

How to Write Scientific Papers and Essays A General Guide

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by

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Scientific Writing

In science the credit goes to the man who convinces the world, not to the man to whom the idea first occurs.

- Sir Francis Darwin

Impact of Career

- **How well you communicate affects your career**
 - **Successful scientist spent 25% of work week writing (Davis 1997)**
 - **Professional scientists found writing their most useful subject (University of Wisconsin)**
 - **MSU CANR Alumni need most work on their writing (Suvedi, 2001)**

Writing Stages

1. Getting in the Mood



2. Writing the First Draft



3. Revising, Revising, Revising



4. Finishing



Components of a Paper

Section	Purpose
Title	Clearly describes contents
Authors	Ensures recognition for the writer(s)
Abstract	Describes what was done
Key Words (some journals)	Ensures the article is correctly identified in abstracting and indexing services
Introduction	Explains the problem
Methods	Explains how the data were collected
Results	Describes what was discovered
Discussion	Discusses the implications of the findings
Acknowledgements	Ensures those who helped in the research are recognised
References	Ensures previously published work is recognised
Appendices (some journals)	Provides supplemental data for the expert reader

Authors Listing

- ONLY include those who have made an intellectual contribution to the research
- OR those who will publicly defend the data and conclusions, and who have approved the final version
- Order of the names of the authors can vary from discipline to discipline
 - In some fields, the corresponding author's name appears first

Title

- Describes the paper's content clearly and precisely including keywords
- Is the advertisement for the article
- Do not use abbreviations and jargon
- Search engines/indexing databases depend on the accuracy of the title - since they use the keywords to identify relevant articles

Abstract

- **Briefly** summarize (often 150 words) - the problem, the method, the results, and the conclusions so that
 - The reader can decide whether or not to read the whole article
- Together, the title and the abstract should stand on their own
- Many authors write the abstract last so that it accurately reflects the content of the paper

See: The Structured Abstract: An Essential Tool for Research

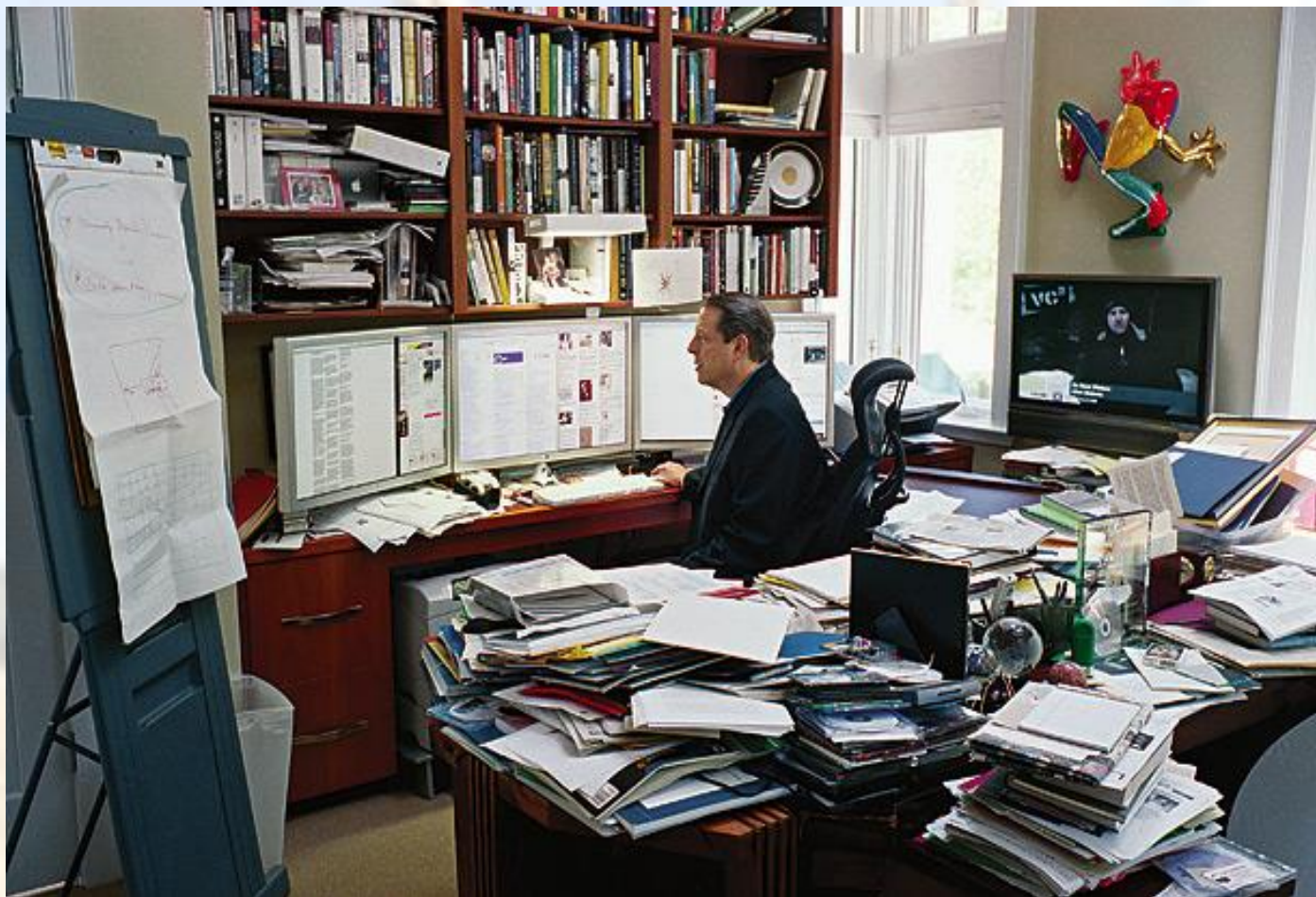
http://research.mlanet.org/structured_abstract.html

Introduction

- Clearly state the:
 - Problem being investigated
 - Background that explains the problem
 - Reasons for conducting the research
 - Summarize relevant research to provide context
 - State how your work differs from published work
 - Identify the questions you are answering
 - Explain what other findings, if any, you are challenging or extending
 - Briefly describe the experiment, hypothesis(es), research question(s); general experimental design or method
-

Methods

- Provide the reader enough details so they can understand and replicate your research
- Explain how you studied the problem, identify the procedures you followed, and order these chronologically where possible
- Explain new methodology in detail; otherwise name the method and cite the previously published work
- Include the frequency of observations, what types of data were recorded, etc.
- Be precise in describing measurements and include errors of measurement or research design limits



Gerald had begun to think that his methodology was too detailed.

Results

- Objectively present your findings, and explain what was found
- Show that your new results are contributing to the body of scientific knowledge
- Follow a logical sequence based on the tables and figures presenting the findings to answer the question or hypothesis
- Figures should have a brief description (a legend), providing the reader sufficient information to know how the data were produced

Discussion/Conclusion

- Describe what your results mean in context of what was already known about the subject
 - Indicate how the results relate to expectations and to the literature previously cited
 - Explain how the research has moved the body of scientific knowledge forward
 - Do not extend your conclusions beyond what is directly supported by your results - avoid undue speculation
 - Outline the next steps for further study
-

References

- Whenever you draw upon previously published work, you **must** acknowledge the source
- Any information not from your experiment and not ‘common knowledge’ should be recognized by a citation
- How references are presented varies considerably - refer to notes for authors for the specific journal
- Avoid references that are difficult to find
- Avoid listing related references that were not important to the study

Harvard Reference Style

Uses the author's name and date of publication in the body of the text, and the bibliography is given alphabetically by author

- Adams, A.B. (1983a) Article title: subtitle. Journal Title 46 (Suppl. 2), 617-619
- Adams, A.B. (1983b) Book Title. Publisher, New York.
- Bennett, W.P., Hoskins, M.A., Brady, F.P. et al. (1993) Article title. Journal Title 334 , 31-35.

Rules of academic writing

- An academic text not a narrative-it is an argument.
- Formal, logical, cautious & unemotional language.
- No slang, jargon, personal anecdotes, colloquisms, exclamation marks & contractions ('e.g. can't').
- Clear, succinct writing.
- Make your claims tentative rather than definite - it's unlikely that you've reached the only possible conclusion!
- Words which signal tentativeness include: may; might; possibly; in some instances; often; in many cases
- A % of the overall mark will be awarded for clear, accurate writing & referencing & the converse also true.

Rules of academic writing

- **Not 1st person** (I and my).
- **3rd person** only–
 - ‘this writer’ believes that’...
 - ‘this student’s experience has been’...
 - It is believed...
 - Many researchers have noted...
 - Some writers have stated..
 - The research suggests...
 - The evidence indicates...
 - It will be argued that ...

This essay will critically examine the process leading to....

Primary & Secondary Sources

- Where possible, use original/primary sources – e.g. Benner (1984)
- When this is not possible & you are using a secondary source, you should use the term ‘cited by’ in text followed by the reference in which it is quoted
e.g.
Fraser (1990), cited by Walsh (1998), suggests that there is no empirical evidence to support the ‘activities of living’ model of nursing.

Rules of academic writing

- ‘Times New Roman’ script, size 12 font.
-
- Double-spaced between lines.
-
- One side of page only & number pages.
- 3 cm. margins at top, bottom, right & left of page.
- **Word Count:** all words from beginning of introduction to end of conclusion.
- Title Page, References List & Appendices not included in word count.
- Penalties for under/exceeding word limit.

Referencing

Harvard System of Referencing:

- Alphabetical order – by author's surname
- Names & dates cited in the text & then listed at the end.
- Year of publication in brackets after the author's name.
- Titles of books/journal names in italics.

Referencing within the Text

- Give the surname of the author, followed by the year of publication e.g. - One researcher, (Ensign 2006), found that.....
- Two writers – Holloway & Jones (2005) believe that....
- Three or more writers - give the surname of the first author followed by *et al.* e.g. Campbell *et al.* (2001). All the authors' names must be given in the reference list.

Referencing a journal article in the References List

Must include:

- Author(s) surname, followed by initials.
- Year of publication, in brackets.
- Title of the article.
- Title of the journal, in capitals and in italics.
- Volume or series number. Edition number - only if each issue is numbered separately.
- The number of the first and last pages of the article.

Ensign J. (2006) Perspectives and experiences of homeless young people. *Journal of Advanced Nursing*, **54**, (6) 647-652

Referencing a book in the References List

Include the following:

- Author(s)' surname, followed by initials. Year of publication in brackets.
- Full title of the book, capitalised, in italics.
- Edition of work, if more than one edition. Volume number, if more than one volume.
- Name of publisher.
- Town/city of publication.

e.g.: Burns T. & Sinfield S. (2008) *Essential Study Skills: The Complete Guide to Success at University*. Sage:
London

Quoting in text

- ✓ Froman (2008) believes that nursing is a theory- driven, scientifically based profession, that is actualised through clinical practice (*paraphrasing*)
- ✓ Page number & double quotation marks when directly quoting e.g. Wynd (2003:251) stated that “today’s profession of nursing is evolving as a valuable public service” (*verbatim*).
- ✓ Quotations of 2/more lines must be indented & single-spaced:

The more skilled the nurse becomes in perceiving and empathising with the lives of others, the more knowledge or understanding will be gained of alternative modes of perceived reality. (Carper 1992: 219).

Use of literature-showing knowledge & understanding

- Direct quotes should be used sparingly, as they involve little mental processing.

e.g.

According to Johnson (1990), nursing is:

...an external regulatory force that acts to preserve the organisation and integration of the patient's behaviour at the highest possible level under those conditions in which the behaviour constitutes a threat to physical or social health or in which illness is found.

(Johnson 1990:29)

Use of literature-showing knowledge & understanding (cont.)

- A better approach – **paraphrasing** -involves more interpretation.

Choose a linking word between the author you are citing & a summary of what was said:

e.g. ‘Jones (2004) defines/explains/ believes/suggests/indicates/argues/states...’

- Simply a statement – ‘states’, a suggestion- ‘suggests’, personal belief- ‘believes’, an argument- ‘maintains’ or ‘argues’.

References List

Burns T. & Sinfield S. (2008) *Essential Study Skills: The Complete Guide to Success at University*. Sage: London.

Bysshe J. (2006) *Guidelines on Academic Writing for Thames Valley University*, TVU Press.

Campbell T., Draper S., Reid J. & Robinson L. (2001) The management of constipation in people with advanced cancer. *International Journal of Palliative Nursing* **79**, (3), 110-119.

Ensign J. (2006) Perspectives and experiences of homeless young people. *Journal of Advanced Nursing*, **54**, (6) 647-652

Holloway S. & Jones V. (2005) The importance of skin care and assessment. *British Journal of Nursing* **14**, (22) 1172-1176

Johnson A. (2003). Essence of caring for a person dying. *Nursing and Health Sciences*, **5**, 133-138

Plagiarism

- ‘Literary theft’ & unacceptable.
Plagiarism is the use of ideas, quotations, pieces of text, pictures, tables, graphs/other work, without referring to original writer.
- Contravenes UCD’s examination regulations & regarded as very serious offence.
- Every piece of course work submitted requires a signed form to confirm that the work is your own.

Plagiarism

Academic Integrity & Intellectual Property

- Academic integrity is respect for the intellectual community in which you are participating as a student & the standards governing it.
- This means that you are accountable for the honesty and the quality of the work that you submit.
- The rights of intellectual property must be respected by properly acknowledging the original author's ownership of any words, phrases & ideas that are used in academic writing.
- Plagiarism in writing is the incorrect use of source material. **Whether intentional or not**, failing to give credit for words, ideas or concepts that you get from any source, including your own previously submitted work, is plagiarism.

Plagiarism

As a student, it is your responsibility to know and understand the University's policies on academic fraud. The rules apply whether the offence is intentional/not.

Plagiarism comes in many forms:

- Using an author's words/ideas without proper reference
- Failing to put quotation marks around words taken from a source.
- Falsifying/inventing information or data
- "Cutting and pasting" from the Internet

Avoiding plagiarism requires 2 skills:

- 1) using source material correctly,
 - 2) referencing that material.
- Any information that you take from another source must be properly referenced, whether it is from a book, a journal or from class notes or lectures.

How to write an essay

- Identify what the essay question/ title is ; check with your module leader if in doubt.
- Divide the task into sub-tasks e.g. library search, planning, making notes & draw up a timescale.
- Brainstorm ideas & make an initial plan for your essay.
- Search for & select appropriate information; read & make notes.
- Make first draft of essay. Remember to include an introduction, a middle and a conclusion.
- Read your essay; alter parts you are not happy with; check spelling and grammar; check References List.
- Write final version, proof read. Submit on time.

How to write an essay

- Sentences should be short, one idea per sentence.
- One main theme per paragraph.
- Section headings are a good idea.
- **Linking** carries the meaning forward from one paragraph to another:
However.....On the other hand.....
Nevertheless.....Conversely.....

Have a copy of the *Student Guidelines* for reference

Introduction

- Explain topic of interest.
- Set out clearly what question (s) you aim to answer.
- Explain structure of paper – answering the questions.

e.g.

To function effectively in today's society, people must communicate with one another. Yet, for some individuals, communication experiences are so unrewarding that they either consciously, or unconsciously, avoid situations where communication is required. The term 'communication apprehension' (CA) was defined as "an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons" (McCroskey 1984: 68). In the last two decades, communication apprehension and related constructs, such as reticence and unwillingness to communicate, have received extensive research and theoretical attention by scholars in communication and psychology. Overwhelmingly, the underlying theme has been the negative effects that these constructs can have on academic and social success. The focus of this paper is on communication apprehension as a construct and on how it affects the behaviour and lifestyle of an individual.

Organisation & coherence

- Identify the key issues that you will be discussing in the essay.
- Provide **definitions** for the key terms that you introduce, (e.g. the nursing process, accountability etc.)
- Focus immediately on the exact requirements of the essay. **No waffle!**

There is **key knowledge, understanding & insight** which are essential in ensuring safe & best practice. Nursing assignments have to be focused on these key issues, because, ultimately, patients' lives may be at risk if you lack this fundamental knowledge.

Main body

- Divided into paragraphs, looking at specific aspects of problem (issue).
- The reader should be able to understand the relevance of each paragraph & how they relate to each other.
- End a paragraph with a mini conclusion and a link to the next paragraph.
- Avoid paragraphs that are too short/ong – min. of 4 sentences per paragraph.

Content

- Must follow assessment guidelines - certain key characteristics, e.g. if the essay requires you to write on professional, legal & ethical issues and you choose only to concentrate on professional & ethical, then you miss key content and & lose marks.
- Also an essential requirement is to apply theory to practice – **integration.**

You need to demonstrate that, not only do you understand the theory, but you understand the extra implications /difficulties of implementing this in practice. (e.g., knowing about the dangers of smoking is a different issue to actually empowering a patient to give up smoking for the good of their health).

Conclusion

This should:

- Be a summary of your main results what you believe are the most important points.
- Do not simply write what you have done.
- Explain the significance of your conclusions & provide suggestions for future research.
- Leave the reader with a sense that the purpose of the paper as set out in the introduction has been achieved.
- e.g. *‘In conclusion, this essay examined the needs of a patient with congestive cardiac failure and discussed the Activities of Daily Living Model. The patient had many needs and the model identified, concisely, what these needs were. This study, therefore, has highlighted the importance of using an appropriate nursing model to ensure that the holistic needs of patients are addressed, resulting in optimum nursing care and a good experience for both the patient and the nurse.*

Data Statistics

- **World Bank** <https://datacatalog.worldbank.org/>
- **WTO** (World Trade Organisations) www.wto.org
- **USDA** (United States Department of Agriculture National Agricultural Statistics Service) <https://www.fas.usda.gov/data> or https://www.nass.usda.gov/Data_and_Statistics/
- **UN comtrade** (United Nations Commodity Trade Statistics Database) www.comtrade.un.org
- **WASDE** (World Agricultural Supply and Demand Estimates – USDA) <https://www.usda.gov/oce/commodity/wasde/>
- **GLiPHA** (Global Livestock Production and Health Atlas) <http://kids.fao.org/glipha/>
- **FAOSTAT** (Food and Agriculture Organization of the United Nations) <http://www.fao.org/faostat/en/#home>
- **AQUASTAT** <http://www.fao.org/nr/water/aquastat/data/query/index.html?lang=en>
- **CountrySTAT** <http://www.fao.org/economic/ess/countrystat/en/>
- **Fisheris and Aquaculture** <http://www.fao.org/fishery/statistics/collections/en>
- **Gender and Land Rights** <http://www.fao.org/gender-landrights-database/en/>
- **GIEWS** FAO (Global Information and Early Warning System) <http://www.fao.org/giews/en/>
- **AMIS Market Database** <http://statistics.amis-outlook.org/data/index.html>
- **OECD-STATA** <https://stats.oecd.org/> or <https://data.oecd.org/>
- **FAPRI** (Food and Agricultural Policy Research Institute) <http://www.fapri.iastate.edu/tools/> (Commodity and Elasticity Database)
- **IndexMundi** <https://www.indexmundi.com/>

Publication Ranking for Journals in Agricultural Economics

- GEWISOLA-ÖGA Ranking and Rating of 160 best Journals, **order GEWISOLA-ÖGA-JOURQUAL-Indexvalue**

<https://www.uni-hohenheim.de/i410a/publikationsranking/Tabelle%201%20GEWISOLA-OEGA%20Publikationsranking%202009.htm>

- GEWISOLA-ÖGA Ranking and Rating of 160 best Journals **alphabetic order**

<https://www.uni-hohenheim.de/i410a/publikationsranking/Tabelle%202%20GEWISOLA-OEGA%20Publikationsranking%202009.htm>

Sources

- **Reese and Woods (2003), The Craft of Scientific Writing, AEE 804, ANR Communication Strategies, Spring 03.**
- **How to write a scientific paper - A general guide, HINARI, WHO.**
- **Johnson, F. (2008), Essential Academic Writing and Informations Skills. Undergrad.Stage 2 BSc. 12th September 2008.**

Dear Participants!

Thank you for your attention!
**I am ready to answer your questions and
to discuss with you!**