

Tips for Academic Writing and Other Formal Writing

The following is a list of solutions to problems I have encountered repeatedly in my students' formal writing, such as coursework, research papers, and literature surveys.

It is a long list. People have a lot of problems.

Some of the items sound picky or trivial, even to me. Yet bad grammar, bad style, and poor organization will make it very difficult for you to convey your ideas clearly and professionally, and will limit your academic and professional success. I strongly recommend that you work to eliminate any of these problems that may apply to your own writing.

-- Dr. James A. Bednar

General guidelines

Rules for formal writing are quite strict, though often unstated. Formal writing is used in academic and scientific settings whenever you want to convey your ideas to a wide audience, with many possible backgrounds and assumptions. Unlike casual conversation or emails to friends, formal writing needs to be clear, unambiguous, literal, and well structured.

Formal writing is not just dictated conversation

In general, it is inappropriate simply to write as you would speak. In conversation, the listener can ask for clarification or elaboration easily, and thus the speaker can use imprecise language, ramble from topic to topic freely, and so on. Formal writing must instead stand on its own, conveying the author's thesis clearly through words alone. As a result, formal writing requires substantial effort to construct meaningful sentences, paragraphs, and arguments relevant to a well-defined thesis. The best formal writing will be difficult to write but very easy to read. The author's time and effort spent on writing will be repaid with the time and effort saved by the (many) readers.

Make your thesis obvious throughout

An essay, article, or report should have one main topic (the "thesis") that is clearly evident in the introduction and conclusion. Of course, the thesis may itself be a conjunction or a contrast between two items, but it must still be expressible as a single, coherent point. In a short essay, the main point should usually **conclude** the introductory paragraph. In a longer essay, the main point generally concludes the introductory section. The reader should never be in any doubt about what your thesis is; whenever you think it might not be absolutely obvious, remind the reader again.

When in doubt, use the recipe: introduce, expand/justify, conclude

Paragraphs, subsections, sections, chapters, and books all use the same structure: first make the topic clear, then expand upon it, and finally sum up, tying everything back to the topic. At each level, you need to tell the reader what you will be trying to say (in this paragraph, section, etc.), then you need to cover all the relevant material, clearly relating it to your stated point, and finally you need to tie the subtopics together so that they do indeed add up to establish the point that you promised.

Stay on topic

Everything in your document should be related clearly to your main thesis. You can write other papers later for anything else you might want to say. The reason your reader is reading *this particular paper* of yours is that he or she wants to know about your main topic, not simply about everything you might want to say (unless for some narcissistic reason "everything you might want to say" is your clearly stated main topic).

Conversely, there is no need to bring up items simply because they relate to your main topic, if you do not have anything to say about them. If you do bring something up, say something important about it!

Staying on topic does not mean being one sided

To avoid being misleading, you will often need to acknowledge some weaknesses in your argument or discuss some merits of an opposing argument. It is quite appropriate to discuss such opposing views when they are relevant, i.e., when they relate directly to the main topic of your paper. For instance, if you are reviewing a paper and arguing that it was not written well overall, it is usually a good idea to point out the few things that were done well, e.g. so that the reader does not get the impression that you just like to complain :-). Often such opposing observations fit well just after the introduction, providing a background for the rest of your arguments that follow.

Whenever you do include such material, i.e. things that go in the direction opposite to your main thesis, be careful to put it into only a few well-defined places, reorganizing your argument to achieve that when necessary. Jumping back and forth will confuse the reader unnecessarily. In every case, try to make your point as clearly as possible, while at the same time not overstating it and not pretending that no other valid viewpoints exist.

Transitions are difficult but very important

Each sentence in your document should follow smoothly from the preceding sentence, and each paragraph should follow smoothly from the preceding paragraph. The world is arguably an unstructured jumble of ideas, but anything that you expect the reader to read from start to finish needs to be a linear progression along one single path. **Transition words and phrases** are what make it possible for a reader to follow you easily as you explore the various ideas in your paper. Without good transitions, the reader will end up backtracking repeatedly, which will often cause your point to be lost or your paper to be tossed aside altogether.

One clue that your writing needs better transitions is if you find that you can cut and paste paragraphs from one section to another without doing substantial rewriting of how the paragraph begins and ends. If making such rearrangements is easy, then you have not been linking your paragraphs into a coherent narrative that reads well from start to finish.

In practice, making smooth transitions is very difficult. Learning to do it takes a lot of practice at first, and actually making the transitions smooth takes a lot of effort every time you write or revise something. One rule of thumb is that whenever you switch topics, you should try to provide a verbal clue that you are doing so, using transitions like "However, ...", "As a result, ...", "For comparison, ", etc.

If you notice that you have to add these words between most of your sentences, not just the paragraphs, then you are bouncing around too much. In that case you need to reorganize your document to group related thoughts together, switching topics only when necessary. Once the organization is good, all you can do is read and reread what you write, rewording it until each new item follows easily from those before it.

Write what you mean, mean what you write

Speakers use many informal, colloquial phrases in casual conversation, usually intending to convey meanings other than what the words literally indicate. For instance, we often speak informally of "going the extra mile", "at the end of the day", "hard facts", things being "crystal clear" or "pretty" convincing, someone "sticking to" a topic, readers being "turned off", something "really" being the case, etc. Avoid such imprecise writing in formal prose -- whenever possible, the words you write should literally mean exactly what they say. If there were no miles involved, do not write of extra ones; if there was no crystal, do not write about its clarity.

Among other benefits, avoiding such informal language will ensure that your meaning is obvious even to those who have not learned the currently popular idioms, such as those for whom English is a second language and those who might read your writing years from now or in another part of the world. Formal writing should be clear to as many people as possible, and its meaning should not depend on the whims of your local dialect of English. It is a permanent and public record of your ideas, and should mean precisely what you have written.

Avoid redundancy

Unfortunately, specifying minimum page requirements encourages redundancy, but please try to avoid that temptation. When two words will do, there is no need to use twenty. Whenever you finish a sentence or paragraph, read over it to see if any words or sentences can be eliminated -- often your point will get much stronger when you do so. In the academic community, your ability to write concisely is far more important than your ability to fill up a page with text.

Academic courses specify page minimums to ensure that you write an essay of the appropriate depth, not to test whether you can say the same thing a dozen different ways just to fill up space. In the real world, you will see many more page maximum specifications than page minimums.

Be professional and diplomatic

When writing about another's work, always write as if your subject may read your document. Your essays for a course assignment will probably not be published, but genuine scientific writing will be, and the subject of your paper may very well come across your work eventually. Thus it is crucial to avoid pejorative, insulting, and offensive terms like "attempt to", "a waste of time", "pointless", etc.

If some of the essays I have seen were read out loud to the author under discussion, a fistfight would probably result. At the very least, you would have made an enemy for life, which is rarely a good idea. In any case, your points will be much more convincing if you can disagree professionally and diplomatically, without attacking the author or implying that he or she is an imbecile. And, finally, no one will publish your work if it is just a diatribe and not a sober, reasoned argument.

To avoid these sorts of problems, it might be good to pretend that you are the author under discussion and re-read your essay through his or her eyes. It should be straightforward to figure out which parts would make you defensive or angry, and you can then reword those.

Avoid imperative voice

Use imperative voice sparingly in a scientific paper, because it comes across as rude (as do many of the sentences in what you are reading right now!). E.g. do not say "Recall that ...". Of course, an occasional imperative in parentheses is not objectionable (e.g. "(see Walker 1996 for more details)").

Document organization

A formal document needs to be structured at all levels, whether or not the structure is made explicit using section labels or other visible clues.

Overall structure

The standard format for an effective essay or article is to: (1) present a coherent thesis in the introduction, (2) try your hardest to convince the reader of your thesis in the body of the paper, and (3) restate the thesis in the conclusion so that the reader remains quite sure what your thesis is, and so that the reader can decide whether he or she was convinced.

Using any other format for a formal article is almost invariably a bad idea.

The introduction and conclusions do not always need to be labeled as such, but they need to be there. Note that an abstract is no substitute for an introduction; abstracts act as an independent miniature version of the article, not part of the introduction.

Each paragraph is one relevant sub-topic

Each paragraph in a document should have **one** topic that is clearly evident early in the paragraph. Every paragraph should have a clear relationship to the main topic of your document; if not, either the paragraph should be eliminated, or the main topic should be revised.

Use complete sentences

Except in extraordinary circumstances, sentences in the main text must be complete, i.e., they must have a subject and a verb, so that they express an entire thought, not just a fragment or the beginning of a thought. Note that most "-ing" words are not verbs. "The light turning green" is just a fragment, i.e., a start to a sentence or a part of one. To be a sentence that you could use on its own followed by a period, it would have to be "The light turned green", which has both a subject and a verb.

Put appropriate punctuation between sentences

Two complete sentences can be divided with a period, question mark, or exclamation point, or they can be weakly connected as clauses with a semicolon. However, they can *never* be connected with a comma in formal writing! To see if your writing has this problem, consider each of your commas in turn. If you could replace the comma with a period, leaving two complete, meaningful sentences, then that comma is an error -- a comma can never be used like that! Instead, replace the comma with a semicolon, in case you have two sentences that need to be linked in some generic way, or make the linkage explicit with a conjunction, or simply use a period, to leave two complete and independent sentences.

Section titles

Section titles for an article should say exactly and succinctly what the reader will get out of that section. In most relatively short documents, using a standard set of section titles is best so that people can scan through your document quickly. Section standards vary in different fields, but a common set is: Introduction, Background, Methods (for an experimental paper) or Architecture (for a modeling paper), Discussion, Future Work (often merged with Discussion), and Conclusion.

If you do not use the standard titles, e.g. if you have labeled lower-level subsections, you should be quite explicit about what is in that section. Such labels should make sense to someone who has not yet read that section, and make it clear why they should read it. For instance, a section about adding a second eye to a simulation of single-eye vision could truthfully be called "Multiple eyes", but that title is meaningless to someone scanning the document. Instead, it should be something like "Extending the model to explain stereo vision" whose meaning will be clear to the type of person likely to be reading the paper.

Everything important goes in your introduction and conclusion

Everyone who looks at your paper will at least skim the introduction and conclusion, and those who read it in depth will remember those two sections the best. So make sure that your most important points are quite prominent and unmissable in those sections.

Say it, never just say that you will say it

In the introduction, conclusion, and abstract (if any), do not merely describe what you are going to say or have said; actually say it! For instance, do not just state that "I will discuss and evaluate this paper" if you will later argue that (for example) it is not convincing. Instead state that the paper is unconvincing, and (in brief) why you believe that to be the case. Then you can elaborate on that point in subsequent paragraphs.

Subsections

If you have sections 1, 1.1, and 1.2, there must be introductory material between 1 and 1.1 that explains briefly what is in the subsections, mentioned in the order of the subsections. That is, 1.1 should never follow just after 1 without some intervening text. If you have 1.1, there must always be a 1.2; otherwise 1 and 1.1 should be merged. Each 1.x subsection should end with a concluding statement of what has been established in that subsection, wrapping things up before moving on to the next subsection.

Figure captions

Different communities have different expectations on what to put into figure captions. Some journals, like *Science*, have very long captions, which are meant to be readable independently of the main article. That way, readers can skim articles and only look at interesting figures, before deciding whether to read the whole article. In such cases, you must ensure that all of the main points of the figure are also mentioned in the text of the article, so that someone reading the article straight through will not miss them. Other journals and other publications like books, theses, and proposals tend to have very little in the caption, with the figures being understandable only when reading the main text. Even in such cases, I myself prefer to put all the graphical details like "the dotted line represents" in the caption, plus enough context so that the import of the figure is clear. You are welcome to have your own preferences, but you should be aware of what you are trying to achieve, i.e. whether you want the caption to be readable on its own.

Word-level issues

Try hard to avoid ambiguous references

Conversation is replete with ambiguous words like "this", "these", "his", "it", "they", etc. These words have no meaning in themselves, but in conversation the meaning is usually clear from the context. In written text, however, the intended meaning is quite often not evident to the reader, because there are e.g. many possible interpretations of "it" and "this".

It is a good idea to read over anything you write, searching for this sort of word. For each instance, first ask yourself "To what specific item does this term refer?". For such a reference to make sense, the object, person, or concept must have been **explicitly** mentioned **just prior to** your reference. Often you will find that "it" or "they" refers to something vague that was not even discussed explicitly in your paper, in which case you should reword your text entirely.

Even if the item to which you refer is explicitly mentioned in your paper, ask yourself whether there is any chance that the reader might not know to which of several items you might be referring. E.g. for the word "he", were there two or three people being discussed? If so then state the actual name of each; "he" would be ambiguous.

Often an ambiguous "this" or "these" can be disambiguated by adding a noun that specifies precisely the type of object or concept to which you are referring. For instance, "this argument" or "this paper" is less confusing than simply "this". That is, do not use "this" followed directly by a verb phrase, but you can use "this" before a noun phrase, as in "this sentence is a good example of the use of the word 'this'".

Watch out for homonyms

Spell checkers are wonderful, but they are absolutely useless for detecting misused homonyms or near-homonyms, i.e., actual words whose meaning is confused with other actual words. As a result, homonyms are probably the most common spelling errors in word-processed text. Even if you are lazy and let the spell checker fix all of your other words, make certain that you know the differences between words like:

- it's, its
- their, there, they're
- whether, weather
- to, too, two
- site, cite, sight
- waste, waist
- whole, hole
- fare, fair
- great, grate
- affect, effect
- discrete, discreet
- forth, fourth
- past, passed
- roll, role
- lead, led
- lie, lye
- throughout, through out
- seem, seam
- new, knew
- illicit, elicit
- complement, compliment
- extent, extend
- obtain, attain
- pair, pare
- personal, personnel
- suit, suite
- principal, principle
- bear, bare

If you do not know the difference, you must simply avoid using any of these words. Yet because the spell checker takes care of all the other words you may misspell, learning to use these few words correctly is surely not much of a burden, and is crucial for convincing your readers that you are competent and trustworthy.

Avoid "comprise"

Apparently the word "comprise" has now been used incorrectly so many times to mean "compose" that this usage is now becoming acceptable. But it is much safer simply to avoid "comprise" altogether, as anyone who does know what it started out meaning will be annoyed when you use it to mean "compose".

"But" and "however" are not interchangeable

The words "but" and "however" have similar meanings, but they are **not** interchangeable. If you take a grammatically correct sentence containing "but" and replace it with "however", or vice versa, the result will almost always be incorrect, mainly because of comma punctuation.

Correct examples:

"I like oranges, but I do not like tangerines."

"I like oranges. However, I do not like tangerines."

"I like oranges; however, I do not like tangerines."

"I, however, do not like grapefruits."

"I like oranges however they have been prepared."

If you exchange any of these "but"s and "however"s, then the sentences would become incorrect, and in some cases meaningless.

A "point" is a single item

The word "point" can only be used for a single, atomic item. Thus it is not appropriate to discuss a "sub-point", "part of a point", the "first half" of a point, etc. Instead use "topic" or "section", etc.

"A research"

There is no noun phrase "a research" in English. Use "a study" or just "research", never "a research". Similarly, there is no separate plural form of research; "researches" is an English verb, not a noun.

Avoid capitalization

When in doubt, use lower case. Capitalization is appropriate only for specific, named, individual items or people. For example, capitalize school subjects only when you are referring to a specific course at a specific school: math is a general subject, but Math 301 is a particular course. Similarly: Department of Computer Sciences vs. a computer science department, the president vs. President Bush. **When in doubt, use lower case.**

Avoid contractions

Contractions are appropriate only for conversational use and for informal writing, **never** for technical or formal writing.

Hyphenate phrases only when otherwise ambiguous

In English phrases (groups of several words forming a unit), hyphens are used to group pairs of words when the meaning might otherwise be ambiguous. That is, they act like the parentheses in a mathematical expression. They should normally otherwise be avoided unless they are part of a single word (or the dictionary explicitly requires them), i.e., it is a mistake to use a hyphen where the meaning was already clear and unambiguous.

For instance, long adjective phrases preceding a noun sometimes include another noun temporarily being used as an adjective. Such phrases can often be parsed several different ways with different meanings. For example, the phrase "English language learners" as written means "language learners from England", because, by default, "language" modifies "learners", and "English" modifies "language learners". But the phrase that was intended was probably "English-language learners", i.e. "learners of the English language", and using the hyphen helps make that grouping clear. Note that there would never be a hyphen if the same phrase were used *after* the noun it modifies, because in that case there would be absolutely no chance of ambiguity: "a learner of the English language" (**NEVER** "a learner of the English-language"; the hyphen effectively turns the noun phrase "English language" into an adjective, and a prepositional phrase starting with "of the" must be completed with a noun, not an adjective).

Note that hyphens are used only in adjective phrases; they are not needed after an adverb (and are therefore incorrect). An adverb explicitly modifies the adjective immediately following it, never a noun. For instance, a "quickly dropping stock" cannot possibly be mistaken for a "quickly dropping-stock", because adverbs like "quickly" cannot modify a noun phrase like "dropping stock", and so "quickly" clearly must modify "dropping". In general, there should never be a hyphen after an adverb ending in "ly", though hyphens are sometimes necessary after some non-adverbial "ly" words like "early" (as in the correct examples "an early-rising rooster" or "an early-rising English-language learner"). You may want to search through your finished document for "ly-"; nearly all examples of those three characters in a row will be mistakes.

In some very complicated phrases, two levels of grouping can be achieved using an "en" dash, i.e. a slightly longer dash than a hyphen. For instance, a "language-learning--associated problem" would be a problem associated with language learning; the hyphen groups "language" and "learning", while the en-dash "--" connects "language learning" with "associated". Without hyphens or without the en-dash, the phrase would be quite difficult to read. But in such cases it is often clearer just to reword the sentence to avoid the ambiguity, as in "a problem associated with language learning".

In cases where the word grouping is quite obvious because the pair of words are so often used together, the hyphen can be omitted even when it would strictly be required to avoid ambiguity. For instance "chocolate chip cookies" is unlikely to be misread as "chocolate chip-cookies", despite that being the literal interpretation, and so the hyphen can usually be omitted from "chocolate-chip cookies".

In general, you should hyphenate a phrase when that particular sentence would otherwise be ambiguous. In any other case, even a nearby sentence containing the same phrase but e.g. after the noun it modifies, you should leave out the hyphen. I.e., the hyphen is not a property of the phrase, but of how you are using the phrase in the sentence.

American vs. British English

I myself am American by birth, despite lecturing in a British university, and I use American spellings by default (e.g. "organization", not "organisation"). Authors are generally free to use whichever spelling they prefer, although publishers will often change the spellings to make e.g. all the papers in a certain edited volume use the same conventions. Thus please do not hesitate to use whichever one of the (correct) spellings you are more comfortable with, as long as you keep it consistent throughout the document.

Additional guidelines specific to academic writing

Academic writing includes texts like original research papers, research proposals, and literature reviews, whether published or not.

Formatting and grammar rules

When in doubt about grammar or page format, researchers in psychology and computer science generally follow the [APA style guide](#); biological fields use similar standards. Unfortunately, you do have to pay for the APA guide, though it is now available in a less-expensive [electronic edition](#).

Pay attention to how your document looks

Use readable, clear fonts and reasonable margins, following the typical format used for similar documents.

If your word processor cannot make the spacing regular between words (e.g. most versions of Microsoft Word), turn off right justification. Poor spacing makes the page look jumbled and seem incoherent, even if the writing is not.

Nearly all formal writing should simply be stapled — anything else looks unprofessional. For instance, using a fancy cover and binding for a short paper or report is distracting and makes it difficult to photocopy the paper; such binding is necessary only for long papers that a staple would have trouble keeping together. At the opposite extreme, it should be obvious that folding one corner is not an acceptable substitute for a staple.

Authors are authors, not writers

The people who perform a scientific study are called "authors", never writers, even though the results are presented in a written paper. Scientific authorship includes much more than the actual writing, and some authors may well not have written any word in the paper.

Use last names

Never refer to the authors by their first names, as if they were your friends. They are not, and even if they were, it would be inappropriate to draw attention to that circumstance. Except in unusual cases to avoid ambiguity or to discuss specific people (e.g. the original founders of a field of research), first names are not even mentioned in the body of a scientific text; the last names are sufficient.

Author names are keys – spell them properly

In academic writing, an author's last name is like the key in a database lookup -- if the name is misspelled (e.g. "Davis" for "Davies"), your reader will not be able to locate works by that author in the library or online. Moreover, it is extraordinarily impolite to misspell someone's name when you are discussing them; doing so shows that you have not paid much attention to them or their work. So you should make a special effort to spell author names correctly, double and triple checking them against the original source, and ensuring that you spell them the same way each time.

Use appropriate pronouns

Use appropriate pronouns when referring to the authors. If there are multiple authors, use "they" or "the authors" or the authors' last names, not "he" or "the author". If there is only one author and you can determine the gender with great confidence, you may use "he" or "she"; otherwise use "the author" or the author's last name.

Referring to other texts

Use double quotes around the title of an article when you refer to it in the text. Italics are reserved for books or other works of similar length. Avoid underlining altogether --- underlining is just a way of indicating that handwritten or typewritten text should be typeset in italics, and is thus inappropriate when italics are available (as they are on any modern word processor).

Be very precise when discussing an author discussing another author

For better or worse, academic writing often devolves into discussions of what one author said about another author. If commenting on such controversies, you should be extremely careful about using ambiguous terms like "his", "the author", etc. Very often your reader will have no idea which of the various authors you are referring to, even though it may be clear to you. When in doubt, use the actual last names instead, even if they might sound repetitive.

Avoid footnotes

Footnotes should be used quite sparingly, and should never be used as a way to avoid the hard work of making your text flow into a coherent narrative. Only when something genuinely cannot be made to fit into the main flow of the text, yet is somehow still so important that it must be mentioned, does it go into a footnote.

Avoid direct quotes

In scientific (as opposed to literary or historical) writing, direct quotes should be used only when the precise wording of the original sentences is important, e.g. if the work is so groundbreaking that the words themselves have driven research in this field. In nearly every other case, paraphrasing is more appropriate, because it lets you formulate the idea in the terms suitable for your particular paper, focusing on the underlying issue rather than the way one author expressed it.

Be careful with arguments about grammar

If you are going to criticize the grammar or spelling of an author in writing, you should be extraordinarily careful to verify that you are correct. Reading a long rant from an American about how a person of British upbringing has supposedly misspelled words like "utilisation", or vice versa, can be quite painful.

There is no need to mention explicitly reading the paper

A lot of students use phrases like "while reading this paper, I..." and "In this paper the authors ...". Try to avoid this redundancy. If you use the word "author" you need not also use "paper", and vice versa. Similarly, it is clear that whatever you discovered about the paper, you discovered while reading the paper; we do not need to be reminded of this. Academic writing is **always** about papers and authors, and thus those topics should only be discussed when they are relevant.

Discussing existing work

Whenever you bring up an existing piece of research, whether it is your own or someone else's, there is a standard way of doing it properly. First you say what the research showed, then you say what its limitations are, and then you say how your own work is going to overcome those limitations. I.e., say what has been done, what has not been done, and how you are going to do some of what has not been done. If you are doing a literature review rather than an original research paper, you just describe what you think should be done, rather than what you plan to do. Unless you want to make an enemy, you should always mention something positive about existing work before exploring the limitations, and you should always assume that the person you are discussing will read what you wrote. Of course, sometimes there is a good reason to make an enemy, e.g. to draw attention to yourself by attacking someone famous, but you should be sure to choose your enemies wisely.

Discussing proposed work

In a research proposal, it is never acceptable to announce only that you are planning to "study topic X". In the context of research, studying is a vague and unbounded task, with no criterion for success and no way to tell if you are getting anywhere. Studying is something you do in a course, where someone can tell you what to focus on and can test you to see if you got the right answer; research is not like that. In research, you need to spell out the specific questions you are going to try to answer, the specific phenomena that need explanations, and so on -- it's up to you to define the question and the methods, and until you've done so, it's not research, just idle speculation.

Discussion/future work

In the discussion sections of a research paper, be sure to discuss all topics that the audience expected to see in the paper, even if you yourself do not believe them to be relevant. The reader is more likely to assume that you have been sloppy about your literature review than to assume you knew about the work but believed it not to be relevant. Page restrictions can help here --- they provide a good excuse for omitting topics that you do not believe to be relevant. In a longer article or thesis without page limits you have no choice but to address the issue and explicitly state why the topic is not relevant despite the common belief that it is.

Bibliographies

Students often seem to think that bibliographies are mysterious, tricky things with rules far too complex to understand or remember. Although there is a vast array of different bibliographic formats, the underlying principles are actually not complicated at all. Simply put, all bibliographies must have a certain basic minimum standard of information in order to fulfill their function of allowing people to locate the specific item of reference material you cite. In particular, every bibliography entry needs an author, date, and title, every journal article absolutely must have a volume and page numbers, and every conference paper must have the title of the conference proceedings, the page numbers, and some indication of who published it. Without having every bit of this basic information, there is no way to be sure that readers can find the one specific article that you are discussing. Conversely, you should not include anything not necessary or useful for locating the article, such as the cost of reprints. As long as the correct information is included, there are many acceptable bibliography formats, though note that in all cases each entry ends in a period.

Citations

The bibliography or reference list in an academic paper must consist of precisely those sources that you cite in the text, without any extra sources and without omitting any. Each citation must provide enough information for the reader to find the correct source in the bibliography; beyond that, any number of citation formats will do unless there is some specific standard you are told to follow. One

common approach is to use author-date citations like "(Smith, Wu, and Tong 2008)", but other approaches such as numbering the bibliography entries and then using bracketed or superscript numbers are also fine.

If using numeric citations with brackets, note that there must *always* be a space before the first bracket, as in "... known [1]", (**not** "... known[1]").

If using author-date citations, you must remember that any item in parentheses *does not exist*, as far as the grammar of the sentence is concerned, and thus it cannot be used as part of the sentence. Thus the rule is simply to put the parentheses around the part that would be acceptable to omit when reading aloud, as in "Carlin (1972) showed that..." or "... as seen in rats (Carlin 1972)." (**not** " (Carlin 1972) showed that..." and **not** "... as seen in rats Carlin (1972).").

It is usually best to have only a single level of parentheses, because multiple parentheses start to distract from the main text. Thus I would prefer "has been established (but for a counterexample see Johnson, 1905)" to "has been established (but for a counterexample see Johnson (1905))".

"I" and "we"

Writing standards disagree about whether to use "I" and "we" (and their various forms) in academic work. Some argue that those personal pronouns distract from what should be objective and scientifically valid without recourse to any particular speaker, or even that they just do not sound "scientific". Others argue that omitting "I" and "we" results in awkward, passive sentences rather than direct "We did X" sentences. Personally, I believe that academic writing should use personal pronouns whenever what is being reported was an arbitrary and specific choice made by a human being, or for opinions or personal judgment, precisely because these pronouns emphasize that a human was involved in the work. When reporting universal scientific facts or observations, I would *not* use personal pronouns, because any reasonable observer would have reported similar results and thus there is no need to emphasize the role of the authors. Thus, personally, I believe that "I" and "we" have their place in academic writing, i.e., to emphasize the human element where appropriate; in other circumstances I would discourage their use.

Apology: My personal quirks

Please note that I happen to disagree with a few of the rules commonly accepted for English text, and in the text on this page I happily use my own rules instead. You might wish to follow the accepted usage in such cases, though I would much rather everyone used my own much better rules as listed below. If you do agree to join my one-man campaign to fix the English language, I cannot accept any responsibility for points deducted by less enlightened folks. :-)

Punctuation after quotations

In American English (and in some cases for British English), punctuation following a bit of quoted text is traditionally placed *inside* the quotation. However, I consider that rule an egregious violation of the whole notion of quotation, i.e. an obvious bug in the English language. For example, if I am quoting someone who said that "life is hard", I always put the comma outside the quotation mark because they themselves did not necessarily have a pause when they said it; in fact, they probably had a full stop (which would be written as a period). Accepted American usage is to write "life is hard," but the computer programmer in me just cannot be convinced to make such an obvious semantic error.

Spaces around dashes

An em-dash is a long dash, longer than an en-dash and a hyphen. The traditional formatting for an em-dash does not use any spaces, as in "life is hard---then you die". However, I myself much prefer to put a space before and after the dash. Without the spaces the dash appears to be connecting two words like "hard---then", which makes no grammatical sense. Grammatically, the function of the dash is to separate and connect phrases or clauses, not words, and I prefer to make that visually clear by putting spaces around the dash. Again, in my opinion the accepted usage is a bug in the language.

Dangling prepositions

Officially, it is an error to end a sentence with a preposition, as in "they arrived at the place they were heading to". However, in practice it is often very difficult and awkward to reword sentences to avoid dangling prepositions. Thus I consider this rule to be optional at best.

Serial commas

In Britain and some other less-enlightened countries, the comma is often omitted before an 'and' in a list. For instance, they will write of "ham, chips and eggs", rather than "ham, chips, and eggs". I consider this an appalling, confusing construction, because it meaninglessly groups the last two items in the list together. Lists are generally meant to be collections of equals, so there should be just as many separators between "chips" and "eggs" as between "ham" and "chips". In many cases, omitting the serial comma is ambiguous. Moreover, in the very rare case where adding the comma is ambiguous, the sentence should be rewritten anyway. Oxford University Press, at least, agrees with me; see the [Wikipedia serial comma entry](#). Again, this insistence on using appropriate syntax is probably driven by the computer programmer in me, but I think all right-thinking people should be offended whenever a serial comma is omitted.

Commas after "i.e." and "e.g."

Many grammar books state that a comma is always required after "i.e." and "e.g." used in a sentence, as in "sentences often contain spelling errors, i.e., words spelled incorrectly". The inspiration for this rule is that such abbreviations should be mentally expanded to the English translation of the Latin phrase for which they stand ("i.e." translating to "that is", and "e.g." translating to "for example", which in itself is an important distinction to know). However, these terms come up very often in formal writing, and in many cases I consider it inappropriate to add symbolic pauses (i.e. commas) around them. Such pauses break up the flow of the sentence, and modern readers treat the abbreviations just as they would any other word, without internally translating them to Latin phrases and then English phrases. Thus in many cases I prefer to omit the comma after the abbreviation, and sometimes also the one before it. Some people, even more pedantic than I, disagree.

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