

Education and Engagement

Education and engagement activities in science, technology, engineering and maths (STEM) help to develop a skilled and adaptable future workforce and build a culture of science, in which people have scientific inquiry skills and a positive attitude towards science. A diverse range of science education and engagement activities are delivered and supported in Western Australia across Government, academia and industry.

Increasing community awareness, interest, participation and capability in STEM

Scitech, the State's dedicated science centre, is increasing awareness, interest, capability and participation in STEM, engaging almost 500,000 people each year.



Credit: Scitech

▲ Scitech's interactive programs and initiatives are inspiring interest and participation in STEM.

The **Western Australian Museum** is engaging the community with its diverse scientific collections and extensive scientific research, with an annual visitation of over 900,000 across its six sites.



Credit: WA Museum

▲ The Western Australian Museum houses the State's scientific and cultural collection and engages the community through public programs.

The **Botanic Gardens and Parks Authority** and the **Perth Zoo** provide science-based public and schools education programs about the State's unique flora and fauna, with a strong focus on environmental sustainability.

More than 4,300 community volunteers registered with the **Department of Parks and Wildlife** have contributed over 500,000 hours to wildlife conservation projects across the State.

As part of Parks and Wildlife's **Nearer to Nature Bush Rangers and River Rangers** programs, more than 20,000 primary and high school students participate in biological fieldwork in conservation areas each year.

Western Australia has strong ongoing participation in **National Science Week**, holding more than 100 events and activities each year, including the Perth Science Festival.

Regional community STEM engagement networks have been established in Broome, Karratha, Geraldton, Bunbury, Esperance, and Kalgoorlie through the **Inspiring Australia initiative**.

Dolphin Watch, a citizen science program, has 900 community volunteers and 700 students focused on learning more about the Swan and Canning rivers' Indo-Pacific dolphins.

Other citizen science initiatives include Curtin University's Fireballs in the Sky; the International Centre for Radio Astronomy Research's the SkyNet; The University of Western Australia's (UWA) MicroBlitz and Perth Zoo's Nightstalk.

Astronomy WA and its partners deliver **Astrofest**, an annual community astronomy festival, and a range of other public astronomy events and activities.

Credit: ICRAR



▲ Astronomy WA and partners share the excitement of astronomy and science with over 4,000 members of the community through the annual Astrofest celebration.

The **ChemCentre's** annual outreach program includes the ChemCentre Open Day and other chemistry events and activities.

The Telethon Kids Institute is working with **Playgroup WA** to take science to the community and educate parents and children in health and medical research.

Raising the profile of capabilities, achievements and opportunities in STEM

ScienceNetwork WA, a partnership between the State Government and Scitech, promotes science news, research and events from across Western Australia.

The **annual Premier's Science Awards** recognise and celebrate outstanding scientific research and engagement efforts taking place in the State.

In 2015, Western Australia will host the State and national finals of **Famelab**, an international science communication competition with scientists from more than 25 countries around the world engaging in three-minute presentations for a general public audience.

SNAPSHOTS OF SCIENCE IN WESTERN AUSTRALIA

Strengthening participation and achievement in STEM subjects by school students

School education activities with curriculum links to science are delivered by a range of providers including Scitech, the Western Australian Museum, the Perth Zoo, Kings Park, the State Government Department of Fisheries, the Harry Perkins Institute of Medical Research and Earth Science WA.



Credit: Kings Park Education

▲ Kings Park Education inspires understanding of Western Australia's unique plants, people and places through hands-on, inquiry-based education programs.



Credit: Harry Perkins Institute of Medical Research

▲ School students and community members can don a lab coat and get hands on with science at the Lotterywest BioDiscovery Centre at the Harry Perkins Institute of Medical Research.



Credit: Perth Zoo

▲ Perth Zoo Discovery and Learning staff deliver a range of inspiring environmental education experiences for students of all ages.

Scientists and mathematicians are supporting STEM education in Western Australian schools through the Commonwealth Scientific and Industrial Research Organisation's **(CSIRO) Scientists and Mathematicians in Schools program**.

STEM education activities for Aboriginal school students include Scitech's Aboriginal Education Program, Edith Cowan University's (ECU) Old Ways New Ways initiative and a new STEM education program from CSIRO, supported by BHP Billiton.

STEM-related competitions and awards programs for school students include the Governor's School STEM Awards, Science Talent Search, Woodside-Scitech Science Awards, BHP Billiton Science and Engineering Awards and Robocup.

Regional Science Awareness Festivals, coordinated by Scitech, connect secondary students with local organisations about the importance of science in daily life.

CoderDojo WA, an initiative of the Fogarty Foundation, is supporting Dojos, which are informal computer clubs where young people aged 7-17 learn computing skills.

Multi-day STEM activity programs for school students include the Conoco Phillips Science Experience, ECU's Engineering Exploration Summer Program and Curtin University's Indigenous Australian Engineering Summer School.

Strengthening teaching capability in schools

The State Government is committed to enhancing STEM education in public schools and promoting more STEM learning pathways for students. As part of its strategic plan Focus 2015, the Department of Education aims to increase emphasis on STEM education, particularly in the early years of school and for Aboriginal students.

This will include support for Senior High Schools (SHS) to refocus on specialist areas, including STEM. One such school is Cecil Andrews SHS, which will receive almost \$5 million for the introduction of a locally selected Academic Extension Program for students from Years 7 to 10, with a focus on STEM subjects. New facilities include two

multidisciplinary STEM laboratories and preparation areas.

Other initiatives supported by the Department of Education include:

- Connect, an online platform enabling teachers, schools and Departmental staff to develop professional learning communities. The Senior Secondary Science Network has over 900 members.
- Switch, a tailored training program supporting primary and secondary teachers in demand areas such as science.
- Teacher Development Schools, a school-based system resource that promotes the sharing of high-level curriculum expertise and innovation across schools.

The Science Teachers Association of Western Australia provides teacher professional development and will host the annual National Science Education Conference of the Australian Science Teachers Association (**CONASTA**). The conference will be held in July 2015.

Scitech's Professional Learning team delivers teacher workshops and drop-in sessions, supporting metropolitan and regional teachers in science education.

Earth Science WA supports the teaching of earth science in schools, including by developing teaching resources and providing professional development for teachers.

SPICE, a collaboration between UWA and the Department of Education, provides science teachers with professional learning and curriculum resources.

Building industry skills in STEM postgraduate students

Advancing Western Australia Research Education (AWARE), a collaboration between the five Western Australian universities and the State Government, is providing training, professional development and industry experience for PhD students and postgraduate researchers.

The Australian Academy of Technological Sciences and Engineering is working with UWA and other partners to pilot a STEM industry mentoring scheme for PhD students in the minerals and energy sector.

UWA offers undergraduate science communication programs, training students to help bridge the gap between the scientific community and the public.