If your school would like to take part in National Science Week in the future, here are some past program ideas to inspire you.

Use your imagination and remember that the main objective is to engage everybody's interest in science – the more fun and inventive, the better!

Science Fairs/Expos – always a favourite!

East Coast Earth Expo

The main focus event for St Helens DHS, was the East Coast Earth Expo which was advertised on radio and in St Helens and at St Mary's District High School, as well as within the Department of Education in Tasmania. The event was to highlight East Coast geology and mining heritage and was open to the general public. Displays were constructed by Year 9/10 students as part of a learning sequence, and also included a display from Kindergarten students on fossils and dinosaurs. There were also displays put together by St Helens community members, including the St Helens History Room and Museum, and science teaching staff at St Helens DHS. An information brochure was put together by the science teaching staff and handed out to visitors. Also as part of the Expo, were displays of stone tumbling and gemstone cutting and polishing equipment, thus highlighting some of the industry behind rocks and minerals.

Day-long Community Science Fair

This included a display of students' work from the Crest Awards (CSIRO), interactive stands and displays from industry partners (BHP Billiton Worsley Alumina, Doral Sands Ltd, Simcoa Industries) community partners (Bunbury Leschenault Rotary Club, City of Bunbury, Wooldridges Book store). Students also ran interactive workshops on their dolphin research, tours of our environmental centre, aquacultural facilities and our wetlands.

Apart from our school, visitors came from the general community, the Mayor, representatives from each of our partners mentioned above and the Marine biologist along with the General Manager from the Bunbury Dolphin Center. Over a hundred primary school students from three different schools also attended. The press, SW Western Times also attended. Students ran the interactive activities and showed the public and students how each activity operated. This included a range from using computerized robots to blowing up balloons with dry ice. (Newton Moore SHS, WA)

Science Fair - Secondary

The school hosted the Nowra High School Science Fair with the aim of hosting the same event each year. Students from Year 7 to Year 10 presented their Student Investigation Projects for judging by other teachers from Nowra High School and Bowral High School, members of the local community, representatives from Shoalhaven Council and local businesses. Prizes were donated by local businesses. Year 11 and Year 12 students presented a showcase of mini experiments to the visitors to the fair to display and explain the cool side of science. The Science Fair was run in two sessions with local primary schools visiting in the afternoon and the general public visiting in the evening.

Science Fair - Primary

The hall was divided into 5 areas: (1) Scientists in action; (2) Biology; (3) Chemistry; (4) Earth and Space and (5) Physics. The children had 50 demonstrations and experiments to view and/or complete. The aim of this event was to engage the children with a variety of science concepts in a fun way. (Ayr State School, QLD)

Discovery Science Expo

The Discovery Science Expo was a chance for students to investigate a science topic of their choice. They chose a research question and then designed and ran their own experiment to investigate the question. They then presented their findings at the Discovery Science Expo, where guest judges evaluated them on their science techniques. (Narangba Valley SHS, QLD)

Science Fair - Evening

We held a science fair (from 5.00 to 7.00pm) to showcase and celebrate the excellent science work that the children had completed in their classrooms. This work was displayed for the night. Teachers also set up interactive activities that linked in with the classroom science topic, so that children could actively engage with the activities at the science fair. Community groups were also invited to attend to have added displays and demonstrations to show how science is in our everyday life. These included: a weather man, forestry, environmental, conservation and bird displays, bees and honey, 2 calves, fishcare, police with a forensic fingerprints display and a university lecturer who presented a magical chemistry show. A local newsagency brought books and science kits that could be purchased and we used black lights to set up a magical aquarium that the children could walk through. There were also 2 competitions on the night - a guess the photo competition (photos of parts of objects from around the school) and a make wind powered land yacht competition that generated a multitude of interest. The land yacht entries were still being trialled past 7.00pm. (Bridport Primary School, TAS)

Science Fair with a number of schools

Students from Kinder to 6 attended a science expo at the local Civic Centre. The science expo involved students from East Derwent Primary School, Herdsmans Cove Primary School and Gagebrook Primary School in Tasmania. This created an ideal opportunity for children, teachers and families of all the Federation schools to connect and work together/learn from each other.

The event was free and had hands-on activities that explored a range of science concepts including magnetism, air, water and biodiversity. Each participating teacher received a pack with all the task cards used at the event with worksheets and the science behind the experiments for use back at school. Each stall was run by students from Years 2/3 and 5/6.

The Science Expo was held on Monday for the Kinder to Grade 3 and on Wednesday for the Grade 3s and up. Both sessions started at 11:15 with classes arriving from 11am. Sessions concluded at 1pm, with a lunch provided to promote healthy eating.

Science Fair - Kinder to 10

Each class contributed a display with hands-on activities demonstrating various science investigations. Exhibits covered topics including mixing colour (Kinder), human touch (Prep/1), melting (Yr2), optics with lenses (Yr3), pneumatics (Yr4), sound insulation (Yr4/5/6), seed germination (Yr7), chemical reactions (Yr9), acids and the pH scale (Yr10). It was exciting to see and experience some of what other classes have been doing in science. The Year 9 exhibit deserves a special mention with almost every student in the school enjoying a chemical reaction in their mouth! Got to love sherbet.

For the Year 10's, lead-up Science Week events included meetings with 2 working scientists, a nutritionist and an environmental scientist. Our meeting with the environmental scientist focused on biodiversity and weed management here on King Island. (King Island DHS, TAS.)

Science Challenges - get them thinking!

Family Science Evening

We had an open night of activities for members of school community and local community. Interactive activities included the Family Science Challenge from 4 sheets of newspaper make a bag, which could hold 6 dictionaries. (Bayswater PS, VIC)

Bridge Building Competition

(Years 4-7) based on natural and processed materials. The challenge was to build a bridge to span 40cm to carry a matchbox car. Yrs 4-5 used straws and masking tape; Yrs 6-7 used spaghetti and hot glue. Students were given a 2-hour block and worked in teams of 3 to create the bridges. (Logan Reserve SS, QLD)

National Science Week Community Challenge

Cowra High School (NSW) invited local schools, businesses, council and community groups to complete a series of science and engineering tasks. This was an evening event from 6pm - 10 pm. 10 teams in total competed in the challenge. The two engineering tasks were collaborative tasks and promoted group engagement. Teams needed to construct a water filter and were only provided with 2 plastic bottles and scissors. Each group was given $45 in money and could purchase substrates (sand and gravels), stockings, cotton balls, elastic bands and charcoal. They could only spend as much as they had and the more they spent the more points they lost, however, the clearer and purer the water the more points they earned. Other students tested the water for clarity and purity by doing simple tests.

The second engineering challenge was to construct a ball-bearing roller coaster where groups had to construct a roller coaster to deliver a ball bearing from table height to the floor in the longest time possible. A series of obstacles had to be included (loops, slides and a change in direction) or the group lost points. Teams were then placed 1st to 10th in this activity.

Outcomes included: collaborative learning, inclusivity, introducing the community and other schools to enquiry-based learning activities, introducing students to influential community members and engaging students and community members ion science and engineering!

Science Challenge - Upper Primary

36 Year 6/7 students gathered at Boonah State High School (QLD) to participate in three challenge activities. The first was the Irrigator Challenge. A huge water channel with 3 different crops that need irrigating: tomato, grape and citrus. At one end the water is released for the irrigators to use, at the other end the water company collects the wastage. Points were awarded to teams that cooperated and used water wisely. Challenge Two was to create a sleek racing car that ran on a rubber band system. Students are expected to experiment with the design of the car and add or subtract from the basic design to create a reliable racer. Varied materials were selected that influenced the final outcome. Challenge Three was to make balloon rockets piggy back across fishing line to see who could make the balloons travel farthest.

Science and Engineering Challenge - Constructarama

Constructarama was a week-long, Years 7-9 Science and Engineering Challenge that emphasized teamwork and creativity, and included lunch-time activities and demonstrations. Students were given a science or engineering problem to solve (e.g. building a bridge, catapult or balloon-buggy), provided with the equipment and were required to solve the problem in the time allowed. Teams competed over the course of several weeks for the Grand Prize, and results were discussed with each class. (Blackfriars Priory School, SA)

Try a theme!

Healthy Garden Beds in the Permaculture Garden

After one year it was time to investigate how healthy the garden beds were and how well the plants were growing through observation and soil tests. From a choice of nine garden beds four were chosen on the basis on the length of time they had been developed i.e. from well established to second planting to first plantings. The groups collected soil samples, which they used to perform the following tests:

- pH,
- turbidity and soil content - a web cam was set up in the computer lab and photos taken each morning for a week. It was obvious which garden bed had the higher clay content,
- evidence of micro-organisms - use of a digital microscope.

The students also measured some plants with the intention of measuring again at a later date to determine their growth rate. A birds eye view of each bed was drawn up and the number of plants and types in each bed were noted. (North Arm SS, QLD)

Biodiversity in the Local Area

We conducted a series of experiments and measured and recorded the biodiversity in our local area through a quadrat analysis. The students drew detailed sketching of botanical plants, insects and seaside animals and shells. The drawings were mounted and displayed in our school hall to make a wonderful exhibition. The results of our experiments were presented to the school community along with our display as part of our education week open day. Students produced quality illustrations, understood the outcomes that all groups of living things are different and change over time, made detailed observations, classified objects according to one or more criteria, measured and compared areas, showed commitment to improving the quality of the environment. Students also took environmental photographs and these formed part of our display as well. The displays were of great quality and were extremely well received by the community. (The Junction PS, NSW)

Fantastic Flight Festival

All students (Prep to Yr 6) participated in rotational year level activities involving scientific experimentation related to the concepts of flight. Students were given the opportunities to create and test a range of flight resources including parachutes, rockets, paper planes, choppers, flying foxes, slingshots, hot air balloons and delta darts. Lunchtime activities were developed and included frisbee, vortex, rocket and ball activities, kite making and flying, peg plane design and construction, and a huge school wide paper plane making and flying competition. A wide range of flying animal specimens and model flying machines (Aero Model Soarers Club) and a range of live birds from the local budgerigar society were displayed for student learning, observation and sketching. A spectacular display and commentary on kite flying (Qld Kit Flying Society) was presented and to culminate the week of activities, two skydivers used parachutes to drop onto the school oval. (Capalaba State College, QLD)

Older students showing younger students

Science Spectacular

Older students demonstrated a number of different science experiments that the younger students rotated through over an hour. The experiments demonstrated that science is fun and applicable to many areas of everyday life. Experiments included:

- Smartie Party- discover how Smartie colours spread but don't mix straight away, in water.
- Milky Rainbow - surface tension discoveries with milk, food colouring and detergent.
- Mini volcano - vinegar, bicarb soda, detergent and food colour creates lots of fun!
- A Chilly Recipe - a great endothermic reaction with bicarb soda and citric acid.
- Lava Lamp - oil, water, food dye and salt, oil and water don't mix!
- Soap Boats - water tension with water, detergent and mini boats.
- Humpty Dumpty - discovering the structural strength of eggshells.

(St. John Vianney School, ACT)

Science Circus for Local Primary School Students

Several teachers supervised the circus. Many of the activities run for the primary students were organized and controlled by High School students from different years. This allowed the High School students to keep their interest in science and be positive role models for students from outside the school. The activities took up several laboratories and several outside areas. The focus of the Circus was on Forces and Energy and teachers and students ran approximately 18 different activities. To do this involved training the students running some of the events and a tight timetable so that everything ran on time. The primary students first watched a display of spectacular chemical energy reactions and then moved around a large number of smaller activities run by the High School students involved. The group got back together at the end to witness a fiery finale. (Mudgee High School, NSW)

Science Roadshow to local primary schools

Three staff and eighteen fantastic Year 7 students visited our five feeder primary schools to promote science by running activities with eleven Year 5/6 classes. This year, theme was biodiversity and our focus was the importance marine biodiversity and how we can affect it through fishing. In smaller groups the Year 7 students lead groups in activities where they learnt how scientists identify and classify organisms, how they keep track of population sizes and how chemicals can affect their habitats. The finale was a fish dissection demonstration. (Kingston High School, TAS)

Science Creation

Students from Years 5/6 visited ten other classes during the week, carrying out a range of scientific activities. These included; water bottle rockets, friction car track, bi-carb soda and vinegar experiments, rebounding ball investigations, candle and water experiments, etc. Classes were challenged to construct straw towers and investigate ways to make the towers stronger by using diagonal bracing. Prizes were awarded to all participating classes. (Montello PS, TAS)

For preschools

Science Explorers Workshop

The preschool playroom became a science workshop with equipment and instructions on each table allowing the children and their parents to investigate and partake in different science experiments. Some the children could do themselves, others needed the parent and child to work together. (Lilydale North PS, VIC)

For special schools

Mackillop Catholic College students ran activities for our students - giant bubbles, rats, stick insects, robots (dancing, soccer, 'search and rescue'), explosions and the Van de Graaff generator. We also set up different activities magnets, ant 'circus', worm farm, prisms, crystals and rockets. Students with special needs often have difficulty in communicating or participating in group activities the Mackillop students talked knowledgeably about the activities, but more importantly, engaged with our students in an incredibly caring and successful manner, interactions were wonderful to observe.

Our students, the very young to the 18 year olds, found activities of interest foil pie dishes flying around (Van de Graaff generator), intriguing stick insects and rats, robots, popping and fizzing of the hydrogen and the giant bubbles. The Expo not only sparked immediate enthusiasm, but also provided our staff with a rich stimulus for engaging students in follow-up activities, which will far outlast the event itself. I am sure we will have stick insects at our school before too long! An event when science truly made a difference!

Discussion and planning took place between the two schools (high students and teaching staff) over many weeks. Mackillop students were briefed about the types of students that they would be working with. Communication between the two schools was excellent - a key factor in ensuring that appropriate activities were selected. A symbolised activity booklet was prepared and distributed in advance. This provided students with a visual representation to prepare them for an unusual event (very important for students with ASD). Students were given a sticker for their booklet after participating in each activity. A space was provided on each page for inclusion of a photo of the activity (to be completed during follow-up work).

The fact that most students participated was a key indication of effectiveness. One student for example entered the hall shaking all over but became intrigued by the stick insects and even requested to go back to them! Staff response was incredibly enthusiastic with lots of follow-up discussion. The Mackillop science teacher was asked to describe the event and show photos at a staff meeting and at their formal assembly when VIPs were present. (Southern Support School, TAS)

All sorts!

Outdoor Science Laboratory

Growing bacterial cultures using rhodospirillum rubrium, extracting DNA from strawberries and bananas, making water-powered rockets, completing fitness tests, building electrical circuits and testing a range of products to see if they conduct electricity, the development of a native garden, a farmers market to sample the schoo Ag farm produce, wine making and forensics. (Charters Towers SHS, QLD)

Science sculpture exhibition

Each class from PP - Yr 7 designed and created a science sculpture made from recyclable materials. All classes visited the exhibition and older students were buddies up with younger students. Each child received a program with an outline of each sculpture and was asked to complete a voting slip. They voted for their favourite sculpture, the one with the best environmental message and the one with the best use of recycled materials. The local Member of Parliament presented certificates and fruit trees (for our vegetable garden) at assembly. (Applecross PS, WA)

Science Week Lunch

We had a special science week lunch at the tuckshop that included items such as Microchips with lava, flavoured H2O, protein wrapped in emulsified sheets of carbohydrates and solidified h20 with glucose. We also had our district science facilitator talk about biodiversity at our upper and lower school assembly and she conducted some science experiments. (Cooroy SS, QLD)

Scientist-in-residence

We had a scientist-in-residence for National Science Week culminating with a Science fair. (Bishop Druitt College, NSW)

Construct a Sundial

Joint project between Ipswich SHS and Brassall SS (QLD) to construct an analemmatic sundial on the Brassall site. Activities included planning and obtaining field data, constructing models, trialling sundials and eventually construction.

Marine Debris Suvey

Studying the effects of plastic in our ocean and the effect on marine food webs. As a school we went to our local beach and conducted a marine debris survey to send the local WWF. The school P and C, family members, local beach residents, an army officer from the local army base and our Adopt-a-Cop helped us. The local indigenous group is looking at letting the school adopt the beach with a proper hand-over ceremony! (Moresby SS QLD, One teacher school)

Science Boxes

Science boxes were made that included all the everyday items that could be used for science activities during Science Week. Teachers are encouraged to run experiments in their classroom and look at different ways of recording results. From there, teachers will use other everyday items to conduct other simple science experiments. Teachers were also encouraged to contribute these items to the box for other teachers to use.

Solar Power Pump

The students in conjunction with community members and staff developed a solar power run pump system for the hydroponic watering system in the schools gardens. The school employed the services of a hydroponic specialist to assist in the selection of the pump and the correct size panel to power the system. The students had to examine the various alternative forms of generating power and why solar power was the most effective choice for this task. The students also designed the way they thought that the solar pump would work in the setting it was proposed for. The students developed their own alternative energy making devices and had to explain how they worked. (Mayfield East PS, NSW)

Hands-on Science Stall

Every class in the school developed their own 'hands-on science stall' that was suitable for all year levels to engage in. All of the classes set up their stall before school in the school hall and rostered students on to man their stall throughout the day. Every class was allocated a 45-minute time slot to explore the 31 stalls. Students were highly enthusiastic and enjoyed the wide variety of activities on display - from parachutes to oil spills to pepper racing (Mt. Warren Park PS, QLD).

Open Day and Food Growing and Preparation

As a school we planned a vegetable garden, rotary hoed it, spread a ute load of manure over it, purchased a bale of straw for compost, divided the garden up into beds and put up fence lines for climbing plants such as peas. Individual classes selected seeds to plant for this time of the year and started seedlings in pots in the classrooms. Other classes planted directly in the garden.

As a school we did many other activities including preparation and cooking of garden/ farm products, such things as separating milk, making cheese, cooking bread, making soup. We had an open day and the comments from that were very positive. (Quandialla PS, NSW)

Community Science Museum

The Community Science Museum was an educational and interactive museum organised in the school community hall. The museum ran for Science Week and was free of charge to all local, state and independent primary and secondary students and teachers as well as members of the Charters Towers community. The science and agricultural departments delivered practical demonstrations and prepared interactive exhibits in various fields of science. The museum featured exhibits from local and regional agencies, including LANDCARE: Charters Towers, Great Barrier Reef Marine Park Authority (GBRMPA), Museum of Tropical Queensland (MTQ), NQ Dry Tropics and the Tropical Weeds Research Centre. (Charters Towers SHS, QLD)

Science Spelling Bee

(Condell Park HS, NSW)

Garden project

Local nursery was involved in providing us with the plants we required to establish/add to our vegetable/fruit gardens at each individual school. We accessed resources from our local community. We bought (at a discounted price) plants from our local nursery. We also hosted a meeting with local 'green' groups including Gold Coast City Council, Smith Family, North East Albert Landcare, Peachy Community Garden and Primary Science Facilitators. (Norfolk Village SS, Cedar Creek SS and Woongoolba SS, QLD)

Science Video

Students in Years 5 and 6 got into pairs and researched and filmed a one-minute video of a science experiment of their choosing. The film is going to be entered into the 60 Second Science competition and be shown to the school community in a presentation evening. (Roseneath PS, TAS)

Daily Activities for the Week

Each year level collaboratively planned a week's worth of science activities. During each day every class participated in a different activity with a different teacher. Across the week every student got to see 5 activities studying different aspects of science. Activities were captured via digital images and were dispayed in the school foyer and on the school website. (Belmont SS, QLD)

Astronomy evening

Local astronomer invited with telescope. Soup and casserole tea shared. (Eurongilly PS, NSW)