

HOW TO WRITE A SCIENTIFIC ESSAY?



Scientific research is exciting but is also demanding! A lot of information is **gathered** and **analyzed** to effectively communicate ideas, findings and arguments in a well structured manner. Scientific research explains how science and society affect each other through many **factors**, hence it plays an important role in society and contributes to the advancement of humanity. It's important to use logically **consistent** arguments and to put an emphasis on **evidence** to ensure the **authenticity** of the scientific text.

In order to develop your science writing **skills**, follow the checklists below to produce your **best work**.

Essay Sections:

The section headings should be **centered** and the body of the text should follow immediately below the heading. ***Do not begin each section on a new page***, except for the Title Page and the Works Cited.

1. Introduction
2. Problem
3. Solution
4. Factor
5. Conclusion
6. Works Cited

Avoid using personal pronouns such as “I”, “you”, “we”. Try to use “one” or the passive.

e.g. *“In order to achieve these results, one should be very careful with the measurements ” Or “These results were achieved because measurements were carefully taken*

The font is also important so use Calibri. In a scientific text Comic Sans is NOT appropriate. Use the font size 12, double line spacing, and number the pages, so your teacher doesn’t find it difficult to read the text. Include **primary** and **secondary** sources.

Primary: original documents from someone who witnessed the event

Secondary: a document written by an expert who didn’t experience or participate in the event you are researching about.

Check these elements in the box once you have added them to your title page.

Heading (on the first page)

- First Name, last name (nickname)
- Ms. T Cantillo
- Year Level and class
- Date submitted: e.g. 15 November 2016
- On the header: last name and page #

1 - Introduction



In the introduction, lead the reader to the theme of the essay while showing your understanding of the topic. Explain the meaning and the relationship between the keywords that relate to your topic. You can also state questions regarding this topic, which leads the reader to be excited about reading your work. Support your ideas with at least 2 in text citations and do not forget to use the present tense.

Example of an introductory question: **How does the study of physical or chemical reactions help in the development of society?**

For this section, include **COMPARE** and **CONTRAST** sentences.

Example:

Golden Eagles are apt (able) to hunt for prey **while** Bald Eagles are more likely to take an easy meal.

You can use these transition words to compare and contrast the physical and chemical property keywords which your teacher has given you in class: *"conversely", "however", "even though", "despite", "although", "when comparing the two"*

Introduction checklist:

Check these elements in the box once you have added them.

- Do you have a good question?
- Add at least 4 keywords to your introduction and justify why they are relevant to the essay.
- Introduction is in the 'present tense'.
- 2 in text citations supporting your ideas.
- Use 2 transition words from the green box.

2 - Problem



Describe the problem in a very **detailed** way. Do not use words such as “great”, “awesome”, “sad”, etc. Use graphics, charts, numbers, **quantitative data** for **statistics** to support your problem.

Answer the questions below for a detailed description of your problem:

- (1) What causes the problem?
- (2) How does the problem affect the individual?
- (3) How does the problem affect society on a local/global scale?
- (4) How does the problem affect the environment?

A.C.E.

Answer the question

Cite evidence to support your answer (examples)

Explain how your examples prove your answer

For this section, include **CAUSE and EFFECT** sentences. **Example:**

Many Bald Eagles were killed by pesticides and illegal hunting **that** they were in danger of becoming extinct.

Other words: “so”, “because”, “under these circumstances”, “for this reason”, “in effect”, “consequently”, “therefore”...

Problem checklist:

- You have answered the questions above on what causes the problem (1), how does it affect the individual (2), society (3), and the environment (4).
- Problem section is in the ‘present tense’.
- 3 in text citations
- Use 3 cause and effect sentences.
- Quantitative data.
- If you use a table, the source goes below the table, not in the works cited

Check these elements in the box once you have added them to your essay.

3 - Solution



The solution for the problem needs to be science based, a solution developed from scientific knowledge. Form a **balanced review, clearly supported by evidence** of the **positive and negative effects** of using science in order to solve the problem. Use graphics, charts, numbers, quantitative data to support your ideas.

Answer the questions below for a detailed description of your solution:

- (1) How was the solution developed? By who?
- (2) Which ATL Skills were used to develop the science based solution?
- (3) How does the solution work?
- (4) How effective is the solution? What are its limitations?
- (5) How does the solution impact individuals and society on a local/global scale?
- (6) Are there any negative effects which derive (come) from the solution?

A.C.E.

Answer the question

Cite evidence to support your answer (examples)

Explain how your examples prove your answer

For this section, include **PROBLEM and SOLUTION** sentences. **Example:**

When a raptor species declines, scientist take wild bird eggs to raise in captivity and increase the number of birds.

Other words: *“as a result”, “in effect”, “then”, “firstly”, “secondly”, “in fact”, “to clarify”, “since”...*

Solution checklist:

- Answered the questions above: how was the solution developed (1), how does it work (2), how effective is it? what are its limitations? (3) impact on individuals and society (4), possible negative effects (5).
- Is in the ‘present tense’?
- 3 citations support your ideas.
- 3 problem and solution sentences.
- Quantitative data
- If you use a table, the source goes below the table, not in the works cited

Check these elements in the box once you have added them..

4 - Factors



Choose ONE of the factors below and justify how it affects or is affected by your science based solution. Remember to only explain how the science based solution affects the factor, not the problem.

- (1) How and why is the solution affecting this factor?
- (2) How does the solution positively and negatively affect the factor?
- (3) Why is it important to consider the factor when developing the solution? How does the factor help us to determine if the solution is in fact tailored to the needs it's addressing?
- (4) How does the factor impact individuals and society on a local/global scale?

Economic (production, distribution and use of income, wealth, commodities)

Environmental (circumstances, objects, nature)

Social (society and its members)

Moral (personal beliefs)

Ethics (society's beliefs)

Cultural (traditions, language, customs, values, goals)

Political (government, law, public affairs, policies)

For this section, include **transition** words such as: "which proves that", "which leads to", "based on", "that is why", "what follows from this is obvious", "is a consequence of", "consequently", "so"...

Factor checklist:

- Answered the questions above: how the solution affects a factor (1), why (2), why is it relevant for the analysis of the solution (3) and how does the factor impact individuals and society (4)
- 'present tense'
- 2 transition words from the green table above.
- Quantitative data.

Check these elements in the box once you have added them.

5 - Conclusion



In your conclusion, answer the question of your introduction, based on your research. Conclusions usually start with the following words: *"In conclusion", "To summarize", "Overall", "In brief"*, etc. You should have a brief summary of your main ideas, justify the title of your essay and try to make the reader remember your words.

Check these elements in the box once you have added them.

Conclusion checklist:

- Started with one of the words in green above.
- Answered the question in the introduction.
- Summarized the main ideas.

ATL Skills List

- 1- **Communication Skills** (are you a better communicator? Why?)
- 2- **Collaboration Skills** (did you develop better ways to work with others? How?)
- 3 - **Organization Skills** (did this assignment provide you with opportunities to be more organized with your time?)
- 4- **Affective Skills** (was this research very stressful? How did you overcome stress? were you able to motivate yourself and persevere (overcome difficulties by not giving up when things went bad)?)
- 5- **Reflection Skills** (do you think you have become a better learner during this research? Why?)
- 6- **Information Literacy Skills** (was it easy to research this topic? How?)
- 7- **Media Literacy Skills** (where did you get the information from? Are you sure you got it from a reliable source?)
- 8- **Critical Thinking Skills** (Do you think you have analysed this issue in-depth? Why?)
- 9- **Creative Thinking Skills** (Were you innovative in your ideas? How?)
- 10- **Transfer Skills** (can you use the knowledge you have acquired in different subjects or in your personal life? Justify.)

6 - Works Cited

Check if ALL the references follow the MLA 8 Style by using EasyBib. Talk to Ms Kathy about this if you have any questions, her email is kathyf@concordian.ac.th. Make sure they are in their own page, alphabetized and the title for this page **Works Cited** is on top of the page and centered.

MLA 8 Style - All Double-Spaced - 12pt Calibri Font -
No Colors No Bold

Jones 1

Works Cited on
separate page Title
centered Exported
to GoogleDocs from
EasyBib

Works Cited

Douglas, Mary. "Taboo." *Man, Myth & Magic*, edited by Richard Cavendish,

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21 vols, New York, Cavendish, 1994, pp. 2546-2549.

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