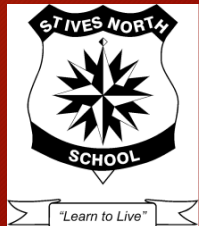
PROJECT IMPLEMENTATION

Examples from *Design Thinking* activities



GEOGRAPHICAL INQUIRY SKILLS

- Acquiring geographical knowledge
 - Questioning
 - Data collection, survey, maps
- Processing geographical information
 - Represent data and interpret data
- Communicate geographical information
 - Present findings, evaluate & propose actions



GEOGRAPHICAL TOOLS

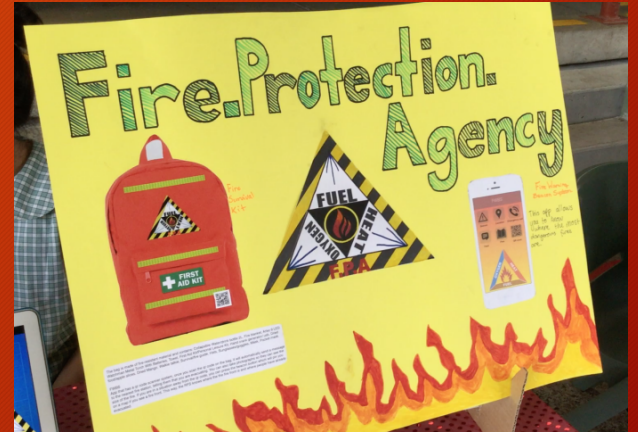
- Maps
- Field work
- Graphs & Statistics
- Spatial technologies
- Visual Representations



PEDAGOGICAL CHANGES



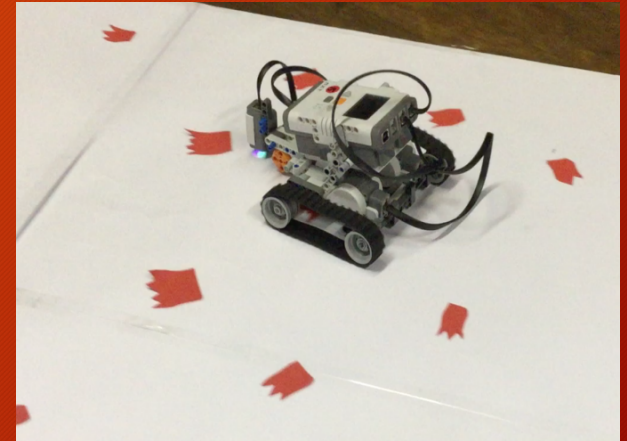
- From a traditional teaching model
- To Project-based learning model
- To Problem-based learning model
 - Use prior knowledge;
 - Develop deep understanding of stakeholders and audience;
 - Allowed freedom of time;
 - Student-centred, teacher facilitated



PEDAGOGICAL CHANGES

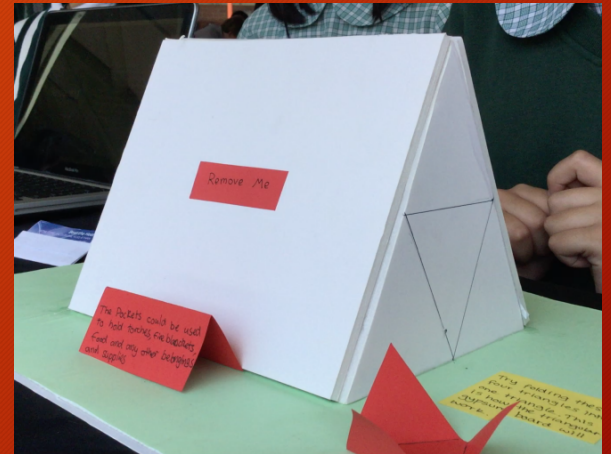


- Student ownership
- Intrinsic interest
- Students enquiring
- Students supporting students
- Connected learning
- Applied inquiry using geographic skills and tools
- Working Mathematically, Scientifically and Technologically were natural components
- Student-created rubrics for tracking and assessment



LESSONS LEARNT

- Develop Driving questions that are open - no 'right' answer, no 'one solution'
- Assist students to plan, lead and assess
- Provide systematic instruction
- Provide models of excellence in problem-solving
- Monitor for success
- Provide milestones/ guidelines



CHALLENGES



Students:

- Ownership of ideas
- Sharing the solving
- Staying focused

Staff:

- Curriculum demands
- Space
- Time
- Expertise



IMPACT ON STUDENT LEARNING



- Confident, articulate students
- Pride in presentations
- Deep knowledge
- Empathetic understanding
- Strong connections between concepts
- Engagement and excitement in learning

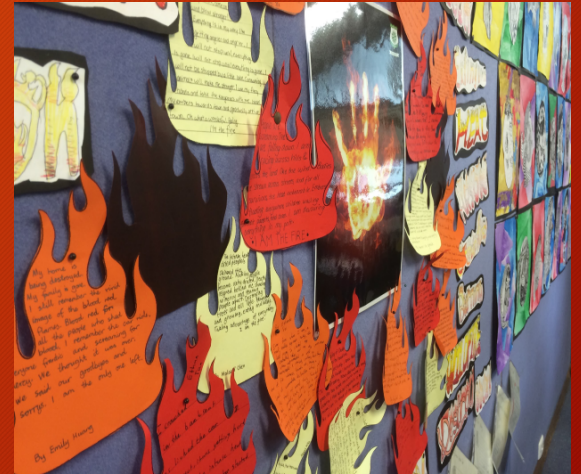


SUSTAINING THE PROJECT



Planning to develop 3 domains to drive integrated STEM:

- **Digital Fluencies** platform (to build core technology skills in staff and students. Includes Robotics, Coding, 3D Modelling / Printing, Game Design).
- **MakerSpace** (collaboration space / trial emerging tech / staff & student support. Not a Computer Lab - key feature will be the physical mobility of kits).
- **STEM Units** for K-6 (tap into existing units and integrate STEM).



OTHER INITIATIVES

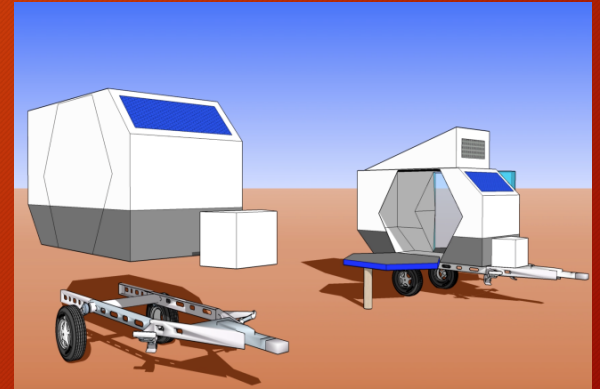


Involving P&C in our model for change.

Timetabling, co-ordination and roles of specialist and classroom teachers.

New and emerging technologies.

Forge links with industry and professional bodies.



WHERE TO NEXT?



Develop PBL STEM units for all grades (Mini Projects for K-2 and more comprehensive PBL units for 3-6).

SINPS worked closely with St Ives High through the Stage Coach Program (particularly S&T). We are looking at opportunities to build links (Coding & STEM days).



FINAL THOUGHTS FROM FUTURE STEMers

