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# CIFAL Newcastle - The National Science and Engineering Challenge - Series

People

截止日期 : 10 Dec 2026

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| 日期 : | 15 1月 2026 to 15 12月 2026 (待确认 ) |
| 期限 : | 6 Hours |
| 项目领域 : | Decentralize Cooperation Programme |
| 网址 : | https://www.newcastle.edu.au/college/engineering-science-environment/... |
| 价格 : | US$0.00 |
| 活动协调人 email: | cifalnetwork@unitar.org |
| 合伙 : | Rotary International, , Lockheed Martin, , InLand Rail, , Google, , Google, , BHP, , Google, , Port of Newcastle, , Google, , Victoria State Government, , Atlassian Foundation |

背景信息

For sustainability to be a future for everyone, we need everyone to have access to opportunities to contribute. The Science and Engineering Challenge is a door into science and engineering for many students who have felt that science is all about book learning, or ‘not for them’ by virtue of their gender or socio-economic status.

The Science and Engineering Challenge takes science out of the classroom and away from the formulae and text books that alienate so many from careers in STEM.  It’s a whole-day event in which students are put into small groups and given a set of materials and a problem to solve. Help is available if they want to ask, but they are given the space and freedom to address the challenge (building a model bridge, making a prosthetic grasping device, trapping a sustainable number of fish using first nations methods and technology) using their own ideas, skills and approaches. To be successful they need team-work, good communication, respect for one another and engagement with the task at hand. Their work is then tested – as a group – often with highly unexpected results (students from marginalized and under-represented communities often out-performing their more feted peers) that shape self-esteem and school subject choices at a critical time in their education trajectory.

The partnership with CIFAL Newcastle comes from CIFAL Newcastle’s goal to ensure we are promoting and enabling opportunity for everyone – and our driving principle that for sustainability to be successful we need to engage those who have previously not been included or consulted. The Science and Engineering Challenge levels the science playing field and gives everyone a go. Available for highschool students around Australia it’s a local (Newcastle based) ground-up, innovative way of including everyone, and has opened up careers in STEM for under-represented groups of young people (women, migrants and first-nations youth) who have gone on to study STEM as a direct result of their experience of problem solving at a Science and Engineering Challenge event.

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The goal of the Science and Engineering Challenge is to give high school students in years 8,9 and 10 the opportunity to experience solving a real-world sustainability-centric engineering problem in real-time, themselves, in an environment where everyone is equal and everyone has the same materials and opportunity for success.

This event builds competencies for the following SDGs:

No Poverty: Through creating pathways to higher education and well-paid employment in industries directly relevant to building a sustainable future.

Quality Education: This event is co-created, industry-relevant and built on high-quality research. It has a demonstrable track record of attracting adn retaining students in STEM, many of whom return to work with the Challenge in their professional capacities.

Gender Equality: The Challenge creates a level playing field giving everyone the same chance to succeed. The results show this has reduced male-dominance in STEM fields allowing greater visibility, engagement and achievement by women.

Industry, Innovation and Infrastructure: the STEM pipeline is vital to building industry, innovation and infrastructure for a sustainable planet. By ensuring this workforce includes people from all backgrounds the Challenge is building capacity to ensure a variety of perspectives, ideas and experiences in the next generation of STEM professionals.

Reduced Inequalities: Achievement in the Challenge requires a number of things: team work, respect, good communication, open-mindedness and a willingness to listen to and evaluate ideas no matter where they come from. This level playing field approach reduces inequalities and sees many STEM-marginalized communities really shine. Research shows a positive experience at the Challenge can really change career trajectories and self-confidence for students who did not feel STEM was ‘something for them’ but who go on to contribute significantly as a professional in the field.

Sustainable Cities and Communities: A diversity of approaches, voices and opinions builds stronger communities in which people feel heard, seen and understood. The team structure and nature of the Challenge means everyone contributes and everyone has a voice – a small environment that has big echoes long after the event itself ends.

Peace, Justice and Strong Institutions: The event is staffed by volunteers, many of whom are older people. The event runs on respect and generosity, and this attitude has flow-on effects on all engaged.

Partnerships for the Goals: Science and Engineering thrive on teamwork, and this event provides a safe, inclusive and engaged space in which generations mix and

students can form bonds with one another without classroom, social or gender hierarchies or expectations. The Challenge shows the power of partnerships and demonstrates to students that they have those skills – and that using them is productive for all concerned.

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The program enhances the teamwork, problem solving, creativity and innovation of participants. The event runs from 9-3pm and students are given a number of hours to solve a complex problem with a variety of complicating factors. An example is the bridge building challenge: every team of students is given exactly the same set of materials and each team's solution is tested against one another across a variety of tests to determine a winner.

Each activity has a narrative behind it – and CIFAL Newcastle is building sustainability narratives for each activity, the  most recent of which is a housing challenge in which students are required to build a dwelling that catches rainwater and can withstand a hurricane to be errected as emergency shelter after a typhoon in the Philippines.

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STEM is vital to the world's future. Everything from agriculture, computers to phones to clothing is reliant on advances in scientific – and engineering – knowledge, innovation and development.

The program is an interschool competition where teams from each of the schools participate in a number of challenging activities which are scored on outcomes that require creativity, innovation, problem solving and teamwork.  All activities are carefully designed to ensure that there is no one clear solution thus requiring out-of-the box solutions.

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The target participants are year 10 students though it is of some influence to years 8 and 9.  The relevance to year 10 students is to have an impact on them in relation to how scientists and engineers work thus encouraging them to choose to study physics, chemistry and advanced mathematics in senior secondary school

keeping their options open for future STEM careers.