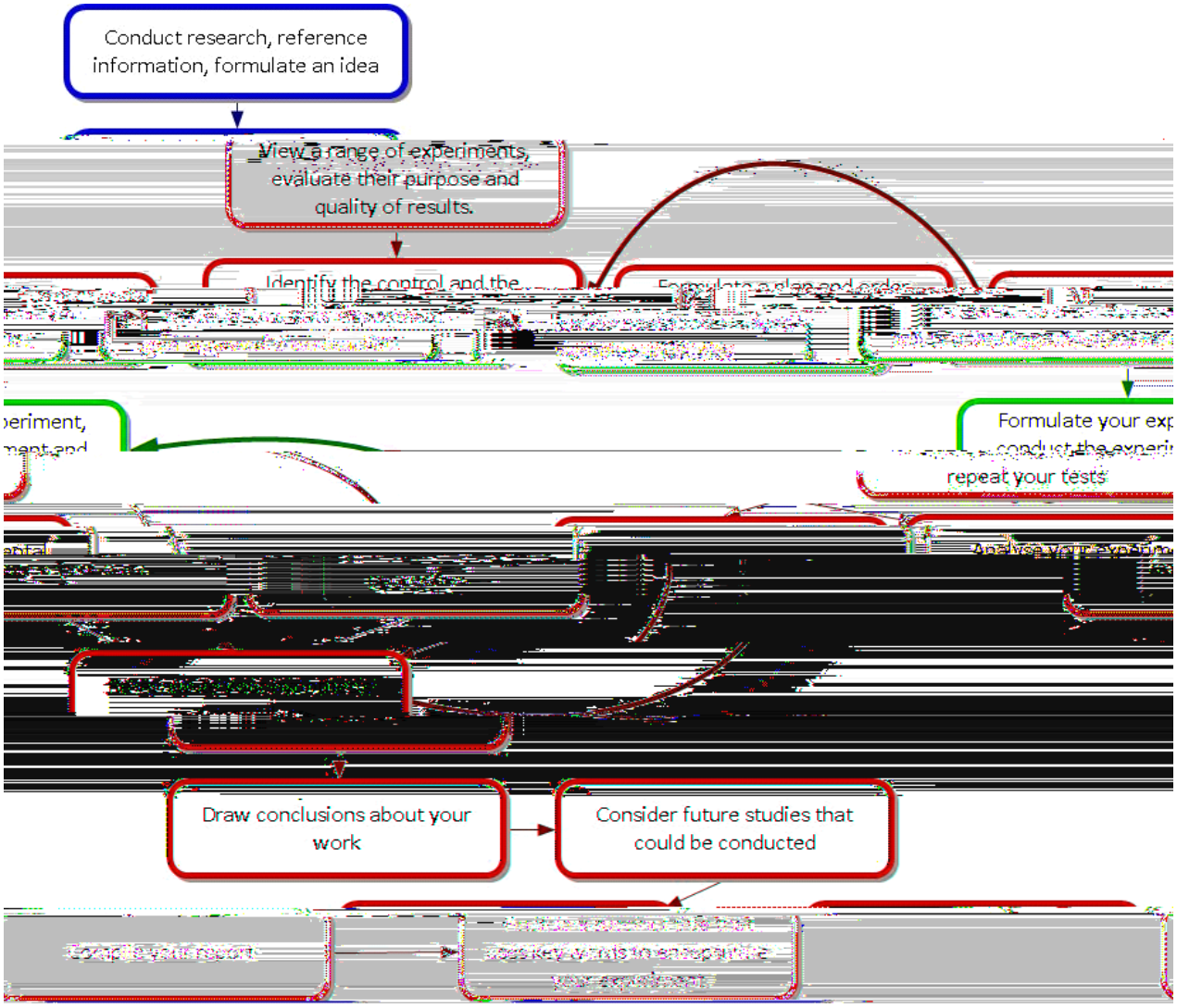
1. Research an aspect of functioning organisms.
   e.g. enzymes, membrane permeability, photosynthesis, cellular respiration.
2. Identify a question about the topic that can be investigated in the laboratory.
3. Propose a suitable Hypothesis.
4. Carry out initial testing to identify your variables and suitable amounts and concentrations.

6. Organise researched background information into an Introduction to your formal report. This must:
   – show the relevance of your investigation
   – acknowledge the prior work of scientists by rigorous in–text referencing
7. Review your testing and your hypothesis and retest any elements that are unclear.
8. Organise your data into a meaningful format. Analyse your results in relation to your hypothesis.
9. Analyse your experimenting technique and attention to safety precautions. Offer advice for future experiments.
10. Conclude your report by relating your data back to your hypothesis and relate your study to future applications.


Conduct research, reference information, formulate an idea
View a range of experiments, evaluate their purpose and quality of results.
Draw conclusions about your work
Consider future studies that could be conducted

A hypothesis is a suggested explanation of a phenomenon, or alternatively a reasoned proposal suggesting a possible correlation between or among a set of phenomena.

It is a formal statement that is designed to provide a potential explanation for something that has been observed. A hypothesis is a potential answer to a question. A hypothesis is supposed to address causes that lead to effects.

Any useful hypothesis will enable predictions by reasoning. It might predict the outcome of an experiment in a laboratory setting or the observation of a phenomenon in nature.

It is essential that the outcome be currently unknown to the experimenter.

When conducting research, remember to select key terms with purpose. Select broad topics and then move into specific search terms.

Initially, complete general research on your topic. You may use general web searches or print material. Read widely on your chosen topic.

Next, visit the Potter Library databases to locate general information and research involving potential experiments.

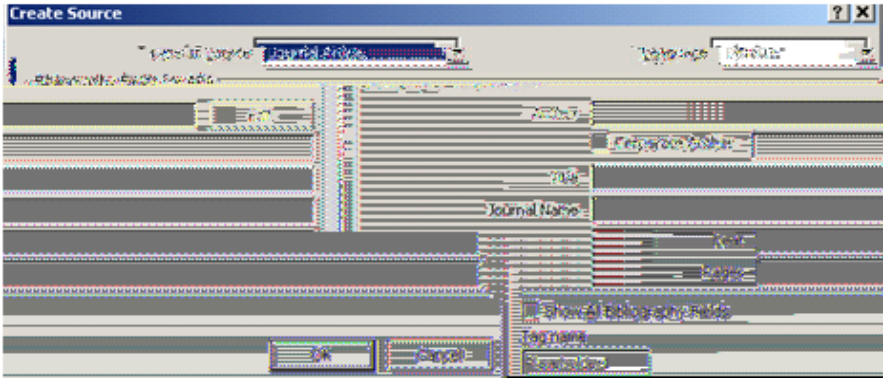
Finally, for more advanced studies usually published in scientific journals, search within http://scholar.google.com.au/. Use the advanced search options to narrow down your results.

- Substrate concentration

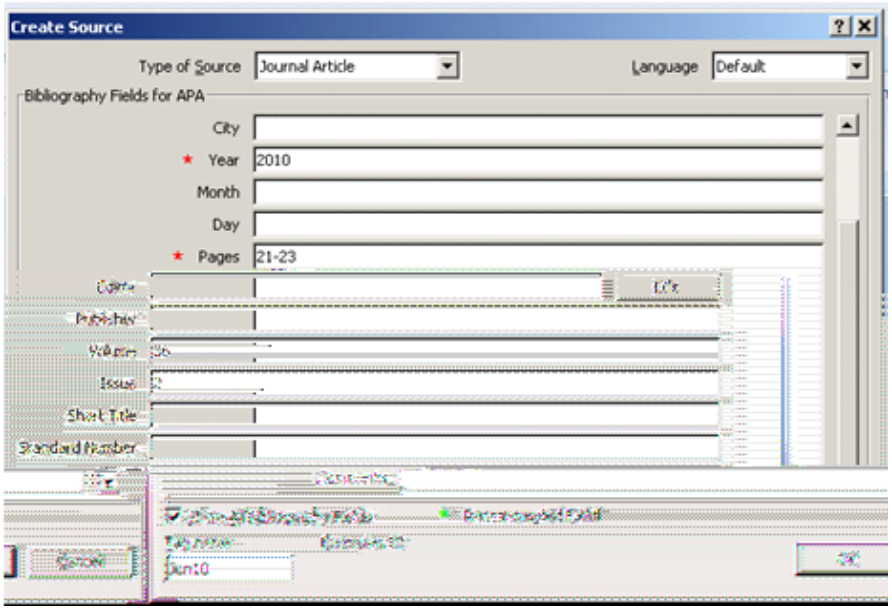
Ask yourself questions like…

1. Where is this enzyme found in organisms?
2. Where is the enzyme made in organisms?
3. What pH and temperature will it then be suitable for?
4. How does the enzyme assist the functioning organism?
5. What happens when the functioning of the organism goes wrong?
6. How can this research be linked to the organism?

Each time you locate a source, create an entry for this source.



You may need to reveal 'All Bibliographical Fields' to record all of the necessary data.



Manage your sources to ensure only those sources referred to in the article are found in the Bibliography. Ensure you update this record before submitting your report.

Spare journal pages

- Record every aspect of your work on this task in your individual journal, including
  - research, planning (even dead-ends!) and all raw results, observations & modifications.
  - Research notes (handwritten information, photocopies of text and/or internet printouts) are to be included in the journal with relevant sections highlighted.

  Note: All information included here must be referenced.

- Don't cross anything out, you might need to refer back to it later.
- Entries should be dated with the date and the number of days into the experiment.
- Include all observations, don't assume you'll remember points and particulars.
- Please note that the journal is expected to be a valid working record.
- The journal is very important in verifying ownership of your work.

Make the title a succinct statement of what is in the report. Try to include significant key words that alert a reader to the content. Practical reports are often submitted without any title at all—don't forget!

(2) have a title that clearly indicates the content of the figure or table;
(3) have a legend that explains all symbols and abbreviations, source of the data, and other pertinent information

Always draw graphs or diagrams using a sharp lead pencil.

This is the good bit. It is here that you get to express the most (followed closely by the Introduction). It is here that you develop your thinking and logic. Your paragraphs should run like this:

> Never start your discussion with your final result – you should be working to prove how you came up with your results.

In this section, it is appropriate to refer back to your aim and introduction. You should state whether or not you have met the initial aim and whether or not your hypothesis was correct. You may wish to lead your experiment on to future research that may be useful or some real life applications of your experiment.

The References section lists the scientific literature you cited in the main text of your report.
When should you cite a reference in your report?

> When you quote directly from the source, or closely paraphrase the source.
> Whenever ideas, facts, or data mentioned in your report are taken from another source.
> Whenever you make a statement of fact or opinion that is not common knowledge, and is not supported by your own data and arguments.

If you refer directly to the source, use the surname and place the date in brackets:
Fisher (1930) was the first to propose a theory for the evolution of sex ratios.
If you refer to the publication indirectly, both author and date go in brackets:
Half a century after Darwin, a theory of sex ratio evolution was proposed (Fisher, 1930).
A citation is part of the sentence it refers to. A full stop goes after the citation, not before.
Right: DNA takes the form of a double helix (Watson and Crick, 1954).

In this section, list all the sources you have cited in the main text with full details. List in alphabetical order according to the surname of the author. Nothing should be in the reference list that is not cited in your report.

The format is: Authors. (date). Book title. Publisher: Place of publication.
Fisher, R. (1930). . Oxford University Press: Oxford.

- Equipment must be ordered on the requisition form.
- It will be your responsibility to organise and store your materials once provided.
- You are expected to clean up after yourself at the end of every session.
- Anything that you need to leave must be clearly labelled with your name and the date to which it is to be kept.
- Store in a place approved by your teacher.
- You may work in groups of up to three people to plan and carry out the investigation but reports and logbooks must be individual.