Bishop Druitt College

Year 10 Science

Student Research Project

2017

Marks allocated: 30% of your NSW Record of School Achievement (ROSA) for Science

The Student Research Project (SRP) is an investigation that needs to be carried out at home as part of your Year 10 Science course requirements. It has been designed so that you can demonstrate to your teacher and fellow students your skills in planning and carrying out a scientific investigation, solving problems and communicating ideas.

Due dates to remember in Term 1, 2017

<table>
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<tr>
<th>Task</th>
<th>Date</th>
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<tbody>
<tr>
<td>Record your hypothesis, variables and risk assessment in your logbook</td>
<td>Week 3, Term 1</td>
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<tr>
<td>Logbook - first check</td>
<td>Week 3, Term 1</td>
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<td>Submit logbook – second check</td>
<td>Week 4, Term 1</td>
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<td>Submit final report (20%) and logbook (5%)</td>
<td>Friday 24 March</td>
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<td>Week 8, Term 1</td>
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<td>Oral presentation in class (5%)</td>
<td>Week 10 &amp; 11, Term 1</td>
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<td>(in class)</td>
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The SRP is made up of 3 parts:

1. Logbook
   - This is a diary of what you did during your scientific investigation. In the logbook you will make rough notes, to-do-lists, draw up plans, record ideas and results. You may include diagrams, illustrations and web site addresses from your research.
   - Each entry should include a date so that you are showing your progression towards a finished product.
   - The logbook needs to be as long as you want (without waffling) but should be at least 1 page long.
   - You may present it in electronic form or written form. It may be decorated beautifully or just roughly written. You will be marked for your content, not your presentation. Your teacher may want you to submit a paper copy if you are using an electronic method of recording. Ask your teacher.
   - This MUST be submitted with your final report.

2. Final Report
   - Set out your report using the following headings:
     - Title
     - Introduction
     - Aim
     - Hypothesis
     - Variables
     - Materials
     - Risk Assessment
     - Method
     - Results
     - Discussion (and data analysis)
     - Conclusion
   - You may complete your final report electronically or hand written. To submit you will be required to print the document and submit in a single A4 page protector. Some teachers may accept electronic versions.
   - This final report scaffold will be helpful.
   - Links that may be of help in completing this:
     - [https://explorable.com/conduct-science-experiments](https://explorable.com/conduct-science-experiments)
3. Oral Presentation

- In Week 10 you will speak (oral presentation) about your experiment to the rest of the class for 2-3 minutes – it’s not as scary as you think! Your teacher will arrange a schedule for the class.
- Make the talk as informative and interesting as possible, detailing your procedure and results.
- Visual aids are a great idea. Bring in things you used for your investigation, display video clips etc.
- Remember to pre-book a laptop and the data projector if you have a digital display.
- Practise at home on your family or in front of the mirror.

SUGGESTED STRATEGIES

STEP 1  Decide on your idea for an investigation

a) You should pick an investigation that interests you (REALLY interests you) to investigate. The best thing to investigate is often something that strikes you as worth doing - something that you have seen and wondered about and you want to look at more closely. You may find something interesting in your science classes, at home, outside or to do with your favourite sport or pastime – yes, even sleeping or eating!

b) Think carefully to decide if your idea is feasible:
- Can it be investigated experimentally – meaning is it scientific?
- Many behavioural investigations will be too difficult for you to test in a valid scientific manner.
- Can you get the materials you need?
- Have you got time to finish it?
- Is it dangerous or cruel?
- Does it depend on the weather (e.g. growing seeds and plants)?

c) Discuss your decision with your teacher before proceeding.

STEP 2  Get started ..... set up a logbook

a) Look in library books, magazines or on the internet to find out more about your idea. Make sure you write down this information, with the reference details, in your logbook. This information should be used in your introduction and will help in your discussion.

b) Record all your ideas, research, failures, changes and progress.

STEP 3  Conduct your investigation

a) Create a risk assessment, get it signed by your teacher BEFORE you start – your teacher will explain this in class. Follow the safety procedures you have identified.

b) Keep careful notes and put your notes straight into your logbook so they are not lost.
c) Use tables and graphs, photographs and video records, where they are appropriate.

d) Record your successes and failures in your logbook— you often learn more from your failures. You may not always get the answer you expect. If you make a mistake or change your mind do NOT erase your previous work from your logbook. Adjust your method if needed.

e) After each experiment, ask “What if ...”, then try it - as long as it’s safe and included in your original approved risk assessment!

f) Be prepared to change your ideas as you get results from your experiments. Record these changes.

g) Repeat to improve reliability. Do each component of the experiment more than once to obtain reliable results. As many times as practical, this may be 5 times, it may be 100 times. Calculate an average when you collect repeated quantitative data.

**STEP 4** Prepare your final report and submit it with your logbook.

Remember to put your name clearly on the FRONT page and include all sections of the report.

**STEP 5** Prepare your oral presentation

**By doing all this you fulfil these syllabus outcomes for your Science course:**

SC5-4WS - develops questions or hypotheses to be investigated scientifically.

SC5-5WS - produces a plan to investigate identified questions, hypotheses or problems, individually and collaboratively.

SC5-6WS - undertakes first-hand investigations to collect valid and reliable data and information, individually and collaboratively.

SC5-7WS - processes, analyses and evaluates data from first-hand investigations and secondary sources to develop evidence-based arguments and conclusions.

SC5-8WS - applies scientific understanding and critical thinking skills to suggest possible solutions to identified problems.

SC5-9WS - presents science ideas and evidence for a particular purpose and to a specific audience, using appropriate scientific language, conventions and representations.
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| **A** (9-10) | • Excellent chronological records kept of activities (including dates)  
• Evidence of thorough planning  
• Appropriate level of difficulty or innovation in topic  
• Variables addressed comprehensively  
• Detailed outline of method with clear evidence of improvement after initial trials  
• Evidence of thorough research with clear links to topic  
• Raw data clearly recorded and well-organised |
| **B** (7-8) | • Thorough chronological records kept of activities (including dates)  
• Evidence of good planning  
• A reasonable level of difficulty in topic  
• Most variables addressed thoroughly  
• Method outlined with some detail and clear evidence of improvement  
• Evidence of thorough research relevant to topic  
• Raw data clearly recorded |
| **C** (5-6) | • Adequate records kept of activities  
• Evidence of planning  
• Experimental design is simple  
• Variables identified  
• Method satisfactory but little evidence of improvements  
• Satisfactory level of research relevant to topic  
• Raw data recorded in simple manner |
| **D** (3-5) | • Some records kept of activities  
• Some evidence of planning  
• Experimental design is simple  
• Variables vague or incorrect  
• Incomplete method with basic suggestions for improvements  
• Rudimentary research relevant to topic  
• Basic raw data collected, presented in simple or disorganised manner |
| **E** (0-2) | • Basic records of activities  
• Little or no evidence of planning  
• Experimental design is overly simplistic  
• Variables not addressed  
• Little or no method with no suggestions for improvements  
• No evidence of research relevant to topic  
• No raw data present |
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| **A**<br>(36-40) | - Excellent planning and presentation of report  
- Excellent method and materials list with appropriate photos and/or diagrams  
- Results accurately recorded over a number of trials in a well-designed table with averages calculated where appropriate  
- Discussion critically analyses trends in data, recognises errors, evaluates the appropriateness of methods used and plausible solutions proposed  
- Well-designed, accurately plotted graph (or appropriate graphic) which conveys the relationship between independent and dependent variables  
- Clear evidence of following safe working practices in risk assessment  
- Aim and hypothesis clearly written and in correct format  
- Conclusion clearly written and relates to aim and hypothesis |
| **B**<br>(30-35) | - Careful planning and well-organised, clear presentation of report  
- Clear method and materials list with appropriate photos and/or diagrams  
- Results accurately recorded over a number of trials in a table with averages calculated where appropriate  
- Discussion analyses trends in data, recognises errors, evaluates the appropriateness of methods used and solutions proposed  
- Accurately plotted graph (or appropriate graphic), mostly well-designed which conveys the relationship between the independent and dependent variables  
- Evidence of following safe working practices in risk assessment  
- Aim and hypothesis in correct format  
- Conclusion clearly written and relates to either aim or hypothesis |
| **C**<br>(20-29) | - Good planning and presentation of report  
- Satisfactory method with appropriate diagrams/photos and complete equipment list  
- Results recorded in a table  
- Discussion recognises errors and proposes limited solutions  
- Graph (or appropriate graphic) included, satisfactory design and plotting  
- Some evidence of safe working practices in risk assessment  
- Aim and hypothesis present but not clearly written  
- Satisfactory conclusion with limited reference to either aim or hypothesis |
| **D**<br>(11-19) | - Satisfactory planning and presentation of report  
- Satisfactory method, either lacking appropriate diagrams/photos or incomplete equipment list  
- Results recorded and organised but not presented in a table  
- Discussion recognises few errors  
- Graph (or appropriate graphic) included but poorly designed and inaccurate  
- Limited evidence of safe working practices but no risk assessment included  
- Aim or hypothesis present but not clearly written  
- Conclusion present but does not relate to either aim or hypothesis |
| **E**<br>(≤10) | - More planning and greater level of completion required in report  
- Limited detail in method, incomplete equipment list  
- Results recorded, but poorly organised  
- Very limited discussion  
- No graph (or appropriate graphic) included  
- Very limited evidence safe working practices, no risk assessment  
- Aim or hypothesis present but has little relevance to the investigation  
- Conclusion absent or very limited without reference to aim or hypothesis |
## Year 10 SRP ORAL PRESENTATION (10 marks)

**NAME: ____________________**

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| **A (9-10)** | • Information is clearly presented in a logical sequence and within the time limit  
• Information is relevant, addresses all aspects of the project and analyses outcomes clearly  
• Voice is well projected and paced with effective modulation and clarity  
• Minimal use of notes, eye contact maintained throughout presentation  
• Visual aids are relevant to topic, varied, used effectively and of excellent quality or innovative  
• Entertaining and maintains the interest of the audience throughout |
| **B (7-8)** | • Information is clearly presented in logical sequence but does not meet time limits  
• Information is relevant and addresses all aspects of the project  
• Voice is well projected and paced with either good modulation or clarity  
• Unobtrusive notes used but still maintained eye contact with audience  
• Visual aids are relevant to topic and excellent quality or innovative  
• Maintains the interest of the audience throughout |
| **C (5-6)** | • Information is presented in a satisfactory method  
• Information is relevant to the topic but covers only some of the aspects of the research  
• Voice projection is adequate and can be understood  
• Notes used, reduced eye contact  
• Visual aids are relevant to topic, good quality  
• Audience shows interest for most of the presentation |
| **D (3-4)** | • Information is minimal but clearly presented  
• Information has some relevance to the topic  
• Voice is poorly projected or difficult to understand  
• Reading from notes only, some eye contact  
• Visual aids are either relevant to topic or good quality or used effectively  
• Of some interest to the audience but does not maintain attention |
| **E (0-2)** | • Rudimentary information presented, presentation is not logical  
• Information is not relevant to the topic  
• Voice is poorly projected and difficult to understand  
• Reading from notes only, no eye contact  
• Visual aids are either not used or irrelevant to topic or of very poor quality  
• Does not maintain the interest of the audience |

**Overall mark for SRP = Logbook & journal + report + oral presentation**