

Category 1: Research Investigation (Years 7-12)

What is a research investigation?

An investigation is an attempt to find, in a scientific way, the answer to an original question. The scientific way may involve careful recording of organised observations such as watching the behaviour of wild birds or the movement of planets. It may use an experimental procedure that involves designing an experiment, controlling variables, interpreting your data and making a conclusion. Investigations always look for reliable results that can be used to explain or predict events.

Note: From Years 7-12 it is expected that students generate their own research questions.

If students in a class are investigating the same question then the teacher should select the best investigation for entry into this category.

A research investigation involves:

- **choosing and defining a topic.** *Pick a topic that interests you.*
- **asking questions about your topic.** *Why? What if...? How? It would be a good idea to do some reading about your selected topic. Libraries and the internet are a very useful resource. You could also discuss ideas with others familiar with your topic.*
- **forming an hypothesis.** *This is an educated "guess" as to what you think will happen in a certain set of circumstances or conditions. (Look at ONE change at a time).*
- **investigating your hypothesis.** *To do this properly you will need to design and carry out experiments in a safe manner*.*
- **carefully recording the results of the experiments.** *A survey, if it is used to collect data as part of an investigation, is regarded by STS as an experiment. (Keeping a log book or taking photographs are useful ways of recording).*
- **analysing results.** *What do your results mean?*
- **working logically through your results so as to support or disprove your hypothesis.**
- **writing a report to tell others what you did and what you found, based on experiments you carried out.** *The experimental report is NOT a research assignment.*

** It is important that a risk assessment is completed before conducting the investigation. A **Risk Assessment Form** is required to be submitted with the entry.*

A successful STS Research Investigation entry will:

- follow the scientific method of investigation
- communicate ideas clearly
- be an original investigation
- include evidence of reading on the topic

STS Rules

It is important that all entries comply with the STS Rules. Please read these rules carefully to ensure your entry is eligible for judging.

The judges will be looking for entries that clearly communicate science ideas, use appropriate inquiry skills and that the technical language is appropriate for the age level of the entrants. Refer to the Australian Curriculum for details of the Science Inquiry Skills expected by students in each age grouping.

Category 1: Research Investigation - Years 7-12

Entry guidelines

Tick that you have satisfied each of the requirements below.

Content

Your entry should include:

- entry label attached to the top right-hand corner of title page
- written report following the headings described below
- Risk Assessment Form
- Supervising Scientists Form (if required)
- Human Subject Permission Form (if required)

Your report format must include at least the following parts.

- Title page and Table of contents**
- Abstract** - *Give a brief description of what you did and what you achieved.*
- Introduction** - *This must be relevant to the topic and explain why you chose this topic. It must define key terms and provide some background information as well as answering the question "What were you looking at?" Some information from your background reading would be useful. This could be in the form of a literature review.*
- Aim** - *This must give a clear indication of your investigation. Include your hypothesis.*
- Materials** - *List or describe the equipment you used to carry out your experiment.*
- Method** - *Presentation of the method should allow someone else to follow your experiment step by step. Method should report what was actually done, not what you should do. Include any mistakes. Remember to include a description of the safety precautions you used to conduct the experiment. For example, "because the chemicals were corrosive, we wore safety glasses".*
- Results** - *Present your results in an easily understood format which may include tables, graphs, photos, maps and descriptions. All information should be clearly labelled. Where possible, results should involve measurement. Avoid subjective results such as those involving likes and dislikes.*
- Discussion** - *Analyse what your results show. Discuss the implications and validity of your results. Did your results support or disprove your hypothesis? What problems did you encounter? How could you improve on your experimental design or data collection? What errors could you have made? Reflect on unexpected results.*
- Conclusion** - *The conclusion must relate to the aim. Has the hypothesis been supported or disproved?*
- Acknowledgements and references** - *All research is based on some background information therefore a reference list must be included. You should list the books, journals and websites you referred to and the people who gave you help or advice.*

Presentation

- When your report is finished ask your teacher or parent(s) to check your report to make sure it follows the guidelines.
- Your report should be typed on single sided A4 paper and stapled in the top left corner. The whole report may be placed in a plastic sleeve for protection. Do not bind or place in a presentation folder.