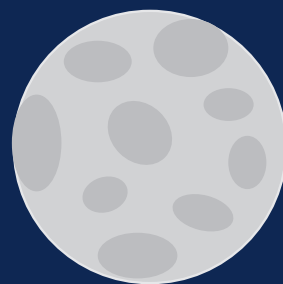
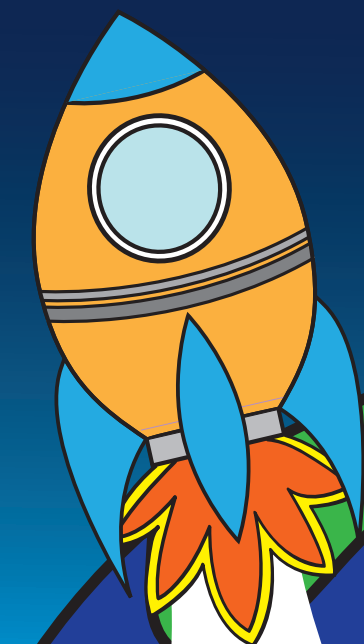




SCIENCE & ENGINEERING FAIR



Projects can now
be submitted
digitally



BHP Foundation



The SEAACT Science & Engineering Fair

Participation in the SEAACT Science & Engineering Fair provides opportunities for students to demonstrate their understanding of science inquiry processes as outlined in the Science Inquiry Skills strand of the Australian Curriculum.

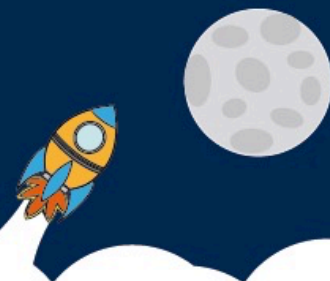
1. Objectives of the SEAACT Science & Engineering Fair

- To encourage active involvement and interest by students in science.
- To encourage students to pursue their interests in science beyond the boundaries of the classroom.
- To encourage students to undertake planned and controlled investigations in science and report their results in an appropriate manner.
- To encourage students to apply these processes to scientific enquiry to topics that interests them.
- To encourage students to record and present their work for others and in so doing, develop the various skills used in scientific communication.
- To enable the community, including other students and teachers, to see project work done by students in the ACT colleges, schools and preschools.

2. Projects must be entered under one of the following themes*:

- Earth and Space sciences
- Physical sciences
- Biological sciences
- Chemical sciences
- Engineering

**Judges reserve the right to re-categorise projects.*



3. Preparing for the Science & Engineering Fair

The judges of the SEAACT Science & Engineering Fair are looking for **innovative, creative and well-presented projects** that clearly tackle a problem that has real meaning for the participant. The judges will also be looking for work that is well designed, has scientific merit and is able to communicate fresh ideas to a wide audience.

Judges will be specifically looking for projects that:

- i. Show an understanding of the **Scientific Process**.
- ii. Display authentic ingenuity. Projects that display creative approaches for solving problems through innovative and original methodology will be highly regarded by judges. This includes:
 - Choosing a problem that has real meaning to the participant
 - Displaying original perspectives to solving familiar (or unfamiliar) problems
 - Data collections or use of equipment that is **unique, original or inventive** and achieves results that are noteworthy.
- iii. Presentation of ideas that reveals clarity of thought and clear communication to a wide and varied audience. ***Judges will not assess the overall appearance of the presentation.***

4. Project format

Projects can be completed in any of the following formats:

- i. Typed scientific report (A4)
- ii. Digital submission (Google Drive)
- iii. Notebook or binder (A4)
- iv. Thumb drive/USB – **for Engineering projects only**
- v. Poster (A2) or 510 mm x 640 mm maximum – ***Not permitted for Secondary students***

A2 Poster Board

510 mm x 640 mm

5. Completing a Project

Projects can be completed as following:

- i. Individual
- ii. Group/Class

6. Age Categories

Projects will be judged by age group:

- i. Early Childhood – Preschool to Year 2
- ii. Primary – Years 3 to 6
- iii. Secondary – Years 7 to 12
- iv. Special Education – all ages

7. Science Investigation Content

Projects should include:

i. Introduction

What was your inspiration? What research did you conduct prior to undertaking this task?

ii. Aim

What is your experiment trying to show? What problem are you trying to solve? What is the point of your experiment?

iii. Hypothesis

Can you predict with a reasonable explanation what might happen?

iv. Materials

A list of what you used in the project, including quantities.

v. Method

How did you conduct the experiment? What controls did you use? Did you replicate your experiment to improve accuracy? List everything in the order that you did it.

vi. Results

What are the results of your testing and experimentation? Have you controlled the variables in your work? How did you achieve your results? To show all this use tables, graphs, pie charts, photos, maps etc...

vii. Discussion

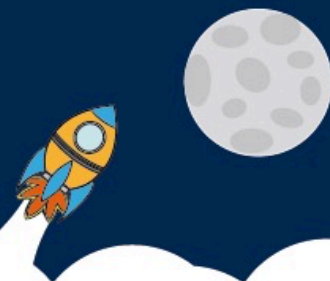
Discuss your results. What happened in your experiment? Did the results match your hypothesis? What questions has your experiment raised for you? Can you explain the theory behind your results?

viii. Conclusion

What can you determine from conducting your experiment? What have you learnt? What would you do differently next time?

ix. Risk assessment

Complete the SEAACT Science & Engineering Fair risk assessment form included in this booklet and attach it to your project or include it in your digital file.



8. Engineering Projects

Students who are submitting a project under the Engineering category must fulfil additional requirements. These include submission of:

- i. A device or product.
Dimensions should not exceed 76 cm in depth, 122 cm in width and 100 cm in height.
ICT-based projects in an Engineering context that have a positive impact for society are also eligible.
- ii. A maximum five-minute video of the device or product in operation, explaining the following:
 - The problem you have chosen to solve
 - How you use the device or product
 - The function of the device or product
 - The design of the device or product
 - How well the device or product solves the problem.

Judges will be using an engineering project rubric to assess each project. The rubric is included in this booklet.

9. Hints for Parents and Teachers

When helping students prepare their project for entry into the fair:

The entry **MUST** be the student's own work. Assist the student where possible (especially in the area of safety) but let them make their own discoveries. Let the student use their own scientific language that is appropriate for their age group.

- a. It is acceptable for a scribe to be used in Early Childhood entries.
- b. Students must acknowledge any assistance they receive.
- c. Judges will not assess the neatness of handwriting or the project's overall appearance.

10. How to enter

There are 2 ways to submit your project – either digitally as an electronic submission or a standard paper-based project. However, we strongly encourage all high school projects to be digitally submitted through the SEAACT website using the links provided.

- i. Electronic submission instructions
 - a. Register your details on-line at seaact.act.edu.au
 - b. Name your electronic file(s) by identifying your school and name
Eg. XXXX Primary School Jane Smith
 - c. Upload your project on the SEAACT webpage to the appropriate Google Drive (Primary or High School)
- ii. Paper-based submission
 - a. Register your details on-line at seaact.act.edu.au
 - b. Once you register, a label with your details will be generated. Print this label and fix it to the **FRONT of your project so that it is visible to the judges**. If your project has several pieces, it is a good idea to print additional labels so the judges don't miss anything important.
 - c. Make sure your entry is durable and can be transported easily and that it does **not** exceed the poster size limit (A2).
 - d. **DO NOT** include any biohazardous material such as mould, mouldy food or plant material. It is best to take photographs of your living objects and include them in your report.

11. Prizes

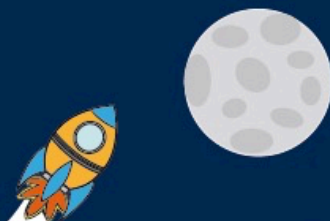
Prizes will be awarded for **First**, **Second** and **Highly Commended** for both individual and group projects, in each theme, for each age group. In special circumstances where the student has produced a sound investigation, an **Encouragement Award** may be awarded.

SEAACT School Shields will be awarded to the school that has the highest number of winning entries in each age group.

12. BHP Billiton Foundation Science and Engineering Awards

All winning **SECONDARY** entries receive automatic entry into the national BHP Billiton Science Foundation and Engineering Awards representing the ACT. There is no extra charge to enter this competition.

Finalists will be invited to participate in a four-day science camp and attend a presentation function held in Melbourne in February the following year. Finalists will also be required to prepare a science fair exhibit, which will be displayed in a public venue and judged. The two winners of the BHP Billiton Science Foundation and Engineering Awards will win \$4,000 each and represent Australia at the International Intel Science and Engineering Fair (IISEF) in the USA. See www.scienceawards.org.au for more information.



13. CSIRO CREST

CREativity in Science and Technology (CREST) projects can be used to enhance a student's ability to produce high quality projects for the SEAACT Science and Engineering Fair and the BHP Billiton Foundation Science and Engineering Awards. See www.csiro.au/crest for more information.

14. Our sponsors and supporters

We are very grateful to all our sponsors who have donated prize monies to support the SEAACT Science and Engineering Fair. We are also grateful to our supporters who have provided donations 'in kind' such as prizes, advertising opportunities and the use of venues.

The success of the science fair would not be possible without the generous support of our major sponsors: Rowe Scientific Pty, CSIRO, and BHP Foundation who make it possible for students to further their passion for science inquiry.

Thank you also to CSIRO Discovery, The Australian Science Teachers Association (ASTA) and Questacon for your continued support over the years.



RISK ASSESSMENT FORM

Title of project:

Student Name(s):

School:

Teacher's name:

If the project is to be completed outside of school:

Name of Institution:

Supervisor/Scientist's Name:

Contact number:

Contact email:

1. List/identify the hazardous chemicals, activities, instruments or microorganisms that will be used.

2. Identify and assess the risks involved.

3. Describe the disposal precautions and procedures that will be used to reduce the risks.

To be completed and signed by the designated supervisor/qualified scientist:

- ☐ I agree with the risk assessment and the safety precautions described above.
- ☐ I certify that I have reviewed the research plan and will provide direct supervision.

Supervisor/Scientist's signature:

Date: