



Writing a scientific review article

In this activity, students write an article, paying particular attention to the structure, content, language and format used. This activity should be carried out in conjunction with 'Writing an abstract' and 'Compiling a bibliography', with 'Evaluating scientific writing' presenting an opportunity to evaluate the work.

Outcomes

Students will be able to:

- use their knowledge of the structure of scientific review articles to write a review on a topic
- identify relevant sources of information to complete the task.

Time required

30 minutes class time plus several homeworks (additional class time may be required for reflective discussions at various points as discussed in the outline of the activity).

Outline of the activity

Explain that a review is a scientific paper that draws together the findings of a range of researchers who have published their work in various different publications.

Depending on the ability of the group, you could set this task as a self study approach to the topic, or you may decide to do some initial teaching beforehand. In either case, the task helps students to apply their knowledge and understanding of stem cells and their uses.

The in-class element of the task gives a chance to brief the students on what they need to do. Student briefing sheet 1 gives information regarding the formatting, structure and content of the article. Briefing sheet 1 details a suggested structure that students could use for their article. Briefing sheet 2 contains a brief for the article. Briefing sheet 3 provides explicit instructions on how to improve work through redrafting, and briefing sheet 4 is a sample feedback letter from the editorial board. These are provided as Word documents so you can tailor them to your needs.

Hold short, reflective discussions with the class at certain points, such as:

You could allocate a group of students to be an editorial board to feed back to the rest of the class; you could be the board yourself, or you could split the class into two, so each student both writes and reviews as part of a board.

Hold short, reflective discussions with the class at certain points, such as:

1 After the completion of research

Where did students look? What did they find? Did they have any problems? Do they need to do more research? Have they kept a record of their sources?

2 After completing their plan

Have students covered all the points? Do they have adequate information about each area to write their report? Do they need any guidance before attempting the first draft?

3 After writing their first draft

What is good about students' work? What do they need to do to improve? (This could be done using peer assessment, using an 'editorial board' but you may prefer to do this later, as part of 'Evaluating scientific writing'.)

Tips and strategies

See next page



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Tips and strategies

In an ideal world, different students would write reports on different aspects of the topic. But teachers will probably prefer to keep all students focussed on one area. However, you could invite students to write a report on one aspect of a topic, and compile the articles to form a class journal.

Point out to students that scientific articles can take the form of research papers or reviews. Research papers give details of research to address a specific question, describing the methods used, the results of the research and the conclusions drawn. Review papers draw on a range of sources, normally research papers, to present an overview of a field or a topic. The article students are writing is akin to a review.

A-level students are not in a position to write a genuine review article, but they should aim to be as formal as possible in their approach. Students will have written a whole range of reports during their education up to this point, and they should reasonably be expected to produce work of high quality. But some students will be strong scientists who may lack flair when it comes to writing. This is an opportunity to help them develop those missing skills.

If using the briefing sheet, you may wish to remove some of the guidance to increase the demand of the activity to stretch more able students.



Writing a scientific review article: briefing sheet 1

The task

The _____ magazine is devoting next month's issue to the subject of Stem cells and their uses.

We are inviting students to send fascinating scientific articles.

Below are the requirements and timetable for articles:

Length of article: 1-2 pages, 1.5 spaces between lines.

Fonts: Main title - Arial 14 point, centred

Sub-title - Arial 12 point, centred

Names of the author, institute and class - Arial 12 point, centred

Article text - Arial 12 point, justified

Right / left margins: 2.5 cm

Bibliography: Attach bibliographic details of sources of information used.

Submission date: Within one week of the date of publication of this invitation.

In order to judge the articles, the paper has drawn up a list of criteria:

a Structure

- the article includes introduction, body and conclusion
- the article title is formatted as above
- there is a clear and logical progression of writing to deliver an argument.
- presentation is enhanced by appropriate use of illustrations.

b Content

- the article presents content that is relevant to the subject
- the scientific content is correct and accurate, and relevant How Science Works issues are discussed.



Writing a scientific review article: briefing sheet 1

- the introduction provokes interest and encourages the reader to read on
- use has been made of relevant and appropriate articles and the information from them.

c Language

- the sentences are concise and clear
- the sentences are written in flowing language
- the sentences are written correctly in terms of language and punctuation.



Writing a scientific review article: briefing sheet 2

Your brief

You are to write an article for a magazine aimed at students of your age. What do you propose would be an interesting article, that is relevant to the study of stem cells and their uses? How many sections would you need? What pictures do you have in mind? How many words?

An Editorial Board should be formed by the class and you need to submit a brief written proposal for your article to the Editorial Board. In your proposal, say how you imagine the article will look and what will be the main content. The Editorial Board will provide initial comment on all proposals. You then complete a first draft of your article as homework.

1 Use several sources of relevant information and write the first draft of your article, including images, within the time agreed.

2 In the second lesson, the Editorial Board reviews the first draft of every submitted article, using the comment sheet provided.

3 It might be useful to discuss the features of a good article, as a class.

4 Redraft your article for inclusion in a class mini-magazine.



Writing a scientific review article: briefing sheet 3

How to improve your drafted work

- 1) Decide whether you prefer editing in hard copy or on screen. Hard copy may allow more of an evaluation of the large-scale changes needed, such as moving large chunks of text around. But, having done this, you may find it easier to make the changes you think are needed electronically.
- 2) Look back at the brief you were given. Have you addressed the question(s)? Have you given an overview as well as detail? Have you got the balance right - with the right amount of emphasis on what you think is really important?
- 3) Collect, consider and act upon comments from teachers or other students about your work. Incorporating reviewers' comments is part of a professional writer's work; comments should be very gratefully received!
- 4) Check that there is no plagiarism.
- 5) What sort of piece are you writing? Who is your audience? Make sure that your approach is right for this.
- 6) Review the structure of the entire text. Move sentences or whole paragraphs so ideas link together through the document.
- 7) If your piece includes diagrams or other images, check that you have referenced them correctly if they are not your own work. In any case, ensure that they add to what you have to say, and that you refer to them accurately in the text.
- 8) Upgrade your work by considering individual statements and arguments. Can they be strengthened? Could you provide more evidence to back them? Is any data provided summarised effectively? Are there any alternative interpretations of the data? Have you provided references to sources you are using or quoting? (see plagiarism above).
- 9) Make sure headings reflect the structure of your piece and way ideas are presented. Make sure they are at the correct level.



Writing a scientific review article: briefing sheet 3

10) Check that scientific terminology is used correctly

11) Improve the quality of the text. Read aloud to help highlight phrases which are unclear due to problems with the way ideas are expressed or with punctuation. Often short sentences are more effective than long ones. This stage should produce text which is clear, concise and correct. Check for grammatical errors and clumsy repetition of words or phrases, and for mistakes in punctuation and spelling.

12) Have you been given any instructions about the formatting of your work, such as typefaces or type sizes? If so, make sure you follow this.



Writing a scientific review article: briefing sheet 4

A letter from the Editorial Board

Article title: _____

Written by: _____ Date: _____

We have read your article, and this is our feedback:

The article is accepted for the newspaper as is.

Slight changes are required before the article is accepted
by the magazine (the changes are marked in the body of the article)

The content of the article is good, but it is not presented clearly
and the reading does not flow. Please rewrite the article in
accordance with the attached comments and resubmit it for review.

The article is too thin on content - please supplement the article and
resubmit it for review.

Comments:

Name(s) of reviewer(s): _____ Date: _____