Scientific Style in English

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1 Introduction

Style is a distinctive manner of expression, in writing or speech. The word evolved from Latin for stilus spike, stem, stylus. It is the way in which something is said or done, as distinguished from its substance. Style is also a convention with respect to spelling, punctuation, capitalization, and typographic arrangement and display followed in writing or printing.

2 Scientific Writing

Good scientific writing

Good scientific writing must be scientifically accurate, concise, useful, clear, illustrated with visuals, targeted to a specific audience, well organized, interesting, consistent, complete, correct in spelling, punctuation and grammar.

- Scientific precision – Inaccurate statements destroy the author credibility. On the other hand, the readers make decisions, operate equipment, and draw scientific conclusions based on the information presented.

- Concision – It is important to avoid wordiness caused by:

    - modifiers: *final outcome, completely finished*;
    - coordinated synonyms: *each and every, basic and fundamental*;
    - excess qualification: *perfectly clear, completely accurate*;
    - expletives, relative pronouns, and relative adjectives: *there are ... who ... which*;
    - circumlocution: *a long, indirect way to express the idea.*

    The author must also avoid repetition, pompous language, jargon, and consider that reducing a document is hard work. Blaise Pascal once wrote, "I have made this a long letter because I haven't the time to make it shorter."

- The document must be useful – People read a paper, technical report, or thesis because they intend to use the information in some way. Therefore, each sentence must contain useful information.

- Clearness – Keep the writing short and simple by breaking the text into short sections, and avoid jargon, because unknown terms is a cause of poor communication and also make the text obscure to the readers. Present the story in a logical, orderly fashion, one step at a time. The use of visuals is recommended, and may include: photographs, drawings, diagrams, graphs, tables, and flowcharts.

- Illustrate the manuscript with visuals – Visuals make the document more interesting to the reader. You can use photographs, drawings, diagrams, graphs, tables, and flowcharts.

- **photographs** (show actual physical images of subjects).

- **drawings** (depict real or imaginary objects, and internal parts).

- **diagrams** (show how the components interact and are interrelated).

- **graphs** (show trends and how one variable changes in relation to another).

- **tables** (organize information systematically).

- **flowcharts** (show the parts or steps in a process or system interact).

- You should target an audience – Write to the level of technical proficiency and understanding of the audience.

- Organize the document – Plan, before writing, creating a rough outline that spells out the contents and organization of your document.

- Interest – Your paper competes with many other communications and, therefore, must be lively and lucid, to attract the reader, not dull and boring.

- Consistency – Inconsistencies confuse readers and convince them that your scientific work is as sloppy as your prose. Avoid random and unnecessary capitalization, mixed sets of units of measurement and indiscriminate use of abbreviations.

- Completeness – A complete document tells the readers all they need to know about the topic, but not a word more. Make sure the specification is complete and that no key data is omitted.

- Correction in spelling, punctuation and grammar – This is a key characteristic of every good paper or book.

3 Writing process

A successful writing involves several phases, which include preparation, research, organization, writing and revision. It is important to follow the steps and to adhere to the scope of the work.

Preparation

- Establish the purpose of your document – What should the readers know after they have finished reading the document?

- Assess the audience – Who exactly is the reader or readers? Who needs to see the document? What they do know about the subject?

- Consider the context – Context is the environment or circumstances in which writers produce documents and within which readers interpret their meanings.

- Determine the scope of the coverage – The decisions on what to include and what not to include in the writing define the scope.

- Select the appropriate medium – Decide in what journal or conference to publish your findings.

Research

Research involves the question: What do you know about the subject? Then, you must conduct the research (primary or secondary), create and use questionnaires, if appropriate, interview for information. In the next phase you summarize the information, take notes, document the sources and, of course, avoid plagiarism.

Organization

Organization involves the choice of the best methods of development. Then you should outline your notes and ideas, develop and integrate visuals. It it important to carefully consider the layout and design.

Writing

During the writing phase, select an appropriate point of view, and adopt a style and tone. Use effective sentence construction. Construct effective paragraphs from the outline. Use quotations and paraphrasing, if appropriate for your document. After that, write an introduction for the document, then write an abstract, write a conclusion and choose a title.

Principles of technical communication

If possible, always use the active voice in your document and a plain rather than a complex language. Delete words, sentences and phrases that do not add to your meaning and use specific and concrete terms rather than vague generalities. Use terms your reader can picture. Use the past tense to describe your experimental work and results, but, in most other writing, use the present tense. Break your writing into short sections to facilitate the perusal of the document.

Revision

During the revision process, check for unity and coherence, verify sentence variety, emphasis, and subordination, check for ambiguity, awkwardness, and verify logic errors:

- lack of reason is when a statement is contrary to the reader's common sense.

- sweeping generalizations are statements too broad to be supportable.

- *non sequitur* is a statement that does not logically follow a previous one.

- false cause refers to the logic fallacy that because one event followed another one, the fist event caused the second.

- biased or suppressed evidence is both illogical and unethical.

- facts, which are verifiable, versus opinion.

- a loaded argument occurs when a conclusion is based on an opinion.

Aim at positive writing, consider ethics, copyright, avoid biased language and plagiarism. Verify appropriate word choice, affectation and jargon, do not use vague words (*real, nice, important, good, bad*), and clichés (*last but not least*). Minimize the problems with grammar. Review punctuation, abbreviations, capitalization, contractions, dates, italics, number and measurement units, proofreading, and spelling.

4   Writing an Article

Parts of the document

- Title, authors and affiliations – Capitalize the initial letters of the words of the title, except articles (a, an, the), coordinating conjunctions (and, but), or prepositions (to, at, into) unless they begin or end the title.

- Abstract – Highlight and summarize, in 50 to 200 words, the major points of an article. This is the base for researchers to decide whether to read your article. It must be readable apart from the the original document.

- Keywords – Three to five words related to the main theme of the article.

- Introduction – Point out the purpose of the paper, define the problem examined, and present the scope of the article.

- Methodology – Discuss previous work in the field, the rationale of the approach to the problem and the reason to reject alternative approaches.

- Results – This section contains the main results of the research.

- Discussion – An optional section with a discussion of the main results, commonly used in Medicine and Biomedical articles.

- Conclusions – This section interprets the results in relation to the purpose of the study and the methods used to conduct it. The conclusion must depend entirely on the evidence found in the research.

- References – It is necessary to cite the references and list them at the end of the document.

- Appendix – Appendices are optional.

5 Writing a Formal Report

A formal report must include the front matter, the body and the back matter.

Front matter

- Title, authors, organization, target institution, and date – Capitalize the initial letters of the words of the title.

- Abstract – Summarizes the major points of the report. Must be readable apart from the the original document.

- Table of contents – List of main topics of the document.

- List of figures – All the figures must be in this list.

- List of tables – All the tables must be in this list.

- Foreword – An optional introductory statement that is written by, usually, an authority in the field or executive of the organization sponsoring the project.

- Preface – An explanation of the purpose of the document, and a description of its contents.

- List of abbreviations and symbols – Mandatory for theses and books, and optional for papers.

Body

- Executive summary – Provides a more complete overview of the report, stating its purpose, scope, and gives background information. It also summarizes conclusions and recommendations.

- Introduction – Points out the purpose and defines the scope of the report, and examines the problem.

- Text – Contains the details of the investigation, the alternatives explored, and visuals and tables to clarify the explanation.

- Conclusions – This section interprets the results and must depend entirely on the evidence found.

- Recommendations – If necessary, recommendations are included in the document.

- Explanatory notes – If necessary, notes that explain details of the work are included in the document.

Back matter

- References – A list of works cited.

- Appendices – Contains additional material that can be useful to the reader to clarify or supplement the body.

- Bibliography – An alphabetical list of all sources that were consulted in researching the report.

- Glossary – An alphabetical list of specialized terms used in the report and their definitions.

- Index – An alphabetical list of specialized major topics discussed in the report, along with page numbers. The index is always the final section of the report.

6   Submitting a Book Proposal

Preparation of an outline of a book to be submitted to an editor

A proposal is a document written to persuade someone to follow a plan of course to fulfill a need. A book proposal is addressed to the publishing editor or director and includes a title, the author name and affiliation, background information, a brief description of the book, the reasons for writing the book, the book market and readership, the competition, a table of contents, manuscript information, author information, a sample writing and the assessment process.

- Title – A clear and accurate title is important in marketing your book. As a general rule, the main title should have no more than seven words. If the title looks like it will be longer than that, then consider using a subtitle.

- Author name and affiliation – You should include your mailing address, e-mail, and phone and fax numbers.

- Background – This should outline the general field, how it has evolved, where it is going, and its commercial importance (if any).

- Brief description of the book – You should define, in a few paragraphs, what specifically the book will be about. You should discuss the approach you intend to take, for example, the balance between theory and practice, and any particular pedagogical or presentational features that will characterize the book.

- Reasons for writing the book – State the reasons you think this book should be published and how it will benefit the readers.

- Market and readership – Describe exactly who the book is aimed at, for example, graduate students, researchers, practitioners in industry, and in what subjects they work or study, for instance, electrical engineering, computer science, applied physics, mathematics. If the book can be used as a textbook then you should describe the type of course for which it could be adopted. In this section you should also describe the prerequisite knowledge that you expect of your readers.

- Competition – Give details of the main competing books (author, title, publisher) and discuss how your book will differ from them. Present the aspects that give your book an edge. This analysis is particularly important if the book you are proposing is a textbook.

- Table of contents – This should give the chapter headings along with a sentence or two explaining what each chapter will cover. You should also include the first level of subheadings. If you have a more detailed table of contents then provide it.

- Manuscript information – This should include estimates for: how long you think the book will be in printed pages, a delivery date for the finished manuscript the number of figures the book will have.

- Author, contributor information – Provide a brief resume or curriculum vitae for each author. If the book you are proposing is an edited volume then give names and affiliations of each of the intended contributors.

- Sample writing – A detailed proposal of five pages is the minimum needed to get the assessment procedure under way. If you have any sample sections or chapters then you should send those as well.

- The assessment process – Once you have submitted the proposal it will be read by the appropriate editor. If the editor feels that the proposal is adequate then it will be sent out to a number of experts in the field. The feedback from these reviewers will be discussed with you. Their constructive feedback results in a better final book.

7 Writing a Book

Initial information

The initial information includes the title, authors, organization, editor, and date. Always capitalize the initial letters of the words of the title. The initial pages of a book also present information for librarians, copyright information, dedication, acknowledgments, information about the author, a list of figures, a list of tables, and a table of contents.

The foreword is an optional introductory statement that is written by an authority in the field. The preface announces the book purpose, scope and context. It usually specifies the audience, contains acknowledgments of those who helped in its preparation and cite permission obtained for the use of copyrighted material. The section on organization of the text contains information on the contents of the chapters and indicates the best way to read or present them to the students.

Body of the book

- The manuscript contains the chapters, which may be divided in sections and subsections. It usually includes visuals: photographs, drawings, diagrams, graphs, tables, and flowcharts, to explain the subject to the intended audience.

- Supplementary reading presents information about other books on related subjects, usually including comments from the author.

- The references form an optional list of works cited in the book.

Additional information

- The appendices usually contains additional material that can be useful to the reader and clarifies or supplements the body.

- The list of abbreviations and symbols is essential in monographs, dissertations and theses.

- The bibliography is an alphabetical list of all sources that were consulted in writing the book.

- The glossary has an alphabetical list of specialized terms used in the book and their definitions.

- The index presents an alphabetical list of specialized major topics discussed in the book, along with page numbers. The index is the final section of the book.

8 Elements of Scientific Writing

In scientific writing some elements must be carefully considered. Most of the usual errors are related to the usage of articles, punctuation and word division.

Articles

- Articles are used to introduce nouns, and English often requires the use of articles

- The indefinite article (*a*, *an*) is used when there is no need to be specific about a person or thing

- *An* is used if the noun following begins with a vowel or sounds as a vowel (e.g., An analysis will follow. Let me show you an SMS)

- *The* is a definite article, used to identify a particular thing

Punctuation

- The period (.)

  - The period is used to close sentences that make statements
  - It is also used to form abbreviations (Ph.D., Inc., Mr.)

- The comma (,)

  - The comma is used to indicate pauses and to separate entries in lists
  - It is also used to set off a word, phrase, or clause that is in apposition to a noun and that is nonrestrictive

- The semi-colon (;)

  - The semi-colon separates closely-related ideas
  - In most cases a period should be used instead
  - When a list includes items that have commas within them, use a semi-colon to separate the items

- The colon (:)

  - The colon is used in headings, to announce that more is to follow
  - It is used to introduce a list of things (words, equations)
  - It introduces a quotation
  - When used between two clauses, it indicates that the second one provides an explanation of what was said in the first
  - Never use the colon after the main verb in a sentence

- The hyphen (-)

  - This mark may be used to separate two parts of a compound noun (e.g., light-year)
  - It is also used to break up words at the end of a line, and should always be placed between syllables. Proper nouns should not be broken up by hyphens

- Parentheses ( )

- Parentheses are used to set off an interruption in the middle of a sentence, including references to pages, diagrams, illustrations, chapters
- They are also used to make a point which is not part of the main flow of the sentence
- Use them to enclose acronyms: "Institute for Advanced Studies in Communications (Iecom)."

- The apostrophe (')

  - The apostrophe shows possession (e.g., Marcelo's book on scientific style in English)
  - It shortens certain word combinations (e.g., can't, he's)
  - Contractions should be avoided in formal written work. (e.g., cannot, he is)

- Brackets [ ]

  - Brackets are used for citations or to enclose a word inserted into a quotation

- The diagonal or dash (–)

  - A dash may be used in place of a colon, to set off a word or phrase at the end of a sentence, or an appositive to be emphasized
  - A dash is used to summarize a thought added to the end of a sentence

- Quotation marks (" ")

  - The main use of quotation marks is to show that the exact words written are being repeated
  - They are also used to enclose titles of articles, chapter names, and short stories
  - Single quotation marks (' ') can be used within a quotation
  - A comma should precede a quotation and other punctuation should be placed inside the quotation marks

Word division

- A word should be divided only between syllables (com•pu•ter). Dictionaries indicate how to divide words at syllable breaks
- If a vowel stands alone as a single syllable, it must remain on the same line as the first part of the word (experi•ment)
- A word is generally divided between double consonants (neces•sary), unless it means breaking up the root of the word (process•ing)
- If a word contains a natural hyphen, divide only at that point (sixty-five)
- If a word contains a prefix or suffix, it is best to divide at that point (auto•correlation)
- Do not divide one-syllable words (length), no matter how long the word may be
- Do not divide a word in the first or last line on a page
- Do not divide a word in the first line of a paragraph
- Do not divide words on two consecutive lines
- Do not divide a proper name or number (Kolmogorov, 1931)
- Do not separate two letters from the rest of the word

- Do not separate contractions or abbreviations (wouldn't, ATSC)

- Do not use a hyphen to break a URL or an e-mail address

- Do not use excessive word division

- Do not separate the unit of measurement from the number (550 kHz)

9 Numbers, Units of Measurement and Symbols

There are strict rules for writing numbers, units of measurement and symbols. A technical manuscript is certainly refused if those rules are not followed.

Rules for writing numbers

- Write out all numbers below ten:

    - zero deviations from the expected value
    - nine devices to count for

- The exception to this rule are numbers used with:

    - units of measurement (3 meters)
    - age (15 years old)
    - dates (October 11, 1957)
    - time (2 seconds)
    - page numbers (page 4)
    - percentages (5 percent)
    - money ($8)
    - proportions (30:1 or 30 to 1)

- Write the numbers as numerals if two or more are in the same section:

    - the transmitter has 5 audio amplifiers, 2 pass-band filters and a net gain of 60 dB

- Large numbers must be written in the form most familiar to the audience:

    - 15,300,000
    - $15, 3 \times 10^6$
    - fifteen million and three hundred thousand

- Place a hyphen between a number and a unit of measurement when they modify a noun:

    - 3-month-old experiment

- Use the singular for fractions and decimals that are used as adjectives:

    - 0.5 kilogram
    - 0.1 centimeter

- Write decimals and fractions as numerals:

    - zero point two five – 0.25

- Do not begin a sentence with numerals

- Keep all units consistent
  - Chose one standard and stick with it
- Use the correct units
  - There are two different versions of the metric system, cgs (centimeter, gram, second) and SI (meter, kilogram, second, ampere, kelvin, mole, candela)
- When writing the units of measurement in word form they should never be capitalized:
  - hertz (Hz), ampere (A), tesla (T), ohm Ω, henry (H)
- Indicate multiplication by a raised dot ($\cdot$) and division by a slash (/):
  - 10 W/Hz
  - 150 V$\cdot$s

10 Complementary Material

It is common to misuse words and phrases in spoken English, but the scientific language is precise and the usage of words must be correct, and redundancies must be avoided.

Commonly misused words and phrases

- a large number of – many
- a lot of – many
- as a general rule – like
- as shown in Table 10 – Table 10 shows
- at this point in time – at this time, now
- be considered as – as
- by means of – by
- despite the fact that – although, even though
- during the course of – during
- exhibits the ability – can
- has been widely acknowledged – is
- has proved itself to be – has proved, is
- have discussion of – discuss
- in many cases – often
- in order to – to
- in some cases, in other cases – sometimes
- in the course of – during
- in the event that – if

- in the form of – as

- in the near future – soon, or exact date

- in the vicinity of – near

- is equipped with – has, contains

- it is clear that – clearly

- know-how – skill, ability

- kind of, sort of – rather, somehow, somewhat

- on an annual basis – yearly

- on the occasion of – when

- prior to that time – before

- start off – start

- subsequent to – after

- take action – act

- the reason why is that – because

- until such time as – until

- with reference to – about

- with the result that – so that

- deemed it necessary to – eliminate

- it has been shown that – eliminate

- it is found that – eliminate

- it is recognized that – eliminate

- it is worthy of note that – eliminate

- it may be mentioned that – eliminate

- it may me seen that – eliminate

- it must be remembered that – eliminate

- thanking you in advance for your cooperation – eliminate

- in fact that – eliminate

- what is known as – eliminate

- such (of this kind) – it

Redundancies that should be avoided

- absolutely essential – essential
- actual experience – experience
- adding together – adding
- advance plan – plan
- an honor and a privilege – an honor
- any and all – any
- balance against one another – balance
- by means of – by
- cancel out – cancel
- consecutive in a row – consecutive
- continue on - continue
- current status – status
- different varieties – varieties
- equally as well – equally
- final outcome – outcome
- first and foremost – first
- first introduction – introduction
- first priority – priority
- goals and objectives – goals
- in close proximity – close
- joined together – joined
- mixed together – mixed
- mutual cooperation – cooperation
- necessary requisite – requisite
- one and the same – the same
- overall plan – plan
- past history – history
- personal opinion – opinion
- physical size – size
- point in time – time
- reason why – reason

- refer back to – refer to

- repeat again – repeat

- small in size – small

- take action – act

- this particular instance – this instance

- this particular time – now

- triangular in shape – triangular

- true facts – facts

- uniformly consistent – consistent

- whether or not – whether

- you may or may not know – you may know

- where (after an equation) – in which

Latin terms and abbreviations

- ca. – *circa* (about, approximately)

- cf. – *confer* (compare)

- e.g. – *exempli gratia* (for example)

- et al. – *et alii, et aliae, et alia* (and others)

- etc. – *et cetera* (and other things, and so on)

- et seq. – *et sequientes* (and the following)

- f.v. – *folio verso* (on the back of the page)

- ibid. – *ibidem* (in the same place)

- id. – *idem* (the same)

- i.e. – *id est* (that is)

- inf. – *infra* (below)

- loc. cit. – *loco citato* (in the place cited)

- n.b. – *nota bene* (note well)

- op. cit. – *opere citato* (in the work cited)

- Q.E.D. – *quod erat demonstrandum* (which was to be proved)

- q.v. – *quod vide* (which see, a reference to another part of a published work)

- [sic] – *sic* (so, thus, inserted in brackets)

- sup. – *supra* (above)

- s.v. – *sub verbo, sub voce* (under the word)

- ut sup. – *ut supra* (as above)

- v. *or* vs. – *versus*

- viz. – *videlicet* (namely)

- vs. – *versus* (inverted, against)

11 Reference Material

Periodicals and handbooks

- *IEEE Transactions on Professional Communication*

  - Published since 1958 to improve professional communication among the IEEE members

- *The Elements of Style*, by Strunk and White (Macmillan, 1979)

  - A good reference for a quick tutorial. Everybody should read this book, which tells about English prose writing in general

- *A Handbook for Scholars* by Mary-Claire van Leunen (Knopf, 1978).

  - This well-written book is a real pleasure to read, in spite of its unexciting title. It explains the use of footnotes, references and quotations, instead of the old-fashioned "op. cit." way

- *Writing Mathematics Well* by Leonard Gillman. Mathematical Association of America

  - Gillman's book refers to the three previous classics in the field:
    * An article by Harley Flanders, *Amer. Math. Monthly*, 1971, pp. 1-10
    * Another by R. P. Boas in the same journal, 1981, pp. 727-731.
    * There's also a nice booklet called *How to Write Mathematics*, published by the American Mathematical Society in 1973, especially the essay by Paul R. Halmos on pp. 19–48

- *Mathematical Writing*, by Donald E. Knuth, Tracy Larrabee, Paul M. Roberts. Mathematical Association of America, 1989

  - This book is based on a course given by Donald Knuth at Stanford University. It discusses technical writing and presentation of mathematics and computer science, including preparation of theses, papers, and books

Reference books

- Handbook of Technical Writing, Gerald J. Alred, Charles T. Brusaw, Walter. E. Oliu. St. Martin's Press, New York, 2006

  - Highly recommended; complete handbook on technical writing; entries arranged in alphabetical order; excellent index; English as a second language guidance; includes succinct guide to the writing process. Supporting material at `bcs.bedfordstmartins.com/alredtech`

- An Outline of Scientific Writing: For Researchers With English as a Foreign Language, J. T. Yang. World Scientific, 1995

  - May be especially useful to English as a second language writers

- MIT Guide to Science and Engineering Communication, J. G. Paradis and M. L. Zimmerman. MIT, Cambridge, 2002

– Discusses all types of technical communication and includes a list of 27 guidelines for style and usage

- How to Read a Book, Mortimer Adler and Charles van Doren. MJF Books, New York, USA, 1972. ISBN 1-56731-010-9.

  – A classic book describing the four stages of reading, includes a list of relevant books.

- *English for Electrical Engineers*, by James MacAllister and Giorgio Madama. Longman, 1976.

  – The book presents and analyzes interesting texts, in increasing order of difficulty, along with language tips and grammar

- Scientific Style in English, Marcelo S. Alencar. To be published in 2012.

  – Discusses scientific, mathematical and technical reading and writing, and includes essential information on preparation of books and oral presentation. The book also explains the use of LaTeX.

Popular words and spelling

- *The Longman Dictionary of Contemporary English.*

  – Instead of the historical words found in the previously mentioned dictionaries, this one has the popular words explained in very simple English

- *Webster's New Word Speller Divider.*

  – People who do not spell well find this book to be quite useful

- *Roget's Thesaurus.*

  – This book is a synonym dictionary. Use it if you know that a word exists but you have forgotten it or when you want to avoid repetition, to define a new technical term or a new name for a paper

- *The Secretary's Quick Reference Handbook*, by Sheryl L. Lindsell. Arco, 1989, New York

  – This is a simplified and easy-to-use manual to correct writing.

The TeX and LaTeX reference books

- The TeXbook (Computers & Typesetting), by Donald E. Knuth. Addison-Wesley Professional. 1984, New York, United States.

  – This is the reference book on TeX

- LaTeX A Document Preparation System (2nd Edition), by Leslie Lamport Addison-Wesley Series on Tools and Techniques for Computer T, 1994, New York, United States.

  – This is the reference book on LaTeX

Dictionaries

- *Webster's Dictionary of English Usage*, 1989

    - A dictionary is always a wonderful resource. This edition goes well beyond the *American Heritage* usage notes. It is filled with choice examples

- *Webster's Standard American Style Manual.* Merrian-Webster Inc. 1985, Springfield, United States

    - A practical guide to the conventions of the English language, which offers concise and comprehensive descriptions of the rules to prepare documentation that is clear and consistent.

- *The Oxford English Dictionary* (usually called the OED).

    - This is a useful reference book

- The *OED Supplement.*

    - The supplement brings the OED up to date. The supplement comes in four volumes

- *The American Heritage Dictionary*

    - This dictionary contains usage notes and an appendix with Indo-European root words

- *Merriam-Webster Dictionary and Thesaurus*, can be found at `www.m-w.com`

    - Useful, gives etymology and pronunciation of words

- *Wordsmyth Dictionary and Thesaurus*, can be found at `www.wordsmyth.net`

    - Very useful, although definitions are brief, it identifies parts of speech

Dictionaries and grammars

- *The Encyclopedic Dictionary of Style and Usage*, by Mary A. DeVries. Berkley Books, 1999, New York, United States

    - A compact dictionary, with cross-references in place of a traditional subject index.

- *The Oxford English Dictionary of English Grammar*, by Sylvia Chalker and Edmund Weiner. Oxford University Press. 1994, London, United Kingdom

    - This is a very useful reference book

- *Modern Grammar*, by Paul Roberts. Harcourt, Brace & World, Inc. 1968, New York, United States

    - This book presents the sentence-producing mechanism and examines the skeleton of the English sentence

Recommended guides to writing

- *The Elements of Technical Writing.* Gary Blake and Robert W. Bly. Macmillan. 1993. United States

    - A concise reference text with useful information on clear writing and punctuation

- *The Canadian Style – A Guide to Writing and Editing*, by Dundurn Press Limited in cooperation with Public Works and Government Services Canada. 1997, Toronto, Canada

– A reference text with useful information for public servants on standards, recommendations and information to ensure quality in their writing

- *The Broadview Pocket Guide to Writing.* Doug Babington and Don LePan. Broadview Press, 2002. Canada

  – This book addresses the specialized writing problems of professionals, including information on units of measurement, equations and symbols, principles of technical communication, and how to write proposals, articles, reports and manuals

Recommended online writing guides

- *Mayfield Handbook of Technical and Scientific Writing.* L. C. Perelman, J. Paradis, and E. Barrett; `mit.imoat.net/handbook/home.htm`

  – Recommended as a complete guide to technical writing from MIT; concise explanation of most aspects of technical writing. It gives English as a Second Language (ESL) pointers

- *Online Writing Lab (OWL).* `owl.english.purdue.edu/handouts`

  – Guide to effective writing at college level. Includes grammar and punctuation with exercises and ESL

- Supporting material for *Handbook of Technical Writing.* Alred et al.; `bcs.bedfordstmartins.com/alredtech`

- *Grammar, Punctuation, and Capitalization: A Handbook for Technical Writers and Editors.* `stipo.larc.nasa.gov/sp7084`

  – NASA Report. Hypertext or PDF. Includes rules for technical writing

- *AIP Style Manual.* `public.lanl.gov/kmh/AIP_Style_4thed.html`

  – American Institute of Physics gives stylistic guidance, especially relevant to physics articles

- LaTeX Style Guide for the *Journal of Integer Sequences* – Version 1.10

Writing references

- Bartleby Classic Online Books `www.bartleby.com`

- A good collection of writers' aids, that includes the American Heritage Dictionary, Roget's Thesaurus, quotations, and more:

  – *American Heritage Dictionary.* `www.bartleby.com/61`
  – *Elements of Style.* `www.bartleby.com/141`, classic handbook, written by William Strunk in 1918
  – *King's English.* `www.bartleby.com/116`, by H. W. Fowler (1908), another classic

- *Writing Research Papers – A Complete Guide*, by James D. Lester. Scott, Foresman and Company, 1984, Glenview, United States

  – A guide for college and university students inexperienced in research paper writing

- *How to Edit a Scientific Journal*, by Claude T. Bishop. ISI Press, 1984, Philadelphia, United States