2016 SCIENCE COMPETITION HANDBOOK

Griffith University Gold Coast Science Competition

ENTRIES DUE MONDAY 22 AUGUST 2016
A Note To Students 😊

Our school has a very proud history of participating in this annual event over many, many years. We would love to have your involvement this year and make this our best showing yet!

We will be have a regular time where you will be able to come along and ask teachers for advice or to have a look at what you’ve done so far. We’ll let you know where and when these will occur next term.

The most important thing right now is to have a think and decide if you are going to commit to entering this year’s competition. It is a lot of work in your own time which is very rewarding and not something that can be done in a couple of days. If you would like to enter the competition, it’s definitely something you need to start working on very soon.

Here are some tips for you:

1. Over the holidays decide if this is something you’d really like to do. We’ll be asking for your commitment as soon as we come back to school after the holidays.
2. If you decide you are going to participate in the competition, please complete the Expression of Interest form in this book and return it to the office by Friday 15 July (end of the first week back). This just lets us know who we need to check in with to see how you’re going.
3. The holidays are also a great time to start thinking of ideas. Have a look through the categories and decide which kind of project appeals to you the most, then you can decide on a topic. Remember to run it by your parents too as they will need to support you with the time and resources you need.
4. As soon as you’ve decided on your topic – START!! August seems like a long way away but it will come very quickly! You may need to make observations over several weeks for your project so starting sooner is definitely the way to go.
5. You are welcome to come to the lunchtime sessions we’ll be offering next term to get advice or ask for help but these are not compulsory.
6. Entries are due to school on Monday 22 August.
7. Your journal is an extremely important part of your entry. This year you may type your journal. Make sure you keep a record of everything including:
   - Why you decided on your topic
   - A plan for getting your project done
   - Research (even Googling for ideas is research so include that too)
   - Background information
   - How you used the handbook and competition guidelines to make sure your entry met the criteria
   - Each step you took to complete your project
8. Make sure you read the handbook very, very carefully to make sure you’re doing everything you need to for the category you’re entering.
9. Think about the presentation of your entry.
10. Work on your project a little bit each week and don’t leave it until the last minute.

Good luck! After the holidays we’ll let you know about the information and help sessions. If you have any questions you’re more than welcome to come and see me.

Mrs Keswell 😊
Dear Parents

Our school has participated in this competition for 10 years and we are proud to continue that tradition this year. Every year the standard of student work gets bigger, better and higher so we can’t wait to see the ideas your children come up with this year!

We have had growing success with our entries and last year we had 9 winners in the Gold Coast competition, 18 winners at the state competition and 3 encouragement awards at the national competition. WE WANT THIS TO BE OUR BEST YEAR YET!

Now is the time to start thinking of ideas. The key to this is finding something your child is interested in. There is no limit, this activity allows for endless creativity and imagination!

Does your child...

- Ever wonder how something works?
- Ever wonder why things happen?
- Like to invent things or think about inventing things?
- Have a particular interest? eg. Animals, creating collections, dinosaurs, fossils
- Like to make models, posters, make up games?
- Like learning about new things?
- Like to experiment and test and measure?

Then this is the activity for them!

There is no doubt that entering this competition is a big commitment by both students and parents. But I can assure you the rewards are well worth it! There is a registration fee but our school will meet this cost.

Dates to remember:

- Friday 15 July – your child has returned their Expression of Interest form to the office to indicate that they will be entering the competition.
- Monday 22 August 2016 - Competition entries are due to school. We absolutely must have entries by this date to allow us time to register the entries and make sure they meet the criteria etc.
- Thursday 25 August 2016 - Science ‘exhibition’ at school to celebrate all of our entrants and to have a look at their hard work.
- Monday 29 August – the entries will be delivered to the competition.
- By the afternoon of Wednesday 31 August, we will be notified of any award winners.
- Thursday 1 September at 6:00pm – Awards ceremony at Queensland Academy of Health Sciences in Ashmore.

If you have any questions, please don’t hesitate in getting in touch with me. Kind regards

Fiona Keswell

Head of Curriculum

fkesw1@eq.edu.au
Expression of Interest

If you have decided to enter this year’s Science Competition please complete this form and return it to the office by Friday 22 July 2016 (or give it to Mrs Keswell).

Please tick:

○ I am entering the 2016 Gold Coast Science Competition
○ I have spoken to my parents about entering the competition
○ I understand the commitment involved in entering a quality project
○ I have read the handbook
○ I know that I can go to the information sessions if I need help or advice
○ I will have my entry to school by Monday 22 August 2016

My Topic ______________________________________________________

Category ______________________________________________________

Name _________________________________________________________

Class _________________________________________________________

Student Signature _____________________________________________

Parent Signature (to indicate support) ____________________________
How To Decide On Your Topic 😊

- Read through the different categories – which one do you think you would like to do best?
- Think about topics you are interested in – animals, space, experiments, electricity, environmental issues etc.
- Think of an idea that joins the category you like with a topic you are interested in.
- Still can’t think of an idea? There’s lots of help out there...
  - Local library and our school library – there are lots of Science Experiment books
  - Internet – Google ‘science project ideas’ or ‘science experiments’ and you’ll get thousands of suggestions!
  - Try these websites as starting points:
    - [http://www.sciencebuddies.org/science-fair-projects/project_ideas.shtml](http://www.sciencebuddies.org/science-fair-projects/project_ideas.shtml)

Presentation 😊

It’s really important to make sure you show off all of your hard work. You need to make it easy for the judges to see what you have done. If you choose to display your work in a book or a folder, make sure you have clear headings and explanations of each step. A poster or display is also another great way to present your work.

A winning entry is about great Science, however, how you present your is important because it allows you to show off everything you know and creates a great first impression with the judges.

My best tip is to take lots of photos! Photos of each step of your project and also photos of you completing each stage of your project. These are also great to include in your journal as evidence that your project is all your own work.

Here are some display ideas:
CATEGORIES

- Scientific Investigations
- Engineering and Technology Projects
- Classified Collections
- Communicating Science
- Environmental Action Project

DIVISIONS

- Division 1 – Prep
- Division 2 – Years 1 & 2
- Division 3 – Years 3 & 4
- Division 4 – Years 5 & 6

Conditions of Entry

Every registered entry must:
- include a signed statement by the teacher confirming 100% child’s work (See Appendix 1)
- include a scientific notebook (reflective journal) (See Appendix 2)
- be identified with a label with the following details (see diagram):
  - Student Name
  - School
  - Registration Number (provided upon registration)
  - Division (please see page 2)
  - Category
  - Title
  - If multiple parts label each part eg Part 1 of 2

Name:
School:
Registration Number:
Division: Prep | Yrs. 1-2 | Yrs. 3-4 | Yrs. 5-6 | Yrs. 7-8 | Yrs. 9-10 | Yrs. 11-12
Category:
Title:
SCIENTIFIC INVESTIGATION

The report should include:

- Realistic aims
- Details of the materials used and the procedure
- Risk assessment
- Determination of variables
- Evidence of replication of results, accuracy and thoroughness
- Results, observations, measurements, graphics and text
- Discussion of the results referring to the aims
- Explanation of errors and anomalies
- Reasonable conclusion from the data
- Suggestions for further research
- Appropriately acknowledge any assistance. Clarify which aspects of the project were devised and carried out alone and which aspects were not and what sort of assistance was provided.

Some examples of topics:

- Does the temperatures of a magnet affect its strength?
- How does the type of soil affect the growth of a bean plant?
- Which type of paper towel has the highest level of absorption?
- Which material is the best for insulating a can of drink?
- How does sugar affect the growth of yeast?
- What is the best metal conductor?
- How fast does light travel in different substances?
- Which tea contains the least amount of caffeine?
SCIENTIFIC INVESTIGATIONS

The Task:
To design and perform a scientific investigation and report on the results obtained and the conclusions reached.

What to do:
- Choose a topic, there are no restrictions.
- Keep a day-by-day Scientific Notebook that explains what you do and why (see Appendix 2)
- Ask questions about your topic.
- Collect the necessary background information about your topic.
- Design and perform one or more experiments that will make up the investigation.
- Analyse the results and draw your conclusions.
- Present a report to tell others what you did and what you found out. Include any references and acknowledge the assistance you receive.
- Scientific Notebook (see Appendix 2)

What makes a winning entry?

<table>
<thead>
<tr>
<th>RELEVANCE OF TOPIC</th>
<th>Topic chosen is original and relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Focus question is testable</td>
</tr>
<tr>
<td>SCIENTIFIC RESEARCH</td>
<td>Evidence of scientific research</td>
</tr>
<tr>
<td></td>
<td>Background research is sufficient and relevant</td>
</tr>
<tr>
<td>EXPERIMENTAL DESIGN</td>
<td>Investigation contains elements of a fair test</td>
</tr>
<tr>
<td></td>
<td>Variables are identified (independent, dependant, controlled and monitored)</td>
</tr>
<tr>
<td></td>
<td>Effective controlling and monitoring of variables</td>
</tr>
<tr>
<td></td>
<td>Method allows for collection of sufficient relevant data</td>
</tr>
<tr>
<td></td>
<td>Safety and ethical issues are considered</td>
</tr>
<tr>
<td>DATA</td>
<td>Sufficient relevant data is collected</td>
</tr>
<tr>
<td></td>
<td>Data is displayed appropriately to present findings</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>Conclusion is made</td>
</tr>
<tr>
<td></td>
<td>Conclusion is supported with evidence and scientific reasoning</td>
</tr>
<tr>
<td>NOTEBOOK</td>
<td>Notebook contains evidence of scientific thought</td>
</tr>
<tr>
<td></td>
<td>Accurate/detailed notes of findings, decisions and thought processes are evident</td>
</tr>
<tr>
<td>SCIENTIFIC LITERACY</td>
<td>Appropriate use of scientific language</td>
</tr>
<tr>
<td></td>
<td>Required elements of a Scientific Report are included</td>
</tr>
<tr>
<td></td>
<td>Sources have been cited</td>
</tr>
</tbody>
</table>
This is the structure for Scientific Investigations as recommended by the Science Teachers Association of Queensland. Make reference to these in your journal.

*Junior School:*

![FAIR TEST Diagram](image1)

![SCIENTIFIC PROCESS Diagram](image2)
Senior School:

**FAIR TEST**
Cows Moo Softly

- Change one thing (Independent variable)
- Measure something (Dependent variable)
- Keep everything else the Same (Controlled variable)

**SCIENTIFIC PROCESS**

- **Question:** What do you want to investigate?
- **Hypothesis:** What do you think will happen and why?

<table>
<thead>
<tr>
<th>Cows</th>
<th>Moo</th>
<th>Softly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change one thing</td>
<td>Measure something</td>
<td>Keep everything else the same</td>
</tr>
<tr>
<td>Independent variable</td>
<td>Dependent variable</td>
<td>Controlled variable</td>
</tr>
</tbody>
</table>

- **Materials:** List of equipment
- **Procedure:** Steps taken to carry out the investigation
- **Results:** What did you observe? How will the data be represented?
- **Discussion:** Explain your results in detail. What problems did you encounter?
- **Conclusion:** Was your hypothesis supported/unsupported? Why? How might you change this investigation next time?
- **Journal:** Day-to-day diary of what you did and what you found.
ENTRY SHOULD INCLUDE A 3-5 MINUTE VIDEO (ON A USB STICK):

- Explain how the product could be used
- Explain how it is easy to use
- Explain how the invention addresses a problem
- Video should be clear and able to be heard clearly and easily

THE REPORT SHOULD INCLUDE:

- Explain how/why you chose the problem
- Set out some realistic aims
- Explain how the problem is significant and relevant
- Explain how you went about solving the problem in an original, creative and resourceful way, including any problems you overcame and how you undertook testing.
- Explain the limitations of the product or device and suggest further improvements
- Address safety considerations in planning the product and the use of the final product
- Appropriately acknowledge any assistance. Clarify which aspects of the project were devised and carried out alone and which aspects were not and what sort of assistance was provided

SOME IDEAS TO GET YOU THINKING:

- Use simple materials
- A problem that needs to be solved or addressed for aged persons
- A problem that needs to be solved or addressed for people with a disability
- A non-harmful pest control device
- A device to address a safety hazard

SOME QUESTIONS TO ASK YOURSELF AND INCLUDE INFORMATION ABOUT IN YOUR JOURNAL:

- To what degree is the innovation new and/or different?
- Where could it be used?
- What are the costs and benefits of the idea?
- What are the consequences, immediate and long-term of employing this idea?
- How does it help society?
- How were the items used in appropriate and/or new ways?
- How well is the product constructed and organised?
- How clear/well prepared is the information and video?
- Is your idea clearly demonstrated and explained?
- Have you been convincing as to why your idea would be valuable and useful and how it would help?
ENGINEERING AND TECHNOLOGY PROJECTS

The Task
To create a device or product to demonstrate a scientific principle, solve a problem or offer a different approach to a problem.

At the broadest level, innovation is commonly seen to be about generating new ideas and bringing them to life as new products, processes and services for commercial use or social wellbeing. Innovativeness is a way of perceiving and responding to the world we live in. Through it, individuals and societies express their creativity, needs and desires. Innovation is about the synthesis of knowledge, ideas and skills in the solution of identified problems and the development of innovative capabilities. In its focus on synthesis, design and invention it embraces creativity across the full spectrum of a student’s learning. It is learning through practice.

What to do:
The entry must be a physical device or product with dimensions not exceeding 76cm in depth, 122cm in width and 100cm in height.

Adhering to the following criteria will ensure that entries are eligible to progress to the BHP Billiton Awards if selected:

- The entry:
  - must not be static except for new devices or products
  - must satisfy one of the following:
    - demonstrate a scientific principle;
    - solve a problem; or
    - offer a different approach to a problem
  - must be accompanied by a Scientific Notebook (see Appendix 2)

Entries that make use of 240V power must be accompanied by a signed note of compliance as being supervised during the construction and testing by an appropriately qualified person.

Although some of the following may be used in the development phases they will not be accepted as part of the display:

1) Living organisms, including plants
2) Soil, sand, rock, and/or waste samples, even if permanently encased in a slab of acrylic
3) Taxidermy specimens or parts
4) Preserved vertebrate or invertebrate animals
5) Human or animal food
6) Human/animal parts or body fluids (for example, blood, urine)
7) Plant materials (living, dead, or preserved) that are in their raw, unprocessed, or non-manufactured state
8) All chemicals including water (Projects may not use water in any form in a demonstration)
9) All hazardous substances or devices (e.g., poisons, drugs, firearms, weapons, ammunition, reloading devices, and lasers)
10) Dry ice or other sublimating solids
11) Sharp items (for example, syringes, needles, pipettes, knives)
12) Flammable or highly flammable materials
13) Batteries with open-top cells
14) Glass or glass objects
15) Any apparatus deemed unsafe by the coordinator or judges (for example, large vacuum tubes or dangerous ray-generating devices, empty tanks that previously contained combustible liquids or gases, pressurized tanks, etc.)

What makes a winning entry?

<table>
<thead>
<tr>
<th>RELEVANCE OF DEVICE/PRODUCT</th>
<th>The device/product demonstrates a scientific principle, solves a problem or offers a different approach to a problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Device/product is innovative</td>
</tr>
<tr>
<td></td>
<td>Device/product has real life application</td>
</tr>
<tr>
<td>SCIENTIFIC RESEARCH</td>
<td>Evidence of scientific research</td>
</tr>
<tr>
<td>DEVICE/PRODUCT DESIGN</td>
<td>Device/product is well designed</td>
</tr>
<tr>
<td></td>
<td>Device product is well constructed</td>
</tr>
<tr>
<td></td>
<td>Device /product fits within the prescribed dimensions (76cm deep, 122cm width, 100cm height)</td>
</tr>
<tr>
<td></td>
<td>Method allows for collection of sufficient relevant data</td>
</tr>
<tr>
<td></td>
<td>Safety and ethical issues are considered</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>Applications of the device/product are evaluated</td>
</tr>
<tr>
<td></td>
<td>Benefits to future society are clearly outlined</td>
</tr>
<tr>
<td>NOTEBOOK</td>
<td>Notebook contains evidence of scientific thought</td>
</tr>
<tr>
<td></td>
<td>Accurate/detailed notes of findings, decisions and thought processes are evident</td>
</tr>
<tr>
<td>SCIENTIFIC LITERACY</td>
<td>Appropriate use of scientific language</td>
</tr>
<tr>
<td></td>
<td>Sources have been cited</td>
</tr>
</tbody>
</table>
CLASSIFIED COLLECTIONS

What to do:

- Choose a topic for your collection.
- Collect relevant items. Keep a record in your journal of where the items were collected, how they were preserved or cared for and your safety considerations in how you safely collected them.
- Organise your collection into groups to show relationships between the items in the collection or to assist in their recognition.
- Develop a classification scheme. This may be a table, key or field guide.
- Consider the most effective way of displaying your collection.

Your journal should include:

- A record of where and how you collected your items
- How they were preserved or cared for
- An explanation of how you classified your collection
CLASSIFIED COLLECTIONS

The Task:
To compile and present a scientific classified collection to show relationships between the items in the collection, or to assist in their recognition. Classified collection examples include a collection of specimens of plants, rocks, insects, shells etc.

What to do:
- Plan, collect, classify and display/organise specimens of a collection to:
  - Help in the understanding of the material that is being collected or
  - Help in the solution of some other problem
- Scientific Notebook (See Appendix 2)

A guide to collecting in different fields of natural science:

Botany
A classified plant collection might deal with a group of plants (e.g. ferns, conifers, palms, grasses, eucalypts, wattles), it might be the flowers of plants that are found in a particular area, or it might be a collection classified according to leaf shapes, flower or fruit characters, or chemical components (aromatic leaves), or it may be for a purpose such as identifying weeds in a locality. In these cases, it is important to explain why the collection was undertaken, and to show how the classification was developed.
- Use the new Griffith University “Grows at Griffith” App to assist you to identify your plant species - it provides plant family name, scientific name, location, distribution and other interesting details
- A collection of seeds might investigate the relationships between seed composition (carbohydrate, protein, fat) and taxonomic group, or between seed size and plant habit (food plant, weed, and forest plant).
- A collection of weeds would ideally include some information that assisted in their identification (a key of some sort as discussed below), and comments on issues such as their importance, origin, manner of spread and difficulty of control.
- A collection of herbs might examine how they are distributed between families of plants, their regions of origin, and how they are used (directly or after processing).
- How to preserve plant specimens:
  - Choose specimens that contain stem, leaf, flowers, fruit/nut, seeds if possible
  - Layout newspaper (greater than the size of specimen), add 2 layers of paper towel, place specimen on paper towel, add 2 more layers of paper towel, then a layer of newspaper; continue process with the next specimen; press specimens by placing in a flower press or by placing a heavy object on top eg. Books; change paper towel and paper daily; continue for 1-2 weeks.
- Display specimens with a label: with common name, scientific name, date of collection, location of collection

Geology
A classified geological collection becomes more valuable when the relationships between rock types are examined, or when the collection is assembled to assist in the identification of rocks or minerals. Relationships between rock types may be examined on a local or a larger scale, but there should be a question asked concerning these relationships. An assemblage of rock types for identification should concentrate either on a class of rocks or on minerals that are important in a locality or region (e.g. important commercial minerals).
- Display specimens with a label: e.g. Identification, date of collection, location of collection
Entomology
A classified insect collection might concentrate on the insects occurring in a backyard over a period of time, or it might concentrate on a particular group of insects that can be collected from a region, or it might survey the orders of insects that can be collected in a region. The purpose for the collection should be to increase understanding of insects, and this purpose should be made clear in the Scientific Notebook.
- Displaying specimens:
  - Keep display enclosed with moth balls
  - Labelling: e.g. Identification, date of collection, location of collection

Zoology
A classified collection of animals (other than insects) will usually be of durable discarded parts (shells or feathers). Shells are used to identify some invertebrates, so the taxonomic relationships may be examined at a number of scales of organisation. Feathers are attractive, but the purpose of collecting and classifying should be more than to simply gather and arrange. There may be an opportunity to examine the relationship between feather size and bird size, or habitat (for example, is it possible to show that water birds have different feathers from land birds?), so there is a question behind the collection.
- Display specimens with a label: e.g. Identification, date of collection, location of collection

IMPORTANT!
Protected Species
Be aware that there are a number of protected species and protected areas in Queensland where collecting is prohibited. They are protected because they are valuable or vulnerable. Ensure that collected specimens are not listed by the Department of Environment and Heritage Protection or collected from a protected area. Go to: [http://www.ehp.qld.gov.au/wildlife/threatened-species/](http://www.ehp.qld.gov.au/wildlife/threatened-species/)

What makes a winning entry?

<table>
<thead>
<tr>
<th>SPECIMEN COLLECTION</th>
<th>Variety of specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLLECTION CLASSIFICATION</td>
<td>Appropriate classification system is evident and used</td>
</tr>
<tr>
<td></td>
<td>An appropriate table of characteristics or key is used for classification</td>
</tr>
<tr>
<td></td>
<td>Includes a description of the classification system used and why it was chosen</td>
</tr>
<tr>
<td>CLASSIFICATION DISPLAY</td>
<td>Specimens are preserved and displayed appropriately</td>
</tr>
<tr>
<td></td>
<td>Specimens are labelled appropriately</td>
</tr>
<tr>
<td>CLASSIFICATION RESEARCH</td>
<td>Evidence of scientific research</td>
</tr>
<tr>
<td></td>
<td>Background research is sufficient and relevant</td>
</tr>
<tr>
<td>SCIENTIFIC RELEVANCE</td>
<td>Collection is scientifically relevant with relationships clearly evident</td>
</tr>
<tr>
<td>NOTEBOOK</td>
<td>Notebook contains evidence of scientific thought</td>
</tr>
<tr>
<td></td>
<td>Accurate/detailed notes of findings, decisions and thought processes are evident</td>
</tr>
<tr>
<td>SCIENTIFIC LITERACY</td>
<td>Appropriate use of scientific language</td>
</tr>
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<td></td>
<td>Sources have been cited</td>
</tr>
</tbody>
</table>
COMMUNICATING SCIENCE

What to do:

- Choose something that you find interesting
- Research your choice
- Choose a target audience
- Choose a communication medium eg. Model, poster, game, webpage
- Be creative, original and resourceful
- Your project should be well made, presented to a high standard and easy to follow

Your journal should include:

- Clearly explain your topic
- Include research – what did you find out, where did you find it. Make sure you include references.
- Identify and describe the target audience
- Justify your choice of communication medium eg. Why you chose to make a model
- Explain how you designed and created your entry
- Explain any challenges you experienced and how you overcame them. Is there anything you would do differently next time?
COMMUNICATING SCIENCE

The Task:
To explain and communicate information about a scientific concept to a specified audience

What to do:
- Present a scientific concept using a communication medium (Model, Poster, PowerPoint Presentation, Game, Comic Strip)
- Scientific Notebook (see Appendix 2)
- Written report (see below)

Your written report should:
- Clearly & briefly explain the scientific concept you have chosen.
- Include your background research information, references and permission to use copyrighted material (if applicable)
- Identify and describe the target audience (examples could be: preschool students, aged pensioners without a scientific background, the general community)
- Justify your choice of communication medium for your target audience

Choices of Communication Mode

Model
- 3D representation of a scientific concept including title, labels
- Not exceed 500 x 500 x 500 mm
- Original construction

Cartoon/Comic Strip
- A single or series of cartoons which are hand drawn or computer generated which communicate a scientific concept
- The presentation must not exceed an A2 size (594mm x 420mm).
- The cartoons/images must not be subject to copyright or a letter stating that you have received permission to use the work
- The comic strip must be an original piece of work.

Game
- The game may be a board or a computer generated game which communicates a scientific concept
- The game must be an original piece of work.
- Clear instructions must be included.

Poster
- A single or series of diagrams/paintings/drawings with text which communicates a scientific concept
- The poster must be “flat” or 2D two dimensional.
- The presentation must not exceed an A2 size (594mm x 420mm).
- The images must not be subject to copyright or a letter stating that you have received permission to use the work
- The presentation must be an original piece of work.
PowerPoint Presentation

- A series of slides with/without sound which communicates a scientific concept — with paper printout of slides
- The presentation must be an original piece of work.
- The images must not be subject to copyright or a letter stating that you have received permission to use the work

Multi-media presentation

- A visual media presentation which communicates a scientific principle
- The presentation must be an original piece of work not longer than 2 minutes.
- The images must not be subject to copyright otherwise a letter stating that you have received permission to use the work

What makes a winning entry?

| RELEVANCE OF TOPIC                  | Topic chosen is original and relevant |
|                                    | Relevance to the broader community is clearly articulated |
| SCIENTIFIC RESEARCH                | Evidence of scientific research      |
| AUDIENCE                           | Clear explanation of intended audience |
|                                    | Communication is appropriate for the intended audience |
| COMMUNICATION                      | Communication is concise and effective for the identified audience |
| OVERALL PRESENTATION               | Presentation is informative          |
|                                    | Presentation is entertaining         |
|                                    | Presentation is effective and clearly articulated |
| NOTEBOOK                           | Notebook contains evidence of scientific thought |
|                                    | Accurate/detailed notes of findings, decisions and thought processes are evident |
| SCIENTIFIC LITERACY                | Appropriate use of scientific language |
|                                    | Handbook guidelines have been followed |
|                                    | Sources have been cited              |
ENVIRONMENTAL ACTION PROJECT

What to do:

- Research a local environmental issue
- Consult with members of the community about the issue. This may involve a survey or questionnaire
- Present the data. It may be helpful to use tables or graphs
- Develop an action plan to help resolve the issue
- Explain how the action plan will help to resolve the issue
- Present your investigation and resulting action plan as a poster, report or video
- Keep a journal throughout the project and submit with the entry

Make sure you:

- Show a clear understanding of the environmental issue
- Explain how the issue was investigated scientifically and how community members were consulted
- Display your data
- Set out your action plan clearly
- Explain how the action plan solves the issue
- Demonstrate active, practical involvement in the issue at a local level
- Be creative and original

Some examples of Environmental Action Plans:

- Develop a plan for your school to reduce rubbish
- Develop a plan for managing crows/ibis at your school
- Develop a plan for managing weeds at the local pond
- Develop a plan for less students to use cars to get to school
- Develop a plan for your school/community group to use less electricity or water
ENVIRONMENTAL ACTION PROJECT

The Task:
To identify, research, investigate and present recommendations about a local environmental issue.

What to do
- Identify and research a local environmental issue. Students may work individually or in pairs.
- With the help of people in the community, set about investigating and resolving the problem
- Choose the medium to present your project e.g. poster or report.
- Provide recommendations for future action
- Scientific Notebook (see Appendix 2)

What makes a winning entry?

<table>
<thead>
<tr>
<th>RELEVANCE OF TOPIC</th>
<th>Topic chosen is original and relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Relevance to the broader community is clearly articulated</td>
</tr>
<tr>
<td>SCIENTIFIC RESEARCH</td>
<td>Evidence of scientific research</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>Shows a clear understanding of the environmental issue</td>
</tr>
<tr>
<td></td>
<td>Identifies a possible solution to the issue</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>Conclusion is made</td>
</tr>
<tr>
<td></td>
<td>Conclusion is supported with evidence and scientific reasoning</td>
</tr>
<tr>
<td>NOTEBOOK</td>
<td>Notebook contains evidence of scientific thought</td>
</tr>
<tr>
<td></td>
<td>Accurate/ detailed notes of findings, decisions and thought processes are evident</td>
</tr>
<tr>
<td>SCIENTIFIC LITERACY</td>
<td>Appropriate use of scientific language</td>
</tr>
<tr>
<td></td>
<td>Sources have been cited</td>
</tr>
</tbody>
</table>
APPENDIX
We have been advised that this year typed/digitally produced journals will be accepted. They need to be printed and a hard copy submitted with each entry.

APPENDIX 2
SCIENTIFIC NOTEBOOK

The Scientific Notebook is very important in showing the purpose behind the study, and the way in which the question evolved and was tackled, as well as a record of how the project progressed over time. A Scientific Notebook helps the student make sense of their science learning.

- A Scientific Notebook should be kept as a record of what was completed on different days – include dates
- A Scientific Notebook should contain evidence of scientific thought – include thoughts, questions, insights
- The Scientific Notebook should be a series of handwritten (not typed) ideas, methods and findings
- Accurate and detailed notes of your findings, decisions and thought processes assist the project in becoming a winning entry.
- Good notes show consistency and thoroughness to the judges.
- Acknowledge any assistance received.

Notetaking and Notemaking

You may like to use the Right hand side (or pages) of your notebook to record investigations including investigation question, prediction/hypothesis, method, materials, observations/measurements, labelled drawings, graphs, discussion, conclusions. This is Note-taking.

You may choose to use the Left hand side (or pages) of your notebook to record your thoughts and reflections on what is happening or questions or ponderings or rough diagrams/sketches etc. This is called Notemaking.

What you wonder v What you observe
LHS v RHS

Left Page/Right Page

Notemaking

Notetaking

Left Margin

Notemaking

Notetaking
This letter must be signed by the entrant and their parent and included in your journal.

Once delivered to school we will complete the teacher section.

APPENDIX 1
GOLD COAST SCIENCE COMPETITION 2016
STUDENT WORK AUTHENTICATION LETTER

The following letter must be submitted for each registered entry into the competition, signed & dated by student/parent and teacher.

Student Name:
School:
Division:
Category:
Project Title:

Dear Competition Judges,

By signing this document, I declare that the work submitted as an entry in the Gold Coast Science Competition is my own work. I have not previously submitted all or part of this work in previous Gold Coast Science Competitions.

Student/Parent Name:
Student/Parent Signature:
Date:

As a teacher of the above student, I support this authentication letter
Teacher Name:
Teacher Signature:
Date:
Cut out these labels, fill them out and attach one to every part of your entry, including your journal. If you need more, just ask!

Leave the Registration Number section blank. We will fill this in once we have registered your project.

Part _____ of _____

Name:
School: Pacific Pines Primary School
Registration Number:
Division: Prep | Yrs 1 & 2 | Yrs 3 & 4 | Yrs 5 & 6
Category:
Title:

Part _____ of _____

Name:
School: Pacific Pines Primary School
Registration Number:
Division: Prep | Yrs 1 & 2 | Yrs 3 & 4 | Yrs 5 & 6
Category:
Title:

Part _____ of _____

Name:
School: Pacific Pines Primary School
Registration Number:
Division: Prep | Yrs 1 & 2 | Yrs 3 & 4 | Yrs 5 & 6
Category:
Title:
Name:
School: Pacific Pines Primary School
Registration Number:
Division: Prep | Yrs 1 & 2 | Yrs 3 & 4 | Yrs 5 & 6
Category:
Title: