

## Project Summary

Climate change is making Queensland's summers longer and hotter, and is projected to increase heat events and impacts further over the coming decades. These periods of increased heat will overlap Queensland school teaching periods, putting our school communities at greater risk of heat health danger.

Designed to educate students and school administrators about heat risk, and how to manage or mitigate it, the Citizen Science for Cooler Schools (CS<sup>2</sup>) pilot project was a 12-month collaborative partnership between Griffith University, the Queensland Department of Environment and Science, as well as two state primary schools in South East Queensland. The pilot had additional support and advice from the Queensland Department of Education, Queensland Fire and Emergency Services, and Queensland Health.

The CS<sup>2</sup> pilot had three key project goals:

- Engage students in an inquiry-based learning unit to raise awareness of heat in schools, and co-design solution to deal with increased heat.
- Design and test a set of school-based heat monitoring activities.
- Design and test a heat-risk reduction toolkit that maps hotspots in school grounds, and suggests administrative and/or infrastructure mitigation controls.

After a short recruitment phase, two South East Queensland state schools met a range of selection criteria and were selected. The project employed a citizen science and cross-curricular approach to raise awareness of heat risk in schools. A key focus was to engage students in STEM clubs at the two participating schools to measure and monitor heat on school campus during Term Four of 2022, and Term One of 2023; highlighting to students and staff the impacts of heat on health, whilst also co-designing actions to reduce risk. The aim was to build on existing Queensland Government initiatives: the Heat, Health, and Human Environment Sector Adaptation Plan Plus (SAP+), and the Cooler Cleaner Schools Program.

There were a range of benefits for school participation in the CS<sup>2</sup> pilot: Students were directly engaged by experts in a range of different fields to learn about heat risk and controls, and students were engaged in research co-design processes and experienced real-world problem solving. Heat issues in the participating schools were identified and

controls suggested by the Griffith Research Team. Also, equipment purchased to measure and monitor heat was donated to each school at the end of the project.

Findings described below explore the goals and aims of the CS<sup>2</sup> pilot and are broadly linked to process and impact values. Project findings include, but are not limited to:

- Hotspots of concern were identified at both participating schools
- Solutions of mitigation and control were recommended, and are being employed at both schools
- Queensland Education officers have flagged the co-designed education package as being suitable for classroom curricular engagement
- Queensland Education officers also indicate that CS<sup>2</sup> could inform disaster preparedness and climate change adaptation perspectives. Conversations with key Queensland Education staff also indicate further review and testing is required as a follow-on activity from this pilot
- The Heat Risk Identification and Mitigation Toolkit has received wide commendation from advisory group members and the Department of Education – the draft toolkit also requires further testing before it can be rolled out into state schools
- One of the participating schools has won a small grant to expand one of the student-led projects
- Student interest in STEM as an extracurricular activity has increased at both schools
- Participating STEM teachers report increased parental engagement in STEM
- Generally, the school communities at both locations indicate an increased awareness of heat as a problem in school grounds

All project aims were achieved at both schools, with student led projects that mitigate heat issues identified in the schools being presented at the Office of the Chief Scientist Showcase in June 2023, and entered into the Queensland Science Project. Recommendations from the pilot include that the education package be provided to the Queensland Department of Education for further development and inclusion into primary curriculum. We also recommend that the toolkit be developed into an online dashboard style resource, and that the Toolkit be reviewed by Department of Education disaster policy unit, construction and maintenance divisions, and the risk and

legal departments for feedback. The Toolkit could be included in the Outdoor and Environmental Education Centre network throughout the state, and the centres could also act as an 'equipment hub' for technical equipment that could be loaned to schools. The CS<sup>2</sup> pilot project provides an ideal basis upon which to initiate further testing to refine the Education Package and the Toolkit. The research team suggests testing in a boarder range of climate zones and a broader range of school types (size, campus designs, morphology), as well as including other schools and school communities, (e.g., CALD and special schools).

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