



## (Lower, Middle and Upper Primary Divisions)

### Experimental research involves:

1. Choosing and defining a topic. Pick a topic that interests you. Does not need to be based on this year's theme.
2. 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 very useful resources. You could also discuss ideas with others familiar with your topic.
3. 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).
4. Investigating your hypothesis. To do this properly you will need to design and carry out experiments in a safe manner.
  - Data logging equipment can be used to collect data.
  - If able, repeat the experiment a number of times to reduce random errors.
  - Use experimental controls eg. variables, to make results more meaningful.
5. Carefully record 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).
6. Analysing results. What do your results mean?
7. Being prepared to change your original ideas and procedures as you get results which may be unexpected.
8. Working logically through your results so as to support or reject your hypothesis.
9. 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.

### Entries must be electronically submitted:

Project files should be given to your teacher at least a week before the due date.

**Online submission portal closes: 19 July 2020**

## Writing an experimental research report

✓ Tick that you have satisfied each of the guidelines below.

### Entry guidelines

Your report format may be written in passive or active voice but must include the following:

- ☐ **Introduction** - What gave you the idea? How did you get started? Provide some background information on the topic.
- ☐ **Aim** - What you are trying to find out?
- ☐ **Hypothesis** - A scientific guess on what you think will happen based on your initial understanding of your idea
- ☐ **Materials** - List everything used!
- ☐ **Method** - List everything you did, but remember to keep them in order (like a recipe).
- ☐ Describe the **safety requirements** you followed in conducting this experiment. Attach **Risk Assessment Form**, sample provided on page 23.
- ☐ **Results** - Everything you discovered (or found out). Keep a little book (logbook) and record everything as you go. To show all this use graphs, tables, pie charts, photos etc...
- ☐ **Discussion** - Judges pay particular attention to the quality of your discussion. Consider using the following questions as prompts. (Discussion should not be question/answer style)
  - What happened and what did you learn?
  - Did it reflect your hypothesis? Do you think you know why?
  - Did you find any unexpected results? Can you explain this?
  - What problems did you encounter?
  - How could you improve on your experiment or data collection?
- ☐ **Conclusion** - This is a simple paragraph that links back to your aim and hypothesis. Did you find out what you wanted? Was your hypothesis right?
- ☐ **Acknowledgements and References** - Make sure you include a list of people who gave you help/advice and outline the ways they helped you.
- ☐ List any books or websites you used. (See page 23 to reference correctly)
- ☐ When your report is finished ask your teacher or parent(s) to check your report to make sure it follows the guidelines.
- ☐ **Keep a full electronic copy of your work**, including scans of log book etc. See page 23 for naming your file

**All guidelines should be followed to avoid being disadvantaged during judging.**

Students who win major bursaries in the experimental research and inventions sections will be eligible for the **National BHP Foundation Science and Engineering Awards**. You must notify STS if you do NOT want your project forwarded to BHP Foundation Science and Engineering Awards. For more information go to <http://www.scienceawards.org.au>