How to write a 'Scientific Review'

Depending on the competition topic, required tasks and your year level (see your current competition guidelines), you may be asked to write a **'Scientific Review'** to discover what research has already been performed on a specific topic of interest.

Scientists often have a topic or a question that they want to know more about and they conduct experiments that might answer their question. When they have completed their experiments, they write a scientific report to communicate their findings. Usually, these scientific reports (also called scientific articles or papers) can be found in special magazines (also known as scientific journals). Over time, there might be many different people who have conducted experiments and have written scientific reports on a similar topic.

Sometimes, instead of conducting more experiments, or before they conduct a new experiment, scientists go back through the scientific reports of other scientists to see what others have already discovered about a topic. Because they are reviewing reports that are already out there, this type of scientific writing is called a 'scientific review'.

Our DAF scientists write scientific reviews on a regular basis and in order to discover what research has already been done on a specific topic.

We would like you, as Australia's future scientists and agriculturalists, to develop skills in writing a 'scientific review' too!

Imagine you have a bag of puzzle pieces. Without putting the puzzle together you don't know if there are any missing pieces and you also don't know what the final picture on the puzzle is. All the scientific reports that have been written on a topic are a bit like the pieces of the puzzle. Someone has to find all the pieces and start putting them together, so we can find out if there are any pieces missing, but also so we can start seeing the big picture on the puzzle. That is exactly what scientists do when they write a 'scientific review'.

As with most things in science (or life for that matter) there are rules about how to write a scientific review. Like with all scientific methods you should start with a question in mind. Once you are clear on what you want to research you can start searching the internet for scientific reports on the topic you have chosen. You often can't read absolutely everything that is out there, so you will need to select the ones that are best suited to your topic or your question. Often you will find that some scientific reports say one thing and others say a slightly different thing or even the exact opposite! Things are rarely totally clear in science so it is your job to try and truthfully report the different findings and pull them together in a way that tells a story.

1. **Ask a question** - what do you want to find out by studying other people's scientific reports? (eg. What is known about a certain topic? What have most people discovered when they conducted experiments on this topic?).
2. **Search the internet for articles or scientific reports about your question** – find what have other people already written about your topic.
3. **Select the most interesting articles** - select the articles that you think are the best, or most relevant or important in regards to your topic.
4. **Work out what the main findings in each article are and write them down** - try to find out what the main message of each article is and how it answers your specific research question. Write all of these messages down and also make reference to where you found the information or who the researcher was, so your readers know that you aren't making it up.
5. **Try to write a story that talks about the big picture of the puzzle** - when you think about all of the findings you have now discovered and put together, can you see a story or a big picture shining through? Has an answer to your research question at the start been found?
6. **Create a bibliography** – at the end of your story list all the articles or websites that you used so the readers of your 'scientific review' can go and read those articles if they want to know more about it for themselves. (Details on how to assemble a bibliography are on the next page).

Example of a 'scientific review'

http://www.mdpi.com/2504-446X/1/1/2

(Click on 'view full text' or 'download pdf' to see the complete scientific review)

What is a bibliography?

A bibliography is a list of the sources you used to get information for your report. It is included at the end of your report, on the last page (or last few pages).

You will find it easier to prepare your final bibliography if you keep track of each book, encyclopaedia, or article you use as you are reading and taking notes. Start a preliminary, or draft, bibliography by listing on a separate sheet of paper all your sources. Note down the full title, author, place of publication, publisher, and date of publication for each source.

When assembling a final bibliography, list your sources (texts, articles, interviews, and so on) in alphabetical order by authors' last names. Sources that don't have authors (encyclopaedias, movies) should be put into alphabetical order by title. There are different formats for bibliographies, so be sure to use the one your teacher prefers.

General guide to formatting a bibliography

For a book:
Author (last name first). Title of the book. City: Publisher, Date of publication.
EXAMPLE:
Dahl, Roald. The BFG. New York: Farrar, Straus and Giroux, 1982.

For a magazine:
Author (last name first), "Article Title." Name of magazine. Volume number, (Date): page numbers.
EXAMPLE:
Jordan, Jennifer, "Filming at the Top of the World." Museum of Science Magazine. Volume 47, No. 1, (Winter 1998): p. 11.

Newspaper article:
Author (last name first). "Article title." Name of newspaper (Type of medium), city and state of publication. (Date): If available: Edition, section and page number(s). If available: publisher of medium, version, date of issue.
EXAMPLE:
Stevenson, Rhoda. "Nerve Sells." Community News (CD-ROM), Nassau, NY. (Feb 1996): pp. A4-5. SIRS, Mac. version, Spring 1996.

Online Resources:
Internet:
Author of message, (Date). Subject of message. Electronic conference or bulletin board (Online). Available e-mail: LISTSERV@ e-mail address
EXAMPLE:
Ellen Block, (September 15, 1995). New Winners. Teen Booklist (Online). Helen Smith@wellington.com

World Wide Web:
URL (Uniform Resource Locator or WWW address). author (or item's name, if mentioned), date.
EXAMPLE: (Boston Globe's www address)
http://www.boston.com. Today's News, August 1, 1996.