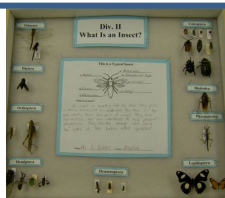


## OPTION FIVE: CLASSIFIED COLLECTIONS

**The Task: To compile and present a scientific classified collection.**

**What to do:**

- Plan, collect, classify and display a collection to to:
  - Help in the understanding of the material that is being collected OR
  - Help in the solution of some other problem.
- The classified collection should show relationships between the items in the collection, or to assist in their recognition.



**A guide to help choose a collection type includes:**

- Botany** – A classified plant collection might deal with a group of plants (e.g. ferns, wattles, etc.) / flowers of plants / collection classified according to leaf shapes / a collection of herbs, etc.
- Geology** – A collection of rock types or minerals that are important in a region.
- Entomology** – An insect collection. This may concentrate on insects occurring in a backyard over a period of time or a particular group of insects collected from a region.
- Zoology** – A collection of animals which would come in the form of discarded parts (shells or feathers). Shells are used to identify some invertebrates (animals that lack a backbone) e.g. molluscs – snails, slugs, oysters, squid ; marine invertebrates – star fish, sea cucumbers, sea urchins; arthropods – spiders, crabs, lobsters, crustaceans. Feathers may be used to examine the relationship between feather size and bird size, or habitat.

*(Please note: there are a number of protected species and protected areas in Qld where collecting is prohibited. To ensure that a collected specimen is not listed by the Department of Environment and Heritage Protection, go to:*

<http://www.ehp.qld.gov.au/wildlife/threatened-species/>

**A great collection may include:**

|                               |   |
|-------------------------------|---|
| Specimen Collection           | Variety of specimens  |
| Collection Display            | Specimens are displayed and labelled appropriately  |
| Collection classification     | A classification system is used such as a table of characteristics, or a dichotomous key<br>Include a description of the classification system used and why it was chosen |
| Research                      | Background research about the collection.<br>Use of scientific language and sources are cited.  |
| A Scientific Notebook/Journal | Please see last page of booklet for information   |

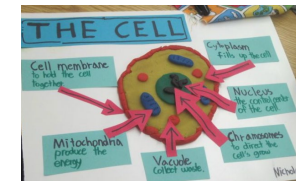
**\*\* Please note – use of as much scientific language as possible is an advantage**

## OPTION TWO: 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, Comic Strip, PowerPoint Presentation, Board game or computer generated game)
- Scientific Notebook (see last page of booklet for details)
- Written report (see below)



**Your written report should:**

- Clearly and 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: young children or the general community)
- Explain your choice of communication medium for your target audience. E.g. "I made a Model so that young children could have a better understanding of my concept in 3D".
- The presentation must not exceed an A2 size (594mm x 420mm)

**\*\* For specific information about this please refer to the 'Gold Coast Science Competition' Booklet**

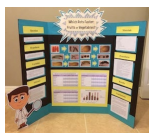
**A great entry may include:**

|                               |   |
|-------------------------------|---|
| Relevance of Topic            | Topic chosen is original                                  |
| Research                      | Evidence of scientific research. Sources are cited.       |
| Audience                      | Clear explanation of audience the project is targeted for |
| Communication                 | Communication is relevant for the targeted audience       |
| Presentation                  | Presentation is informative and entertaining              |
| A Scientific Notebook/Journal | Please see last page of booklet for information           |

**\*\* Please note – use of as much scientific language as possible is an advantage**

### OPTION THREE: 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/Journal that explains what you do and why.
- 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.
- Investigation should contain elements of a fair test. (Everything stays the same each time, except for one variable.)
- Present a report to tell others what you did and what you found out. Include any references and acknowledge the assistance you receive.

#### A great entry may include:

|                               |   |
|-------------------------------|---|
| Relevance of Topic            | It has a focus question that is testable. Make it original!   |
| Research                      | Evidence of scientific research. Sources are cited.   |
| Experimental Design           | <ul style="list-style-type: none"> <li>• <b>Hypothesis:</b> make a prediction about what you think will happen.</li> <li>• <b>Equipment</b> used in the investigation.</li> <li>• Identify and describe <b>variables</b> that needed to be controlled in order to make it a 'fair test'. (independent, dependant, controlled and monitored).</li> <li>• <b>Procedure:</b> List in order each step that will be undertaken.</li> <li>• <b>Safety decisions:</b> Describe how to manage the work safely.</li> </ul> |
| Data                          | Observations made throughout the investigation including any measurements and photos to show what happened. You can summarise data using graphs and tables.   |
| Conclusion                    | Explain you results in detail, drawing on any evidence you collected. Compare the results to your hypothesis and what does this mean? Don't forget to use appropriate scientific language.  |
| A Scientific Notebook/Journal | Notebook contains evidence of scientific thoughts throughout the process. Notes of findings, decisions and thoughts should be included.<br>Please see last page of booklet for information  |

**\*\* Please note – use of as much scientific language as possible is an advantage**

### OPTION FOUR: ENGINEERING AND TECHNOLOGY PROJECTS

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

#### 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. (Please note: these dimensions only are required to be adhered to if you wish to be considered for other external competitions).
- The project must satisfy one of the following:
  - Demonstrate a scientific problem;
  - Solve a problem; or
  - Offer a different approach to a problem.
- Provide a report clearly explaining how the model works or will work and what it does.
- Provide details on why you chose the problem and how it is relevant or important.
- Test your model and include test results.
- Reflect on how your model solves the problem.



#### A great entry may include:

|                               |  |
|-------------------------------|--|
| Relevance of Device/Product   | The device/product demonstrates a scientific problem, solves a problem or offers a different approach to a problem.<br><br>The device/product is innovative and is useful in real life |
| Research                      | Evidence of scientific research. Sources are cited.  |
| Design of Product/Device      | It is well designed and constructed. Collection of data when tested. Safety issues are considered.   |
| Discussion and Reflection     | Make observations and reflect on these once tested<br><br>Outline the benefits we would gain or the need to use this new innovation in future society                                  |
| A Scientific Notebook/Journal | Notebook contains evidence of scientific thoughts throughout the process. Sources are cited.<br><br>Please see last page of booklet for information                                    |

**\*\* Please note – use of as much scientific language as possible is an advantage**



## Pimpama State School 2022 Science Fair Competition

Pimpama State School is once again holding a Science Fair Competition! This is a school wide competition where students are awarded prizes in each category. In order for students to enter the competition they may choose to complete a project in one of the five categories (outlined below and in this booklet). These entries will then be judged using an age appropriate criteria and will all be proudly displayed at the Science Fair on **Wednesday the 17<sup>th</sup> of August** at a designated area in our school. Please note that although guidance can be given to children whilst undertaking work on their Science Fair entry, the work is to be completed by the student.

Following this event, student projects will be selected to gain entry into the 'Griffith University Gold Coast Science Competition' and then the 'Science Teachers Association of Queensland' (STAQ) Science Contest. Further to this, students who excel in these competitions can be selected as entrants to the 'BHP Billiton Science Awards'.

Students may choose from **any one** of the following categories which are outlined in this booklet:

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

The age categories for entries are as follows: Prep, Years 1-2, Years 3-4, Years 5-6

\*\*Please refer to the following websites if you are in need of 'ideas' for a project:

<https://www.sciencebuddies.org>

<http://www.sciencekids.co.nz>

<https://www.education.com/science-fair/>

ALL PROJECTS ARE DUE AT SCHOOL BY: **Wednesday 3rd August 2022**

To enable time to plan the Science Fair adequately, please advise Miss Denholm of the category in which you have chosen to undertake by **Wednesday 20th July**. If you have any queries or questions, please do not hesitate to contact your classroom teacher or Miss Denholm (3-6 Science Teacher) at [akden0@eq.edu.au](mailto:akden0@eq.edu.au)

### **Important Dates to Remember!!**

|                                    |   |
|------------------------------------|---|
| Wednesday 20 <sup>th</sup> July:   | Advise your class teacher and Miss Denholm of the category for your project |
| Wednesday 3 <sup>rd</sup> August:  | All projects are due at school  |
| Wednesday 17 <sup>th</sup> August: | Pimpama State School Science Fair – (viewing and judging)                   |
| Wednesday 24 <sup>th</sup> August: | Winners announced at Assembly and prizes given                              |
| TBA:                               | Griffith University Gold Coast Science Competition                          |
| TBA:                               | STAQ Science Competition  |

Extra information on Griffith University Gold Coast Science Competition can be found at:

<https://app.griffith.edu.au/events/event/53747>

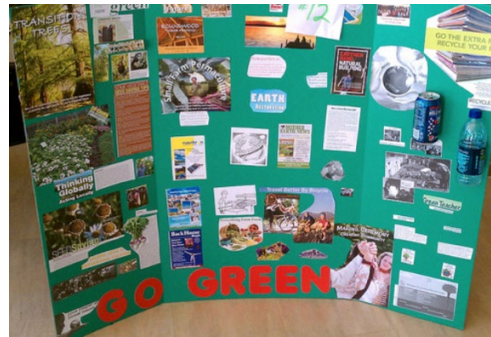
Extra information on STAQ Science Contest can be found at: <http://www.staq.qld.edu.au/queensland-science-contest/>

## OPTION ONE: ENVIRONMENTAL ACTION PROJECT

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

Some examples:

- Green power
- Pollution
- Recycling
- Climate change
- Energy conservation



**What to do:**

- Identify and research a local environmental issue. E.g. recycling, pollution, energy conservation, air quality, etc.
- With the help of people in the community, set about investigating and resolving the problem. (E.g. you may prepare a survey or questionnaire to gather opinions)
- Present data gathered in tables or graphs.
- Choose the medium to present your project, e.g. poster or a report.
- Provide recommendations for future action to help resolve the issue.
- A Scientific Notebook/Journal should be kept and submitted with the project.

**A great entry may include:**

|                               |  |
|-------------------------------|--|
| Relevance of Topic            | Topic chosen is original and relevant  |
| Research                      | Evidence of scientific research. Sources are cited.  |
| Discussion                    | Show a clear understanding of the environmental issue<br>Identify a possible solution to the issue                                 |
| Conclusion                    | A conclusion is made<br>Conclusions can be made using evidence to support it   |
| A Scientific Notebook/Journal | Notebook/Journal contains evidence of scientific thought throughout the process<br>Please see last page of booklet for information |

**\*\* Please note – use of as much scientific language as possible is an advantage**

## THE SCIENTIFIC NOTEBOOK OR JOURNAL

As part of the Science Fair Competition, all projects must include a Scientific Notebook. This item is very important in showing the purpose behind your project as well as a record of how the project progressed over time.

**The Notebook/Journal should:**

- Have a record of how your work progressed over time (including the disasters). The best projects engage the viewer (and judges) in the excitement and failures of the investigation! Don't forget to date your work.
- Contain evidence of scientific thought used. Any questions you have along the way or insights into the progress of your project.
- Be a series of handwritten or typed notes.
- Include photos, diagrams, etc. to record the process. Anything to explain what you have investigated. (Photos and drawings are a great idea for lower year levels.)
- Contain notes of your findings and a summary of what you have learnt/achieved as a result of your scientific work!
- Spelling should be checked for accuracy.
- Be presented in a neat and well presented format.

