

Rapid Academic Writing

Royce Kimmons & Richard E. West

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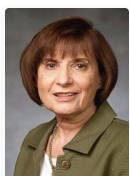


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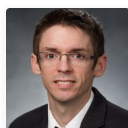
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Let's Get Writing

Writing

The 5 C Guidelines

How to Write Articles Quickly and Expertly



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The 5 C Guidelines

Prioritizing Principles for Good Academic Writing

Royce Kimmons

Writing

Academic Writing

Producing good academic writing is a difficult skill to master, and writing for an academic audience is different than writing for other audiences.

As an academic writer, you must approach topics differently than you might as a journalist or creative author, and you must emphasize certain skills, such as writing clearly, and ignore other skills that you might have been taught in other contexts, such as using expressive imagery.

To introduce you to this world of academic writing, in this chapter I suggest that you should focus on five hierarchical characteristics of good writing, or the “5 Cs” of good academic writing, which include Clarity, Cogency, Conventionality, Completeness, and Concision. I will now explain each of these in more depth and then discuss tensions between them in writing for different academic audiences.

Clarity

“Ambiguity is very interesting in writing; it’s not very interesting in science.” — Janna Levin

Many of us were taught in writing courses that ambiguity and obfuscation of meaning are laudable, because they make our writing seem more complex, deep, and witty. And many of our favorite novelists likely use ambiguity and other tricks to make their writing seem mysterious and complex.

In academic writing, though, these practices simply suggest that you don’t know what you’re talking about. For academics, writing is a way of uncovering truths and realities of the social and physical world, so we should say what we mean. We should make it clear, and say it so that it is impossible for our audience to misunderstand. If your imagined reader ever has to squint her eyes and muse “I wonder what the author really meant by this,” then you have failed. If your imagined reader ever smiles to herself and chuckles at your brilliant wordplay, then you have failed.

This is not to say that academic writing must be joyless and stodgy. It can be witty. It can be deep. But academic depth and wit come from the ideas portrayed through the words, not the words themselves. Too often, writers use ambiguity to hide sloppy thinking and beautiful language to hide destitute ideas. If you say something that could potentially be

misunderstood, explain it. If a simpler word will do in place of a more complex one, then use the simple word. Don't be afraid of laying out complex ideas across multiple sentences or paragraphs, but use the space available to you to open up your mind to your reader — what exactly you are thinking, how you are thinking about it, and why.

If you use jargon, technical terms, or initialisms, then you should define or operationalize them. Defining a term means that you are relying upon someone else's explanation of what the term means and are sticking with it (e.g., "Marwick defines 'social media' as..."). Operationalizing a term means that you are using a term that might mean multiple things but you are deciding to only use it in a very finite and specific manner (e.g., "In this paper, I use the word 'engagement' to mean...").

In the case of initialisms, no reader should be expected to know what a PBL, SNS, LMS, CMS, or PBIS is by virtue of the letters themselves, and often even technical initialisms might have multiple meanings (e.g., PBL in education might refer to "project-based learning" or "problem-based learning"). So, when you use initialisms in your writing, define them at the outset (e.g., "positive behavioral interventions and supports (PBIS)").

If you find yourself repeating the same words over and over again, that's okay; don't use variety in your language just for the sake of variety, because in highly technical academic fields every word carries with it technical baggage that you may not intend. If I'm talking about a "curriculum," then I shouldn't swap this out with "program," "module," "subject," or "materials" just because I'm tired of saying "curriculum;" each of these words means something very different, and using these terms interchangeably just shows my reader that I don't understand the differences between them.

In short, other types of writing often rely upon ambiguity and obfuscation to prevent their underlying thought processes from being examined, but examination of these processes is the whole purpose of academic writing. We are not poets, politicians, or preachers, whose primary goals are to be convincing or mystical; rather, we are fellow learners that can only learn together insofar as we can clearly reason together through a dialogic process of clear writing.

Cogency

"Logic is the beginning of wisdom, not the end." — Leonard Nimoy

Your writing should follow a logical pattern or argument. Arguments generally follow a pattern of identifying one or more assumptions, providing evidence, and drawing a conclusion, such as:

1. Assumption - Test creators should design tests to be equitable to all learners who may represent various demographic differences (e.g., race, ethnicity, gender);
2. Evidence - Specific research studies show that some prominent tests exhibit inequitable outcomes for students based on race and ethnicity;
3. Conclusion - Therefore, test creators should seek to understand why such tests are biased toward some students and should seek to remedy this issue.

Once a conclusion is drawn, it can then be used as an assumption for a subsequent argument. This means that the overarching argument for a paper actually consists of many micro-arguments made throughout the paper that build upon one another like bricks in a wall. Essentially, each paragraph in an academic paper should be treated as its own separate argument, and these arguments then build off of each other to construct the overarching argument.

To help reveal your logical structure, each paragraph should generally represent its own argument. It should start with a topic sentence, provide evidence, and then draw a conclusion that you then build upon in the next paragraph. This is what people often refer to as logical flow: moving from one idea to another without any unsubstantiated gaps.

Since you must substantiate each claim that you make in an academic paper, you should also be careful not to overstate claims (e.g., using superlative language) and not to make claims that you cannot provide evidence for. Oftentimes, this is done by toning down language (e.g., "project-based learning can be an effective pedagogical strategy" [toned down] vs. "project-based learning is the best pedagogical strategy" [superlative]) and using helping

verbs, such as may, can, and might (e.g., "social media use may contribute to student depression" vs. "social media make kids depressed"). By toning down your language, you introduce possibilities for doubt (which academics should always be open to) and also prevent your argument from being invalidated by a single counter-instance (e.g., "my kid uses social media and is not depressed, therefore your argument is invalid").

Conventionality

"Writing [without structure] is like playing tennis with the net down." — Robert Frost

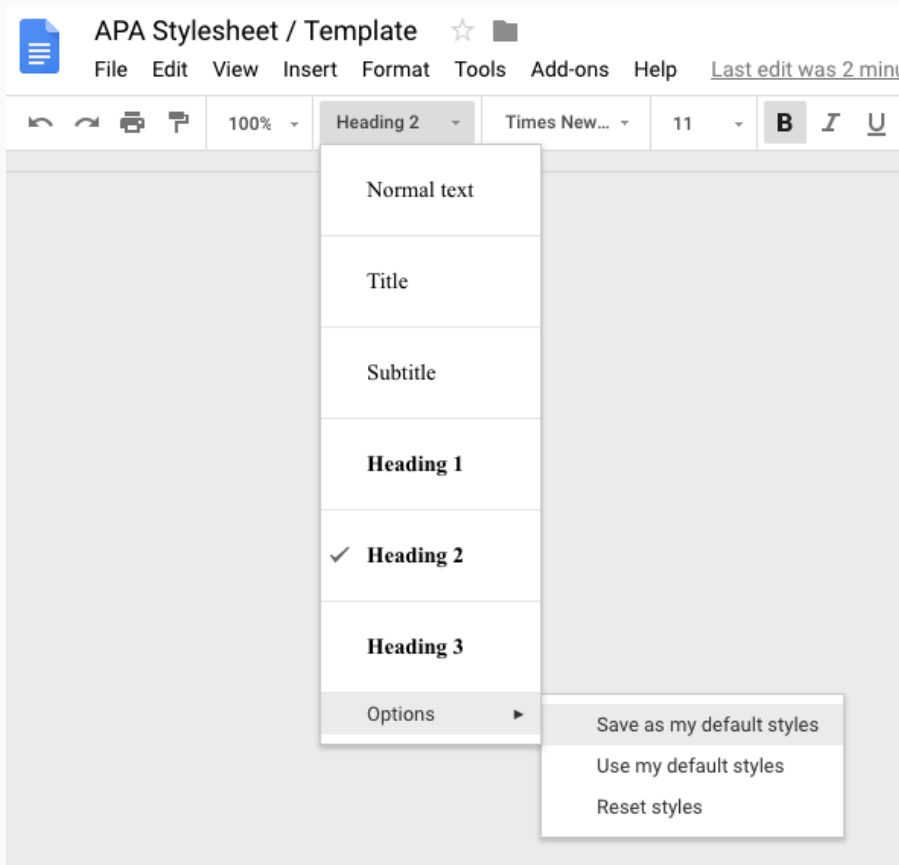
In order to understand each other and to know what to expect when we are reading a new manuscript, we need some conventions to provide uniformity. If every article you read had a unique structure, formatting, spacing, capitalization, font size, style, tone, and so forth, you would have increased difficulty comparing it to other work that had gone before.

However, if every time you approach a new piece of writing you know what to expect and where to find it, you will be able to more efficiently recognize where to go and what to look for in the paper. Rather than hunting for the research question, you will know that it will be found right before the methods section and that results will be provided right after that section. Similarly, when you see a bolded and centered line of text, you will know that this means that a new top-level (H1) section is beginning and are not left to wonder why the author made such a bold stylistic choice.

For these reasons, groups of academics have sets of guidelines that they agree to follow, and in our field we follow the American Psychological Association's (APA) Handbook (version 6). That handbook covers everything from structure and formatting to style and tone, and theses, dissertations, and class projects require students to follow these same guidelines to help ensure that student work is written in a way that will allow it to be published to a wider audience.

APA Template

To assist you in following APA guidelines, you can access this [Google Document](#) that has proper APA heading formats built into it. Then, click on the Styles dropdown > Options and save the APA styles as your default styles, thereby making any new documents that you create in Google Drive follow the APA conventions.



Setting the APA stylesheet as your default Google Document styles

Completeness

"Our duty is to believe that for which we have sufficient evidence, and to suspend our judgment when we have not." — John Lubbock

Since the goal of academic work is to inform as broad an audience as possible and to stand up under the scrutiny of diverse sets of eyes, you must flesh out your writing to address all of the major questions and doubts that your readers might have. Thus, you must not only make an argument that might be convincing to a few people, but you must include sufficient detail and explanation to allow your writing to hold under the scrutiny of the most critical reader. That is, you must write for your greatest critic, not your greatest fan.

This is why academic publishing relies upon peer review. The assumption of peer review is that the best way to ensure quality of writing is to put an author's work in the hands of dispassionate, unbiased, and diverse experts who typically do not know the identity of the author. This allows reviewers to be honest in their feedback and prevents them from relying upon their personal relationships with or knowledge of the author to fill any gaps (e.g., "I've heard of Dr. Avila,

and she's done great work before, so I'm assuming that she did good work here, too"). Rather, every piece of academic writing must stand or fall on its own merits and not on the author's prior quality of work or reputation.

To do this, you must be explicit and detailed, assume that your reader does not know or trust you as the author, and treat every piece of academic writing as a completely self-contained, self-sustaining, self-validating artifact.

Concision

"Brevity is the soul of wit."— William Shakespeare

Most journals in education and other social sciences have strict article word limits of 4,000 to 7,000 words, or roughly 20 to 30 double-spaced pages. This historically has been done to accommodate publishing limitations, because printing pages in a journal is expensive, but even in a digital world, with practically zero publishing costs for adding additional words, imposing limits helps to reduce information overload on readers and to drive more readers to your work.

After all, a moderately-interested reader is much more likely to read a ten-page synopsis of your dissertation than the 200-page document itself, and only the most devoted of readers will stick with it after 20 pages or so. This means that you as the author must not only meet all of the requirements established by the previous guidelines, but you must do it on a strict word budget that avoids unnecessary detail or repetition.

Tensions and Relative Importance

As you've probably guessed by this point, the demands of each of these guidelines sometimes conflict with one another. For instance, being complete might mean that you are not very concise, and being clear might reveal the irrationality or poor cogency of your argument. At such times, you must prioritize the guidelines to determine which to emphasize and which to ignore.

Depending on the type of academic writing you are doing, the way that you prioritize guidelines may vary. For instance, a journal article will normally value concision over completeness, due to publishing word limits and trying to make the article as accessible as possible to a wide audience, while a systematic literature review for a thesis or dissertation will do the opposite, requiring students to reveal all of their understanding of their topic and how it is situated within the broader field so that their committees can be assured that they actually know what they are talking about.

Similarly, a quantitative empirical paper will rely heavily upon the conventions established by the paradigm (e.g., p-values, effect sizes), while a qualitative empirical paper will need to provide completeness in its descriptions to allow for trustworthiness and at times ignore conventions. Theoretical papers will also often necessarily defy some conventions in favor of laying out a clear and cogent argument, because the proposed ideas will be new and will not neatly fit within existing reporting approaches but will nonetheless need to be argued in a reasonable and compelling manner.

All this is to say that though these guidelines are all important, their relative importance to one another varies by the context of the writing as determined by purpose, audience, and methods.

Table 1

Relative Importance of the 5 Cs in Different Settings

Relative Importance	Journal Article	Thesis or Dissertation
Most Important	Concision	Completeness
	Conventionality	Clarity

Relative Importance	Journal Article	Thesis or Dissertation
	Clarity	Cogency
	Cogency	Conventionality
Least Important	Completeness	Concision

By focusing on these 5 Cs and each of their relative importance for your writing context, you can begin to approach your own work in a manner that is systematic and self-reflective. If writing a thesis, for instance, I should start by asking myself "Am I including all pertinent information and details? Is my meaning clear? Is my logic sound? Am I following APA guidelines? And am I careful not to repeat myself or belabor my point?" If writing a theoretical argument for a journal, on the other hand, I should ask myself "Am I within the word limit for the journal? Am I following the journal's stylistic guidelines? Is my argument strong? Is my meaning clear? And do I cover everything that I need to in order to preempt any concerns?"

When asking these questions, something always has to give, such as cutting that explanatory paragraph to get an article under the journal's required word limit or adding an additional paragraph to make it clear to your thesis readers that you understand the implications of what you're saying. Through it all, however, each of these guidelines is generally important to follow, and you can only justify ignoring one temporarily in those cases where tensions exist and your intended audience requires you to prioritize another guideline in its place.



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How to Write Articles Quickly and Expertly

Stephen Downes

Introduction: Four Types of Discursive Writing

From time to time people express amazement at how I can get so much done. I, of course, aware of the many hours I have idled away doing nothing, demur. It feels like nothing special; I don't work harder, really, than most people. Nonetheless, these people do have a point. I am, in fact, a fairly prolific writer.

Part of it is tenacity. For example, I am writing this item as I wait for the internet to start working again in the Joburg airport departures area. But part of it is a simple strategy for writing your essays and articles quickly and expertly, a strategy that allows you to plan your entire essay as you write it, and thus to allow you to make your first draft your final draft. This article describes that strategy.

Begin by writing - in your head, at least - your second paragraph (that would be the one you just read, above). Your second paragraph will tell people what your essay says. Some people write abstracts or executive summaries in order to accomplish this task. But you don't need to do this. You are stating your entire essay or article in one paragraph. If you were writing a news article, you would call this paragraph the 'lede'. A person could read just the one paragraph and know what you had to say.

But how do you write this paragraph? Reporters will tell you that writing the lede is the hardest part of writing an article. Because if you don't know what the story is, you cannot write it in a single paragraph. A reporter will sift through the different ways of writing the story - the different angles - and find a way to tell it. You, because you are writing an article or essay, have more options.

You have more options because there are four types of discursive writing. Each of these types has a distinct and easy structure, and once you know what sort of writing you are doing, the rest of the article almost writes itself. The four types of structure are: argument, explanation, definition, and description. So, as you think about writing your first paragraph, ask yourself, what sort of article are you writing. In this article, for example, I am writing a descriptive article.

These are your choices of types of article or essay:

Argument: convinces someone of something

Explanation: tells why something happened instead of something else

Definition: states what a word or concept means

Description: identifies properties or qualities of things

An **argument** is a collection of sentences (known formally as 'propositions') intended to convince the reader that something is the case. Perhaps you want to convince people to take some action, to buy some product, to vote a certain way, or to believe a certain thing. The thing that you want to convince them to believe is the conclusion. In order to

convince people, you need to offer one or more reasons. Those are the premises. So one type of article consists of premises leading to a conclusion, and that is how you would structure your first paragraph.

An **explanation** tells the reader why something is the case. It looks at some event or phenomenon, and shows the reader what sort of things led up to that event or phenomenon, what caused it to happen, why it came to be this way instead of some other way. An explanation, therefore, consists of three parts. First, you need to identify the thing being explained. Then, you need to identify the things that could have happened instead. And finally, you need to describe the conditions and principles that led to the one thing, and not the other, being the case. And so, if you are explaining something, this is how you would write your first paragraph.

A **definition** identifies the meaning of some word, phrase or concept. There are different ways to define something. You can define something using words and concepts you already know. Or you can define something by giving a name to something you can point to or describe. Or you can define something indirectly, by giving examples of telling stories. A definition always involves two parts: the word or concept being defined, and the set of sentences (or 'propositions') that do the defining. Whatever way you decide, this will be the structure of your article if you intend to define something.

Finally, a **description** provides information about some object, person, or state of affairs. It will consist of a series of related sentences. The sentences will each identify the object being defined, and then ascribe some property to that object. "The ball is red," for example, where the ball is the object and 'red' is the property. Descriptions may be of 'unary properties' - like colour, shape, taste, and the like, or it may describe a relation between the object and one or more other objects.

Organizing Your Writing

The set of sentences, meanwhile, will be organized on one of a few common ways. The sentences might be in *chronological* order. "This happened, and then this happened," and so on. Or they may enumerate a *set of properties* ('appearance', 'sound', 'taste', 'small', 'feeling about', and the like). Or they may be *elements of a list* ("nine rules for good technology," say, or "ten things you should learn"). Or, like the reporters, you may cover *the five W's*: who, what, where, when, why. Or the steps required to write an essay.

When you elect to write an essay or article, then, you are going to write one of these types of writing. If you cannot decide which type, then your purpose isn't clear. Think about it, and make the choice, before continuing. Then you will know the major parts of the article - the premises, say, or the parts of the definition. Again, if you don't know these, your purpose isn't clear. Know what you want to say (in two or three sentences) before you decide to write.

You may at this point be wondering what happened to the first paragraph. You are, after all, beginning with the second paragraph. The first paragraph is used to 'animate' your essay or article, to give it life and meaning and context. In my own writing, my animation is often a short story about myself showing how the topic is important to me. Animating paragraphs may express feelings - joy, happiness, sadness, or whatever. They may consist of short stories or examples of what you are trying to describe (this is very common in news articles). Animation may be placed into your essay at any point. But is generally most effective when introducing a topic, or when concluding a topic.

For example, I have now concluded the first paragraph of my essay, and then expanded on it, thus ending the first major part of my essay. So now I could offer an example here, to illustrate my point in practice, and to give the reader a chance to reflect, and a way to experience some empathy, before proceeding. This is also a good place to offer a picture, diagram, illustration or chart of what you are trying to say in words.

Like this: the second paragraph will consist of a set of statements. Here is what each of the four types look like:

Argument:

Premise 1

Premise 2 ... (and more, if needed)

Conclusion

Explanation:

Thing being explained

Alternative possibilities

Actual explanation

Definition:

Thing being defined

Actual definition

Description:

Thing being described

Descriptive sentence

Descriptive sentence (and more, connected to the rest, as needed)

So now the example should have made the concept clearer. You should easily see that your second paragraph will consist of two or more distinct sentences, depending on what you are trying to say. Now, all you need to do is to write the sentences. But also, you need to tell your reader which sentence is which. In an argument, for example, you need to clearly indicate to the reader which sentence is your conclusion and which sentences are your premises.

Indicator Words

All four types of writing have their own indicator words. Let's look at each of the four types in more detail, and show (with examples, to animate!) the indicator words.

As stated above, an argument will consist of a conclusion and some premises. The conclusion is the most important sentence, and so will typically be stated first. For example, "Blue is better than red." Then a premise indicator will be used, to tell the reader that what follows is a series of premises. Words like 'because' and 'since' are common premise indicators (there are more; you may want to make a list). So your first paragraph might look like this: "Blue is better than red, *because* blue is darker than red, and all colours that are darker are better."

Sometimes, when the premises need to be stressed before the conclusion will be believed, the author will put the conclusion at the end of the paragraph. To do this, the author uses a conclusion indicator. Words like 'so' and 'therefore' and 'hence' are common conclusion indicators. Thus, for example, the paragraph might read: "Blue is darker than red, and all colours that are darker are better, *so* blue is better than red."

You should notice that indicator words like this help you understand someone else's writing more easily as well. Being able to spot the premises and the conclusion helps you spot the structure of their article or essay. Seeing the conclusion indicator, for example, tells you that you are looking at an argument, and helps you spot the conclusion. It is good practice to try spotting arguments in other writing, and to create arguments of your own, in our own writing.

Arguments can also be identified by their form. There are different types of argument, which follow standard patterns of reasoning. These patterns of reasoning are indicated by the words being used. Here is a quick guide to the types of arguments:

Inductive argument: the premise consists of a 'sample', such as a series of experiences, or experimental results, or polls. Watch for words describing these sorts of observation. The conclusion will be inferred as a generalization from these premises. Watch for words that indicate a statistical generalization, such as 'most', 'generally', 'usually', 'seventy percent', 'nine out of ten'. Also, watch for words that indicate a universal generalization, such as 'always' and 'all'.

A special case of the inductive argument is the *causal generalization*. If you want someone to believe that one thing causes another, then you need to show that there are many cases where the one thing was followed by the other, and also to show that when the one thing didn't happen, then the other didn't either. This establishes a 'correlation'. The argument becomes a causal argument when you appeal to some general principle or law of nature to explain the correlation. Notice how, in this case, an explanation forms one of the premises of the argument.

Deductive argument: the premises consist of propositions, and the conclusion consists of some logical manipulation of the premises. A *categorical* argument, for example, consists of reasoning about sets of things, so watch for words like 'all', 'some' and 'none'. Many times, these words are implicit; they are not stated, but they are implied. When I said "Blue is better than red" above, for example, I meant that "blue is always better than red," and that's how you would have understood it.

Another type of deductive argument is a *propositional* argument. Propositional arguments are manipulations of sentences using the words 'or', 'if', and 'and'. For example, if I said "Either red is best or blue is best, and red is not best, so blue is best," then I have employed a propositional argument.

It is useful to learn the basic argument forms, so you can very clearly indicate which type of argument you are providing. This will make your writing clearer to the reader, and will help them evaluate your writing. And in addition, this will make easier for you to write your article.

See how the previous paragraph is constructed, for example. I have stated a conclusion, then a premise indicator, and then a series of premises. It was very easy to writing the paragraph; I didn't even need to think about it. I just wrote something I thought was true, then provided a list of the reasons I thought it was true. How hard is that?

In a similar manner, an **explanation** will also use indicator words. In fact, the indicator words used by explanations are very similar to those that are used by arguments. For example, I might explain by saying "The grass is green because it rained yesterday." I am explaining why the grass is green. I am using the word 'because' as an indicator. And my explanation is offered following the word 'because'.

People often confuse arguments and explanations, because they use similar indicator words. So when you are writing, you can make your point clearer by using words that will generally be unique to explanations.

In general, explanations are answers to 'why' questions. They consider why something happened 'instead of' something else. And usually, they will say that something was 'caused' by something else. So when offering an explanation, use these words as indicators. For example: "It rained yesterday. That's why the grass is green, instead of brown."

Almost all explanations are *causal explanations*, but in some cases (especially when describing complex states and events) you will also appeal to a *statistical explanation*. In essence, in a statistical explanation, you are saying, "it had to happen sometime, so that's why it happened now, but there's no reason, other than probability, why it happened this time instead of last time or next time." When people see somebody who was killed by lightning, and they say, "His number was just up," they are offering a statistical explanation.

Definitions are trickier, because there are various types of definition. I will consider three types of definition: ostensive, lexical, and implicit.

An '*ostensive*' definition is an act of naming by pointing. You point to a dog and you say, "That's a dog." Do this enough times, and you have defined the concept of a dog. It's harder to point in text. But in text, a description amounts to the same thing as pointing. "The legs are shorter than the tail. The colour is brown, and the body is very long. That's what I mean by a 'wiener dog'." As you may have noticed, the description is followed by the indicator words "that's what I mean by". This makes it clear to the reader that you are defining by ostension.

A '*lexical*' definition is a definition of one word or concept in terms of some other word or concept. Usually this is describes as providing the 'necessary and sufficient conditions' for being something. Another way of saying the same thing is to say that when you are defining a thing, you are saying that 'all and only' these things are the thing being

defined. Yet another way of saying the same thing is to say that the thing belongs to such and such a category (all dogs are animals, or, a dog is necessarily an animal) and are distinguished from other members in such and such a way (only dogs pant, or, saying a thing is panting is sufficient to show that it is a dog).

That may seem complicated, but the result is that a lexical definition has a very simply and easy to write form: A (thing being defined) is a type of (category) which is (distinguishing feature). For example, "A dog is an animal that pants."

This sentence may look just like a description, so it is useful to indicate to the reader that you are defining the term 'dog', and not describing a dog. For example, "A 'dog' is defined as 'an animal that pants'." Notice how this is clearly a definition, and could not be confused as a mere description.

The third type of definition is an *implicit* definition. This occurs when you don't point to things, and don't place the thing being defined into categories, but rather, list instances of the thing being defined. For example, "Civilization is when people are polite to each other. When people can trust the other person. When there is order in the streets." And so on. Or: "You know what I mean. Japan is civilized. Singapore is civilized. Canada is civilized." Here we haven't listed necessary and sufficient conditions, but rather, offered enough of a description as to allow people to recognize instances of 'civilization' by their resemblance to the things being described.

Finally, the **description** employs the 'subject predicate object' form that you learned in school. The 'subject' is the thing being described. The 'predicate' is something that is true of the subject - some action it is undertaking, or, if the predicate is 'is', some property that it possesses. And the 'object' may be some other entity that forms a part of the description.

As mentioned, the sentences that form a description are related to each other. This relation is made explicit with a set of indicator words. For example, if the relation is chronological, the words might be 'first'... 'and then'... 'and finally'...! Or, 'yesterday'... 'then today'... 'and tomorrow'...

In this essay, the method employed was to identify a list of things - argument, explanation, definition, and description - and then to use each of these terms in the sequence. For example, "An argument will consist of a ..." Notice that I actually went through this list twice, first describing the parts of each of the four items, and then describing the indicator words used for each of the four items. Also, when I went through the list the second time, I offered for each type of sentence a subdivision. For example, I identified inductive and deductive arguments.

Summary

So, now, here is the full set of types of things I have described (with indicator words in brackets):

Argument (premise: 'since', 'because'; conclusion: 'therefore', 'so')

Deductive

Categorical ('all', 'only', 'no', 'none', 'some')

Propositional ('if', 'or', 'and')

Inductive

Generalization ('sample', 'poll', 'observation')

Statistical ('most', 'generally', 'usually', 'seventy percent', 'nine out of ten')

Universal ('always' and 'all')

Causal ('causes')

Explanation ('why', 'instead of')

Causal ('caused')

Statistical ('percent', 'probability')

Definition ('is a', 'is defined as')

Ostensive ('That's what I mean by...')

Lexical ('All', 'Only', 'is a type of', 'is necessarily')

Implicit ('is a', 'for example')

Description

Chronology ('yesterday', 'today')

Sensations ('seems', 'feels', 'appears', etc..)

List ('first', 'second', etc.)

5 W's ('who', 'what', 'where', 'when', 'why')

Complex Forms

As you have seen in this article, each successive iteration (which has been followed by one of my tables) has been more and more detailed. You might ask how this is so, if there are only four types of article or essay.

The point is, each sentence in one type of thing might be a whole set of sentence of another type of thing. This is most clearly illustrated by looking at an argument.

An argument is a conclusion and some premises. Like this:

Statement 1, and
Statement 2,
Thus,
Statement 3

But each premise might in turn be the conclusion of another argument. Like this:

Statement 4, and
Statement 5,
Thus,
Statement 1

Which gives us a complex argument:

Statement 4, and
Statement 5,
Thus, Statement 1
Statement 2
Thus Statement 3

But this can be done with all four types of paragraphs. For example, consider this:

Statement 1 (which is actually a definition, with several parts)
Statement 2 (which is actually a description)
Thus,
Statement 3

So, when you write your essay, you pick the main thing you want to say. For example:

Second paragraph:

Statement 1, and
Statement 2
Thus
Statement 3

Third paragraph:

Statement 4 (thing being defined)
Statement 5 (properties)
Statement 1 (actual definition)

Fourth Paragraph

Statement 5 (first statement of description)
Statement 6 (second statement of description)
Statement 2 (summary of description)

As you can see, each simple element of an essay - premise, for example - can become a complex part of an essay - the premise could be the conclusion of an argument, for example.

And so, when you write your essay, you just go deeper and deeper into the structure.

And you may ask: where does it stop?

For me, it stops with descriptions - something I've seen or experienced, or a reference to a study or a paper. To someone else, it all reduces to definitions and axioms. For someone else, it might never stop.

But you rarely get to the bottom. You simply go on until you've said enough. In essence, you give up, and hope the reader can continue the rest of the way on his or her own.

And just so with this paper. I would now look at each one of each type of argument and explanation, for example, and identify more types, or describe features that make some good and some bad, or add many more examples and animations.

But my time is up, I need to board my flight, so I'll stop here.

Nothing fancy at the end. Just a reminder, that this is how you can write great articles and essays, first draft, every time. Off the top of your head.

Johannesburg, September 13, 2006

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Stephen Downes is a specialist in online learning technology and new media. Through a 25 year career in the field Downes has developed and deployed a series of progressively more innovative technologies, beginning with multi-user domains (MUDs) in the 1990s, open online communities in the 2000s, and personal learning environments in the 2010s. Downes is perhaps best known for his daily newsletter, [OLDaily](#), which is distributed by web, email and RSS to thousands of subscribers around the world, and as the originator of the Massive Open Online Course (MOOC), is a leading voice in online and networked learning, and has authored learning management and content syndication software.

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Critical Thinking

Critical Thinking in the Classroom
Necessary and Sufficient Conditions
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Critical Thinking in the Classroom

Stephen Downes

Introduction

Critical thinking is the use of reason in reading and writing. It enables the reader to evaluate the material being read, to recognize argument patterns and to detect inappropriate reasoning. And it allows the writer to present his or her points in a logical and reasonable manner.

As such, critical thinking is not reserved for the domain of logic and philosophy classes alone. It is a skill which has application throughout all disciplines. Indeed, expertise in any discipline is impossible without knowledge and application of critical thinking.

The purpose of this essay is to introduce the instructor to critical thinking and to suggest means of applying it in the classroom. As such, it is not a teaching document; it does not pause and repeat nor stimulate learning with examples and exercises. Rather, its purpose is to provide an overview of the field and to suggest a common terminology. A list of references is provided for those desiring more detailed study.

This essay will not attempt to persuade the reader of the merits of teaching critical thinking in the classroom. That is assumed. Rather, it focuses on what critical reasoning is and how to apply it. This essay proceeds in three major sections. First, the three major types of reasoning are described. Second, errors of reasoning in these three major types of reasoning are described. Finally, third, methods of application to the classroom are suggested.

Some notes are necessary about the approach taken. First, the methods of creating and criticizing arguments are presented as 'tools' for a student (or anyone) to use to achieve a desired outcome. Second, and related to this, it is taken that the use of a tool is flagged with 'indicator words'. That is, there are certain characteristic ways of telling the reader that you are trying to achieve a particular outcome. Hence, words themselves are regarded as tools for the expressions of an idea.

Types of Reasoning

(i) Deductive Reasoning

Deductive reasoning is the oldest and most venerable of the types of reasoning. Examples of deductive reasoning include mathematics, categorical reasoning, set theory, and computer programming. Deductive reasoning is by its very nature abstract; for this reason, students find it the most difficult to master.

A deductive argument is formed from one or more premises and a conclusion. The conclusion is the opinion the author is attempting to prove is true. The premises are the reasons given in order to persuade the reader that the conclusion is

true.

The premises and the conclusion of an argument are identified by indicator words. There are two types of indicator words: premise indicators, and conclusion indicators. Premise indicators always precede premises, while conclusions always precede conclusions. In general, the structure of deductive arguments is as follows:

(Using a premise indicator):

___ *because* ___ .

Since ___, ___ .

(Using a conclusion indicator):

___ *therefore* ___.

Notice the use of not only the indicator words ('because', 'since' and 'therefore') but also the use of punctuation and conjunctions to indicate the structure of the argument. Good writing follows a clear argument structure, and hence, good writing uses grammatical elements to show clear argument structure.

In the absence of an indicator word (some people are sloppy writers), the reader is reminded that the conclusion is an opinion. Hence, the conclusion is usually 'hedged' in some way. By that, what is meant is that the conclusion is not stated directly, but rather, is qualified with expressions like, 'I think that' or 'It must be that', or the like. Compare, for example, the difference between "The sky is blue" and "The sky must be blue". The latter is clearly hedged, hence, it must be an opinion and therefore probably the conclusion of an argument.

Not all arguments are deductive arguments. Deductive arguments may be recognized by their characteristic forms. The form of an argument can be recognized by identifying keywords. Because deductive arguments constitute a particular sort of reasoning, they entail the use of a particular set of words. In particular, there are three types of key words to watch for.

1. Mathematical keywords: plus, minus, equals
2. Categorical keywords: is, all, some, no, every, any, only
3. Propositional keywords: both...and, either, ... or, if .. then, unless

These keywords are not used only to recognize deductive arguments. Knowledge of the role of these keywords also enables the writer to write clear, structured sentences. This will be discussed in more detail in section three.

(ii) Inductive Reasoning

The purpose of an inductive argument is to produce generalizations from matters of fact or experience. It is not as old as deductive argumentation, nor is it as well respected. Nonetheless, without inductive argumentation it would not be possible to live in the world at all.

Types of inductive reasoning include statistical generalizations, analogy, reasoning concerning cause and effect, and probability.

Like a deductive argument, an inductive argument is formed from one or more premises and a conclusion. And like a deductive argument, the purpose of an inductive argument is to persuade the reader that the conclusion is true, and the premises are given as reasons to believe that the conclusion is true. All that was said above of indicator words and hedging is also true of inductive arguments. Hence, the two can be distinguished only by their keywords.

Here are characteristic keywords of some inductive arguments:

1. Statistical keywords: most, many, five percent, usually, generally
2. Analogical keywords: is like, is similar to, like, as
3. Probabilistic keywords: the chances of, probably, likely
4. Causal keywords: causes, depends on, effect

Again, the use of these keywords tells the reader what sort of argument is being used. A reader can, for example, recognize an analogy much more clearly if the words 'like' or 'as' are used than if they are not.

(iii) Abductive Reasoning (Inference to the best explanation)

Abductive reasoning was recognized as such only in the late nineteenth century by Charles Sanders Peirce, though there are instances of it through antiquity. It is now the most common form of argument in the sciences, for it involves the postulation of theories which explain some event or regularity.

The form of an inference to the best explanation differs from that of deductive or inductive argument, though (confusingly) the same indicator words are used. In an abduction, the conclusion is some event or regularity which needs to be explained, while the premises are the theories or sets of conditions which do the explaining. That said, the word 'why' is used much more frequently in explanations, hence, the word 'why' can be used to distinguish abductions from other forms of argument.

The most common form of an inference to the best explanation is:

The reason why ___ is because ___.

Note again that the conclusion should be some fact or regularity, while the premise is typically a theory. Very often the conclusion which is being explained is also the conclusion of an inductive argument. A writer will use induction to show that some generalization is true, and then use abduction to explain why it is true.

Abductive arguments do not have characteristic keywords (other than 'explains' and 'why'). The only way to distinguish between an inductive or deductive argument and an abduction is to determine whether the conclusion is a fact (in which case it's an abduction) or an opinion (in which case it's a deductive or inductive argument). It is important to watch for hedging words while making this distinction.

Errors of Reasoning

(i) Deductive Errors

There are two ways a deductive argument can fail: (i) the premises may be false, or (ii) the conclusion may not follow from the premises. Students often attempt a third method of evaluation: arguing directly against the conclusion. While this is allowed, it amounts to ignoring the argument in favour of the conclusion, and hence, is never decisive.

Whether or not the premises are true, if the conclusion follows from the premises, then the argument is valid. To say that an argument is valid is to say that the premises are appropriately related to the conclusion. The premises need not be true. To see this, consider the following argument: "If Mulroney is a Marxist, then he likes Castro, and he is a Marxist, hence, he likes Castro." As it happens, the premises are false. But suppose they were true. Then we can see clearly that the conclusion would have to be true as well; the premises support the conclusion.

In order to show that a deductive argument is invalid, it is necessary only to show that there is some way the premises could be true while the conclusion could be false. If this is possible, then we can see that the premises do not make the conclusion true. Consider the following example: "If the mill is polluting the river, then we can see dead fish, and we can see dead fish, therefore, the mill is polluting the river." Even if the premises actually are true, we can see that they do not support the conclusion, for it could be that something else is killing the fish, and that the mill is not polluting the river at all.

There are two major forms of invalid argument:

Denying the Antecedent. Any argument of the form "If A then B, and not A, therefore B" is invalid.

Affirming the Consequent. Any argument of the form: "If A then B, and B, therefore A" is invalid. The example of the mill (above) affirms the consequent.

The second way of criticizing a deductive argument is to show that the premises are false. Students are particularly hesitant to do this, however, it is often (all too often) accomplished with ease. Consider a categorical premise of the form "All A are B", for example, "All things which swim in the sea are fish." This is easily shown to be false by observing that there can be some A which is not B, for example, a dolphin swims in the sea, but is not a fish.

In general, premises are shown to be false by showing that their contradictories are true. Here are some common contradictions:

1. 'All A are B' contradicts 'Some A is not B'
2. 'No A are B' contradicts 'Some A is B'
3. 'If A then B' contradicts 'A and not B'
4. 'Either A or B' contradicts 'Not A and not B'
5. 'Both A and B' contradicts 'Not A'

An argument which is both valid and has true premises is called a sound argument. Sound arguments are also sometimes called cogent arguments.

(ii) Inductive Errors

All inductive arguments base their success on the similarity between the objects or events described in the premises and those described in the conclusion. This is most clear in the case of an analogy, and so we turn to the first error of inductive reasoning:

False Analogy. The two things being compared are not similar in a way which is relevant to the conclusion. For example, suppose someone argued, "An employee is like a nail. Just like a nail, an employee must be hit in the head in order to get him to work." This argument may be criticized by showing that employees are not like nails in that (i) incentives will not persuade a nail to work, but they will persuade employees to work, and (ii) a nail won't resent being hit, but an employee will.

Statistical generalizations are arguments which use some sort of sample to draw a conclusion about a population. For example, a pollster will collect a sample of opinions and draw conclusions about the population as a whole. In order for the sample to tell us anything useful about the population, the sample must be similar to the population. The two major inductive fallacies are cases where the sample may be dissimilar to the population:

Hasty Generalization. The sample is too small, and hence, we can't be sure that it is similar to the population.

Unrepresentative Sample. The sample can be shown to be in some way different from the population. For example, a survey taken in only one city is unrepresentative of the nation as a whole.

Unrepresentative samples are very common. Phone-in or write-in polls are classic examples of unrepresentative samples. So are testimonials. Many instructors value student opinions and observations in class. No doubt this makes the students feel good, but such information should not form the basis of instruction, for the individual experiences of one person constitute an unrepresentative sample.

There is a variety of things which can go wrong in causal reasoning. In order to say that A causes B, a minimum of two things must be true:

1. Generally, if A happens, then B happens
 2. Generally, if A does not happen, then B does not happen
- In addition, many theorists argue that there should be a third condition:
3. There must be a law of nature connecting A and B

The most common causal fallacy occurs when only the first condition is true and yet a causal relation is assumed to hold:

Post Hoc Ergo Propter Hoc (After this therefore because of this). This fallacy consists in assuming that because one thing follows the other, the one thing is caused by the other.

Good inductive arguments are called strong arguments. Bad inductive arguments are called weak inductive arguments.

(iii) Abductive Errors

There are two major ways an inference to the best explanation can go wrong: either (i) the fact to be explained is not a fact at all, or (ii) the theory which does the explaining is inadequate. Let us consider these in turn.

The fact to be explained may be false because of:

Non-support. For example, Jenny may wonder why John knows so much about physics. This 'fact' is false because of non-support if John knows nothing about physics.

Subverted Support. The argument which supports the 'fact' is not a good argument. For example, if a generalization such as "Edmontonians are cheap" was formed on the basis of one person's experience, then it is supported by an unrepresentative sample. Pointing out that this putative fact is not well supported is to subvert support.

There are also two ways a theory can be inadequate:

Untestability. Theories which cannot be tested are not good theories. Theories are tested by being used to make a prediction. If a theory cannot be used to make a prediction, then it is a poor theory. For example, if someone theorized that "Coffee keeps you awake because it has wakening properties" then this theory could be criticized because we cannot use it to predict what other things will keep us awake.

Better Alternative. If another theory can explain the same phenomenon and is a better theory, then the new theory can be used to criticize the old. There are two major criteria for the betterness of a theory: (1) the theory has a wider scope, that is, it applies to more things; and (2) the theory is simpler.

(iv) Informal Fallacies

There is also a range of error which can be committed in any type of argument. These are grouped under the heading of 'informal fallacies' ("fallacy" is a ten-dollar word for "error of reasoning").

The first grouping is Fallacies of Relevance. These are fallacies because they change the subject in some way. The following are major fallacies of relevance:

Attacking the Person. Authors commit this fallacy when they argue that because their opponent is a certain type of person, then their opponent is wrong. Students often argue that this form of argument is legitimate. For example, they argue that if a person has an interest in the outcome of an argument (say, a developer argues that some land should be rezoned) that a valid criticism may be made. This assumption is wrong.

Appeal to Force. In this fallacy, the reader is advised that some bad consequence will occur if the conclusion is not believed.

Appeal to Pity. In this fallacy, the reader is appealed to for support because the writer is in some bad state. For example, if a politician tells you how hard he worked on a piece of legislation, he is appealing to pity.

Prejudicial Language. A writer commits this fallacy when some moral value is attached to believing or not believing a conclusion. For example, "Clear thinkers agree that murder is bad" is a fallacy because it implies that people who disagree are not clear thinkers.

Appeal to Popularity. This fallacy is committed when it is argued that because most people believe a conclusion, then the conclusion is true. History is replete with examples where the majority was wrong.

The second grouping is **Fallacies of Distraction.** These are fallacies because while the premises in question appear to be true at first glance, closer examination shows them to be false.

False Dilemma. In this fallacy, the reader is presented with two options, and since one is unacceptable, we are forced to choose the second. The fallacy occurs when more than two options actually exist.

Argument from Ignorance. This fallacy is by far and away a student favourite. In this fallacy it is argued that because some proposition has not been proven to be true, it is therefore false.

Slippery Slope. The writer argues that if some proposition is believed, a chain of consequences will follow, leading to some unacceptable conclusion. The fallacy occurs when there is no reason to believe the consequences will actually occur.

Complex Question. This fallacy occurs when two separate points are presented as a single point. This fallacy is committed a lot on surveys, where a reader may be asked, for example, "Do you support reducing the deficit and cutting social programs?"

Begging the Question. Very often, this is the only way students know how to argue. Instead of offering support for a conclusion, the arguer instead restates the conclusion in a slightly different manner. Obviously, when the conclusion is simply restated, no support has been given for the conclusion.

The third grouping concerns **Fallacies of Authority.** Students tend to be very trusting of authority, even when the authority is inappropriate.

Unqualified Authority. This occurs when an authority is quoted outside his or her field of expertise. Celebrity endorsements fall within this category.

Disagreement. Even when an authority is an expert in the field, it may be that experts in the field disagree on the point in question. In such a case, an appeal to an authority is fallacious, since it is possible to quote an equally qualified authority who holds the opposite view.

Unnamed Authority. This fallacy is committed when an authority is implied but not named. This fallacy may be detected by the use of phrases such as "experts agree..." or "it is said that...". This is a fallacy because there is no way to know that the authority is an expert.

The fallacies listed in this section constitute only a partial list; they were chosen because they are committed the most frequently and because they are most often believed by students.

Applications in the Classroom

Critical reasoning has many more applications in the classroom than merely the correcting of faulty arguments. Critical thinking concerns the nature of argumentation itself, and all branches of knowledge involve some form of argument. This section will describe a number of applications of critical reasoning in the classroom.

(i) Writing

Knowledge of logical structures improves a student's writing in a direct and dramatic fashion. When logical structures are understood, the construction of a sentence is understood as an application of a particular logical structure. The following is a brief example of this process.

Simple sentences using categorical form. The structure of a categorical proposition, 'All A are B', mirrors the structure of a simple sentence. The 'A' in question is the subject of the sentence, while the 'B' is the predicate. This is useful because it helps correct problems with noun-verb agreement. Clearly identifying the subject and the predicate reminds the student that they work as a pair.

Another application of categorical form involves the use of subordinate clauses. The subject-predicate form clearly illustrates to the student the idea that subordinate clauses modify the subject (or predicate) they are attached to. Showing the student a sentence of the form:

"All men are mortal"

clarifies the form of:

"All men who are kings are mortal."

Complex sentences using logical operators. Complex sentences are formed out of simple sentences using logical operators. Consider, for example, how a complex sentence may be constructed from the simple sentences "All men are mortal" and "Socrates is a man".

If all men are mortal then Socrates is a man.
Either all men are mortal or Socrates is a man.
All men are mortal and Socrates is a man.

Even more complex sentences or paragraphs using indicator words. Using simple and complex sentences as described above, the structure of paragraphs can be detailed to students. We identify the premises and conclusion of an argument as a set of sentences. Then these sentences are assembled into a paragraph using indicator words.

If all men are mortal then Socrates is a man, and all men are mortal, therefore Socrates is a man.

All men are mortal, and Socrates is a man. Therefore, Socrates is mortal.

More complex paragraphs are constructed from more complex arguments. Consider the following:

All men are mortal and Socrates is a man. Thus, Socrates is mortal. All things which are mortal eventually die. Therefore, Socrates will eventually die.

(ii) Abstraction

Knowledge in many disciplines is abstract knowledge. This is most clearly the case in mathematics, where notation such as " $x+y=z$ " is abstract, but it is also true in many other cases. For example, in geography, students may be taught that a river meanders in a particular way. This is abstract because we are not talking about any particular river. Or in music, students are taught to read sheet music. This is abstract because sheet music is not generally written for a particular music.

Critical thinking forces a student to reason abstractly because sentences and arguments are thought of as abstract structures. The long paragraph just above should be recognized by the student as an instance of:

All A are B and S is A. Thus, S is M. All M are D. Therefore, S is D.

The benefits of abstract thought should be clear. Lessons learned in one domain are more easily applied in another domain when abstract features of the two domains are identified.

How might this be applied in a classroom? In essence, it involves imparting to the student not merely knowledge of particular matters of fact, but also the abstract form of whatever knowledge is being taught. For example, the proposition that "Rome fell because of a lack of morality" is an instance of the more general "Civilizations fall because of immorality". Students may be shown this, and also shown that the same pattern occurs in "Sodom and Gomorrah fell because of immorality" and "This civilization will fall because of immorality".

(iii) Reading

Students often misunderstand what they are reading. Often this is because they do not know what to look for in a piece of writing. This is understandable; there are many ways to go wrong when reading even a short paragraph.

For example, students often misunderstand a particular sentence. One common mistake occurs, for example, when a student interprets "Not all men are mortal" as meaning "No men are mortal". Knowing that the contradictory of "All A are B" is "Some A are not B" would allow the student to understand that "Not all men are mortal" means "Some men are not mortal".

Students often believe that information contained in a subordinate clause is the main point of a sentence. Making the structure of categorical propositions clear corrects this error.

Students frequently miss the main point of a paragraph as a whole. Pointing to indicator words makes conclusions clear, and the conclusion is a main point of a paragraph. If a student learns to look for conclusions, misunderstandings of this sort can be reduced.

Students should be reminded on a regular basis how to extract information from a text. From time to time, it is useful to identify a key paragraph in a piece of writing and to provide an analysis of it, showing the student how to identify what each sentence says and showing the student how to identify the author's main point. Consider, for example, the following paragraph:

A country, after all, is not something you build as the pharaohs built the pyramids, and then leave standing there to defy eternity. A country is something that is built every day out of certain basic shared values. And so it is in the hands of every Canadian to determine how well and wisely we shall build the country in the future. (Pierre Trudeau, *Memoirs*, p. 366)

The use of the indicator word "so" clearly shows that the last sentence is the conclusion. There are no logical operators in the last sentence, hence, it is a simple sentence of the form "Every Canadian should determine...". The student should also note the use of an analogy in the first sentence. And notice the reasoning, in very abstract form: "A country cannot be left unattended, therefore, all people must attend to the country".

(iv) Critical Evaluation

This is the clearest application of critical thinking in the classroom. Essentially, it involves questioning the truth of premises and the validity of arguments, in other words, not taking the written (and spoken) word as Gospel. Students (and especially those coming straight from high school, where everything is Gospel) find this difficult to do.

A criticism of a point of view is, like everything else in academia, a form of argument. The conclusion is always that some argument has committed a logical error. The premises are the reasons for believing that the error occurred. The form of all critical evaluations is as follows:

The argument does such-and-such, and
Such-and-such is a fallacy,
Thus, the argument is a fallacy.

(Very often the second premise is left implicit.)

Students need to be shown that all sources, including their textbooks and their instructors (not to mention the media and their friends) can commit errors of reasoning. The best means to show them this is to critically evaluate any materials used for instruction. My own experience is that this can be very confusing for a student (one student commented, "I've never seen an instructor criticize the text before).

It is important, therefore, to state the criticism and the reason for the criticism clearly. It is also important to state the intent of posing such criticisms, specifically, that the student should not accept everything as being true, and that the student is expected to perform a similar sort of evaluation on any material. It is especially useful to encourage students to criticize the instructor, and to occasionally concede some points. Even when there is a response to be made, much more progress is made when a good criticism is acknowledged as such.

Finally, students should be required to stand the test of good reasoning. Comments in papers or in class which commit logical errors should be identified as errors in reasoning. This requires some tact. The approach should not be that the student is wrong, but rather, that the student's reasoning is flawed.

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Necessary and Sufficient Conditions

Stephen Downes

The discussion of 'necessary and sufficient conditions' is well understood in philosophy, and as a result, I sometimes make the mistake of assuming it is commonly understood in the wider community. This post redresses this by sketching the concept and why it is important.

Conditions

To say that one thing is a *condition* for another is to say that the one thing is involved in making the second thing happen.

The most common example of a condition is a *cause*. For example, striking a billiard ball with a cue causes the ball to move. Thus, the striking of the ball is a 'condition' of the movement of the ball.

But conditions need not be causes. Giving *permission* is another type of condition. For example, a driver's license gives you permission to drive. This, having a driver's license is a 'condition' for driving.

Necessary and Sufficient Conditions

There are two ways to express conditions:

B if A (alternatively: if A then B)

B *only* if A

The first is called a *sufficient* condition. The second is a *necessary* condition.

The idea of a sufficient condition is that it is *enough* to make something happen. For example, in most cases, pushing on the gas is enough to make the car go forward. It's not the only thing that would do it; you could make the car go forward by pushing it, for example.

The idea of a necessary condition is that something will not happen *unless* the condition happens. For example, we might say that the car will not go forward unless we have turned off the parking brake. Turning off the brake is thus a necessary condition to the car going forward.

Necessary and sufficient conditions are typically used to *explain* why something happens. "Why did the car go forward?" we ask. The brake was turned off; that was necessary for the motion to happen. And then somebody pressed on the gas; that was sufficient to make it move forward.

The Logic of Conditions

The logical structures of necessary and sufficient conditions do a dance around each other.

The simplest statement of a sufficient condition is as follows:

If A then B

This is equivalent to:

If not B then not A, and

It is *not* equivalent to:

If B then A

Meanwhile, the simplest statement of a necessary condition is as follows:

If B then A

And we often use special words to indicate this special status:

B *only if* A

Not B *unless* A

This is also equivalent to:

If not A then not B

And it is *not* equivalent to:

If not B then not A

The Conditional Fallacy

Why is this important? Because it points to what is probably the most common fallacy involving conditions: *not sufficient means not necessary*.

For example, we often hear this kind of argument:

Studies show that simply spending money will not improve test scores in schools. So we should be looking at something else, like quality teachers.

What makes this a bit tricky is that the conclusion is often implicit. The conclusion, if spelled out, is that we should be doing something *instead* of throwing money at the problem.

Here's [an example](#) of the fallacy being committed. Ewan McIntosh writes, "**In 2006 there was \$2 trillion spent on education by the world's governments. But money alone is not the reason we see improvement, not always.**" He then recommends "Getting the right people to become teachers, developing them into effective instructors (and) ensuring that the system is able to offer the best possible instruction for every child ." Presumably, *instead* of spending money on the problem - after all, Singapore didn't have to.

Here is Tom Hoffman [identifying the fallacy](#) in McIntosh's reasoning: "I don't have the slightest idea what school budgets look like in Scotland, so maybe over there it is appropriate to put across the message that more funding isn't necessary

to improve education, but on this side of the pond, even this study makes it clear that improving American education requires spending more money."

The situation is represented thus: spending money is *necessary but not sufficient* to improve educational outcomes.

What this means is that *simply spending money* won't solve the problem. There are many ways to spend money that are not effective, as evidenced by many actual spendings of money that are not effective. Purchasing each mathematics class a Lear jet, for example, would certainly spend money. But it would not be very effective.

The response to this fallacy is to say, as Tom Hoffman did, that spending money is *necessary* in order to solve the problem. What this means is that, while the mere spending of money is no guarantee, nonetheless, the problem will not be solved *unless* money is spent. The supposition that the problem can be solved without spending money is a fallacy.

Causation

As you may imagine, with the logic of conditions being so entwined, it is very easy to get tangled in a mess of necessary and sufficient conditions. This is especially the case when attempting to state whether one thing will *cause* another to happen.

Many people mistake a cause as the *sufficient* condition for something to happen (sometimes thought of as the ['efficient cause'](#) or the 'causal agent'). But formally, we should think of a 'cause' as 'a necessary and sufficient condition for an effect'.

That is to say, the description of a cause needs to include, not only the sufficient conditions, but also the necessary conditions, for an effect.

So if we say that 'A' is a set of necessary and sufficient conditions, then when we say that 'A causes B' we mean that: 'If A then B' and 'If not A then not B'

You need both parts to ascribe a cause. You need to show that when A happens, that B also happens, but also, that it is *not a coincidence*, that is, when A does not happen, B does not happen either.

Some people at this point may argue that only a *correlation*, and not a cause, has been established. They argue that, in addition to a correlation, a causal argument must also appeal to a general principle or law of nature. This may be the case; if so, then we can simply say here that showing that 'If A then B' and 'If not A then not B' is *necessary*, but not sufficient, to show that A causes B.

Ceteris Paribus

The phrase *ceteris paribus* is Latin for 'all other things being equal' and is an important principle for understanding the concept of necessary and sufficient conditions.

Strictly speaking, the description of a cause for any event would be endless. For example, if I wanted to say that 'the car caused the accident' then I would need to say that the car exists and that the accident happened and that the earth exists and that the laws of nature are as we understand and that the accident was not a sub-temporal sentient being and that Merlin did not intervene and... well, you get the idea.

Usually, when we say that one thing is a cause for another, or that one thing is a condition for another, we assume a certain background state of affairs, which continues as it always has. This is especially important when talking about sufficient conditions, but will also come into play when talking about necessary conditions

When I said 'pressing on the gas was sufficient to move the car', I *assumed* that, as usual, the parking brake was not engaged. Because, after all, were the parking brake engaged, pressing on the gas might *not* be sufficient to move the

car. Really, I should say, 'Releasing the parking brake and pressing on the gas is sufficient to move the car'. But since the parking brake is almost never engaged, it is not usually necessary to say this; I just assume it.

Similarly, when I said that 'releasing the parking brake is necessary to move the car', the presumption was that the parking brake was engaged. But most of the time, releasing the brake is *not necessary* because the brake was not engaged in the first place. I do not need to state the necessary condition.

This is why the concept of 'control' is so important in scientific experimentation. If you say 'all else being equal', then if you are measuring for results, then you need to know that all else was, in fact, equal.

Expectations

When you say 'all else being equal', you are assuming that a certain state of affairs holds, described in shorthand as 'all else'. But, of course, *something* changes, for otherwise causation would be impossible.

When you say 'all *else*' you mean 'everything not affected by the cause'. But this is essentially a statement of *expectations*. When you say 'A caused B' what you mean, in full, is that 'A caused B *instead of C*', where C denotes the alternative that would have been the case, all else being equal, has A not occurred.

[Bas van Fraassen](#) explains this at length. When you plant sunflower seeds beside the house and they grow to be six feet tall, someone may ask, "Why did the sunflowers grow here?" What they *mean* is, 'what caused them to grow (instead of to not grow)?' and not 'what caused sunflowers to grow instead of rutabagas?'.

When Tom Hoffman writes, sarcastically, "I don't get [Ewan's Scottish spin on this McKinsey \(i.e., American\) study](#) of educational systems around the globe," he is speaking of expectations. He is suggesting the production of a given effect involves spending *more* money in one context, where in the other the production for the same effect, it is implied, does not mean the spending of more money.

Tricks Involving Ceteris Paribus

This is where *ceteris paribus* gets tricky. Very often, the presumption 'all other things being equal' does not mean, strictly, 'all other things', but rather, a subset of other things, and specifically (and importantly), the *set of necessary conditions* for the effect to happen.

Let us suppose that McIntosh said: "We can hire better teachers, but we do not need to spend money in order to do so." This is a bit of a caricature, but it is implied in the suggestion that the problem will not be solved by spending money.

Strictly speaking, this is impossible. It is not possible to hire teachers without spending money. What can only be meant is that it is not necessary to spend *more* money. He is stating, in other words, that enough money is *already being spent* to hire quality teachers.

But, of course, this money is currently being spent on something else. So in *this* case, '*ceteris paribus*' means 'same amount of money spent' but does *not* mean 'spent on the same things'.

The unstated argument here is that the money being spent elsewhere should be reallocated to spending on quality teachers. But this very *necessary* condition remains unstated. This is a fallacy; the necessary condition is hidden in the *ceteris paribus* clause.

A similar fallacy exists elsewhere in the same argument. McIntosh writes,

Less than 1% of African and Middle Eastern children perform at or above the Singaporean average - to be expected, you might believe, because those Singaporeans must hemorrhage cash into their education system. Wrong. Singapore spends less on Primary education than 27 of the 30 OECD countries.

Fair enough. But is McIntosh recommending that funding for education in the UK be adjusted to match the funding provided to education in Singapore? Almost certainly not!

This is a case of *shifting ceteris paribus* clauses. In *Singapore*, 'all else being equal' means expenditures at Singapore's levels. But in Britain, this means something very different.

Why is this important?

Because, if the expenses in Britain are *not* the same as those in Singapore, this means that there is something *very different* about Singapore which makes it possible to spend much less on education. But if Singapore is very different in precisely this way, then it is a poor analogy and cannot be used to define 'all else being equal', for, in this case, 'all else' is very *different*.

Summary

Arguments involving the use of conditions and causation are often deceptive because of the misuse of necessary and sufficient conditions.

When reading such arguments, you should not be swayed into believing that something is not necessary simply because it is not sufficient.

You should also be wary of hidden, and often shifting, assumptions about necessary conditions implicit in (frequently unstated) *ceteris paribus* clauses.

When evaluating such arguments, ask yourself simple questions. Like: if they did A, would the result be B? If they did not do A, would B not result?

Trust your intuitions. And keep in mind that if the appeal, by analogy, is to something that is unfamiliar to you - like Singapore, or like Estonia - the reason is most likely to hide some hidden difference that makes them a special case.

Moncton, January 07, 2008

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https://edtechbooks.org/rapidwriting/necessary_and_sufficient_conditions.

2.3

Good Logic

Royce Kimmons

Logic

Fallacies

Argumentation



Logic is a systematic way of making inferences, which can be useful for determining truth. It helps you to (a) identify relationships between things and (b) determine whether a conclusion should be trusted based upon what you know about those relationships. A simple example is "If students are asking questions, then they are engaged in their learning. The students are asking questions. Therefore, the students are learning." By stringing statements together, we can make *arguments*, which are structured approaches to convincing others to accept a particular conclusion.

Good logic, then, might simply be said to be argumentation that follows the rules of logic by making arguments that are logically valid and sound.

Yet, there also seems to be a moral dimension of logic that should dictate not just *how* we use logic, but *why* and *when* ... and notably when *not* to rely on logic. That is, it seems that like any tool logic has both responsible and irresponsible uses.

Lest this sound too blasphemous, let's begin by exploring the *Structure of an Argument*, *"If, Then" Statements*, and *Fallacies or Mistaken Logic*. From there, we will discuss how logic leads to three different *Types of Certainty* and what this means for using logic in a responsible way.

Structure of an Argument

A logical argument is merely an attempt to persuasively prove something using logical reasoning. All arguments have at least two things: one or more premises and a conclusion. Premises are the laws, theories, facts, instances, or contexts that we assume to be true, and conclusions are what we are trying to prove by bringing up these premises in relation to one another.

When laying out an argument using formal logical notation, we list all of our premises first (one on each line) and then identify the conclusion with a therefore symbol, which is shaped like three dots of a triangle's vertices, as follows: ∴

This is an example of a formal argument:

I care about all students.

Rita is a student.

∴ Therefore, I care about Rita.

In this case, "I care about all students" and "Rita is a student" are the premises, while "I care about Rita" is the conclusion.

Though most arguments are not structured in this way in typical writing and language, you can normally identify conclusions by listening for keywords that imply logical relationships, such as "therefore," "so," and "then."

"If, Then" Statements

In order for logic to work, we need statements that connect ideas and facts together. These generally take the form of "if, then" statements. I even just used one in this sentence by arguing that "if logic is to work, then we need 'if, then' statements."

"If, then" (or conditional) statements are everywhere, and we use them all the time. "If I don't get any sleep, then I won't be able to go to work in the morning." "If you don't study, then you will fail." "If you eat, then you won't be hungry." "If you treat people kindly, then they will treat you kindly." And so forth.

These types of statements allow us to structure two things in relationship to one another in a way that implies particular causal inferences. In logic, the most simple way of showing this relationship is by stating "if A, then B" or as follows:

$$A \rightarrow B$$

By making a statement like this, we are making two causal claims. First, we are stating that A is a *sufficient* cause of B, meaning that A is all that it takes to cause B. It does not matter what else is happening in the universe or what other factors might be at play, if we just have A, then we will definitely have B. This does not necessarily mean that B originated from A or that B comes after A but just that if I know that A exists or is true, then I know that B also must exist or be true.

The second claim we are making is that B is a *necessary* cause of A, meaning that the presence of B is essential to A's existence. Again, this does not mean that B comes before A or is more fundamental or basic but just that if I know that B does not exist or is not true, then A must not exist or not be true either.

An example of this would be a statement like "if you are a person, then you have value," which we could form into logical notation as follows:

$$Person \rightarrow Value$$

This statement implies two things. First, from a sufficiency perspective, it means that being a person is sufficient to having value. It does not matter what else a person is (teacher, student, ballerina, tax collector, octogenarian, newborn, Democrat, Republican, Armenian, Ethiopian, social justice warrior, transgender, cisgender, despot, paedophile, murderer, white supremacist, *ad infinitum*), this "if, then" statement means that that person has value by virtue of the simple fact that they are human.

Did that list make you at all uncomfortable? If so, it is likely because we often make strong "if, then" statements without necessarily realizing the full causal sufficiency that our statements logically imply. Do you *really* believe that *all* people have value? If not, then you might rephrase the statement to something like "if you are a person of type X" or you might alternatively use the logical power of the statement to push yourself to recognize that all people do actually have value (even if you initially bristle at the idea in some cases). This is perhaps the greatest power of logic; it allows you to take relationships between two things (such as *people* and *value*) and apply that relationship to a variety of situations (e.g., how do I react to a murderer on death row?).

The second implication of this statement involves causal necessity and though it is a bit more of an abstraction in this case, it means that if something does not have value, then it cannot be a person. A simpler example of this would be the statement that "if something is a human, then it is a mammal." We have historically categorized our species biologically as mammals, because, like other mammals, we are warm-blooded vertebrates who give birth to live young. Yet, with the current advent of AI and robots, we are quickly finding ourselves in situations where we talk to machines like humans and treat them like we would other humans (sometimes having difficulty even judging if a conversant is a human or a machine).

As such machines progress, will there ever be a time when we consider them to be human? Based on this "if, then" statement, being a mammal is necessary to being human, so the logical necessity of the statement is that a machine could only be considered human if it became a mammal as well (i.e., one cannot be a human and not a mammal). As pointed out previously, we can either in this situation use the "if, then" statement as the means for determining what is the proper definition of being human, which every AI would fail, or alternatively consider whether our original "if, then" statement is really true (or might there be a time when being human is no longer defined in terms of being a mammal). At any rate, if we accept this "if, then" statement, then it allows us with strong certainty to look at anything in the universe and say definitively that it is not human by merely determining whether or not it is a mammal, which is a very powerful claim to be able to make.

As these two examples hopefully illustrate, "if, then" statements are very powerful, because they can allow us to make strong assertions about the world based on very little knowledge (e.g., I don't know who you, the reader, are, but I know that you have value based upon no evidence other than the fact that you are human and I accept the argument above). Wielding this power to both construct and deconstruct arguments, though, requires us to understand both how to apply logic according to its basic rules and also to understand the limits of logic.

In the beginning we talked about the rules for forming an argument. Here we want to clarify some of those rules. We will first review two rules (*Modus Ponens* and *Modus Tollens*) and then two common mistakes that break those rules (Denying the Antecedent and Affirming the Consequent).

Modus Ponens or Affirming the Antecedent

The first rule of logic with "if, then" statements is that given a relationship between two things (A and B, as in an "if, then" statement), if A is a sufficient cause of B, and if A is true, then B must be true also.

$$\begin{array}{l} A \rightarrow B \\ A \\ \therefore B \end{array}$$

This logical notation should be read as follows:

If A, then B.

A (exists or is true).

Therefore, B (exists or must be true).

An example of the *modus ponens* in action that undergirds all of assessment in education would be the following:

If a student performs well on a test, then they must have learned the material. Juanita performed well on the test, therefore she learned the material.

In this case, because we cannot open up a person's brain and figure out whether they learned something or not, we ask them to perform a task, such as fill in some answers on a multiple-choice test. If they perform well, then we conclude that they must have learned. Alternatively, this could be written as follows:

$$\begin{array}{l} \text{Perform} \rightarrow \text{Learn} \\ \text{Perform} \\ \therefore \text{Learn} \end{array}$$

Modus ponens is simple but powerful, because it allows us to take a universal or theoretical statement (like the relationship between performance and learning) and to make arguments about particular instances or cases where the premises are met.

Modus Tollens or Denying the Consequent

Building off of this, the second rule of logic with "if, then" statements holds that given a relationship between two things (A and B), if B is a necessary cause of A, and if B is not true, then A must not be true either.

$$\begin{array}{l} A \rightarrow B \\ \sim B \\ \therefore \sim A \end{array}$$

This logical notation should be read as follows:

If A, then B.

Not B (does not exist or is not true).

Therefore, Not A (does not exist or must not be true).

To logically reframe our case from above, we could say the following:

If a student performs well on a test, then they must have learned the material. Isabella did not learn the material, therefore she will not perform well on the test.

Alternatively, this could be rewritten as follows:

$$\begin{array}{l} \text{Perform} \rightarrow \text{Learn} \\ \sim \text{Learn} \\ \therefore \sim \text{Perform} \end{array}$$

The *modus tollens* works, because if A truly is sufficient to always prove B, then there can never be a situation when B is not true while A is true. This implies a very strong causal relationship between the two things, and one of the benefits of using a *modus tollens* is to ask ourselves whether we really meant to suggest as strong of a relationship as we did.

In the example above, many people might say that performance is an indicator of learning, but do they realize that this is the same as saying that if a student does not learn then they will not perform well? Perhaps, perhaps not. However, if we do not agree with the conclusion of the *modus tollens* or had an instance when a student did not learn the material but still performed well, then it would call into question the validity of our initial claim, because if the *modus tollens* is not valid, then the original argument is not valid either.

Fallacies or Mistaken Logic

Some of the logical difficulties that arise in arguments come about as people misuse modus ponens and tollens or when they confuse necessary and sufficient causes. These are called formal logical fallacies, and the two most basic forms they take are "affirming the consequent" and "denying the antecedent." In addition, there is another class of informal logical fallacies that originates in a variety of reasoning errors unassociated with the actual form of the argument. We will explore each of these in turn.

Affirming the Consequent

Building off of the modus ponens above, someone might conclude that if A leads to B, then the existence or truth of B must prove A, as follows:

$$\begin{array}{c} A \rightarrow B \\ B \\ \therefore A \end{array}$$

This is logically invalid, though, because just because A is sufficient to prove B, it does not follow that B is sufficient to prove A. In the case of performance and learning, this would be like saying the following:

$$\begin{array}{c} Perform \rightarrow Learn \\ Learn \\ \therefore Perform \end{array}$$

This misapplication of logic assumes that learning alone determines performance, when, in fact, many other factors might influence performance as well, such as the quality of the test, what you ate for breakfast, your grasp of the testing language, and so forth. In other words, though learning might be essential to performing well on a test, it is not sufficient.

To use another example, let us assume that the following statement is true: "Providing the expertise and resources for a quality education is quite expensive." In a nutshell, this is arguing that expenses are necessary for a quality education and that whenever you find a quality educational experience, there were expenses associated with making it happen. This may or may not be true, but let's assume that it is true for now and rewrite the argument as follows:

$$\begin{array}{c} Quality \rightarrow Expensive \\ Quality \\ \therefore Expensive \end{array}$$

Let us say that someone sees this argument, believes it, and then concludes that all expensive educational solutions must be high quality, as follows:

$$\begin{array}{c} Expensive \\ \therefore Quality \end{array}$$

This is invalid, though, because though the original argument acknowledges a relationship between expense and quality, it does not show that merely spending money increases quality (as the latter argument suggests).

To avoid this fallacy in thinking, we should remember that just because something is necessary for causing something else, it does not mean that it is sufficient. Thus, though you might need more teachers to help improve a school, providing more teachers alone will not make this happen. Similarly, though you might need access to particular technologies to improve learning, providing the technology alone will not make learning happen. And so forth.

Denying the Antecedent

The second common fallacy that arises in logical argumentation comes from assuming that a conclusion is untrue just because a premise is untrue or that if A leads to B, then the lack of A must prove the lack of B, as follows:

$$\begin{array}{l} \rightarrow B \\ A \sim A \\ \therefore \sim B \end{array}$$

To use the performance and learning example above, this would be like saying that if a student did not perform, then they did not learn, as follows:

$$\begin{array}{l} Perform \rightarrow Learn \\ \sim Perform \\ \therefore \sim Learn \end{array}$$

The problem with this is that a student might have learned the material but nonetheless failed a test (for reasons mentioned above). This fallacious argument does not logically follow from the original argument, because though learning might be necessary for performance, a lack of performance does not prove a lack of learning, because other factors might be to blame for the poor performance.

To use another example, we might believe that if achievement gaps exist along racial lines, then this is evidence for systemic racism as follows:

$$Gaps \rightarrow Racism$$

If we look at data from a given scenario, though, and find that no gaps exist, does this mean that systemic racism also does not exist, as follows?

$$\begin{array}{l} \sim Gaps \\ \therefore \sim Racism \end{array}$$

Perhaps, but perhaps not. Perhaps systemic racism evidences itself in ways other than achievement gaps, or perhaps the lack of a gap merely shows that a racially marginalized group is working harder to make up for differences in how they are treated within racially stratified systems (as many marginalized groups will argue). In any case, this version of the argument does not follow from the original argument, because it assumes that achievement gaps are the only indicators of systemic racism.

To avoid this fallacy in thinking, we should remember that just because something is a sufficient cause or a sure evidence for something else, it does not mean that it is the only cause or the only evidence for the other.

Informal Fallacies

In addition to these formal fallacies, there are many informal fallacies that reveal errors in logical reasoning. These errors take many forms and might attempt to appeal to a listener's emotions, to muddle the issue, or to sidetrack the argument. Some common informal fallacies include *ad hominem*, *tu quoque*, slippery slope, begging the question, *post hoc*, strawman, burden of proof, fallacy fallacy, and many others. We will briefly discuss a few here, but for more information on these and other informal fallacies, please refer to the [Your Logical Fallacy Is website](#).

To better understand each of these fallacies, we will also provide an example using two fictitious characters in a parent-teacher conference: Graciella, who is a parent dissatisfied with her child's schooling experience, and Inez, who is a very defensive teacher. In all scenarios, Inez will provide the negative example of using the fallacy.

Ad Hominem

The *ad hominem* fallacy, which literally means "to the man," consists of attacking your opponent's character rather than the argument they are making.

Graciella: You marked my daughter's test wrong. She got the answer right, but you said it was wrong.

Inez: I'm sorry, but I don't believe you even completed high school. Are you really qualified to question my grading methods?

In this situation, Inez is bypassing Graciella's argument and instead attacking her credibility. Even if what Inez is saying is true, it does not change the fact that Graciella might have a sound argument.

Tu Quoque

The *tu quoque* fallacy, commonly called whataboutism or appeal to hypocrisy, consists of accusing your opponent's side of doing the same thing that they are accusing your side of.

Graciella: You did not provide my daughter with any help on this assignment.

Inez: You never help your daughter with any of the homework that I send home with her, so you don't have any right to accuse me of that.

In this situation, though what Inez is saying might be true and Graciella might be guilty of the same behavior she is accusing Inez of, this is irrelevant to the point that Graciella is a teacher that should be providing help to students on their assignments.

Slippery Slope

The slippery slope fallacy consists of stringing together multiple causal statements to typically lead to a catastrophic conclusion, attempting to show that the initial step should never have been taken.

Graciella: Why did you tell my daughter she couldn't wear her hat in class?

Inez: Because wearing a hat shows disrespect for the school. If she disrespects the school, then she disrespects society. If she disrespects society, then she will commit crimes. Do you really want your daughter to end up in prison someday?

In this situation, Inez starts with a plausible premise and moves from one conclusion to another without fully substantiating each step (e.g., is disrespecting the school really the same as disrespecting society?). This allows her to end with a scary conclusion that is very far removed from the original premise.

Begging the Question

The begging the question fallacy merely restates the original question as the conclusion in a circular way, essentially appealing to the conclusion being true by definition.

Graciella: My daughter said that her science textbook said that Pluto is a planet. Why are you teaching her things that aren't true?

Inez: Pluto is a planet, because the science textbook says it's a planet.

In this situation, it has already been established that the book said that Pluto is a planet and rather than arguing that this is true from some other source of evidence, Inez is merely restating the original premise.

Post Hoc

The *post hoc* (*ergo propter hoc*) fallacy literally means after this (therefore because of this) and consists of claiming that because something happened after something else then it must have resulted from it.

Graciella: My daughter failed this test even though she studied hard for it all weekend.

*Inez: I saw her gossiping with some other girls before class while other students were studying, so she must not have studied **that** hard.*

In this situation, Inez connected two true observations together (that the daughter failed and was seen gossiping before class) to make a problematic causal inference (gossiping instead of studying for that brief period caused her to fail).

Strawman

The strawman fallacy consists of making a simplistic caricature of the opposing argument, which is easier to argue against.

Graciella: I work three jobs to make ends meet. When I get home from my third job each night, my daughter has made dinner, washed the dishes, and put her siblings to bed. She's exhausted, I'm exhausted, and I just can't find the time to help her with all the homework you're giving to her. And even if I can find the time, most of the stuff is beyond me.

*Inez: I think that if the two of you **really** cared about her future, then you could figure it out. In my mind, it all comes down to grit.*

In this scenario, Inez is taking the complex situation that Graciella has explained to her (which involved time constraints, sleeping requirements, and limited expertise) and has oversimplified it to just be about grit or caring. Whenever someone says something like "it all comes down to X," you can generally assume that they are putting forth a strawman fallacy.

Burden of Proof

The burden of proof fallacy consists of claiming that your opponent must provide proof of their claims before you should be expected to provide proof of your own.

Inez: Your daughter seems to not be reading as well as she should.

Graciella: Why do you think that? She reads just fine when we read together.

Inez: Do you have any evidence that she's actually on track for her grade level?

It is obviously appropriate for a parent and teacher to consider whether a student is on track with her reading, but in this scenario, Inez assumes that the daughter is not reading well (without providing any concrete evidence) and then discounts Graciella's counter-argument by suggesting that Graciella is the one who must prove that the daughter is on track (rather than the teacher providing evidence that she might not be).

Fallacy Fallacy

The fallacy fallacy consists of claiming that your opponent's conclusion is untrue, because they used a fallacious or weak argument to argue for it.

Graciella: I don't understand how my daughter can keep failing her math tests. She's never had trouble in math before. She is very good at math! When we go to the store, she helps me keep track of how much I'm spending so that we don't go over the budget.

Inez: This is algebra. The type of math that we're doing is much more complex than simple addition. So, your argument is invalid, and this proves my point that she just must not be good at complex math.

In this scenario, Graciella did not make the strongest argument in favor of her daughter's algebraic abilities, but Inez should not conclude from this (alone) that her daughter is bad at math. Doing so ignores the fact that the daughter's math ability and Graciella's logical reasoning are completely disconnected from one another.

Three Types of Certainty

There are at least three different types of certainty that we can attain through logical argumentation: deductive, probabilistic, and inductive. Deductive certainty is most common in mathematics, moral reasoning, theology, and formal logic and essentially operates on an all-or-nothing basis: either we can be completely sure or we can't be sure at all. Probabilistic certainty is common in the social sciences and establishes certainty based on statistical formulas. And inductive reasoning is common in observational sciences and everyday argumentation, wherein we use evidence to make what we believe to draw subjectively reasonable conclusions about the world. Each will now be discussed in turn.

Deductive

From the perspective of deductive logic, an argument is logically convincing only if it is both (1) valid and (2) sound. That is, arguments are neither true nor false but are rather only convincing (to be trusted) or unconvincing (not to be trusted).

To be deductively valid, an argument's conclusions must necessarily always follow from the premises. For instance, we might want to reveal that systemic racism exists in the U.S. educational system by showing that achievement gaps exist along racial lines. We might do this by making an argument that if Asian Americans experience an achievement gap when compared to white Americans, then systemic racism must exist as follows:

$$\begin{array}{c} \text{Gap} \rightarrow \text{Racism} \\ \text{Gap} \\ \therefore \text{Racism} \end{array}$$

In this case, we would have to show that every single time that a gap has existed between groups along racial lines, then this has been the result of systemic racism. If we cannot show this (or if there are compelling counter-examples to this claim such as gaps that have existed along socio-economic lines alone), then the argument will struggle to be convincing in terms of validity.

To make deductive arguments more valid, then, we often have to add new premises, which will help more carefully show the relationship between our premises and conclusion. In this case, we might add other premises that help to prevent counter-examples from emerging (e.g., "and there are no differences in socio-economic status" or "and there are no differences in levels of parental formal schooling"). In so doing, we can make the argument more convincing by showing that the relationship between achievement gaps and racism cannot be explained away by reference to other factors.

Learning Check

Consider the following argument:

If a student learns the periodic table of elements, they will pass the test. Lucy learned the periodic table. Therefore, Lucy will pass the test.

Is this argument valid?

☐ Yes

☐ No

Consider the following argument:

If the No Child Left Behind Act (NCLB) worked, then all students would be succeeding today. All students are not succeeding today. Therefore, NCLB did not work.

Is this argument valid?

☐ Yes

☐ No

Furthermore, to be sound, an argument must be valid *and* all of its premises must be true. For this argument to be sound, we would have to show that race-based gaps exist between all minority student groups and their white counterparts, including between Asian and white Americans. However, the argument will lose its convincing power if we analyze our data and discover that no gaps exist (or that Asian Americans out-perform their white counterparts). If the premise is not true (i.e., a gap exists), then it prevents us from convincingly arriving at the conclusion (i.e., systemic racism exists). This weakens the argument. Notably, it does not disprove that systemic racism exists, but the lack of a gap merely shows that this particular argument is not convincing for proving it in terms of soundness.

Because we expect deductive arguments to be both sound and valid, it can be difficult to make bulletproof arguments, because our opponents have two ways of challenging the argument. They can either (a) show that our conclusion does not always follow from the premises we have provided (i.e., not valid) or (b) show that just one of our premises is false (i.e., not sound).

Let us take the modus ponens example from above to illustrate and assume that Juanita is using this argument to convince her teacher that she learned what she was supposed to learn in class.

The easiest way to test the argument for soundness would be to simply check whether Juanita performed well on the test. If she did not perform well, then this does not necessarily mean that she did not learn, but it rather shows that the argument is just not a convincing way to show that she learned. Likely, Juanita would have determined whether the argument was sound or not before she made it and would only have attempted to make the argument if she was sure that she performed well on the test.

Even with this evidence, though, is it possible that Juanita still did not learn the material? Or in logical terms is the following possible:

$$Perform \ \& \sim Learn$$

If someone can prove this, then they can show that the original relationship between learning and performance (that if a person performs, then they must have learned) is not always to be trusted. They might do this in a number of ways, such as checking to see whether another student who merely guessed "C" on every option was able to perform on par with Juanita. If so, then this would effectively destroy the argument, because they would have shown that the conclusion does not always follow from the premises in every case or that performance is not always a valid indicator of learning (e.g., in cases of cheating or poor test design).

Probabilistic

Probabilistic certainty relies upon statistically-established relationships to help us determine to what degree we should trust a given conclusion. For instance, let us assume that a study was conducted that showed that students who used a particular program to prepare for a test did better on the test than students who did not. Such statistical tests typically have a significance score to account for random variance in the data (e.g., due to individual differences between students) and other reported measures to help us know how we can reasonably understand the results.

Within the social sciences, the p-value is used in many tests to establish the likelihood that any differences seen were not due to chance. Where we set this certainty threshold is quite arbitrary, but in education research it is generally set at $p < .05$, meaning that education researchers need to be able to show that there is less than a 5% (or 1-in-20) chance that the observed results were due to random effects. This means that education researchers anticipate that their outcomes should be true at least 95% of the time in order to report them (or that they are 95% certain).

Quite different from deductive certainty, which relies on definitions and logical implications based on the meanings of words and ideas themselves, probabilistic certainty relies upon empirically observing and measuring relationships between phenomena and using statistics to determine how certainly we can predict future events based upon past events.

Inductive

Both deductive and probabilistic certainty tend to be quite untenable in a person's day-to-day life, because we rarely are analyzing situations within closed, neatly-defined systems (as required for deductive certainty) and also rarely have the ability to statistically analyze relationships between premises and conclusions (as required for probabilistic certainty).

To illustrate, when you walk into a dark room and turn on the light switch, you expect the light to turn on. Why? Not because we can confirm that all the circuitry, conditions, and natural laws associated with such a behavior are understood and have not been violated (as with deductive certainty) and not because we have tested the light switch 100 times and have found it to turn on the light at least 95 of those times (as with probabilistic certainty).

Rather, we simply know (a) that turning on the light is what the switch is designed for and (b) that our past experiences with such switches shows that they generally work. Such certainty is termed inductive, because it uses finite facts or experiences to draw conclusions in a compelling (though not infallible) way.

Is it possible that the light will not turn on? Absolutely (and the logician could skeptically point this out), but given the limited evidence it still makes sense to assume that the conclusion is probably true.

Thus, with inductive reasoning, the goal is to provide sufficient evidences to make a compelling case, even though the likelihood of the conclusion is not absolute (deductive) or quantitatively calculable (probabilistic).

An example from education might be Graciella (from the examples above) noting that her daughter has failed multiple tests in a row and is feeling like she cannot keep up and concluding that she will likely fail the next test also. The daughter's performance on the fourth test is not ensured by definition (deductive) or mathematically (probabilistic) but

is rather an educated guess based on the premises (previous failures and current attitude). Is it possible that the conclusion is wrong? Sure, but it nonetheless seems like a compelling argument that should not be ignored, and Graciella should be concerned about her daughter's next test performance as a result.

Responsible Logic

Finally, I will close this chapter by mentioning a few points about the responsible use of logic. Logic serves a very important purpose of unmasking assumptions, enabling skepticism, and highlighting irrationality, yet it does so in specific ways that should be understood and used responsibly.

Unmasking Assumptions

One of the great benefits of logic is that it can help us to unmask hidden assumptions that we might otherwise take for granted or that a sophist might be attempting to mask. By laying out premises and conclusions in structured ways and interrogating how one leads to another, we are able to understand more clearly where argumentative differences lay.

As an example, let us use the historic abortion debate in the U.S.

On one side of the debate, those who self-identify as "pro-choice" argue that a woman should have the right to choose what is to be done to her body and that because abortion is a procedure done on women's bodies, then women should have the right to choose that procedure or not.

On the other side of the debate, those who self-identify as "pro-life" argue that every living person has a right to life and that because living babies are people, then they should not be killed in the womb.

Each side self-identifies based upon their claimed central tenet. Pro-choice advocates argue that choice is preeminent and that those who oppose them are not respectful of women's choices over their bodies (implicitly labeling them as "anti-choice"). Pro-life advocates argue that a baby's life is preeminent and that those who oppose them are not respectful of a baby's right to life (implicitly labeling them as "anti-life"). Yet, neither of these characterizations are actually true. Pro-choice advocates may actually care deeply about the right to life of a baby, and pro-life advocates may actually care deeply about the individual rights of women.

So, the source of the conflict is not located in either of the premises (a) that women should have the right to choose what happens to their bodies or (b) that living babies have a right to life, because both pro-choice and pro-life advocates actually believe both of these things. Rather, there is an unstated premise upon which the argument for each side is based. It is that *unborn fetuses are or are not living babies*. By changing this single premise, it changes the conclusion of the argument.

This premise is the heart of the issue, and yet, when we see political pundits or advocates arguing about the issue, they spend very little (if any) time on the crucial premise and rather spend time angrily shouting about premises that both sides agree on (i.e., women should have a right to choose, babies should have a right to life). Much of this happens simply because it is easier to win an argument by making your opponent appear to disagree with a basic truth that we all agree on (i.e., freedom and life) than it is to have a reasonable conversation about an unsubstantiated belief (i.e., what life is and when it begins).

Logic, then, can be helpful for showing that one person might truly believe in women's rights and also oppose abortion or that another person might truly believe in a baby's right to life and support abortion, which shows that the arguments we are generally having are not substantive or dealing with the actual source of the disagreement. By unmasking such contentious assumptions, we can (hopefully) spend our energies solving problems rather than creating caricatured arguments that fail to reflect the complexities of reality.

Healthy Skepticism

Logic is also helpful for encouraging us to approach arguments with a certain level of skepticism, asking whether all the premises are clear, whether they are true (sound), and whether the conclusion necessarily follows from the premises (valid). This can help keep us from believing in conclusions for which there is insufficient evidence and is necessary for approaching problems in life in a critical manner. Such a mindset I consider to be healthy skepticism, because it leads us to interrogate arguments to determine the level of certainty we can place in the conclusion based on the provided evidence.

However, skepticism can easily become unhealthy if we place our certainty thresholds too high (e.g., expecting all arguments to provide deductive certainty). In the social sciences, for example, scientists must balance between two types of errors. Type I errors are those in which the scientist has not been sufficiently skeptical and has rejected a null hypothesis that should have been retained. Type II errors on the other hand are those in which the scientist has been too skeptical and has failed to reject the null hypothesis by setting a standard for verification that is too high. Typical social science errs more on the side of preventing Type I errors than Type II errors (e.g., the 95% vs. 5% split of the standard p-value), which seems reasonably appropriate, but both errors are problematic, and the unhealthy skeptic can easily fall into the trap of demanding too much evidentiary certainty before believing a conclusion and thereby commit a Type II error.

To illustrate, a famous example is provided by the renowned atheist Bertrand Russell (and Richard Dawkins later repeated his stance) as follows:

When asked what he would do if after he died he found himself standing in God's presence and God asked him why he didn't believe in him, Bertrand Russell quipped that he would shake his finger at God and shout "Not enough evidence, God! Not enough evidence!"

Though humorous and almost bravely skeptical, there seems to be a type of hubristic skepticism (or cynicism) at play in this type of scenario that denies truth to its face if it is not presented in the quixotic trappings that the seeker demands. Such levels of skepticism can easily lead one to deny very practical causal relationships in argumentation, such as that flicking a light switch actually caused a light to turn on (as in Humean skepticism), even though the skeptic actually uses light switches on a daily basis (implying some practical belief in the relationship). In the example above, denying the existence of God to his face would be like denying the existence of any other person that you saw face to face, such as a friend or mother. Such behavior does not reveal enlightened scientific reasoning but rather absurd and insincere resistance to reasonable truths that you already accept (in this scenario, would Russell respond to God, if he did not acknowledge his existence?). To be clear, here I am not making an argument for the existence of God but am merely responding to this famous scenario which holds as its premise that the skeptic is standing in God's presence and is talking to him.

Similarly, a true empiricist, for example, might faithfully quip that "nothing should be believed unless it is based in sufficient, externally verifiable, objective evidence." The problem with such a belief is that the maxim itself is not based in empirical evidence (where in the world was this maxim originally observed?), and if it was observed, then why should it be believed if the maxim was not already believed (cf., Quine's critique of logical positivism and the analytic-synthetic distinction)? To say that logical fallacies should be avoided because logical fallacies are bad is itself a fallacy, and it would be quite difficult to construct a logical argument showing that logic should be believed (and even if we did, such an argument would be circular).

All of this is to say that healthy skepticism is a valuable logical asset to critical thinkers, but such skepticism should serve a reasonable purpose. Rather than being used as a blunt hammer to skeptically deny everything, logic should be used as a precise scalpel to dissect arguments, to understand underlying evidence and relationships, and to make reasonable certainty demands. In other words, logic is a tool to be used, not a master to be served, and if logic or critical reasoning are ever preventing us from reasonably doing good or moving forward in valuable ways, then we should (like the social scientist) accept a slim chance of succumbing to a Type I error rather than fall prey to the ever-present Type II error of cynicism.

Human Irrationality and Ethics

And finally, logic exists as a field of study, and we are talking about it now, because it is not natural to humans. Humans are naturally irrational, and logic serves as a foil to this. Many of the informal fallacies mentioned above are successful because they are irrational. For instance, they appeal to our prejudicial nature, such as the *ad hominem*, or they appeal to fear, such as the slippery slope. Logic can serve as a way to overcome these irrational aspects of our natural selves and overcome prejudice, fear, and various other vices through reason. This is a clear benefit of logic, and it can be very useful for helping us to become better people by clearly considering our motivations, assumptions, and outlooks on the world.

Yet, is *all* irrationality bad? Should it *all* be overcome?

Some would say so and suggest that the logical life and the good life are synonymous. Yet, can't a person irrationally do good? And aren't there plenty of good actions that are irrational?

I irrationally love and care for my children, and though I could probably come up with some kind of logical argument for why I should, does that love and care need to be rationalized to be valid? Or do we seek to rationalize such things only when we fail to do them well (e.g., in the case of a neglectful father)? And if we cannot rationalize the need to be a good parent, then does that absolve us of the need to be one?

There are plenty of things we have not proven rationally to ourselves that we believe implicitly and claim others should believe as well (e.g., parents should care for their children, all people are created equal, justice is a virtuous goal, everyone deserves a chance, first do no harm), but if we really applied skeptical reasoning and attempted to prove such things, we would find the task much more difficult than it may initially appear.

I bring this up only to point out that logic is often used as a weapon to critique the irrationality in others while ignoring the irrationality persistent in all of us, and it seems that the difference between leading a good life and a lesser life has more to do with the actual things we do than whether we are doing those things for rational reasons. The serial killer can be quite rational, and the philanthropist can be quite irrational.

This is in no way intended to be a treatise on ethics, but I merely bring this up to point out that logic itself does not seem to be the doorway to a good and ethical life and that we should be careful not to operate on the assumption that all irrationality is necessarily bad and all rationality is necessarily good.

As suggested previously, reason, logic, and skepticism are tools to be used toward an end. That end can be noble or nefarious; the fact that we use logic in no way suggests that we are acting rightly.





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APA for Novices

The chapters in this section were originally written by Sharon Black and were published by the [BYU McKay School of Education](#). Their purpose was to help students to quickly learn and navigate the intricacies of writing and formatting using American Psychological Association (APA) guidelines in their theses and dissertations.

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Hoops and Barriers
Crafts and Puzzles
The Papers Trail
The Fine Art of Sentencing
Hurdles
Small Stressors



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Hoops and Barriers

Things That Shouldn't Matter But Do

Sharon Black

As you navigate the intricacies of APA, you may begin to wonder if your degree is worth the hoops you have to jump through and the barriers you have to crawl past in order to get it. Why should nitty-gritty forms and formats matter? Why should the word count of your abstract or placement of your headings matter so much? Why do your professors, graduate committee members, or collegiate deans keep handing things back to you and insisting that you “clean up your APA?” What is so difficult and so terrible that you may end up having to pay some smart-aleck English major \$40 an hour or so to clean up for you?

Whether you save the world may not depend on whether you do so in perfect APA format, but whether you save your course grade or graduate program may. Some give the reason that APA can get desperately needed funding by selling massive printings of each new edition. Others place the blame on journal editors or on professors and deans. But blame-laying aside, there really are a number of reasons for academic formats, most of which come down to a deceptively simple explanation: *Professionalism*.

Sometimes those of us who have given our lives and sanity to the social sciences since as someone says, “But of course you’re not in the *hard* sciences” or, even worse, “you really ought to go into a ‘profession.’” Perhaps the composition and laws of the social sciences, including education (for nothing really is more social than education), are a little softer than the composition of metals or the laws of physics. This doesn’t make them less important or less *professional*. But if we want to be considered as professionals and respected as professionals, we need to behave as professionals and produce our professional materials in professional ways.

Theses and dissertations no longer hide on the back shelves of university libraries—mute testimony that the writer has obtained a degree but the work probably hasn’t much connection to anyone in the “real world.” With electronic storage, access, and indexing, anyone—from college freshmen to experienced academic researchers—may find your work and look into it. You, your work, and the university that approved it will be judged as professional or not according to (1) how professional it looks, (2) how professional it sounds, (3) how professionally it has been carried out, and (4) how professionally it is expressed. You’re carrying your research out professionally—your professor(s) and/or your graduate committee will see to that. This manual is designed to help you with the other three.

This chapter will look at the hoops and barriers you have to deal with as far as formats and formalities are concerned. Some are simply formalities: the specific number of words in the abstract or the spacing of footnotes, for example. We have to get around or past them because they are there. Others, such as a carefully constructed abstract and purposeful introduction, can contribute significantly to the coherence and accessibility of your writing.

Settings and Set-Ups

Familiarity Aids Clarity

Don't you love it when some "do gooder" rearranges your desk, your drawers, or—worse still—your bathroom? No matter how sensible the new arrangement may be, the sense of discomfort and disorientation is frustrating, and you may waste a lot of time looking for things that are in logical (but not familiar) places. Similarly, a professor, dean, or researcher who is trying to find important information in your paper, article, or dissertation feels comfortable and oriented when things are arranged in familiar places. There is conscious or subconscious routine/structure in reading, just as there is in daily necessities. Some of these set-up points have logical reasons, some don't.

Visuals Actually Do Make A Difference

Many of the visual formats and conventions really do make reading and processing more efficient for the reader. And you want to make things as easy for your readers as possible.

Paper. For paper copies, use relatively heavy white bond: 8 1/2 by 11 inches.

Font. 12 point

Use a serif font, such as Times New Roman, for the text.

A serif font (like this one) draws the eye forward.

Use a sans serif font, such as Helvetica or Geneva for tables and figures.

Note how this sans serif font gives a clearer, cleaner line.

Spacing. Double space the entire paper, article, thesis or dissertation. This includes the text itself, as well as titles, subtitles, quotations, footnotes, and references, unless your publisher specifies otherwise.

Margins. Margins should be one inch all around. For materials that will be bound, increase the left margin an additional half inch.

Alignment. Do not justify lines. The left margin will, of course, be flush, but let the right margin be ragged. The irregular spacing of the words that results from justification actually makes reading slower and more difficult.

Running head. At the top of each page in the left hand corner, place an abbreviated form of the title—a *running head*—in all caps. Try to keep it under 50 characters (including spaces and punctuation). On the title page it is labeled as "Running head" (with just *Running* capitalized); on the other pages it just appears.

Numbers and Headers. Number all pages consecutively from the title page. Use an arabic numeral in the top right-hand corner, at least 1/2 inch from the top of the page and 1 inch in from the side.

Paragraphs and Other Indentations. Set your indentation tab at 1/2" (5 to 7 spaces), and try to discipline your autoformat to leave it there.

Headings and Subheadings. Function and format of headings and subheadings will be discussed in detail in the following chapter.

BYU Standards and Specifications

BYU has its own list of requirements and standards for theses and dissertations, particularly as preliminary pages are concerned.

These can be downloaded or printed from the [Graduate Studies website](#). Formats and components for these pages will be briefly summarized here, and a sample title page will be included.

- A thesis or dissertation should be double spaced, typed with a 10-12 point serif typeface (Times Roman and Palatino are recommended). Elaborate typefaces should not be used.
- The document should be single sided if under 300 pages, double sided if more.
- Preliminary pages include the title page, an optional copyright page, approval and acceptance pages, a 350-word-or-less abstract, and an optional acknowledgements page.
 - The preliminary pages of all theses and dissertations are to be single sided, whether the body of the text is double sided or not.
 - The following pages have no number printed on them but are counted in the page sequence: Title page, copyright page, graduate committee approval, final reading approval and acceptance, abstract, and acknowledgements.
 - These pages are numbered with lowercase Roman numerals: table of contents, list of tables, list of figures.
- The pages of the body of the text and the appendices are numbered consecutively, beginning with the Arabic numeral 1.

All theses and dissertations must be submitted to the library electronically. Specific ETD formatting can be obtained from [the ETD website](#). The library does not require a hard copy of ETD documents, but particular departments may request hard copies for their archives

Introductory Components

Introductory materials such as the title page, the abstract, and the introduction are not merely formalities. They welcome the reader into your project—your research and ideas. They can have important effects on the way(s) your work is read and interpreted.

Title Page

Though many of us type the title page almost as an afterthought (a few minutes before the manuscript must be in the professor's or associate' dean's office, it is the welcome mat for your dissertation or article.

Many professional journals and graduate schools require their own title page formats, and of course you need to follow these directions. The basic APA title page consists of the following components:

Title. With the era of electronic databases and advanced library searches, the title carries more responsibility than it used to. Someone seeking to narrow a broad search may limit to words used in the title, and if you don't include the right words your article or dissertation may not be found. The following steps may help you in composing your title.

- Go backwards for a minute. Think of the words you used in the database searches that yielded the strongest, most focused sources.
- List additional words that express your most important processes, relationships, and findings.
- Using these words, construct a title that previews fairly accurately what a reader will find in your work.
- Cut out extra words—a 10- to 12-word title is ideal.

Byline. Type the name(s) of the author(s) one double space below the title. Give your name in its most identifiable form: first, middle initial(s), last. Resist the temptation to add "MA" or "PhD." If you are submitting an article for publication, include your institutional affiliation as well. If no institution acknowledges you, give your city and state.

Running Head. The running head makes its first appearance on the title page. It is labeled "Running head" (with just the *R* capitalized) followed by a colon. The running head itself is in all caps, as it appears at the top of each page of the manuscript.

Author Note. Author notes are not required for most theses or dissertations, but are necessary for submitted articles. The author note identifies the affiliation of each author at the time a study was completed, indented as separate paragraphs. It may include affiliation changes, acknowledgments, or special circumstances if appropriate (see APA 6, p. 25). The final paragraph includes a contact author along with mailing address. The email address follows.

Additional Information as Requested. Some journals use the title page as a place to record your contact information: work address, telephone, fax and email—sometimes even home address and telephone numbers. Some of them ask for so much information that the title page no longer appears tidy and professional—but we have to give them what they want.

This is the basic title page required by most publications using APA format.

Running head: ORAL RETELLINGS OF WORD PROBLEMS	1	Running head Page number
Use of Oral Retellings in Second Graders'		Title
Word Problem Comprehension		Byline
Susan R. Smith		Affiliation
Brigham Young University		City and state given when there is no affiliation. State names are spelled out rather than abbreviated.
Mary J. McKenzie		
Provo, Utah		
Author Note		Author note:
This research was completed by Susan R. Smith as part of her doctoral Dissertation.		May also include affiliation change, acknowledgements, or special circumstances.
Correspondence should be directed to Susan R. Smith, 314 McKay Building, Brigham Young University. Email: susansmith@gmail.com.		Corresponding author

Abstract

If the title page is the welcome mat, the abstract is the front door to your presentation. The abstract will appear in databases so that readers or researchers can tell very quickly whether or not your work will be relevant and interesting to them.

For most articles you have 120 words—or for a thesis or dissertation a whopping 350 words—to summarize your masterpiece. You want to work in as much solid, specific information as you can; there is no room for repetition or fluff. Since abstracts for doctoral dissertations will be published in *Dissertation Abstracts International* and other databases, include names of specific relevant places and full names of specific individuals, along with keywords that will be useful in electronic retrieval.

Following is a fairly easy process for putting your abstract together.

List out your chapter titles and your first- and second-level headings. If you have formed these carefully, they should express in simple and condensed form the main ideas and the groupings of supporting information for each chapter. As you look at this list, you can see at a glance both the outline of content and the key words you have chosen to express it.

Choose the most important points. The *Publication Manual of the American Psychological Association* (2010) suggests no more than four or five. You may want to discipline yourself to reflect your pattern of development and the main relationships that you bring out in your work.

Just summarize. Do not use the abstract as a “hook” to catch attention or as a place to validate your topic (unless it is BADLY in need of validation). Resist the temptation to use the abstract to make an evaluation of your “excellent” work. Leave statements of your strengths and limitations for later.

Trim the excess.

- **Eliminate repetition.** Repeated words and phrases are often key to noticing repeated content. Synonyms are also commonly found in verbal excess.
- **Consolidate sentences.** If two or more sentences have essentially the same subject or very similar predicates, they can often be easily collapsed into one clear statement.
- **Use pronouns efficiently but not carelessly.** It may take several words to repeat an antecedent that can be replaced by *it*, *they*, or *which*.
- **Eliminate unnecessary words.** Don’t waste space with “it is a fact that,” “it can be conceded that,” “it is important to notice,” “we have found it significant” etc. If these things weren’t facts and weren’t important or significant, you wouldn’t be including them in the abstract.

For articles submitted to APA journals and for most course papers, the format involves the running head, the title “Abstract” and the double-spaced one-paragraph text. BYU has a specific format for theses and dissertations, which will be shown in the next section.

ORAL RETELLING	2
Abstract	
This study investigated the effects of the strategy of oral retellings on second graders’ ability to comprehend and solve word problems. A sequence of 10 lessons teaching and implementing this strategy was conducted, reinforced by guided practice including group discussions and individual problem-solving challenges. Students were	

Running head
Page number

Abstract centered

Text double spaced
One paragraph
No indentation

BYU Preliminary Pages

Title Page

BYU has specified a particular format for the title page. A change has recently been made to eliminate the month, as month often changes between various submissions and readings.

All information is centered between the margins: both top and bottom (both one inch) and left and right.

Title	One inch from top of page. If more than 6 inches, split on 2 or 3 lines—inverted pyramid form. Headline style caps.
Name	
A dissertation submitted to the faculty of _____ Brigham Young University in partial fulfillment of the requirements for the degree of	Formal introduction required Full name of university
Doctor of Philosophy _____	Official title of degree
John Q. Brown, Chair George P. Johnson Michael C. Thomas Alonzo N. Nelson	List committee chair and members
Department Brigham Young University	Full name of department Double space Full name of university
Copyright © year graduate name All Rights Reserved	Copyright year only—no month Name of student as copyright holder

Graduate Committee Approval Page

BRIGHAM YOUNG UNIVERSITY	
GRADUATE COMMITTEE APPROVAL	
of a dissertation submitted by	
Michael D. Brown	
This dissertation has been read by each member of the following graduate committee and by a majority vote has been found to be satisfactory.	
_____	_____
Date	Mary Ann Prater, Chair
_____	_____
Date	Timothy B. Smith
_____	_____
Date	Ellie Young

5 blank lines

Double spaced

3 blank lines

2 blank lines between
signature lines

Final Reading Approval and Acceptance Page

After your thesis or dissertation has been completed in its final form, it will be read and “signed off” on this form by your graduate committee chair, the department chair or graduate coordinator for your department, and the dean or an associate dean of your college.

Acknowledgements Page

If you want to acknowledge people who have contributed to your work—by way of academic and/or personal support—you may include this page to do so. If you’re a lone wolf or a rugged individualist, no one will force you to thank anyone. Just don’t expect extra favors afterwards.

Abstract

BYU requires a format for the abstract that gives more information than the standard APA design.

<p>ABSTRACT</p> <p>TITLE</p> <p>Author's name</p> <p>Department</p> <p>Degree</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p>	<p>ABSTRACT centered in all caps.</p> <p>Title centered in all caps</p> <p>Name, department, and degree on separate lines, initial caps, double spaces between</p> <p>Text double spaced, one paragraph, not indented</p>	<p>Tripple space between ABSTRACT and title, between title and author, and between degree and text.</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------

Introduction

The introduction welcomes your readers and makes them comfortable with your presentation by acquainting them with topic and approach and by orienting them in terms of literature and developments in the field.

The introduction is not labeled unless necessary to avoid having a first page of a chapter with no heading.

CHECKLIST

The following suggestions are adapted from the 6th edition of the Publication Manual of the American Psychological Association (2011, pp. 27-28). They do not comprise a sequence or process, only a checklist for inclusion (or lack thereof).

Introduce your work and orient your reader.

- State the purpose and rationale for your research.
- Summarize previous arguments and evidence.
- Present the hypotheses and the experimental design.
- Discuss theoretical propositions and implications.
- Give necessary historical and research context.
- Introduce important terminology.

Avoid wasting your space and your reader's time.

- Don't let it get too long or heavy. Most introductions are initially way too long. Eliminate everything that is not really necessary for a reader to understand your piece. If you are uncertain about particular aspects, get your chair to advise you.
- Do not include an exhaustive historical review of the literature unless instructed specifically to do so. Include what you need to portray background and continuity of the research and to provide a reference base that the reader can appreciate. But do not include things that are tangential or irrelevant.
- Do not use the introduction as a soapbox to denounce opposing views. If these views need to be brought up early in order to orient the reader, do so efficiently and reasonably.

Tables and Figures

Tables and figures can be efficient ways of presenting information: packing a large amount of data in small space, emphasizing relationships, bringing in a visual learning modality. But they should be used only when they accomplish these functions. Do not overuse figures and tables.

Purposes for Figures and Tables (Adapted from APA 6th edition, 2010, pp. 125-126)

- **To explore:** to invite your readers to explore the data with you.
- **To communicate:** to share the data that support the meaning you have found so that the readers can understand your meaning on a deeper level.
- **To calculate:** to invite your reader to calculate a statistic or function related to the data.
- **To store:** to allow both you and your reader to have the data available for easy retrieval.
- **To enable visualization:** to attract attention and give your manuscript more visual appeal (depending, of course, on the nature of the data and the purpose and target audience for the paper).

Tables

Preparing course papers may not involve tables—at least not very many of them—as many courses do not have time for heavy data gathering. However, tables are an important component for theses, dissertations, and articles. Your committee and statistics helpers will guide you in composing the tables. This manual deals only with placements and formalities.

The following checklist will guide you in using tables effectively.

CHECKLIST

(Compare *Publication Manual of the American Psychological Association*, 6 th ed., pp. 125-150)

- Be sure that all tables are actually identified and discussed in the text. What is obvious evidence to you may not be so easy for a reader to interpret.
- Number tables consecutively throughout the text. Use separate numbering for tables in the appendix (A1, A2) or for separate appendices when you have them (B1, B2, C1, C2 etc.).
- Avoid using unnecessary or repetitive tables. Keep tables as simple as you can: data should be easily accessible.
- Use horizontal lines between table title and headings and between headings and body of table. Thereafter use horizontal lines only for clarity. Do not use vertical lines in tables.
- Place explanatory notes immediately following a table. A general note is labeled *Note*; a note specific to part of a table is indicated with a superscript number.

	Oral Retellings of Word Problems	24
Table number, Arabic numeral, flush left.	Table 1	
Table title, in italics	<i>Subjects' Use of Two-factor Retellings in Solving Multiplication Word Problems in Post-treatment Interviews</i>	
Horizontal lines separating table title and table text and separating column headings from data.		
Double spaces before and after.	Subject	Use
Column headings. Initial caps. No italics or bolding. "Decked heads" are layered to prevent unnecessary repetition: Self-identified use, Subconscious use.		Self-identified Subconscious
Table data columns at least 3 spaces apart.	Jace	2 3
Type table in sans serif font, no more than 4 font sizes larger or smaller than the font of the text.	Rory	5 4
	Haley	1 3
	^b Olya	0 2
	Kayla	2 5
	Michael	4 6
Include table notes to give information to aid in interpreting the table. General notes (set off by the label "note") apply to the table as a whole.	Note: Data represent transcriptions of student interviews recorded in both audio and visual formats ^b Child has recently moved from Russia and has very limited English skills.	
Specific notes (indicated by a superscript lowercase letter) apply to just the item or row on which they appear.		

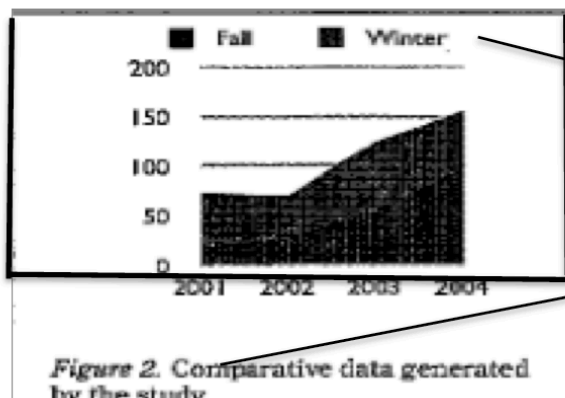
FIGURES

Figures attract attention and can represent complicated relationships in ways that are easy for a reader to process and remember. They are more striking and less precise than tables.

CHECKLIST

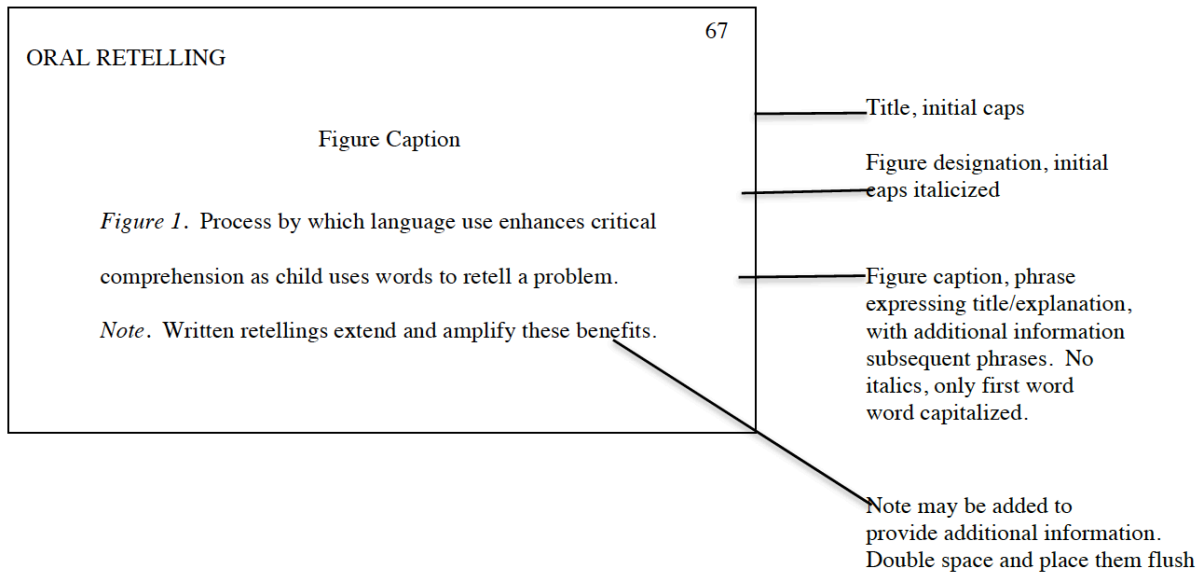
(See *Publication Manual of the American Psychological Association*)

- As the purpose of a figure is to supplement and enhance the text, it should be discussed with enough detail that a reader can easily interpret and remember it.
- Be sure that figures are simple and clear, avoid crowding in too much detail.
- Place the figure on a full page, either immediately following or facing the page on which it is first mentioned. The page devoted to the figure is not headed or numbered.
- Number figures consecutively with arabic numerals outside the boundaries of the figure itself.
- Type the figure caption below the figure or on the following or facing page.
- In material submitted for publication, where the figures are clustered at the end, type figure captions in a list on a separate page, not on the pages on which the figures appear.
- Be sure that the caption and legend explain symbols and abbreviations.
 - **The legend** appears as part of the figure; thus it is within the boundaries of the figure and uses the same typeface.
 - **The caption** is both a title and an explanation. It consists of a brief descriptive phrase, often followed by additional explanations of symbols or measurements. If material is to be published, captions are listed on a separate page rather than on the figures.



Legend: Placed on the figure to explain symbols used in it

Figure Caption: Identifies the figure, acts as title. Figure number is in italics, wording is not.



Follow-up Items

Appendix

If you have something that's a little bulky or tangential, but someone is apt to be curious about it (and/or your chair really likes it), you can include it in an appendix. The specialist may gaze at it all he/she wants, but the casual reader who finds your dissertation on the internet doesn't have to be bothered.

Think of the appendix as a closet for your research skeletons—things that can't be thrown away because somebody's bound to ask about them. But you just don't need to put them on prominent display.

Items for Inclusion

Any of the following might be included in an appendix (see *Publication Manual of the American Psychological Association*, 2010, p. 205):

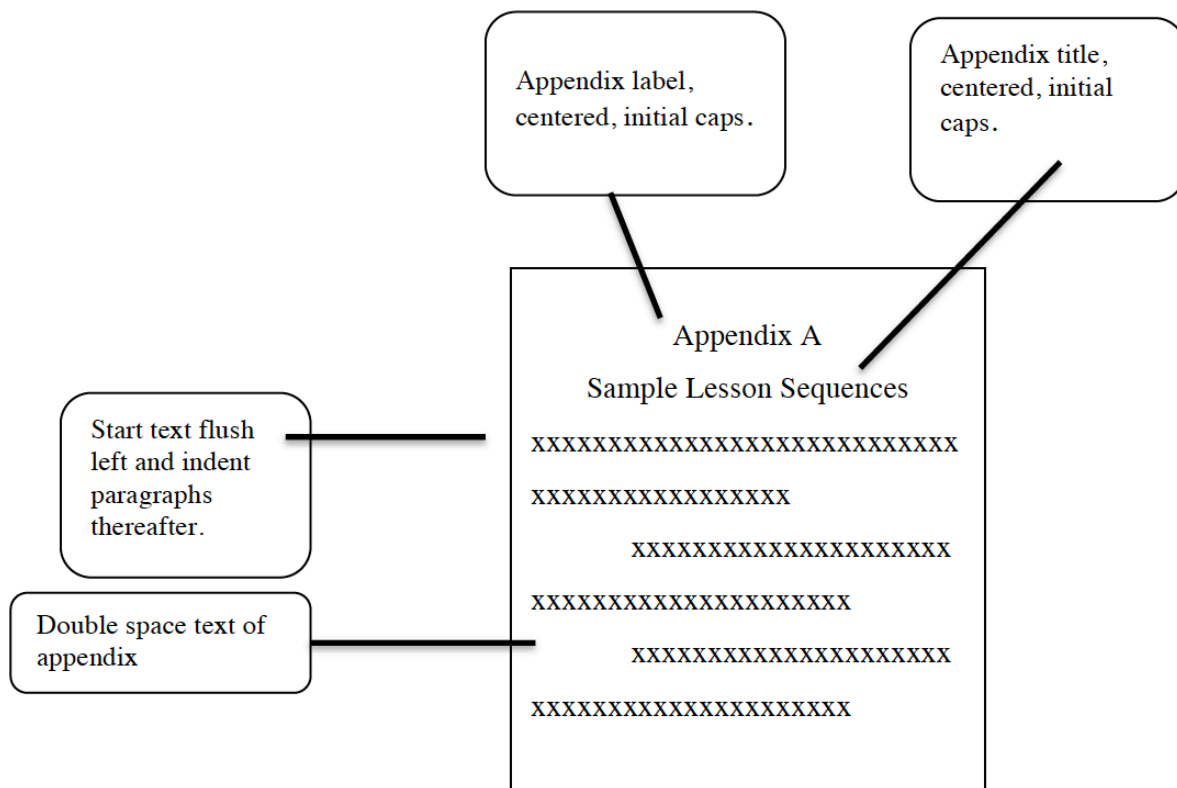
- Word list(s)
- Mathematical proof(s)
- Large table(s), particularly those too detailed for the text
- Technical information on methods beyond that required in the text
- Computer program(s)
- Questionnaire or survey instrument (you designed), instructions to participants
- Parts of published survey instruments only if copyright permission is obtained
- Participant recruitment materials: sign-up sheets, informed consent forms
- Case studies or other illustrative resources
- Statistical calculations that are relevant but not necessary to the text
- Additional data that are not vital to and are possibly awkward or bulky within the text

An appendix should contain related materials. If you have diverse appendages, you may have more than one skeletal closet. If you do have more than one, label them with capital letters: Appendix A, Appendix B, etc. Refer to them by these labels in the text (a copy of the questionnaire is provided in Appendix A).

As far as form and numbering are concerned, appendices are separate closets.

General Formatting Directions

- If you need only two levels of headings, use the formatting system you would use for a two-level paper rather than the four- or five-level system you are using for the overall dissertation.
- Label figures and tables in the appendix with the appendix designation as well as a number (e.g., Table B1 for the first table in Appendix B). If there is only one appendix, use an *A* to separate it from tables in the text (e.g., Table A2 for the second table in the only appendix).
- Begin each appendix on a separate page. Format as shown below.



If the appendix needs headings and subheadings to make information easier to access, set them up according to the format you have used throughout the text.

Appendix A	Appendix label
Sample Lesson Sequences	Appendix title
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Text double spaced
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Do not indent first paragraph
Introductory Lesson	
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	First-level heading: Format same as body of text
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
Anticipatory Set	Second level heading: Format same as body of text
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Indent paragraphs subsequent to the first in the section
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	

Notes: Foot and otherwise

Notes are convenient little “asides” that help you keep from overloading your sentences and diverting your paragraphs. They allow you to be explicit without being weighty.

Notes are a little like toe rings: They may not be absolutely necessary, and there are times when they do not do much good. But they can allow you some opportunities to amplify and enhance your text.

APA format requires parenthetical documentation for references, not footnotes (The reference footnotes used for Chicago format are completely different). APA uses only three kinds of notes in papers, dissertations, and basic articles: author notes, content footnotes, and copyright permission footnotes.

Author Note

The author note gives the author(s)’ names along with affiliations. Support acknowledgements and special circumstances relevant to consideration of the piece are sometimes included.

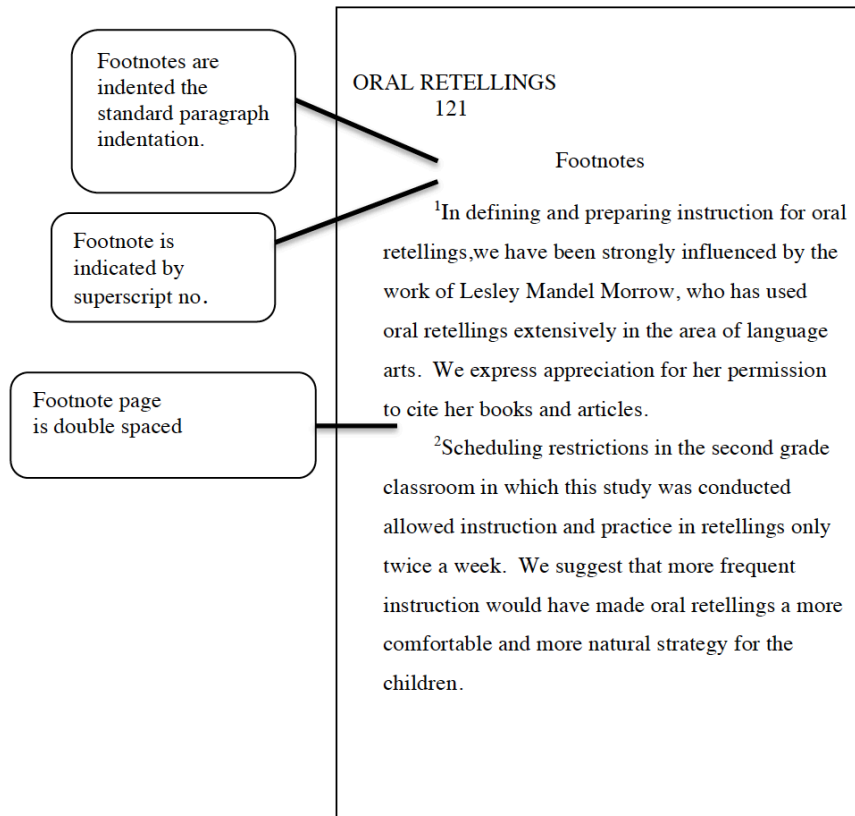
- On manuscripts submitted for publication, author notes are usually placed on the title page, as shown earlier in this chapter. If the manuscript is not being published, author notes may be placed on separate sheet at the end (following references or appendix).
- A contact address should be given. When there are multiple authors, only one need be designated as a contact.

Footnotes

- **Content footnotes** allow you to make expansions and explanations that would interrupt the flow of your text and not be of interest to all readers: for example, definition of a term, identification of a key individual, explanation of an instrument or procedure beyond what is required in the text, reference to sources with more detailed explanations, or additional historical or contextual information.
- **Copyright permission footnotes** acknowledge the copyright holder giving you permission to use material.

Both content and copyright permission footnotes are numbered throughout the text consecutively. Indicate their position in the text by a superscript number, and place the notes on a separate page following the author note.

A typical page of APA footnotes would look like the following example, without the labeling, of course.



Now that you have the hoops and barriers visualized so that you can discipline yourself and your computer to follow them, you're ready for the important work: actually writing the paper, thesis, or dissertation. The next chapter gives you a few hints that may help you to make the text better organized, more coherent and easier for the reader to process.

It probably seems like you have a lot of hoops to keep track of. You do. But with a little courage—and the humility to look at the manual and ask questions when necessary—you can manage them.

Previous Citation(s)

Black, S. (n.d.). APA for novices: A struggling student's guide to theses, dissertations, and advanced course papers. David O. McKay School of Education. Retrieved from https://education.byu.edu/research/dissertation_aids.html



Sharon Black

Brigham Young University

Sharon Black is an editor and writing consultant for the McKay School of Education at Brigham Young University. Her past professional experience included writing for broadcast, teaching kindergarten and preschool, teaching advanced writing and research courses for the English Department and the McKay School, writing home study courses, and doing a variety of editing for BYU and LDS Church literacy projects.

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Crafts and Puzzles

Bringing All Parts Into Place

Sharon Black

Believe it or not, the biggest (and most significant) challenge of writing a course paper, thesis or dissertation is *not* getting the tables, figures, abstract and appendix in correct formats and in the right places, with the spacing and page headings just right. Professional formats and conventions make your work *look* professional and in control, but they don't necessarily mean that it *is* professional and in control.

Your professors and graduate chair will ensure that your work is good. Chapter 1 will help you make it *look* good; the purpose of this chapter is to make it *sound* good. Robert Sternberg of Yale University made this observation:

I have discovered that whereas it is usually easy to distinguish well-presented good ideas from well-presented bad ideas, it is often impossible to distinguish poorly presented good ideas from poorly presented bad ideas. . . . If an idea is presented in a sloppy, disorganized fashion, how is one to know whether this fashion of presentation reflects the quality of the idea or merely the quality of its presentation.

So, the quality of presentation can be as enhancing—or as damaging—as the quality of the work itself. Unfortunately, there is no formula for making your presentation accurate, coherent, and accessible.

A mindset that has become popular with professional writers and writing teachers during recent years might be helpful to you in conceptualizing and dealing with writing tasks. It's actually a classification: writing is a craft. A versatile writer and writing theorist named Donald Graves (1985) explained it this way, "A craft is a process of shaping material toward an end" (p. 6). View yourself as a craftsperson with a large mass of facts, literature, precedent, and study data. You are shaping that material to present it to a particular audience for a significant purpose. If you approach your task with this sort of orientation, you may find that some of those shaping and perfecting processes seem to make more sense.

Your Sketch and Plan: a.k.a An Outline

Why does a sculptor sketch and model before taking on a block of marble? In order to fulfill the potential of the marble and the artist, strokes must be purposeful and accurate. Haphazard slicing will not produce beauty and grace. It won't produce a coherent thesis or dissertation either. Careful planning is necessary in order to maximize the potential of your materials and your talents.

Don't just hack through your data. Plan purposefully how you will form it into an effective product.

Yes, I know teachers have been preaching to you about outlines for years. There must be a reason for this, since outlining is a topic that is not any more fun to teach than to listen to. Outlining is hard, and it is usually time consuming. But ultimately its value in time efficiency and quality assurance is well worth what you put into it.

An outline really is a way of exploring patterns and relationships.

Begin by Looking at the Shape of Your Information

Yes, information has shape—logic of form and proportion, just as visual art, music, and poetry do. And people respond, consciously or subconsciously, to shape and rhythm in the flow of information, just as they do in the arts.



The natural shape of the information you have to convey will become the major sections of your outline (and thus of your chapter, article or paper).

Chapter one, a human form—5 necessary sections: I, II, III, IV, V

If you are doing an article or a course paper, find your shape by looking at your purpose and the information you have to develop it.

- If you're treating a problem and solution with about equal weight, then you have a natural two-part structure.
- If you're looking at two possible solutions to your problem, then you have a natural three-part structure.
- If you're exploring components, the shape will be determined by the number you will treat and the relative weight you plan to give them.
- If you are approaching something historically, then you may section off by historical periods, or possibly by philosophical positions, contextual circumstances, influences or schools.
- If you are discussing an experiment, the classic five-part experiment presentation will be your overall pattern and will form the main sections of your outline (I, II, III, etc.).

For a thesis or dissertation, the overall shape provided by the chapters may be determined for you. If you have done an experiment, the shape of some of your sections will be predetermined as well. Be careful in setting up the structure of your dissertation according to the basic pattern and the headings given you by your chair.

Consider the Contribution that Each Section Makes to the Whole



I , the head; IA, the face.
Within IA, four features.

Group the information that develops each section so that it can fulfill its purpose. Look for a pattern within these units as well. This pattern will become the A,B,C sections of your outline.

Choose content and shape for the introduction.

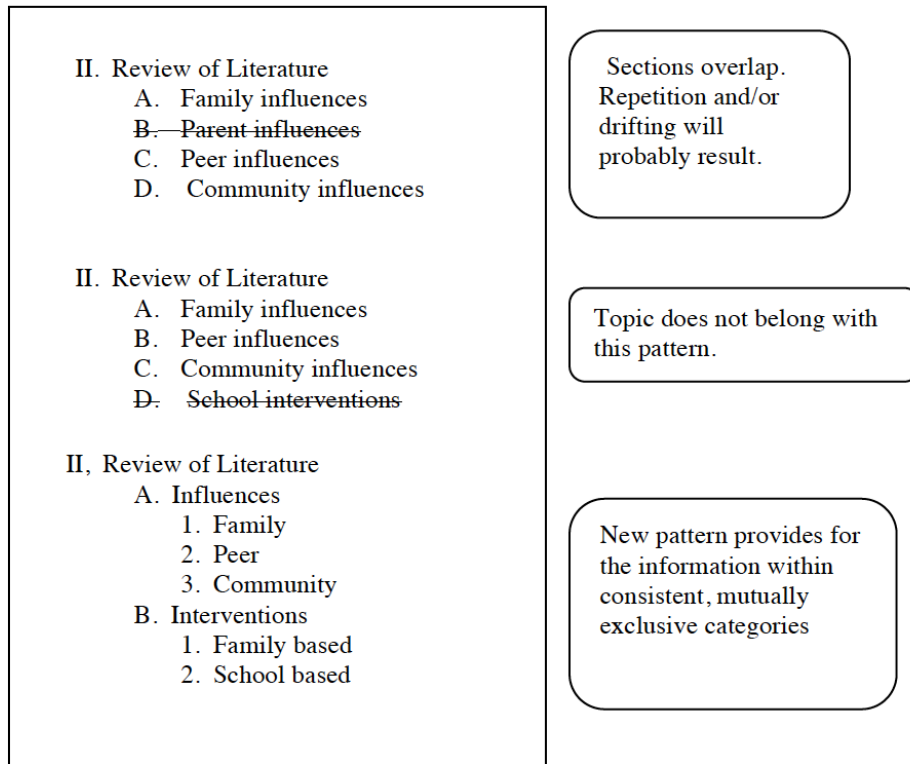
Sometimes introductory subsections are garbled because writers forget that information needs a shape and pattern that generate a purposeful sequence. Decide before you begin drafting what needs to be established in your introductory section and what would be the natural sequence for presenting it. A few common patterns are given to illustrate:

- Are you going from broad importance gradually toward specific applications supported by a progression of studies?
- Are you going to look at reasons for importance, followed by a historical overview of developing interest and increasing research?
- Are you going to begin with specific applications, broaden into theory, and then analyze the applications in terms of the theory?

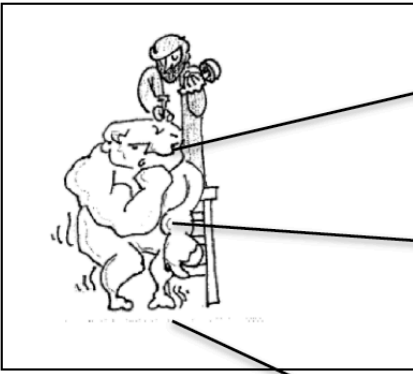
Work out developmental subsections.

The subsections that develop each of the important aspects of your pattern should be separate, mutually exclusive, and logically sequenced. After you have worked out your pattern, sort your references, inferences, and conclusions accordingly. If you have a database or sorter for your notes, let this mechanical servant help you out. If not, you are your own sorter or database. Perform this function before, not after, you get into the thick of drafting. Again, a few fairly typical examples are offered:

- **Example 1.** When you are putting together a review of literature, decide on a general pattern. Perhaps your particular project brings together what is known about four different aspects of your topic. These four aspects then become your pattern for the review of literature as well as for the larger text. Be sure the four are sorted according to a principle of division that can be consistently applied so that they do not overlap (and thus lead to drifting and repetition). Also be sure that you do not include an aspect that doesn't really apply. The following is oversimplified to make the point.



- **Example 2.** When putting together a section of findings, discussion, or conclusions, list out the main ideas and group under each the information you need to explain, demonstrate, and support your reasoning. If some of the conclusions extend or build on others, arrange them in the sequence that is necessary for them to be clearly understood. Eliminate information that is not necessary so that it won't distract from your reasoning patterns.
- Try to end on your strongest and best supported area. If you have an instinct to put your best material in the early sections, gradually diminish, and end on a weak or poorly developed area, you will have an awkward top-heavy structure. To see if this is happening, list the number of pages in each section headed at level 1. If your numbers are something like 10, 14, 12, 12, 7, 4, and 2, then you have a problem. You need to build up those short sections, reposition them, or find a way of combining them.



Start strong. Unless sequence relationships prevent it, begin with one of your strongest conclusions/reasons/examples/applications etc.

Put weaker materials toward the center. Central positions are those of least emphasis—the reader is usually sleepest.

A top-heavy structure leaves both you and your reader a little unsure.

End on strong, well developed material. A feeling of unsteadiness or disorientation comes when a piece ends on a weak or underdeveloped point. Your masterpiece doesn't have strong enough legs to stand on, and your readers will be able to tell.

“Flesh it Out”



Now fill in the supporting data, along with evidence, citations, quotations, details, explanations, definitions, applications. Give your paper, article, thesis or dissertation the substance it needs to be convincing, interesting, and useful. These groupings will become the 1/2/3 and a/b/c levels of your outline.

II. Review of literature

A. Family influences

1. Necessary definitions
2. General background
3. Initial studies 1985-1994
4. Extended studies 1994-2004
5. Calls for additional studies

Check for logical grouping

Check for logical sequence

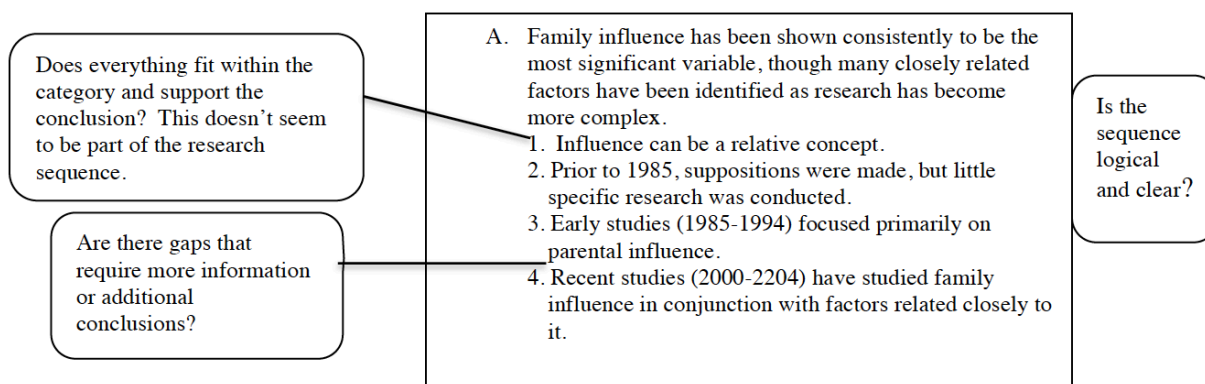


Not general lines and angles—fully rounded features

Now that you have the parts in place, bring them together into a smoother, more coherent whole. Turn that group of vague topic-notes into complete sentences.

No, this isn't a senseless torture invented by English teachers. Expressing each section and subsection as a subject/predicate sentence forces you to bring the information together as a distinct concept, not a vague designation of territory. When you force yourself to express things in terms of conclusions and relationships, you think in these terms, and you can test out their logic and support structures.

The more complete and specific form of expression helps your professors and/or your graduate committee to understand more accurately what you are learning and how you are putting the work together. It's difficult for faculty to advise and support you if they know only basic subjects in each section but not the ideas and conclusions you are forming from them.



Test It Critically

Now that you have worked out your structure and expressed your sequence of ideas, data, evidence, and conclusions in the form of complete statements, you (and your graduate committee) can examine them critically. During these organizing steps you have solved several problems that would otherwise nag at you and drag you down throughout the drafting process:

- You know what information fits in with your purpose and pattern and what doesn't. Thus, you know what to put in and what to put away.
- You can deal with your information in sections, not all at once—it's less overwhelming. You're not constantly grasping for relevance and relationships because you've already worked them out.
- By looking backwards and forwards, you're able to see relationships clearly. This helps you in expressing those relationships as you draft—both within the paragraphs and in your transitions.
- If there are places where your information is skimpy, you can gather what is needed before you get into the momentum of the drafting process.
- You know where to put your headings and subheadings, and you have the key words you will need in composing them.

Writer-Reader Guideposts: a/k/a Headings and Subheadings

Contrary to popular opinion, headings and subheadings are not merely a formality or an afterthought in your writing. They can be among your strongest tools for controlling your own work and for making it accessible to others.

Understand Uses and Usefulness of Headings and Construct Them Purposefully

Many people construct headings and subheadings mechanically and somewhat thoughtlessly because they do not understand what headings and subheadings should do.

Avoid these common errors:

- Superimposing headings after the text is completed
- Putting in headings at random as it dawns on you that direction is changing
- Using headings and subheadings to set off random and varied sizes and types of sections
- Expressing headings and subheadings in random formats, sometimes as phrases, sometimes as questions, occasionally as sentences

If you are very skilled (and lucky), then headings/subheadings that are placed and constructed in random fashion may still be of some use to your readers—but only if you do them unusually well. Use of headings/subheadings can be a powerful tool if recognized and used properly.

Aim toward these aspects of functionality:

- Using headings and subheadings to express the pattern of your chapter (paper, article) and demonstrate major relationships
- Planning headings and subheadings before you begin drafting so they can guide you as you draft
- Using headings and subheadings to check the logic of patterns, relationships, and sequence
- Constructing headings and subheadings from key words from your outline and notes
- Placing headings and subheadings in your chapter (paper, article) in the same pattern and positions as the items on your outline
- Using headings and subheadings to guide the construction of your abstract and any other summaries you are asked to submit

Use Headings and Subheadings to Reflect Your Structure

The *Publication Manual of the American Psychological Association* (2010) states that headings and subheadings should "establish the hierarchy of the sections via format or appearance." They can do this because "all topics of equal importance have the same level of heading throughout a manuscript" (p. 62). You made the decisions in these areas as you prepared your outline. Thus, the outline becomes the guide to heading/subheading construction.

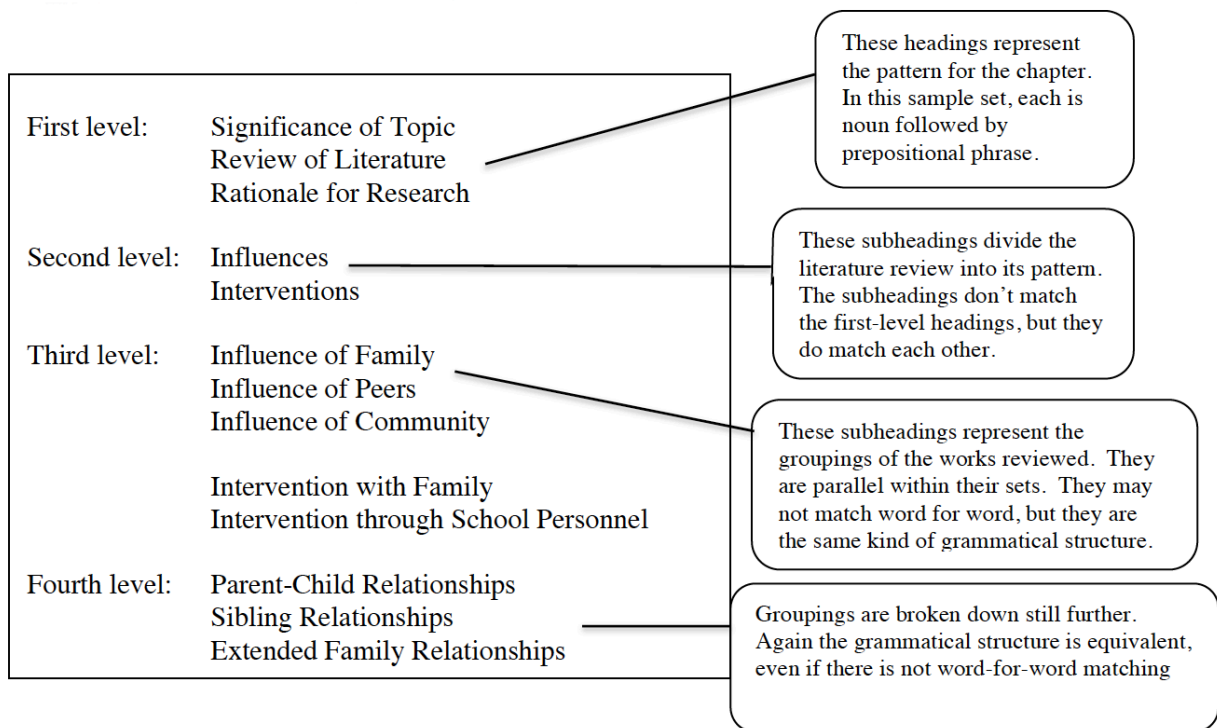
Heading placement reflects the sequence and development of your ideas. Let your outline guide you in placing headings and subheadings. Following is a very general and flexible guide.

Outline Designation	Heading/Subheading	Representation
Roman Numerals (I, II, III)	First-level headings	Overall pattern of chapter, article, paper etc.
Capital letters (A,B, C)	Second-level headings	Pattern of ideas within the section
Arabic numerals	Third-level headings	Supporting and developing materials
Lower-case letters	Fourth-level headings	More detailed breakdown of support patterns

Each new level of subheadings represents a *breaking down* of the unit of information.

You can't break anything down (including a pencil) and come out with just one piece. You can have two, three, seven, or even fifty, but you don't break to one. Thus, each time you break to a new level of subheadings, be sure that you have at least two. If you only have one unit to deal with, don't break down. You do not have to have the same number of levels for every section.

Construct headings as fragments, not questions or sentences. Make them parallel grammatically within their "sets."



ARRANGE AND FORMAT HEADINGS ACCORDING TO APA INSTRUCTIONS

APA format uses five levels of headings. The number of levels you use will depend on the complexity and the length of your thesis/dissertation chapter, article, book chapter, document, etc.

Layers of headings and subheadings are a guide to the way you layer meaning.

Short article, one level

Centered, bold, initial caps

Purpose

XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Medium article or paper, two levels

First-level headings — as above —
Bold, centered, initial caps

Second-level headings — at margin,
bold, initial caps

Method

XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Subjects

XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Substantial article, particularly study with single experiment — three levels

First level: centered, bold, initial caps —
as above

Second level: flush left, bold, initial caps
— as above

Third level: paragraph indentation, bold,
with only the first word capitalized,
followed by a period

Method

XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Subjects

XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Elementary children. XXXXXXXX

XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

**Complex article or dissertation chapter--
four levels**

First level: centered, bold, initial caps—
as above

Second level: flush left, bold, initial caps
—as above

Third level: paragraph indentation, bold,
with only the first word capitalized,
followed by a period—as above

Fourth level: paragraph indentation, bold,
italicized, with only the first word
capitalized, followed by a period

<p>Preliminary Study</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p>Method</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p>Subjects. XXXXXXXXXXXXXXXXXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p><i>Elementary students.</i> XXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p><i>Parents.</i> XXXXXXXXXXXXXXXXXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p>

**Relatively rare, but occasionally needed—
five levels**

First level: centered, bold, initial caps—
as above

Second level: flush left, bold, initial caps
—as above

Third level: paragraph indentation, bold,
with only the first word capitalized,
followed by a period—as above

Fourth level: paragraph indentation, bold,
italicized, with only the first word
capitalized, followed by a period

Fifth level: paragraph indentation,
italicized, with only the first word
capitalized, followed by a period

<p>Experiment 2</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p>Preliminary Assessment</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p>Method. XXXXXXXXXXXXXXXXXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p><i>Subjects.</i> XXXXXXXXXXXXXXXXXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p> <p><i>Elementary students.</i> XXXXXXXX</p> <p>XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p>

- Chapter headings for a dissertation or a thesis begin at the top of a new page. Headings begin at the first level.

- If a chapter designation (e.g., Chapter 3) is included along with the name of the chapter (e.g., Methods), then use the same level and placement of heading for both.

Chapter 3

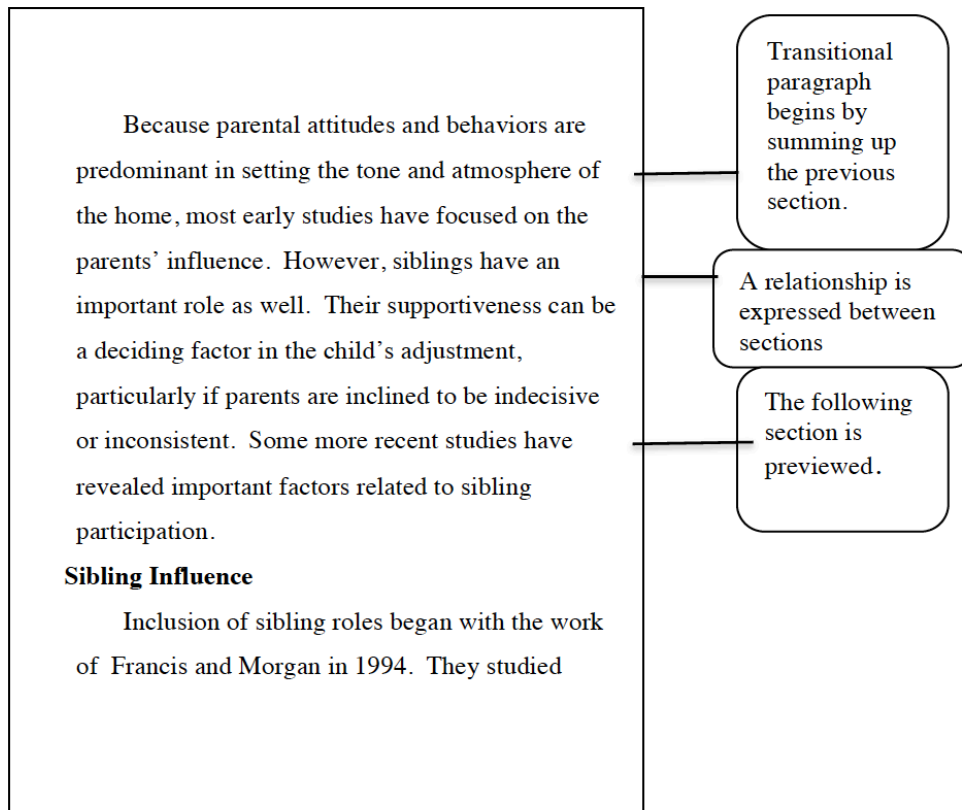
Methods

Smooth Connections: A/K/A Transitions

Use Transitional Paragraphs Between Major Sections

Some writers like to use brief transitional paragraphs between sections. This establishes a smooth relationship between sections, reminds the reader of pattern of development, and reviews what went on in the previous section—for those who have become a little drowsy.

Though a transitional paragraph is not a personal statement, the author reveals his or her own thinking regarding the relationships—an important aspect for students who want to reveal the depth of their own synthesis of ideas.



Use Simpler Transitions Within Sections and Paragraphs

Within sections and paragraphs, additional transitions are needed to keep things orderly and to make the purpose and relationships behind the sequences clear. They are not as large, but they reflect ways the writer sees patterns and interprets relationships.

previously

toward

afterward

indeed

at the same time

another

earlier

later

before

There is no formula for transition. Most of us use too little transition because we assume too much concerning our reader's knowledge of the topic and ability to make connections. What feels like too much to the writer is generally what is required for the reader. An English professor once explained to a graduate student that if she felt like she was putting signs on the doors of the rooms in her house, she was probably using transition about the way she should (Glade Hunsaker, personal communication to graduate student, 2000).

Logical Units: a/k/a Paragraphs

The paragraph is the basic unit of meaning that you use in research and other academic writing—and in most other types of writing, for that matter. You may not think very much about paragraphs when you are writing a letter, a journal, or a personal essay—they just seem to flow naturally. But paragraphing techniques are more important and need to be more deliberate when you are writing an academic paper, an article, a thesis or a dissertation because information is more complex and easier to misunderstand.

Following are some questions that are often asked—consciously or subconsciously—about paragraphing.

Question 1: How Long Should a Paragraph Be?

The *Publication Manual of the American Psychological Association* (2010) states that paragraphs should not be shorter than two sentences or longer than a full page. In general practice writers who know what they are doing can make very effective use of a one-sentence paragraph, and many lawyers, novelists and social scientists can produce paragraphs longer than a page that *they* think are coherent and accessible. However, when in APA territory, you need to follow APA instructions.

The most important thing to remember about paragraphing is that *a paragraph is a purposeful unit*. As different paragraphs will have different purposes, they will have different lengths. *A paragraph is the right length when it has fulfilled its purpose*.

A nice little quotation that has been passed around so much that no one can remember who originated it says, "A paragraph is like a skirt. It should be long enough to cover the subject, but short enough to still be interesting."

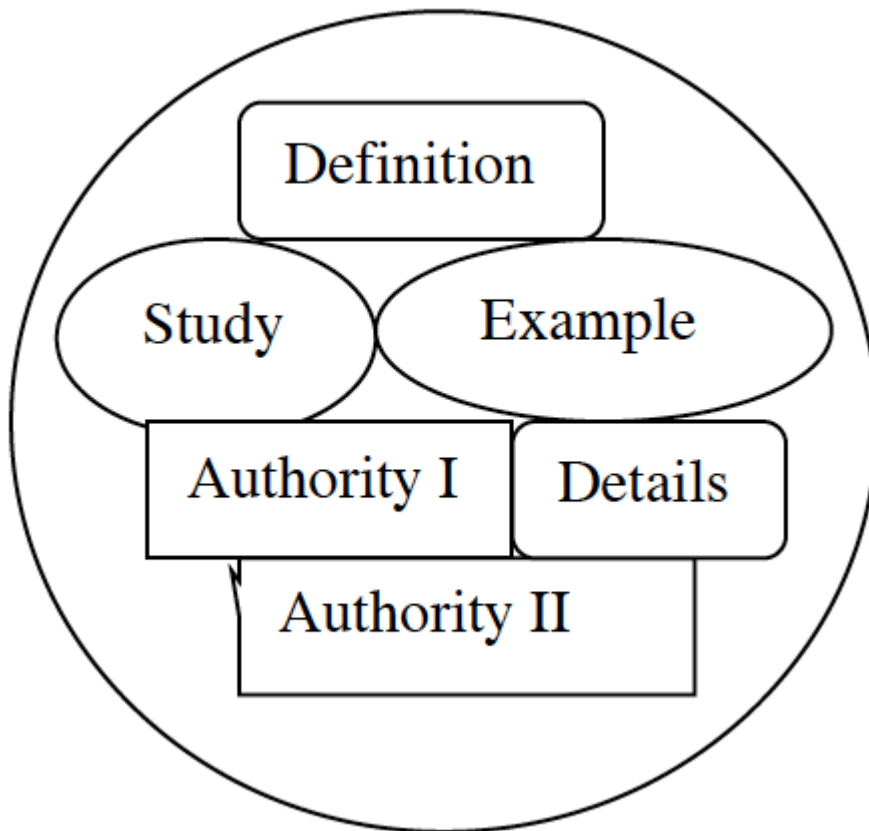
Question 2: How Do I Make the Purpose Clear and Easy to Understand - Both to Myself and to My Reader?

Paragraphs may have different functions or purposes.

As noted in the section on transition, sometimes the purpose of a paragraph will be transition. Such a paragraph may be only two or three sentences. A similarly short paragraph may be used to isolate a particular point for emphasis. Some people will isolate the thesis or purpose statement, along with necessary explanations and definitions, resulting in a very short paragraph that calls special attention by its appearance as well as by its lack of developmental detail.

A developmental paragraph will have a controlling idea along with its necessary development and support.

Most paragraphs are developmental. They take a particular portion of ideas/information and develop it to the extent required to be clear and convincing (long enough to cover the subject) but avoid adding so much bulk that it's overburdened (short enough to still be interesting). In a narrative or descriptive paragraph, the details generally come together naturally without the writer consciously composing a topic sentence and comparing the selection of details against it. In academic writing, however, information is complex and often technical. Paragraphs that are not composed with a controlling sentence often wander aimlessly around both the writer's and the readers' minds.



The topic sentence is a direct statement bringing information in the paragraph together as a purposeful whole.

It can be placed anywhere in the paragraph, but the most common area is within the first three sentences so that it gives maximum control to both the writer and the reader. A writer who places the defining statement early is staring at it while composing the paragraph—this "visual aid" makes it harder to stray off the topic. A reader who sees the topic sentence early understands from the beginning why the information has been selected and how it comes together to make its point.

Question 3: Are Paragraph Divisions Predestined? Am I Discovering or Crafting?

Crafting—definitely crafting! In a good percentage of cases, there are different ways that information can be grouped as units. With practice you will learn to spot options as you draft.

- Perhaps you have three studies that all support the same basic conclusion. You will have three or four sentences discussing each. Do you combine all three as one paragraph since they all support the same point, or do you use separate paragraphs since the studies were completed at different times in widely separate places with different research designs?
- Suppose you are comparing two strategies for dealing with a problem. You will have five or six sentences for each. Do you deal with both strategies in the same paragraph since you want to show the superiority of one strategy over the other, or do you put them in separate paragraphs since they are really separate strategies?
- You want to use a fairly detailed case study to illustrate a significant point. Do you put the whole case study in one paragraph since it is just one case, or do you separate it into parts?

Obviously these are very common situations that require a decision. In each, either one relatively long unit or two or three relatively short units could be justified logically. In these or dozens of comparable situations, the decision is yours as the author. You might want to take a couple of decision factors into consideration:

Consider the purpose of the paragraph.

Short paragraphs are more emphatic. Just as isolating one face and a few details makes the face stand out more, isolating one study, one side of a comparison, one reason, one cause, etc. makes it stand out with more impact.

Long paragraphs emphasize interrelationships. By grouping things within a paragraph, you cause the reader to process them together, without a visual (and thus mental) break. Content is processed together and thus stored and naturally retrieved together. The reader remembers the unifying point.

Thus you might ask these questions: (1) “Do I want to emphasize the characteristics of the individual studies or do I want to emphasize the shared conclusion?” (2) “Do I want to emphasize the individual strategies, or do I want to emphasize the similarities or the differences?”

Variation helps to hold a reader’s attention and interest.

- Both long and short are easier to process when there are not too many in sequence of either one.
 - Too many short paragraphs in sequence gives a choppy effect.
 - Too many long paragraphs in sequence feels heavy.
- Too much sameness keeps anything from seeming distinctive or significant.

Thus, you might ask questions such as these:

- “Are the paragraphs surrounding the three studies quite short?” If so, you might choose to combine the three studies into a longer paragraph to break up the choppy.

- “Are the surrounding paragraphs quite long?” If so, then you’ll probably want to give your reader a mental break by putting them in shorter paragraphs.

As for the case study, a student once included a case study that ran a page and a half, and she put it all in one paragraph. It was a killer! A paragraph shouldn’t go over a page, and very few should go over half to two-thirds of a page. If you find yourself with a lot of chokingly long paragraphs, you may want to try to reprogram your mind to think in shorter units.

Question 4: Once I've Chosen What to Put in the Paragraph, How Do I Link Things Up So That They Flow Smoothly?

Fitting pieces together in a paragraph is like putting together pieces of a jigsaw puzzle. Pieces are separate units, yet they need to come together to form a complete picture.

You need to discern the basic relationship of the pieces and then manipulate them carefully to discover which notch goes in which indentation to make the picture come together smoothly.

Sometimes we find the diverse elements that make up paragraph content are kind of loosely distributed within the boundaries of the topic sentence—sort of like putting together the puzzle border and then throwing the pieces at random in the middle. If not anchored to the topic sentence and attached satisfactorily to each other, they are going to be loose and disconnected—both in the writer’s mind and in the reader’s consciousness. If the paragraph has been planned purposefully, the information relates up—you just need to make those relationships clearly evident. There are several techniques and strategies you can use to do this:

Develop things completely enough that connections can be understood and processed.

Here is a paragraph full of loose, independent pieces:

Topic sentence

Examples, thrown out
but undeveloped

Sudden shift.
Figurative
statement—
undeveloped,
unrelated,
unexplained

Because an empty house or apartment can be a frightening place to come home to, many latchkey children attempt to create a safer environment. Some turn on lights (Galambos, 1983) or play the radio or television. The telephone often becomes the child's life connection to other people (Long & Long, 1983). The child may attempt to shrink the size of the environment. Some children deliberately fall asleep (Long & Long, 1983)

With additional information, the pieces become meaningful and the connections become clear.

Topic
sentence

More
information
makes the
relationships
easy to
understand.

Additional
development links
behaviors to specific
fears and to use of
masking to cope.

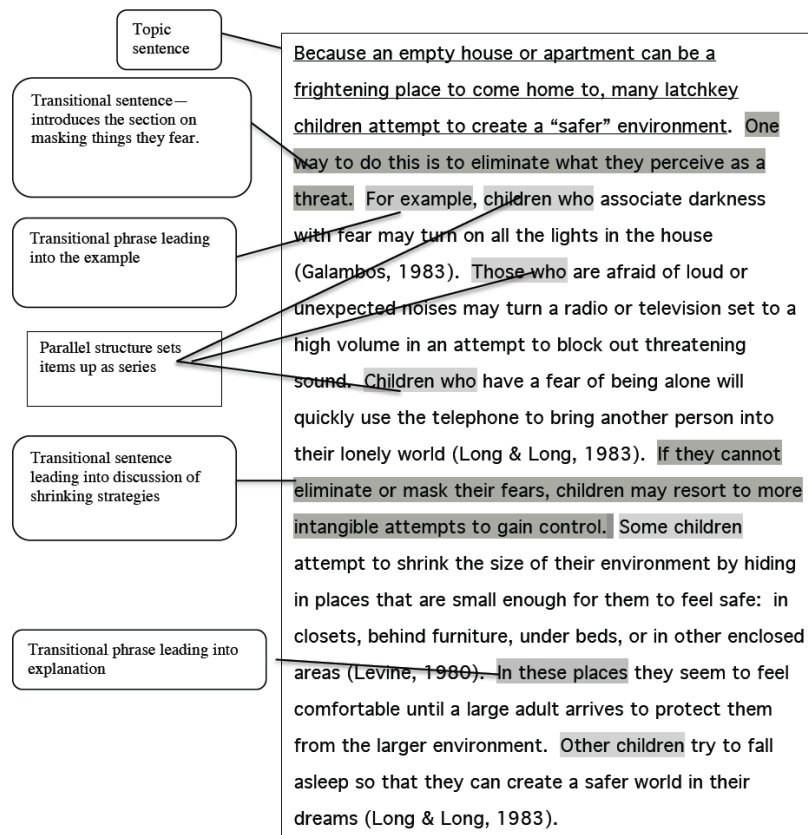
Additional
development
explains the
shrinking strategy.

Because an empty house or apartment can be a frightening place to come home to, many latchkey children attempt to create a “safer” environment. One way to do this is to eliminate what they perceive as a threat. For example, children who associate darkness with fear may turn on all the lights in the house (Galambos, 1983). Those who are afraid of loud or unexpected noises may turn a radio or television set to a high volume in an attempt to block out threatening sound. Children who have a fear of being alone will quickly use the telephone to bring another person into their lonely world (Long & Long, 1983). If they cannot eliminate or mask their fears, children may resort to more intangible attempts to gain control. Some children attempt to shrink the size of their environment by hiding in places that are small enough for them to feel safe: in closets, behind furniture, under beds, or in other enclosed areas (Levine, 1980). In these places they seem to feel comfortable until a large adult arrives to protect them from the larger environment. Other children try to fall asleep so that they can create a safer world in their dreams (Long & Long, 1983)

Fill in the gaps and lead the reader smoothly through by using transitional statements: sentences, phrases, and even single words that connect things up.

The relationship of the pieces is in the notches and indentations. Transitional words and phrases express these relationships.

Here’s the sample revised paragraph again. This time the notches (a.k.a. transitions) are highlighted rather than the extensions.



Provide a subtle sense of fit by echoing: (1) repeating key words and phrases, (2) using synonyms, and (3) selecting words that have similar connotations (affective associations).

It's sort of like repeating colors or other thematic elements as a key to understanding the way parts fit into a picture.

You don't have to read the paragraph again, just look at what is highlighted this time.

Darker shaded words repeat *empty*, *fear(s)*, and *lonely*. Other words such as *loud*, *threat*, and *darkness* continue with similar connotations.

Lighter shaded words repeat *safe(r)* and add “safe space” words like *hiding*, *enclosed*, *in*, *behind*, and *under*. Included also are additional safe connotations like *comfortable*, *asleep*, and *dreams*.

Because an **empty** house or apartment can be a **frightening** place to come home to, many latchkey children attempt to create a “**safer**” environment. One way to do this is to eliminate what they perceive as a **threat**. For example, children who associate **darkness** with **fear** may turn on all the lights in the house (Galambos, 1983). Those who are **afraid** of **loud** or unexpected **noises** may turn a radio or television set to a high **volume** in an attempt to block out **threatening** sound. Children who have a **fear** of being **alone** will quickly use the telephone to bring another person into their **lonely** world (Long & Long, 1983). If they cannot eliminate or mask their **fears**, children may resort to more intangible attempts to gain **control**. Some children attempt to **shrink** the size of their environment by **hiding** in places that are **small** enough for them to feel **safe**: **in** closets, **behind** furniture, **under** beds, or in other **enclosed** areas (Levine, 1980). In these places they seem to feel **comfortable** until a **large** adult arrives to **protect** them from the larger environment. Other children try to fall **asleep** so that they can create a **safer** world in their **dreams** (Long & Long, 1983).

Question 5: Do I Have to Do All of This at Once?

Strategies and techniques for improving organization and coherence in your writing are like strategies and techniques involved in most other craft and skill areas; they may seem a little artificial and somewhat overwhelming at first, but they become easier and more natural as you practice them. As principles of visual design, techniques for a musical instrument, or movements applied in athletic skills gradually become part of the way you deal with the materials, the organization and coherence strategies gradually become an unconscious (or at least semiconscious) part of the way you do informational writing.

Work out your organization through your outline before starting to draft. Doing this allows you to double check your thinking before you begin putting things into final word choice, and it takes off the strain of struggling with what you are going to say so you can put your full efforts into how you want to say it.

Yes, you’ll come to new insights as you draft, and you’ll want to shift a few things around and incorporate new ideas and conclusions. Deeper and more creative application of material is one of the benefits of the language process. But you can handle changes more easily and naturally if you have basic control.

Let yourself draft fairly freely. If you’re aware of the need for topic sentences and transition, these things will come fairly naturally as you write, since you have worked out the relationships previously and are able to think in terms of them. Get a friend, spouse, or coworker to read over your draft—or sections of it—to tell you where there are gaps. Your spouse is in a completely different major?—that’s fine, preferable in fact. Someone closely related to your area of study may mentally fill in the gaps for you. An outsider who is grappling with your meaning will notice them. Be sure you choose someone who will be critically honest with you.

Don’t get too tensed up. Lay out your materials, take a deep breath, and get to work.

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The Papers Trail

Controlling Your Reference Base

Sharon Black

As you put together your initial reference base, plan your inquiry processes, carry out your research or project, and begin analyzing and verbalizing what you have learned. You are continually moving across research territory that others have already claimed. You need to navigate and negotiate very carefully. You must appropriately acknowledge the contributions of others (and do so in proper format), but you must allow and credit the contributions of your own mind. As you gain ideas of your own, you need to compare, contrast, and develop them in the context of the work of others in order to develop maximum strength and effectiveness. And while you are doing all this, additional hurdles keep coming up, as you must handle a good number of new conventions and formats.

This chapter focuses on the tricky business of managing that trail consisting of the articles, books, papers, presentations, and additional work of other researchers, a.k.a using and citing references correctly, accurately, and ethically. It begins with a discussion of why referencing the works of others is such an important aspect of professional participation. If you understand *why*, then *when*, *where* and *how* will probably fit into place fairly easily, and these are discussed as well.

The many components, contexts, and details of reference list format can seem a little overwhelming. Nobody I know has the entire lot memorized. However, the process of putting the reference list together can become a little easier if you get some general patterns down and only have to look up the exceptions. This handbook will not include all the rare exceptions, but you can easily find them in the *Publication Manual of the American Psychological Association* (2010) or on one of several web sites, including Purdue's OWL (Online Writing Lab).

Why Cite?

If you were presenting a musical program for which you had written some of the pieces, you wouldn't merely perform piece after piece as if you had written them all. Similarly, if you were displaying the works of other visual artists along with your own at an exhibition, you would carefully indicate the borrowed works with full credit for their creators. To imply that you had produced artistic works created by others would be blatantly unethical and dishonest. And you would deprive your audience of the benefit of becoming acquainted with other artists who might be of interest to them. In developing your paper, article, thesis, or dissertation, you are in a sense giving a recital or a show. All contributors must be acknowledged, and the audience should learn to appreciate their work as you do.

Reason 1: You Need to Give Credit Where Credit Is Due

Ideas, opinions, observations, research, and data analysis and interpretation are as much the products of creative minds as songs or paintings. Although you may not have picked up your research sources with as much eagerness and fascination as you would a best-selling novel, the author has put a lot of work into that book or article, report, presentation, etc.; a lot of time, and a lot of critical, creative, and—believe it or not—actually imaginative thinking. The researcher has put in as much stress and deserves the same credit for his or her creation as does the composer, sculptor or playwright.

In deciding whether to make a citation to give credit, ask yourself these questions:

- Is this a unique creative work by an individual or group of individuals?
- If all the authors whose works I have consulted were to read my paper, article or dissertation, would they feel that they had received appropriate credit for their ideas and research?

The following types of materials and resources are referenced under the ethical consideration of giving due credit:

- Direct experiences
- Experimental studies
- Case studies
- Observations
- Methodologies or strategies worked out by individuals or groups
- Seminal work on theories or approaches
- Specific applications of theories or approaches
- New directions on theories or approaches
- Conclusions based on research or observations
- Opinions
- A specific list or selection of materials compiled by the author(s), even though items within that selection may be common knowledge
- A metaphor, simile or other image or figure of speech worked out by the author(s), even if the point being illustrated is common knowledge
- Any visual or graphic presentation
- Analysis, discussion, or criticism by the author(s) of the work or research of someone else
- An individual or team's unique definition of a term

Reason 2: You Need to Let a Reader Know Where to Learn More

Often a patron attending a concert will enjoy a new sound or new style enough to want to hear more of it. A quick glance at the program will provide the composer's name so that recordings of the specific piece or of others by the same composer can be easily located.

Similarly, a reader encountering unfamiliar information may want to find more concerning that particular idea, approach, theory, line of research, etc. By learning where you found the discussion of these points, the reader will know where to go to learn more.

In every field there is widely known information that can be found in almost any authoritative work on the topic: for example, the observation that illiteracy is a common cause of juvenile crime or the fact that giving stimulant drugs is the most common treatment for children with ADHD. These points may not be well known to the individual on the street, but someone doing research would have no problem locating further information on them. We refer to these points as *common knowledge*. Something can be considered common knowledge if it could be found in at least five different sources. A reader would not have to go to the source where you found common knowledge points in order to see them validated and discussed. So you do not have to give your source, unless there is another reason for doing so.

In deciding whether to cite a source so that a reader can learn more about the topic, you may want to ask these questions:

- Could a reader find this information easily in at least five different sources?
- Is the treatment you found so complete, authentic, or in depth that a reader would benefit more from reading about it in your source than in others?
- Is the point so new or so innovative that a reader might have difficulty locating information, although technically five sources would include it?

The following types of materials are generally cited so that a reader can use your references in locating further information:

- First-person accounts and other primary sources
- Archival sources: records, logs, journals, files, legislative hearings, legal documents, special collections, etc.
- Very current research
- New theories or approaches
- Particularly in-depth topic examination
- New perspectives or applications
- Literature critiques, reviews, or meta-analyses

Reason 3: You May Need to Give Sources in Order to Fix Responsibility

If concert goers hear a new "sound" and aren't sure whether they like it, they may glance quickly at the program to see who composed the piece. The credibility of the person who created the new style may well determine how seriously the audience considers it and how favorably they receive it. The same is true of information. If something is new, innovative, or unusual, a reader wants to know right away who takes responsibility for it.

In considering whether a source needs to be cited to place responsibility, you may want to consider these questions:

- Is the topic controversial enough that I need the author's name to validate the information?

- Is the research innovative enough that the audience needs to have a name they trust in order to give it the consideration it deserves?
- Although the information could be found easily in five sources, do I need to attach a name to it as a way of signaling to the reader that it is not something I necessarily advocate?

The following types of materials are generally cited to place responsibility:

- Personal opinions (although they may be popularly endorsed and thus widely available)
- Conclusions based on personal experiences
- Political ideas, positions, opinions
- Religious ideas, applications and interpretations
- Value judgments stated or implied
- Moral or ethical positions stated or implied
- Controversial topics
- Emotional topics or positions

Reason 4: You May Cite Some Sources to Put Your Ideas in Context and/or to Build Credibility

On most topics there are particular authors whom most researchers working in the area respect and expect. You need to show that you have consulted these widely acknowledged experts, and you need to show how your thinking relates to and is influenced by theirs.

In deciding whether you need to make a citation to build this credible reference base, you may want to consider these questions:

- Will my readers consider this author and/or this work essential to a strong presentation on this topic?
- Does my work provide an extension of or contrast to this work that the readers need to understand? Was this work a basis for my hypothesis or a context for my research?
- Will reference to the work or the author(s) contribute to a framework that will make my work more meaningful or easier to understand?

The following types of resources may be cited to build context and credibility:

- Researchers whose work established an area of inquiry, for example, Bandura, Glasser, Friere, Dewey, Kohlberg, etc.
- Researchers and authors whose work contributed substantially to the development of an area
- Researchers whose development of a topic is so widely known that citing their names may save you a good deal of background explanation
- Researchers currently recognized as prominent and productive
- Researchers whose positions or affiliations lend prestige to a topic

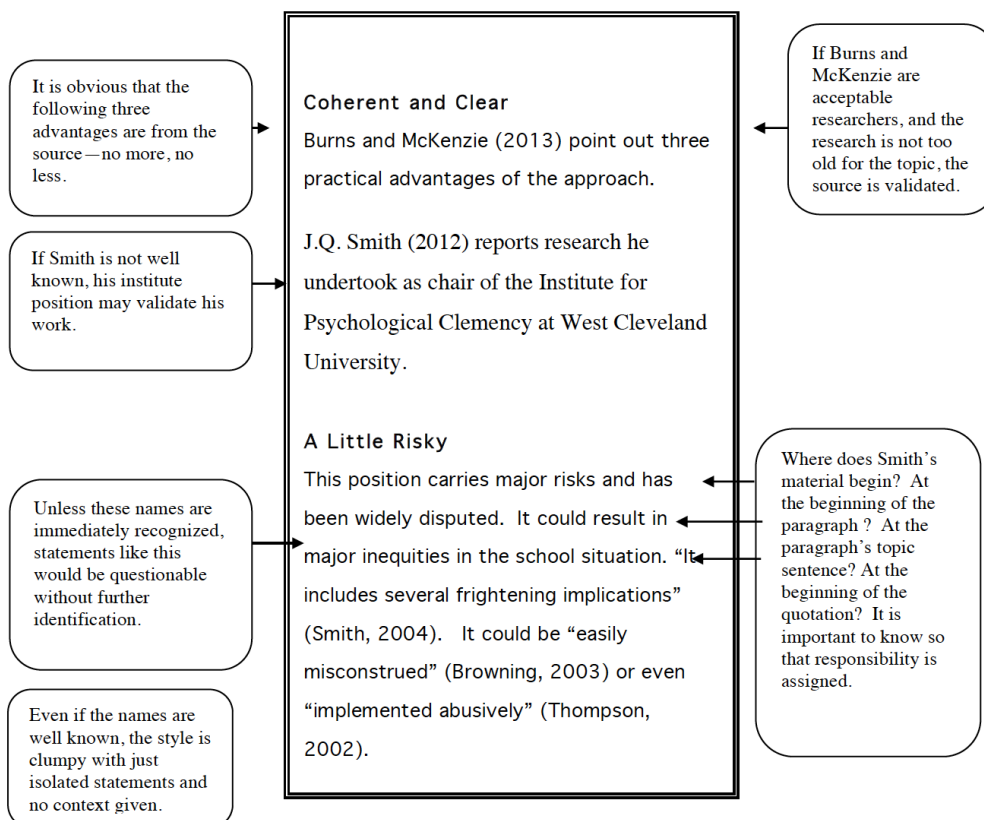
How Do I Cite? How Do I Handle the Citation?

By considering the reasons for documenting your sources, you can understand the importance of working carefully into and out of the information you borrow from them and of being sure that such aspects as authorship and publication availability are handled correctly.

Precaution 1: Handle the Citation so that a Reader can Easily Tell Where Information Taken From a Source Begins and Ends

There are several advantages to introducing the source by author and date as you begin taking information from it:

- You make the beginning of the “borrowing” easy to identify, making clear to the reader what is taken from the source and what is your own comment, analysis, or enhancement.
- The reader knows the author(s) and the date of the research from the beginning and can interpret and assign credibility accordingly.
- For authors who are not well known, you can easily identify their positions or accomplishments to give additional clarity or validity to what you cite.
- Introducing the source leads smoothly and coherently into the borrowing. You avoid the common problem of seeming to plunk in quotations or other points that may not be clearly relevant.

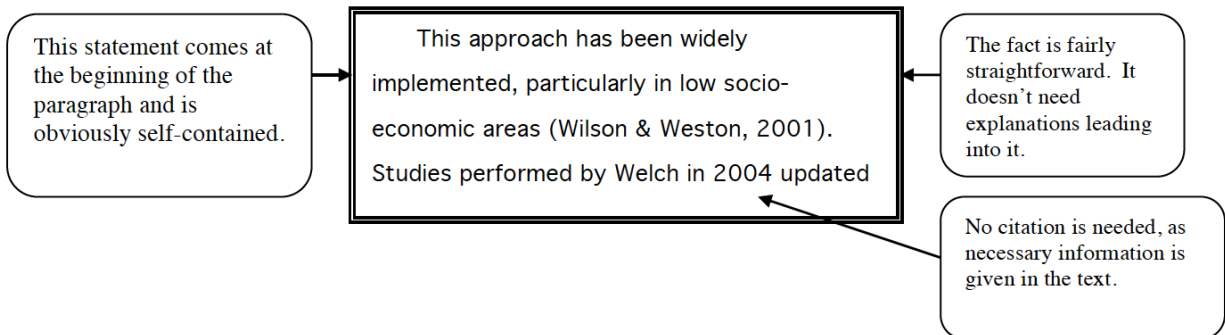


If the context of the cited material makes the parameters easy to discern, citation of both name(s) and date can simply be placed at the end of the borrowing.

Obviously a summary of a study is self-contained, and many opinions and analyses are obviously uninterrupted. In such cases, if the author is well known then acknowledgement at the end may accomplish what your readers need. Using this

form of citing when you can may help to avoid the “he said, she said” monotony that characterizes some academic writing.

If both name(s) and date are given in the text, no citation is necessary.



Precaution 2: Be Sure that Everyone Gets Due Credit and Takes Due Responsibility, Not Just the First or the Loudest

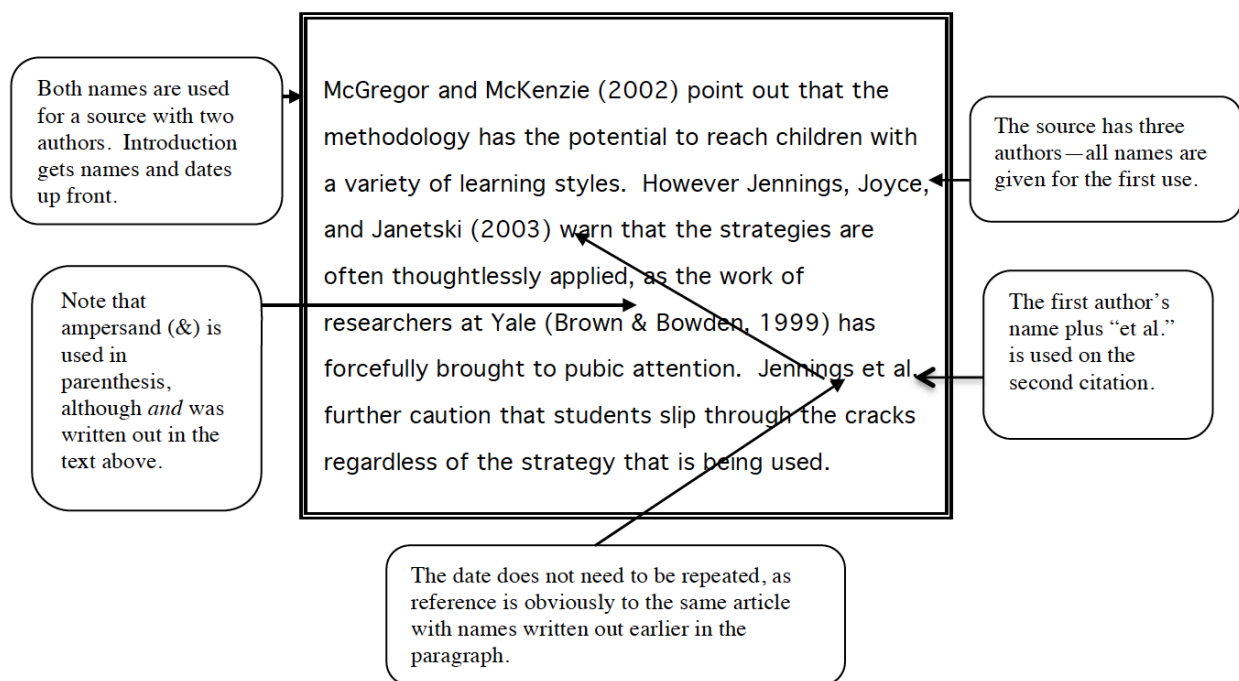
If your thesis or dissertation is turned into articles, you'll want credit, even if you are not actually listed as first author. Be careful to give the same courtesy to other (perhaps fledgling) subsequent authors.

Follow APA conventions for listing multiple authors in the citation.

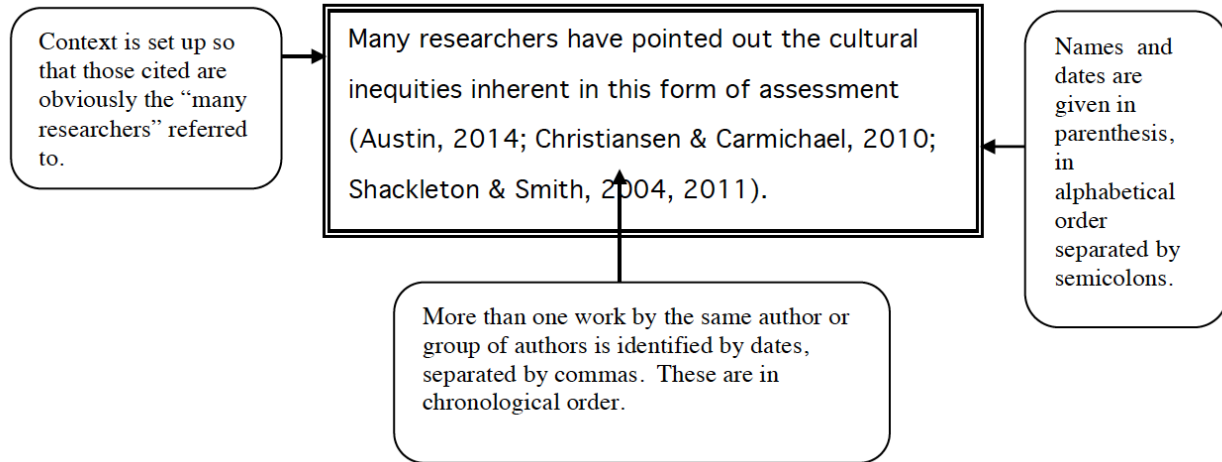
For a source with two authors, give both names every time.

- For a source with three, four, or five authors, give all names for the first use and the name of the first author followed by et al. for subsequent uses (Do not italicize et al. Use period after al.)

For a source with six or more authors, give only the name of the first author plus et al.

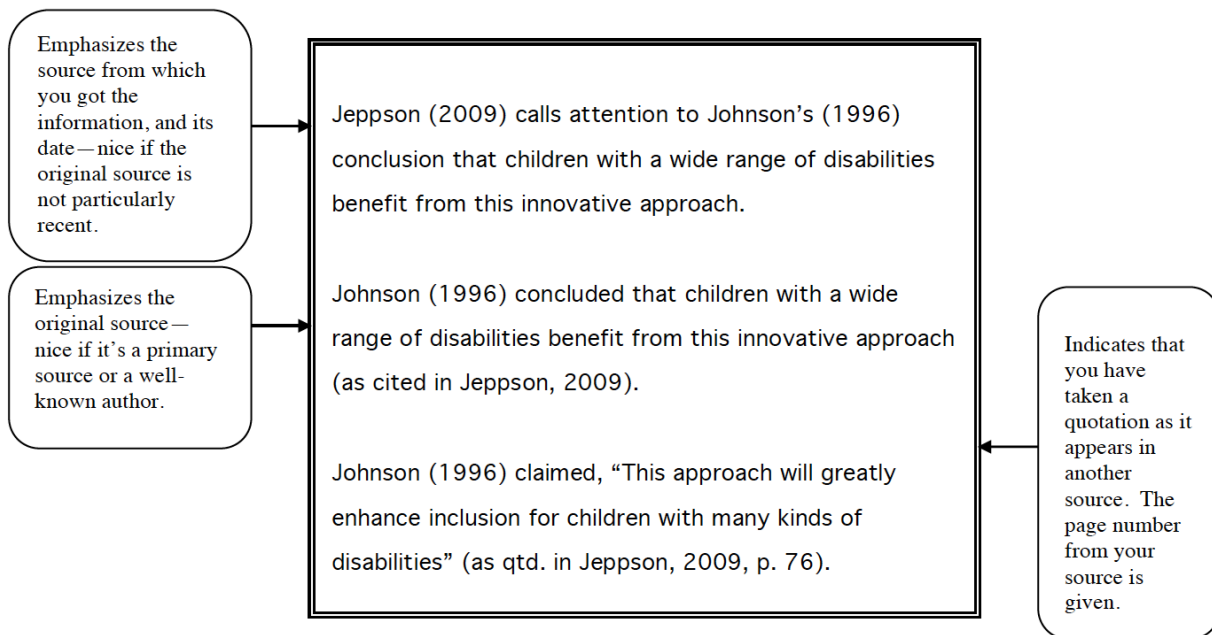


If more than one author or group of authors treats a point that needs to be cited, group the sources in the same parenthesis in alphabetical order.



If you are using something cited or quoted by another author and you have not consulted the original source, be sure that you make this clear—for your own protection.

If the author of the article from which you got the information has distorted or misrepresented, he or she is responsible, and you will not get angry calls from the original author berating you for missing the point. Yes, indignant calls have been received when authors have pretended that they have gone to the original when they have not actually done so.



Precaution 3: Recognizing the Nature of Professional Expectations, Be Alert to Multiples and Overlaps

When an author becomes either very knowledgeable or very desperate for tenure or promotion, he or she may produce many book chapters, articles, presentations, etc. very quickly. You need to be sure that your readers can easily find the particular piece that you are citing.

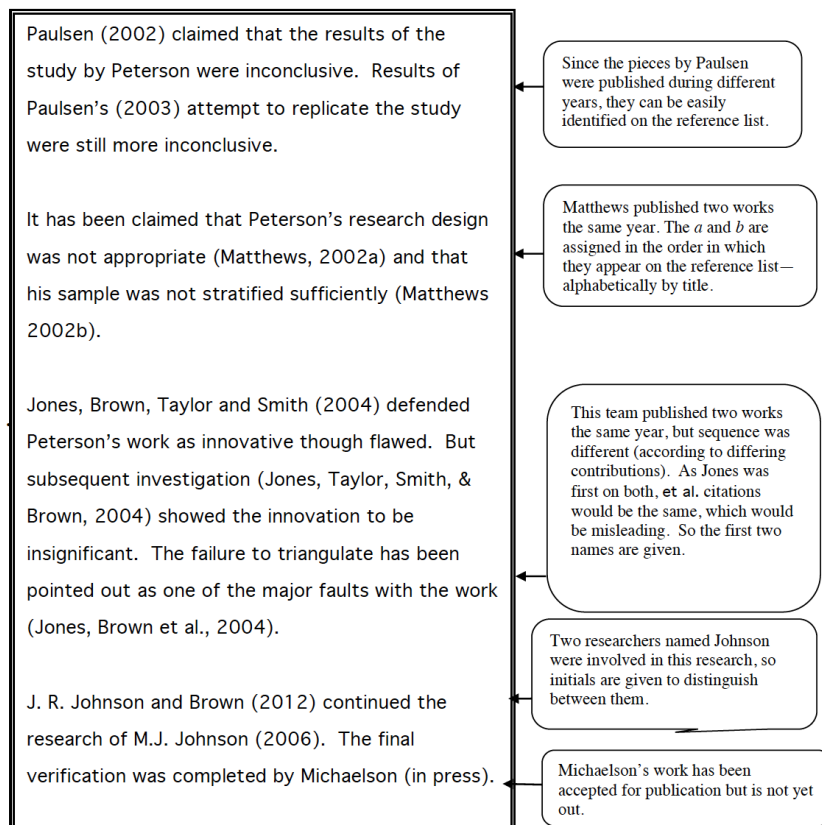
Distinguish carefully between works by the same author or group of authors.

- Multiple works by the same author(s) with different dates will be distinguished by the date.
- Multiple works by the same author(s) the same year are distinguished by adding a, b, c etc. following the date. The letters will distinguish the works on the reference list as well, so they are assigned in the order the works will appear on the reference list—alphabetically by title.
- Always list multiple authors in the sequence the names appear on the title page or byline. If the same group keeps switching positions, be sure you keep the switches straight. If you cite them in a different sequence, then you may be citing a different work.
- If a particular first author heads more than one group publishing works the same year so that two et al. citations come out the same, use the first two (or three if necessary) authors' names—set off by commas—before et al.
 - Jones, Brown, et al. (2002)
 - Jones, Smith, et al. (2002)

Differentiate authors with the same surname by using their initials in all citations, even if works were published during different years.

Even (perhaps especially) with well known husband/wife teams, you need to be sure that both names with accompanying sets of initials are given when appropriate.

If something has been accepted for publication but has not yet actually been published, put in press in parenthesis in the date position. If something is in process but has not been accepted, you can use in review, or being revised in the same position. Do not include the date until the work has actually come out.



Precaution 4: Remember that Anonymity and Eccentricity are Part of the Profession Too

When an organization is given as the author, put the name of the organization in the author position.

Spell out the name each time it is used unless the abbreviation is well known and easy to recognize.

For well-known abbreviations, give the full name followed by the abbreviation the first time, then the abbreviation in later citations.

When no author is given, cite by giving a short version of the title—just a few words.

The full title will be used in the author position on the reference list.

When the byline says “anonymous,” then cite “anonymous” in the author space both in the parenthetical reference and on the reference list.

The diagram shows a sample text box on the left with several callout boxes on the right and one at the bottom, each pointing to a specific part of the text.

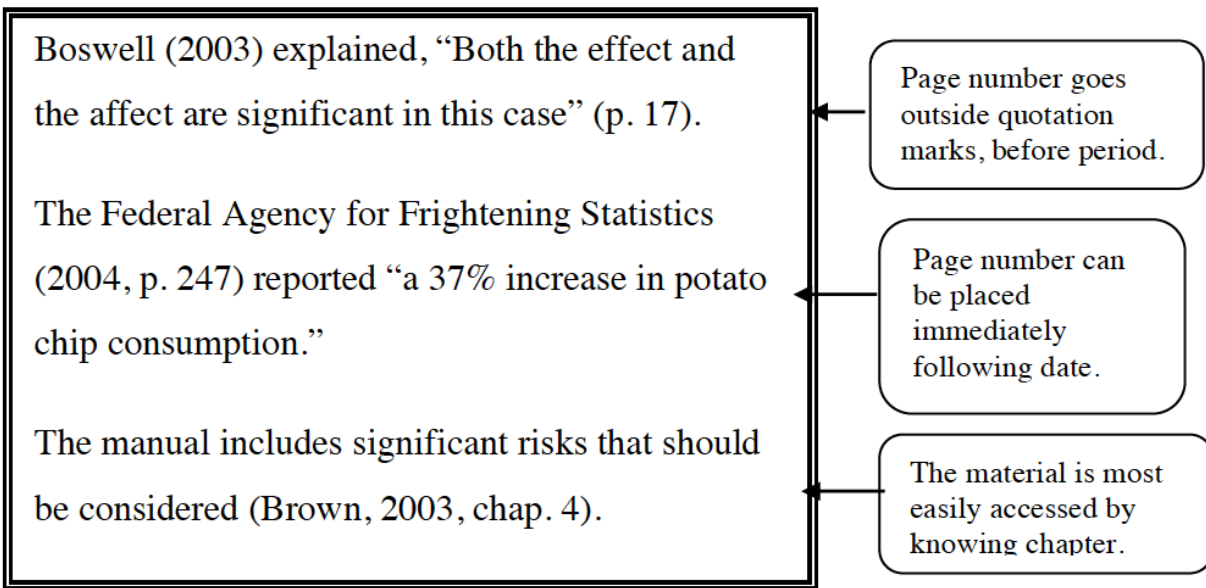
Sample Text:

Weaknesses in the policy have been widely discussed. Government agencies have called it “idealistic but impracticable” (National Foundation for Negativity, 2003, p. 1104) and “almost impossible to implement” (National Education Association [NEA], 2002, p. 23). A columnist in *Criticism Today* agrees, noting that those who have carried out its implications have had occasion to regret doing so (Agency Regrets Stand, 2004). A particularly virulent critic suggested that authors of the policy should be “subject to old fashioned frontier justice” (Anonymous, 2004, p. 17). National leaders do not support this suggestion (NEA, 2004). (See Black & White, 2004, for further mudslinging).

Callouts:

- Foundation functions as the author and is listed in author position. (Points to "National Foundation for Negativity")
- Abbreviation is widely recognized. Full name followed by abbreviation is given on first use. (Points to "National Education Association [NEA]")
- Author was not given. Short form of title is given in citation (Points to "Agency Regrets Stand")
- Piece was designated *anonymous* in publication. (Points to "Anonymous")
- Well-known abbreviation is used on subsequent references. (Points to "NEA")
- Note that citation inside parenthetical statement uses commas—not brackets—around date. (Points to "(National Foundation for Negativity, 2003, p. 1104)")

Precaution 5: Give Page or Chapter Numbers for Direct Quotations



Precaution 6: Designate Personal Communications as Such; The Reader Will Just Have to Trust You

Not everything that informs a study or piece of writing comes from a published source. Much is learned from direct personal communication. These materials cannot be retrieved by your readers for close examination or verification, but they still need to be credited if they take you beyond common knowledge. The following may be included in this category:

- interviews
- telephone conversations
- letters or memos
- email
- non-archived electronic discussion groups

Precaution 7. Avoid Leaving Blanks that May Seem Like Something Has Been Forgotten

If you don't want your professor, graduate committee, or journal editor telling you to go back to the library and track something that cannot be tracked, you need to pass the buck to where it really belongs.

Electronic sources may not give page numbers.

- If paragraph numbers are available, give them—preceded by ¶ or para (Leavitt & Leggett, 2003, ¶ 22).
- If paragraph numbers are not given, give the heading and count the paragraphs from that heading yourself (Zigler, 2004, Discussion, para. 4).

Classical works are in a class by themselves. Often dates and occasionally authors are not known, and other aspects are assumed known or easily accessible.

- For very old works, cite the date of translation, preceded by trans: (Plato, trans. 1942).
- If you know the original publication date as well as the date of the publication you used, give both dates in the citation: (Freud, 1919/1952).
- Major classics (Greek, Roman, Biblical) do not need formal citations or page numbers. Numbers of cantos, verses, and lines of ancient works or of books, chapters, and verses of the Bible are consistent in all editions, so the numbers make text easier to locate than page numbers. Give the edition you are using the first time that you use it: Romans 15:13 (King James Version).

Occasionally publication date is not given. To place the buck where it belongs, give the author with n.d. to indicate “no date” provided (Williams & Willis, n.d.).

Precaution 8: When a Citation Ends a Sentence, Be Careful to Get it on the Right Side of the Period

With all the questions of ethics and accuracy that are involved with citations, one would think that whether a period comes before or after a citation should be rather insignificant. Unfortunately, it isn't. Like the number of words in the abstract or the capitalization of words in various levels of headings, it's a matter of professionalism. You do a thing a certain way because the profession expects it.

With APA format, when the material cited is embedded in a paragraph, the citation comes before the period. The period is considered to be *your* sentence-ending period, and the citation is part of the sentence.

Recent research has confirmed the findings (Rosenberg et al., 2004).

The study furnished “empirical support for the proposition” (Rosenberg et al., 2004, p. 17).

When a quotation is blocked, the citation follows the period. The period is considered to be part of the blocked quotation (the author's period, not yours), so the citation is not part of the quoted sentence.

How Do I Handle the Reference List?

Preparing a reference list may feel like navigating an obstacle course, particularly if one has carelessly jotted down information with the idea of dealing with requirements and formats later. Often that “later” is right against the submission deadline, when patience is short and a trip to the library to locate an elusive page number in a returned book can be a major disruption.

Anticipate Needs and Provide for Them

Sometimes forethought can save you from later hassles, particularly if you are not a natural perfectionist and hate having to be a deadline-harassed unnatural one.

You may prepare your reference list as you go along rather than after you finish a chapter (or worse still, after you finish the entire project).

- If you write out each reference as you draft the citation into the text, then you won't risk leaving one off the reference list.
- You won't put something into the reference list that is not cited in the text if you only add to the list as you draft in the citation.
- You are less likely to have an inconsistency in the spelling of a name (Peterson/Petersen) or the digits of a date (1989/1998), and you avoid the embarrassing error of citing a page that doesn't exist (p. 87 in an article that goes pp. 64 to p. 84) if you are dealing with the textual citation and the reference list side by side.
- If you don't have a program that formats your references for you, it is easier to focus on the format technicalities as you draft rather than later when you're too tired to think straight.

If advance preparation is not the way your mind works, check these things VERY carefully afterward.

- Items should not be included in the reference list that are not cited in the text.
- The reference list must include everything that a reader could retrieve (personal communications are not listed, even though they are cited in the text, because a reader would not be able to access them).
 - Spellings and numbers must be very carefully checked.

Format the Reference List According to APA Conventions

- Start the reference list on a new page
- Double space both within and between entries
- Use hanging indent form

Title References
initial caps.

Double space within and
between items.

Use hanging indent form for
all items. (First line at
margin, all others indented
with paragraph indentation.)

ORAL RETELLINGS OF WORD PROBLEMS

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References

- Baroody, A. (1993). *Problem solving, reasoning, and communicating, K-8*. New York: Merrill.
- Cai, J., Jakabcsin, M. S., & Lane, S. (1991). Assessing students' mathematical communication. *School Science and Mathematics, 84*, 238-246.
- Carpenter, T. P., Fennema, E., Franke, M. L., Levi, L., & Empson, S. B. (1999). *Children's mathematics: Cognitively guided instruction*. Portsmouth, NH: Heinemann.
- Countryman, J. (1992). *Writing to learn mathematics*. Portsmouth, NH: Heinemann.
- Fuson, K. C., Carroll, W. M., & Landis, J. (1996). Levels in conceptualizing and solving addition and subtraction compare word problems. *Cognition and Instruction, 14*(3), 345-371.

Alphabetize Items on Reference List According to the Surname of the First Author; If Something is Unsigned, Begin with the Title and Alphabetize the Item in the List by its First Significant Word

In capitalization conflicts, the trend is to simplify.

- Short before extended: Williams before Williamson
- Mc and M' as they are actually spelled, not assuming they should really be spelled "Mac."
- Prefixes such as de, du, le, or von as part of the name if they are commonly used as part of the name: DeBry, LeBaron (lesser known prefixes at the end: Beethoven, L. von)
- Numerals as if they were spelled out

When dealing with prolific authors, remember that first comes first.

- More than one solo article—first come, first entered:
 - McDonald, R. (2000).
 - McDonald, R. (2002).
- Same for combos if names are in the same sequence:
 - McBride, J. Q., & McDougall, W. R. (1999).
 - McBride, J. Q., & McDougall, W. R. (2003).

- Author(s) up for tenure who publish many the same year and you happen to cite two or more of them—alphabetically by title, designating *a, b, c* etc. so you can identify which is which in the text:
 - MacKenzie, B. B. (2002a). Classroom . . .
 - MacKenzie, B. B. (2002b). Writing . . .
 - MacKenzie, B. B., & McLean, U. J. (2012a). Inclusion . . .
 - Mackenzie, B. B., & McLean, U. J. (2012b). Reading . . .
- First author alone before first author plus friend(s):
 - MacKenzie, B. B. (2009).
 - MacKenzie, B. B., & MacArthur, W. J. (2007).
- First author followed by different line-ups—first *different* author determines sequence:
 - McDonald, R. N., & LaMont, C. K. (2010)
 - McDonald, R. N., McBride, J. Q., & Baird, W. R. (2008).
 - McDonald, R. N., McBride, J. Q., & Foster, M. B. (2009)
- Same surname—initials determine sequence:
 - McBride, J. Q. (1999).
 - McBride, W. T. (2002).

When you don't have the author(s)' name(s), use what you do have.

- When an organization or institution is given in the byline, alphabetize by the organization's name: first significant word, full name.
- If no person or group claims the piece, alphabetize by its title: first significant word.
- If the piece is officially designated "anonymous," accept that as a "statement," and use anonymous in the author place.

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References

American Association for Weird Opinions. (2004).
Response to illogical allegations. *Journal of Weird Ways*, 19(4), 14-17.

Anonymous. (2003). *Slandorous thoughts on recent legislation*. New York, NY: Vanity Press.

Behavioral analysis of compulsive contradiction. (2002).
Eccentric Clinical Research, 68, 33-37.

Organization functions as author. Full name is spelled out.

Publication designated as anonymous.

No author is given, so title is placed in author position.

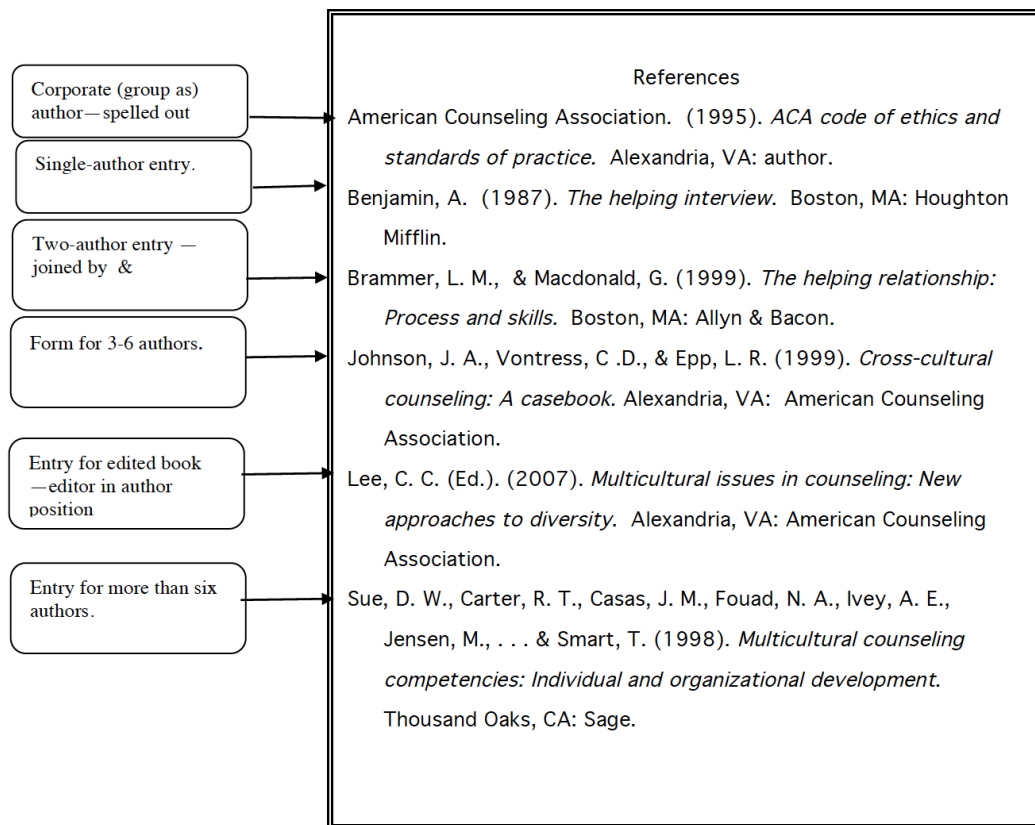
How Do I Remember All the Format Pieces?

There are so many little bits and pieces to remember in formatting that trying to memorize them all would probably put most of us in a padded cell. Thus textbooks and publication manuals sell their products, APA web sites get visited, and professors feel warm and knowledgeable because they know more of the little pieces than most of their students.

This is not a guide for perfectionists who enjoy memorizing things they can easily look up. All of the little nitty-gritties of entering different types of government reports and off-beat web sites are not included; you won't use them often, and you can easily find them in the *Publication Manual of the American Psychological Association* (2010) or one of the various APA-guidance web sites. What will be covered here are the basic patterns that will help you remember enough that (a) you won't have to look up *everything*, and (b) you will have a basis through relationships to understand, locate, and eventually place what you do have to look up.

Position 1: Author (SURnames, Initials, and Lots of Commas and Periods)

- Give the author(s) surname(s), followed by initials.
- If there are more than seven authors, give the first six, followed by ellipsis, followed by the last.
- If a *with* assistant is included on the title page, include this on the reference list in parenthesis: Brown, M. (with Green, C. Q.).
- If the book is an edited collection and is being cited as the collection, name the editor(s) in the author position followed by ed. or eds.: Davidson, R. M. (Ed.).
- If you are citing a chapter or essay in an edited book, give the author and title of the individual section. Follow this with In and the name(s) of the editor(s) and the title of the book.
- Write out the names of corporate authors rather than using abbreviations.
- Use commas between as well as within *all* names (including those joined by ampersand); separate name variations (such as *Jr.* or *III*) by a comma as well: Wilson, G.W., Jr. (2004). End the author entry, like all major units, with a period.



Position 2: Publication Year in Parenthesis

- Give year of publication—year of production if work is unpublished.
- Give month for things that come out monthly, including meetings (which, we hope, are not more frequent).
- Give day for things that come out daily or weekly.
- If something is not published, give date of preparation and indicate publication status as follows:
 - If something has been accepted for publication, use (in press) in the year position. Do not give the year until it comes out.
 - If something has not been submitted for publication, write unpublished manuscript at the end of the reference list entry. If a university is involved, add the name of the university (Unpublished manuscript, University of Utah).
 - If something has been submitted but not accepted, add Manuscript submitted for publication to the entry. Do not tell which publication or publisher.
 - If something is still in draft mode, use Manuscript in preparation. The date should be the date of the draft you read (in the citation also).
- Use a, b, c, etc. after date to indicate more than one work written the same year by the same author (consistent with citations).
- Use n.d. for items for which dates are not given.
- As with the other sections, close with a period.

	INTERVENTIONS FOR CAMPUS ALCOHOLISM 95
Journal with monthly issues	Cowan, G. (2000, May). Beliefs about the causes of four types of rape. <i>Sex Roles: A Journal of Research</i> , 41, 807-818.
Newspaper w/ daily issues	Kirkpatrick, C. (1996, September 29). No easy answers. Universities grapple with vexing alcohol problem. <i>The Herald-Sun (Durham)</i> , p. A1.
Article accepted for publication	Hattie, J. A., Myers, J. E., & Sweeney, T. J. (in press). A multidisciplinary model of wellness: The development of the Wellness Evaluation of Lifestyle. <i>Journal of Counseling & Development</i> .
Unpublished manuscript, completion date given	Mines, R. A. (1977). <i>Development and validation of the Mines-Jensen Interpersonal Relationship Inventory</i> . Unpublished manuscript.
Unpublished manuscript, w/ university	Holingshead, A. B. (1957). <i>Two factor index of social position</i> . Unpublished manuscript, Yale University, New Haven, CT.
Article accepted but not yet published	Hite, J. M., Hite, S. J., Jacob, W. J., Rew, J. W., & Magimu, C. B. (1995). Building bridges for resource acquisition: Network relationships among headteachers in Ugandan private secondary schools. Manuscript submitted for publication.
Two articles by the same author, same year—labeled a and b both in citations and on reference list	Tryon, G. S. (1989a). A study of engagement and premature termination in a university counseling center. <i>Counseling Psychology Quarterly</i> , 2, 419-429.
	Tryon, G. S. (1989b). Study of variables related to client engagement using practicum trainees and experienced clinicians. <i>Psychotherapy</i> , 26, 54-61.
No date given	Myers, J. E., & Gibson, D. M. (n.d.). <i>Technology competence of counselor educators</i> . Washington, DC: Office of Educational Research and Improvement.

Position 3: Title - "Simplify, Simplify, Simplify" (Thoreau, 1854/1980)

- Capitalize only the first word of the title; if the title is split by a colon, then capitalize the first word following the colon.
- Do not use quotation marks around article or chapter titles; italicize book and journal titles.
- If an edition or volume number is given, place it immediately after the title, in parenthesis (2nd ed.), (Rev. ed.), (Vol. 3) (Vols. 1-5).
- If you are using a translation of something written in another language, indicate the translator in parenthesis immediately following the title. If you worked from the original foreign language text, use the original title and place a translation of it in brackets next to the title.
- If additional information would be helpful for easy retrieval of the work, include it in brackets:
 - [Letter to the editor]
 - [Abstract]
- If you are citing an article or chapter in an edited book, include the page numbers of that segment in parenthesis following the book title.
- End the element, as usual, with a period.

Only first word and first word after colon are capitalized; there are no quotation marks around the article title.	MULTICULTURAL LANGUAGE 49
Book titles are in italics; edition (2 nd ed.) follows title.	Sue, S. (1999). Science, ethnicity, and bias: Where have we gone wrong? <i>American Psychologist</i> , 54, 1070-1077.
Volume no. follows title.	Ramirez, M. III. (1999). <i>Multicultural psychotherapy: An approach to individual and cultural differences</i> (2 nd ed.). Boston, MA: Allyn & Bacon.
Translator follows title.	Miller, P. (Ed.). (1962). <i>Major writers of America</i> (Vol. 1). New York, NY: Harcourt Brace.
Translation follows foreign language title.	Bonfil Batalla, G. (1996). <i>México profundo: Reclaiming a civilization</i> (P. A. Dennis, Trans.). Austin, TX: University of Texas Press.
Classification that would make source easier to locate	Cifuentes, B. (1998). <i>Letras sobre voces</i> . (Letters over words/voices). Mexico City, MX: Centro de Investigación y Estudios Superiores en Antropología Social.
Follows title.	Griffith, P. L., & Lynch-Brown, C. (2003). Final words [Editorial]. <i>The Reading Teacher</i> , 56, 718.

Position 4: Publication Information - Or Lack of It (Who, Which, and Where)

For periodical materials, give all information necessary to locate the article.

Journals and other periodicals connect professionals from throughout the world. The good ones are current and reliable.

- Full periodical title, italicized, all significant words in caps.
- Volume number, italicized, followed by comma
- Issue number (if each issue begins with page 1), in parenthesis, not italicized, followed by comma. If pagination is continuous from issue to issue, only the volume number is necessary
- Inclusive page numbers

For books, include place of publication and publisher.

If the publisher is strong and the author/editor reputable, books are solid sources.

- If either the place or the publisher is not given, put n.p. in the place where that information should go (so your professor won't think you accidentally left it out or forgot to record it).
- Give the city and the two-letter postal abbreviation for the state or the city and name of the country. For books published by universities that include the name of the state, the state should not be repeated: for example, Logan: Utah State University Press.
- Use a colon between place and publisher.
- Give publisher's name in its simplest form: Omit extra words (*Publishers, Co., or Inc.*), but retain *Books* or *Press*.
- If the book was originally published at an earlier date, then indicate this at the end of the publication information.
- For chapters, essays, or articles within an edited book, give book editor(s) (initials first), title, and inclusive pages of the part being cited (including volume and volume title if necessary). Then give city and state (or country) as above.

For reports, follow the title with any labels or numbers given by the organization of issue that would help a reader in locating the piece, followed by place and source of publication.

Reports provide rich data and important, innovative findings, particularly reports from entities or institutions with strong credibility.

- Give whatever office, institute, or agency produced the report.
- If the specific office is not well known, give the agency as well, larger agency first: David O. McKay School of Education, CITES Research Group.
- If the report is distributed through the Government Printing Office, place this in the publisher's place: Washington, D.C.: Government Printing Office.
- If the report is available through a service such as Education Resources Information Center (ERIC) or National Technical Information Service (NTIS), indicate the service and access number in parenthesis at the end of the entry, with no period following the retrieval number: (ERIC Document Reproduction Service No. Ed 454069), (NTIS No. PB 87-146 388/AR).

If a doi number is given, include it at the end of the reference list entry.

An international publishing group has developed an identification system for digital network materials, known as digital object identifier (DOI). Every article is given "a unique identifier and underlying routing system" (APA, 2010), which links readers to information on desired topics, with embedded linking in the reference lists of articles published electronically. When a source with a DOI number is referenced, this identifier must be included at the end of the reference item. It is not followed by a period so that a period will not be misinterpreted as part of the number. The following example is quoted directly from the sixth edition of the APA manual.

Books and Articles

Standard Journal
format

Derry, S. J. (1989). Putting learning strategies to work. *Educational Leadership*, 46(4), 4-10.

Standard book
format

Heppner, P. P., Kivlighan, D. M., Jr., & Wampold, B. E. (1992). *Research design in counseling*. Pacific Grove, CA: Brooks/Cole.

Book with edition
given

Cohen, J. (1987). *Statistical power analysis for behavioral sciences* (Rev. ed.). Hillsdale, NJ: Erlbaum.

Book with no
publisher given,
original publication
date included

Bulfinch, T. (1856). *The age of fable*. Boston: n.p. (Original work published 1855)

Chapter or section
in edited book

Jacob, E. (1992). Culture, context, and cognition. In M. D. LeCompte, W. L. Milroy & J. Preissle (Eds.), *The handbook of qualitative research in education* (pp. 293-335). New York, NY: Academic Press.

Chapter, article,
essay, or section in
a multi-volume
edited work

Liddle, H. A. (1991). Training and supervision in family therapy: A comprehensive and critical analysis. In A. S. Gurman & D. P. Kniskern (Eds.), *Handbook of family therapy* (Vol. 2, pp. 638-697). New York, NY: Brunner/Mazel.

Chapter, article
essay, or section in
multi-volume work
with volumes titled
separately

Pintrich, P. R. (1989). The dynamic interplay of student motivation and cognition in the college classroom. In C. Ames & M. Maehr (Eds.), *Advances in motivation and achievement: Vol. 6, Motivation enhancing achievements* (pp. 644-689). Greenwich, CT: JAI Press.

Reports

Report with identifying [project, designation, and numbers	Goldstein, H., Moss, J., & Jordan, L. (1965). <i>The efficacy of special class training on the development of mentally retarded children</i> (Cooperative Research Project No. 619). Urbana, Ill: Institute for Research on Exceptional Children.
Report with additional identifying information	Ross, D. M., & Ross, S. A. (1972). <i>An intensive training curriculum for the health of young educable mentally retarded children</i> . (Final Report on Project 142106 and H932106A to Bureau of Education for the Handicapped). San Francisco, CA: University of California Medical Center.
Report available through U.S. government printing office	U.S. Department of Education. (1993). Forum briefing materials from National Agenda for Achieving Better Results for Children with Disabilities. Washington, DC: U.S. Government Printing Office.
Report not available through government printing—must be obtained from author	National Council on Education Standards and Testing. (1992). <i>Raising standards for American education: A report to Congress, the Secretary of Education, the National Goals Panel, and the American people</i> . Washington, DC: Author.
Report or monograph by university	McLaughlin, M. J., & Hopfengardner, W. S. (1992, September). <i>Issues and options in restructuring schools and special education programs</i> . College Park: University of Maryland.
Monograph available through government agency	Clements, C. (1966). <i>Minimal brain dysfunction in children</i> (NINDES Monograph No. 3, Public Health Service Bulletin 1415). Washington, DC: U.S. Department of Health, Education and Welfare.

Presentations

For a conference or symposium presentation, give the title of the conference and the city and state where it was held.

- If the presentation is published in the proceedings, treat it as you would an item in an edited book.
- If it is included in a regularly published proceedings, treat it as you would an article in a periodical.
- If the presentation is unpublished, give the type of presentation (symposium, paper, poster session) “presented at the” and title of the meeting, followed by the location (city and state).

Regularly published compilation of conference materials is treated as a periodical.

Conference proceedings should be treated as an edited book. Initial caps are used for the title of the conference.

Unpublished conference presentation includes title of presentation

- Garcia, G. E. (1998). Mexican-American bilingual students' metacognitive reading strategies: What's transferred, unique, problematic? *Yearbook of the National Reading Conference*, 47, 253-263.
- Appelt, W. (2003). The synergeia system for computer supported collaborative learning. In D. Lassner & C. McNaught (Eds.), *Proceedings of ED-MEDIA 2003: World Conference on Educational Multimedia, Hypermedia & Telecommunications*: (Vol. 4, pp. 307-314). Norfolk, VA: Association for the Advancement of Computing in Education.
- Thornburg, D. D. (2003, December). *Technology in k-12 education: Envisioning a new future*. Paper presented at the Forum on Technology in Education: Envisioning the Future, Washington, DC.

Theses and Dissertations

For theses and dissertations, give author, title, document type, university, and any information that will help the reader in accessing it.

- If the dissertation is abstracted on Dissertation Abstracts International (DAI), follow with the volume and page number of DAI. If you obtained it from UMI, give the UMI number as well.
- If a master's thesis is abstracted on Masters Abstracts International (MAI), give the MAI volume and page number.

Dissertation is unpublished
State is not given because
it is part of university name.

Dissertation is on DAI—the DAI
volume and page numbers are
given. The university name and
date in () shows that you
obtained it from the university.
If you obtained it from UMI, give
the UMI number instead.

Rodriguez, E. R. (1994). *The role of psychological separation,
ethnic identity, and worldview in college adjustment*
(Unpublished doctoral dissertation). Arizona State
University, Tempe.

Calevich, C. (2003). *Literacy communities in the primary grades:
Skill, will, and caring collaboration* (Doctoral
dissertation, Kent State University, 2003). *Dissertation
Abstracts International*, 64, 3197.

Masters Abstracts International is handled the same way.

Other Media

For other forms of dissemination give the same kinds of information you would give in any citation, but adapt.

- Indicate principal creators (producer, director, writer, executive producer) in author position. In most cases, producer, director or both will be given.
- Give date and title, as you would in any citation.
- Indicate the medium (motion picture, television broadcast, television series, DVD etc.) in square brackets following the title.
- End with place and agency/company of dissemination. If the piece is of limited circulation, then give the complete address of the distributor.

For something of limited circulation, provide name and address of distributor

Motion picture easy to obtain.

Television series

For single episode, treat as chapter or section of book

Recording of music: composer, date of composition, title, performer if different from composer, *On* followed by title, with medium in parenthesis. Place and label follow with recording date.

Idaho Literacy Project (Producer). (1991). *Read to me* [DVD]. Newark, DE: International Reading Association. (Available from International Reading Association, 800 Barksdale Road, P.O. Box 8139, Newark, DE 19714-8139).

Attenborough, R. (Producer/Director). (1993). *Shadowlands* [Motion picture]. United States: Savoy Pictures.

Campbell, N. (Producer/Director). (1982). *The Shakespeare collection* [Television series]. Quebec, Canada: Canadian Broadcasting Corporation.

Campbell, N. (Producer/Director). (1982). Shakespeare's *The Taming of the Shrew* [Television series episode]. In N. Campbell (Producer/Director), *The Shakespeare Collection*. Quebec, Canada: Canadian Broadcasting Corporation.

Saint-Saëns, C. (1872). *Concerto no. 1 for cello & orchestra in A minor* [Recorded by Yo-Yo Ma with Orchestre National de France]. On *Saint-Saëns* [CD]. New York, NY: CBS Masterworks, 1980.

Position 5: Retrieval Information (and Other Electronic Media Considerations)

You no longer need to give retrieval date!

Be sure the readers can easily retrieve your sources and locate any information they might want to verify or use to expand their thinking.

For a journal available in print that you used online, create a regular journal entry but add the URL if a doi is not available.

For a journal or other periodical published only electronically, use the regular article format (including volume, issue, and page numbers if available), followed by the URL.

Print journal article that you used online, with doi. DOI is used instead of URL.

Journal article retrieved online with no doi given. URL must be added.

Pressley, M., Roehrig, A., Bogner, K., Raphael, L. M., & Dolezal, S. (2002).
Balanced literacy instruction. *Focus on Exceptional Children*, 34(5), 1-14. doi 10.1037/0278-6133.24.2.225

Swan, A. (2003, January/February). Teachers as learners: Professional development in early reading instruction. *Reading Horizons*, 43(3).
Retrieved from http://vnweb.hwwilsonoweb.com/hww/results/results_

For a non-periodical Internet document, give all information that is available, making it as obvious as you can what information is not available.

- If no date is given, then put n.d. in the date position.
- If page numbers are not given, then substitute the identifier for chapter and section. If neither is available, then use n.p.
- Give the URL that will be the most efficient for a reader who is trying to obtain the document: (1) for a document with multiple pages but not multiple sections, the URL for the home page; (2) for a chapter or section, the URL that links directly to that chapter or section.
- For a Web site that is large or complex, such as a university or a major government or foundation site, include organization and division or department preceding the URL, followed by a colon.

For non-periodical Internet items, the less information available, the more suspicious you need to be. Beware of sites that are not monitored or affiliated.

Stand-alone document: No author, date, or affiliation is given, so none is on reference list.

Section on online document is treated like book chapter, with sec. no. given in place of pages. Complex Web site is identified by organization. Document URL Is given rather than overall USDE homepage

Document is taken From the Web site of a university department or program. Both university and center are Identified as part of retrieval information.

Balanced literacy. (n.d.). Retrieved from

<http://www.comsewogue.k12.ny.us/~rstewart/k>

2002/Teachers/Balanced_Literacy/balancedliteracy.htm.

U.S. Department of Education. (n.d.). Measuring student progress. In

Testing for results: Helping families, schools and communities understand and improve student achievement (sec. 2).

Retrieved from the U.S. Department of Education Web site:

<http://www.ed.gov/nclb/accountability/ayp/testing>

[forresults.html](#).

Craig, H. K., Connor, C. M., & Washington, J. A. (2003). *Early*

positive predictors of later reading comprehension for African

American students: A preliminary investigation. Retrieved

from University of Michigan Center for the Development of

Language and Literacy Web site: [http:// www.asha.](http://www.asha.org/about/publications/journals/Ishss/34/01/default.htm)

[org/about/publications/journals/Ishss/34/01/ default.htm](http://www.asha.org/about/publications/journals/Ishss/34/01/default.htm)

Yes, there are a lot of technicalities involved with documentation. You have to remember when to cite, how to set up a citation, how to organize and format the reference list, and—worse still—how to get the format right for all those little bits and pieces that readers need to know in order to locate your references quickly and efficiently—if indeed they want to locate the references at all. How can you possibly remember all of this?

Most of us can't—or won't. As with so many things in and out of academia, we remember what we use most and learn where to look up the rest. After you have done enough citations and reference list entries, you'll remember the items that your particular project forces you to use often; you'll be able to do them smoothly as part of the spontaneous drafting process. The more obscure things you can look up.

The sixth edition of the *Publication Manual of the American Psychological Association* (2010) includes many more reference categories than the fifth edition. As the number of possible information sources has increased, ways that sources can be categorized and retrieved have increased as well. Since people use game reviews and blog posts to retrieve information for publications, and as a variety of archival systems have developed, the APA has chosen ways to have these matters documented consistently. You need to have the Publication Manual so that you can look up the formats for the less common types of sources when you need them. In addition to the areas treated in this book, you will find formats for the following:

- Reviews and peer commentary (including reviews of videos and video games)
- Audiovisual media (including online maps and podcasts)
- Data sets, software, measurement instruments, and apparatus
- Unpublished and informally published works
- Archival documents and collections (including letters, personal collections, and photographs)
- Internet message boards, electronic mailing lists, and other online communities (including newsgroups, discussion groups, electronic mailing list posts and blog posts)

You can include just as much variety and sophistication in your sources as you want. Just remember—you have to document the stuff.

Previous Citation(s)

Black, S. (n.d.). APA for novices: A struggling student's guide to theses, dissertations, and advanced course papers. David O. McKay School of Education. Retrieved from https://education.byu.edu/research/dissertation_aids.html



Sharon Black

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Sharon Black is an editor and writing consultant for the McKay School of Education at Brigham Young University. Her past professional experience included writing for broadcast, teaching kindergarten and preschool, teaching advanced writing and research courses for the English Department and the McKay School, writing home study courses, and doing a variety of editing for BYU and LDS Church literacy projects.

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The Fine Art of Sentencing

Who Did What? -- and How?

Sharon Black

Many of us enjoy a good mystery. Someone has done something dastardly (or at least interesting), and the detectives must figure out *who* did it and *how*. *Why*, *when*, and *where* usually emerge as well. But the basic beginning is *the perpetrator and the deed*.

Putting information together in a sentence works the same way. We begin by asking *who* and *how*, then select words to express it and punctuation to enhance it. We assemble the rest of the relevant information and place it in clear logical positions to build and develop our ideas.

Sentence structure is based on communicating meaning, and punctuation is based on sentence structure. It's that simple. Grammar is a little more rule bound, but understanding structure is important to handling grammar as well.

This chapter will help you in exploring the mystery of sentencing. Since the style, stance and conventions of academic writing may not be those you are most familiar with, a brief discussion of appropriate style will lead off the chapter. Some processes and hints for putting together the sentence (aligning the *who*, *what* and *how*) will follow. Since punctuation is based on the alignment of sentence elements, common uses and misuses of commas, semicolons, colons, and dashes will be discussed in the context of the sentence (other punctuation challenges will be treated in following chapters). Once the basics are in order, it's time to trim off the excesses that sometimes make social science writing difficult for a reader to process. So this chapter ends with a quick guide for getting rid of wordiness and making your sentences efficient and clear.

Representing Yourself

Many of us find great consolation in Henry David Thoreau's (1854/1980) oft-quoted statement that if a man is out of step with his fellows, perhaps "it is because he hears a different drummer" (p. 216). There are endeavors in which listening to a different drummer is just fine (and a lot of fun), but writing an academic paper, thesis, dissertation, or article isn't one of them. Certain expectations have to be met—among them, basic academic style.

Don't Present a Formal Case in Your Casual Clothes

Style in writing is like style in clothing. It will vary according to situation, purpose, and audience. To violate what is appropriate may feel exhilarating, but it is risky. You can be comfortable, casual, and "yourself" when you're jogging or picnicking, but when you're presenting yourself as a scholar, you're expected to adopt a scholar's style.

Present Yourself as a Competent Professional

Yes, this book is written in a blue denim tone and style. It was intended for an audience of students (graduate and undergraduate) who have been feeling intimidated by the three-piece business suit style of the regular publication manual. Its purpose is to downshift style to make conventions easier to understand. If the author wore sophisticated verbal attire, you'd close it immediately.

But your academic paper, thesis, dissertation, or article is intended for academic professionals, whose ranks you are attempting to join. You need to come across as a professional addressing professionals. You don't have to use the verbal equivalent of a three-piece business suit or 3-inch high heels, but you do need at least a tucked in shirt and a tie (if you're male) or an appropriate feminine equivalent (if you're not). Be conservative—most of your committee is probably over 30.

- Use a tone that is objective, not personal; avoid words that reflect subjective feelings and emotions. Words like *feel* and *think* are not appropriate, even when discussing what others have written (Szuchman, 2002).
- Avoid slang or other popular conversational usage—even words like *awesome* or *terrific* mark you as being too informal or frivolous.
- Avoid contractions or shortened word forms. Use only those abbreviations that are accepted in the professional literature of the field (used in top-tier professional journals).
- Use conservative grammar. For example, avoid leaving out relative pronouns such as “the hypothesis *that* the researcher hoped to prove.” You can get by with ignoring the *who/whom* distinction in a personal essay, but don't try it on the dissertation.
- Use professional terminology when needed and appropriate, but don't use “big words” just to be using them. Avoid buzz words, particularly those with very imprecise meanings.
- Use clear, direct sentences. Vary sentence length. As with paragraphs, too many short sentences in sequence can be choppy, but too many long ones in sequence can be asphyxiating. Sentences do not have to be messy in order to convey complex meaning.

Making Your Case and Nailing It with a Sentence

Conversational sentences are sloppily put together. We speak as we compose (or someone will interrupt us and attempt to finish the sentence—and probably get it wrong). We don't have time to clarify ideas and put important elements in strategic positions. And the listener (who is focusing more on his or her own response than on what we are saying) doesn't have the time or the concentration to be sensitive to our elements and positions anyway.

But writing is different. We do have time to put things together carefully and purposefully, and the reader can (or should) be sensitive to the way things are expressed. Since we do not have the instant feedback or the face-to-face clarification opportunities that we have in conversation, deliberate writing and careful reading become very important, particularly when we are dealing with important or complex information.

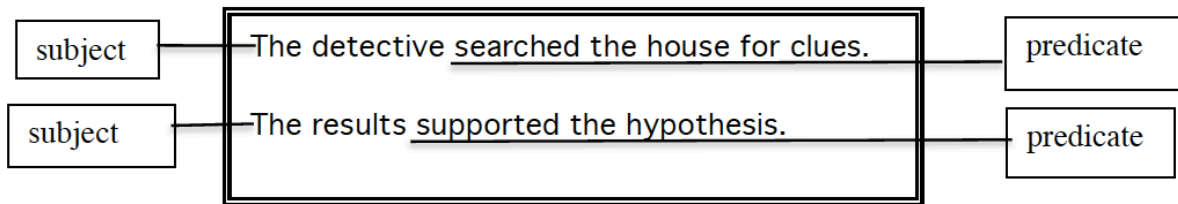
In order to construct a clear and purposeful English sentence, you need to know what you're constructing. Both sentence economy and punctuation are based on sentence structure. Once the structure is in place, you are ready to cut out excess words that interfere with your meaning and then punctuate accurately. This section will deal with the structuring part.

Look First at What the Sentence Should Do

Think of the sentence as a verbal investigation. As you structure it, you need to decide what is important and place important materials in strategic locations. You need to present your thinking to the jury of your readers in as clear and efficient a manner as possible.

The core of a sentence, like the core of the case, consists of a perpetrator and an occurrence. You probably learned to call these things a *subject* and a *predicate*.

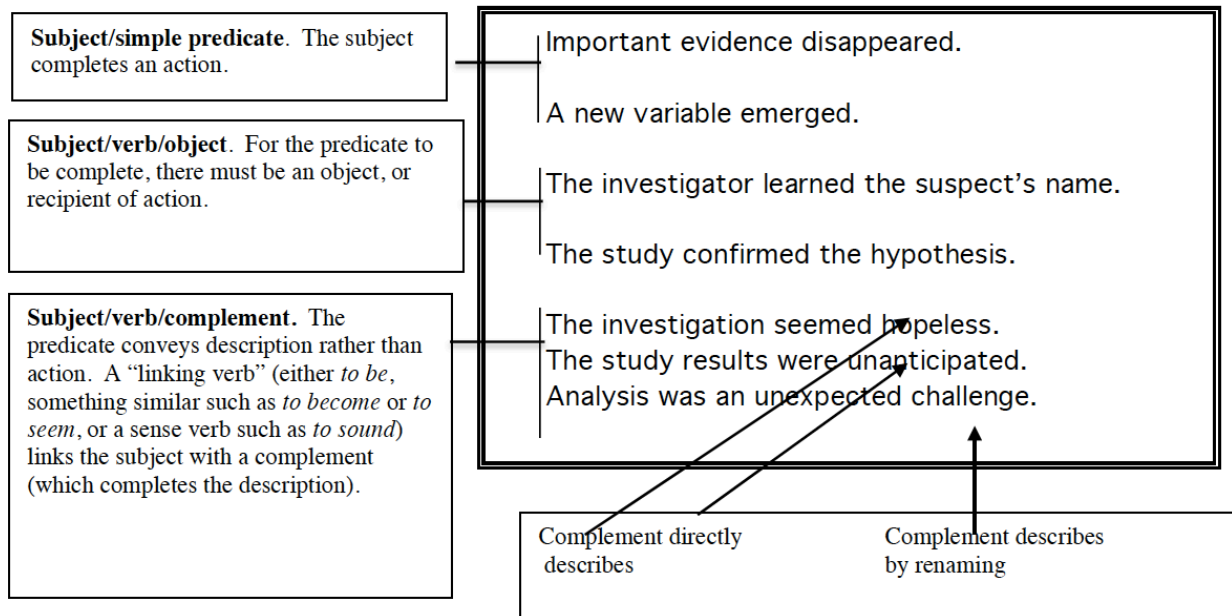
- The subject is what the sentence is about.
- The predicate makes a complete statement about the subject.



Whether you're dealing with criminal investigations or academic ones, the basic elements are the same.

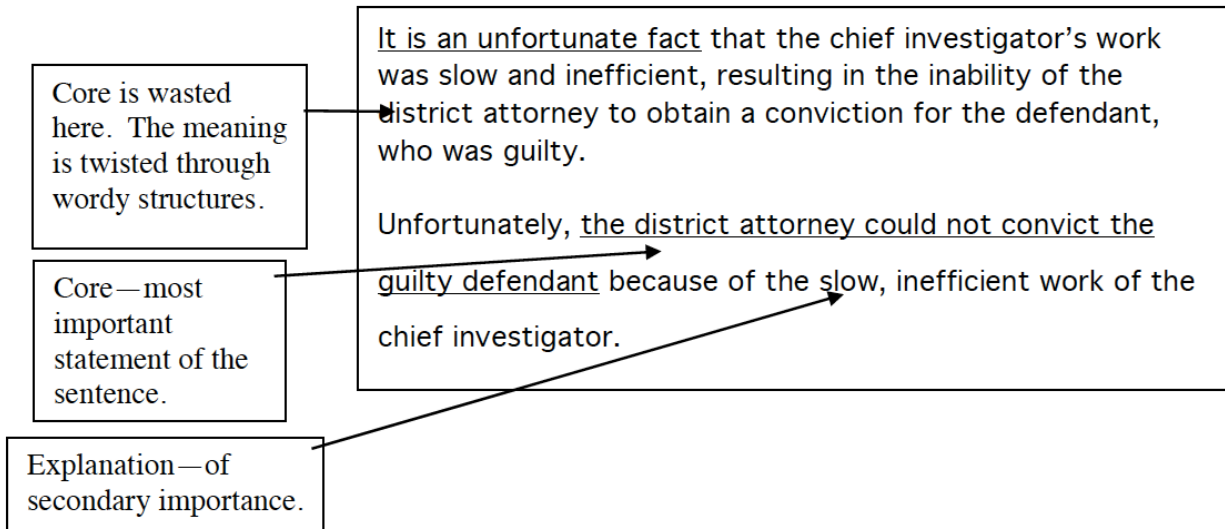
Learn what the core elements are so you can line them up accurately.

In order to structure and punctuate correctly, you need to recognize three kinds of subject/predicate structures.



For Clarity, Efficiency, and Reader Accessibility, Put the Most Important Sentence Information in the Core

The reader shouldn't have to search through muck to find meaning.

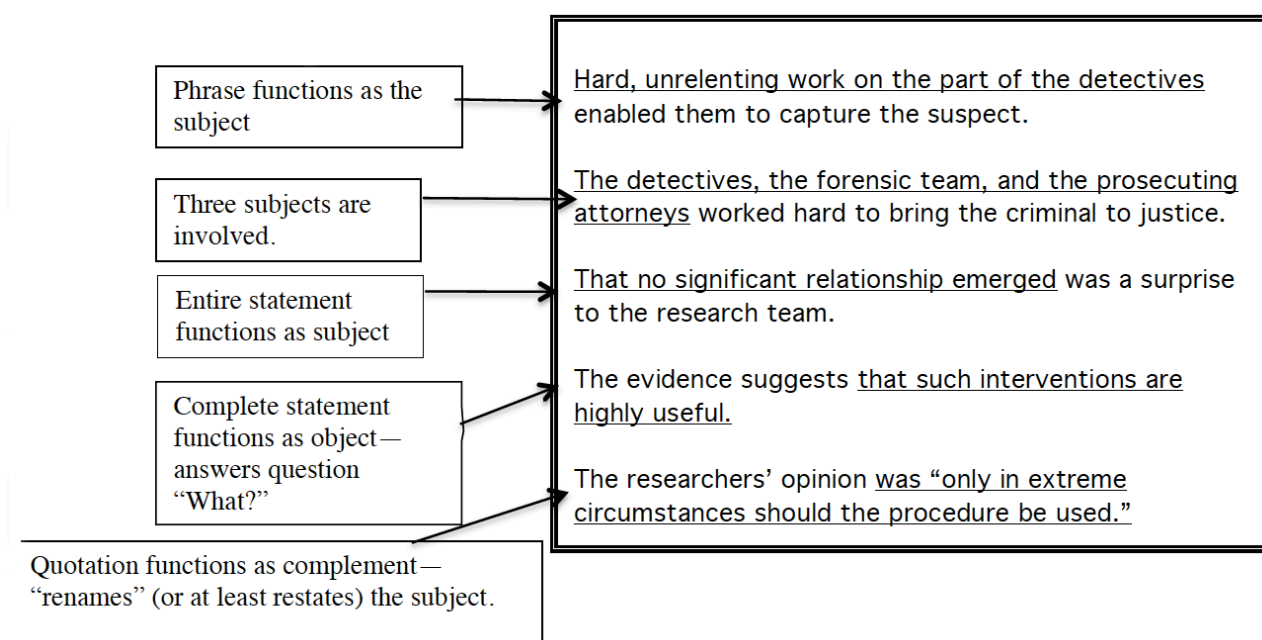


Even When Cores are Long or Complex, the Strategy Remains the Same

Sometimes a basic element (subject, verb, object, complement) will consist of a phrase (two or more words) or a clause (an entire statement).

Sometimes one of the elements will consist of multiples (more than one subject, more than one action etc.).

But the elements still have the same function.



Even though the basic elements in these sentences are more complex, they are still in the sentence core. The sentences are thus direct and efficient.

Be Sure that the Core Elements Actually Have a Logical Subject-Predicate Relationship

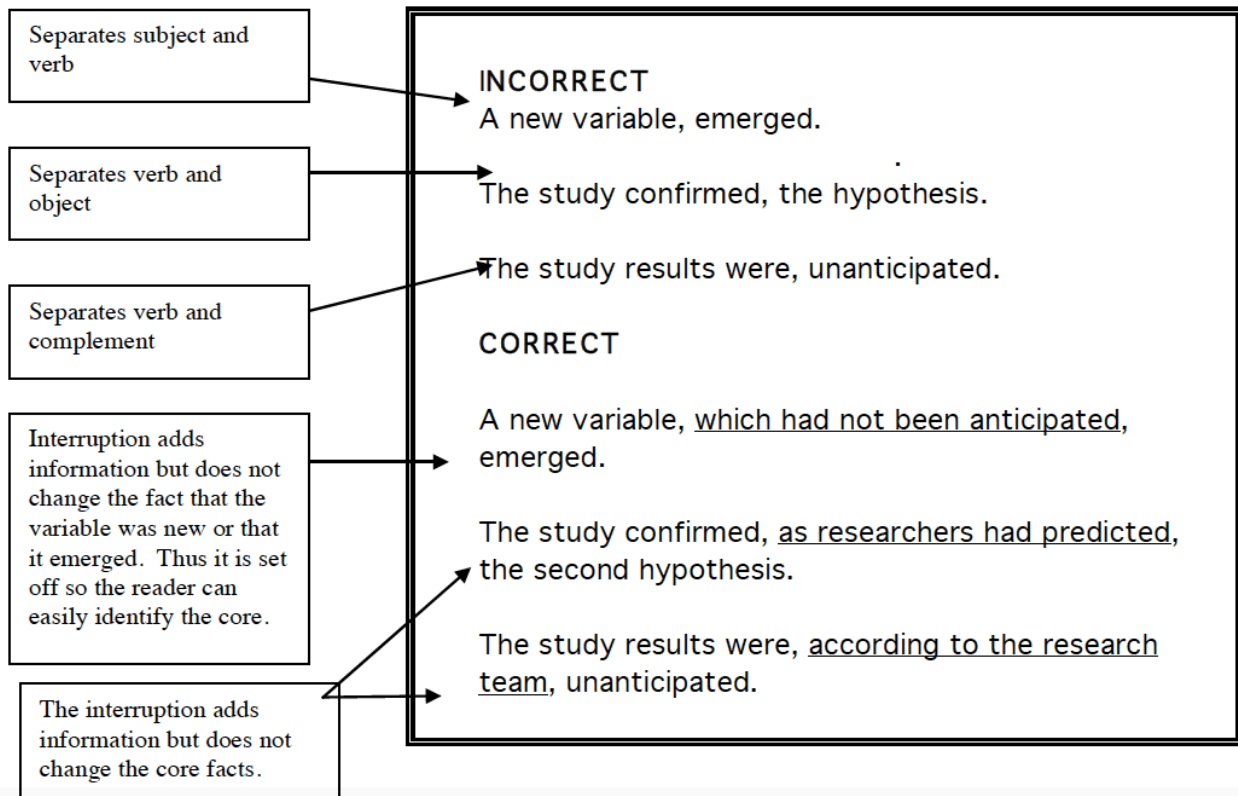
When a writer is tired or in hurry, it's easy to express general relationships in the first wording that comes to mind, even though the choice may not be entirely accurate. Avoid subject-predicate mismatches such as the following:

Illogical	Reason	More logical relationship
The study said [or concluded explained, clarified etc.]	A study is not alive; it doesn't talk, write, or draw conclusions from its evidence (see Szuchman, 2002).	After conducting the study, the <i>researchers</i> said [proposed, explained, suggested recommended etc.]
Study results conclude	Results consist of data that can demonstrate, but concluding and applying are human actions.	The <i>results</i> of the study show, confirm, support or fail to support, demonstrate, illustrate, or provide evidence.
The article (or book) talks about	Articles and books don't talk. Really strict constructionists also discourage "the article says" (see Szuchman, 2002).	The article describes, explains, recounts. (An explanation or a description is published in a book or article.)

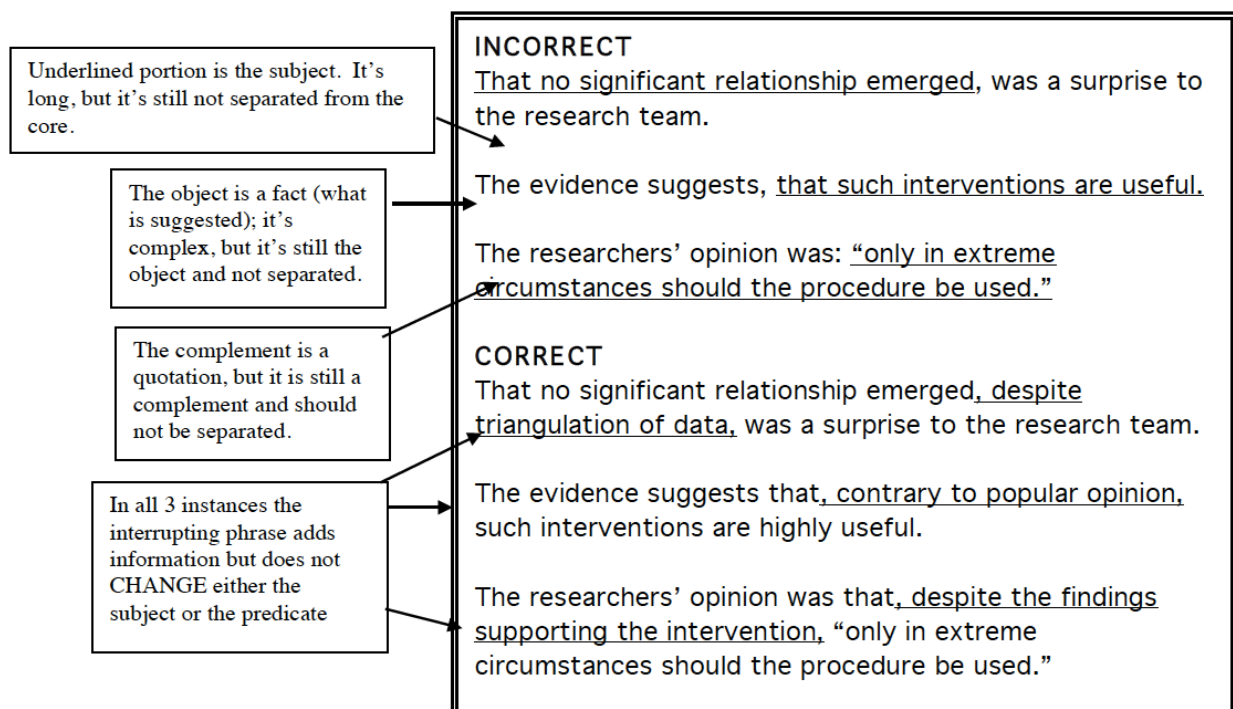
Punctuating to Promote Clarity

There are two main points that you need to remember in order to use punctuation correctly. All the individual punctuation rules go back to these guidelines:

1. Do not use punctuation that would interrupt the sentence core: comma, colon, or anything else.
2. Use a pair of punctuation marks (commas or dashes) to set off elements that interrupt the core. By doing so you make it easier for the reader to discern and relate the core elements.



The same principles are true no matter how long or complex the sentence elements get.



Applying Specific Punctuation Rules

Keeping in mind that the purpose of punctuation is to clarify and emphasize the sentence core, you can remember the various punctuation marks and their uses by extending the analogy of signs and signals from Step 3.

Just as traffic signals control the flow of traffic, punctuation signals control the flow of ideas.

This is just a memory device—but memory devices are sometimes easier to apply than intellectual rules. Don't try to take everything too literally—just use the analogy as a system for recall and basic application.

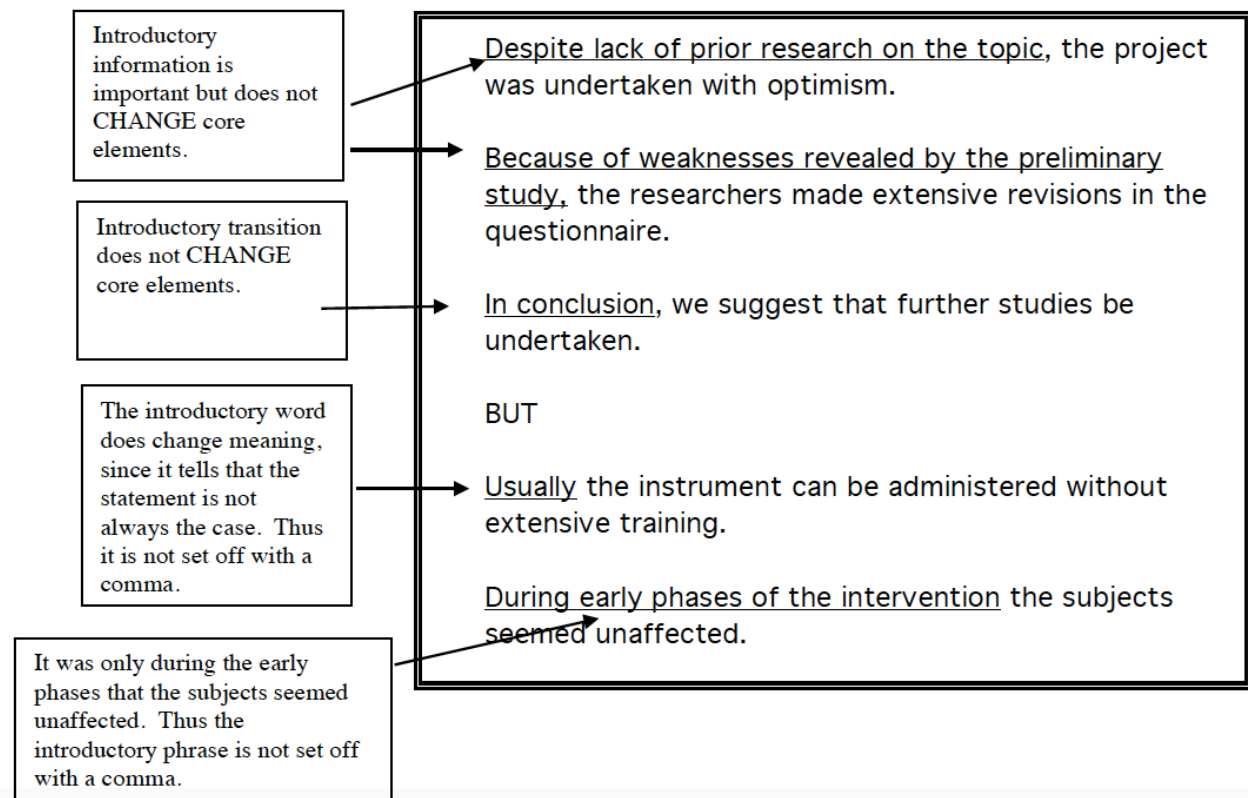
The Comma is a Blinking Yellow Light

As a blinking yellow light, a comma indicates a minor intersection of ideas. It tells you that you don't have to come to a complete mental stop; you just have to exercise caution to void running things together.

You might have had a high school textbook with 30 comma rules. No wonder you decided to just put a comma where you felt like breathing. There are two common fallacies you need to get rid of.

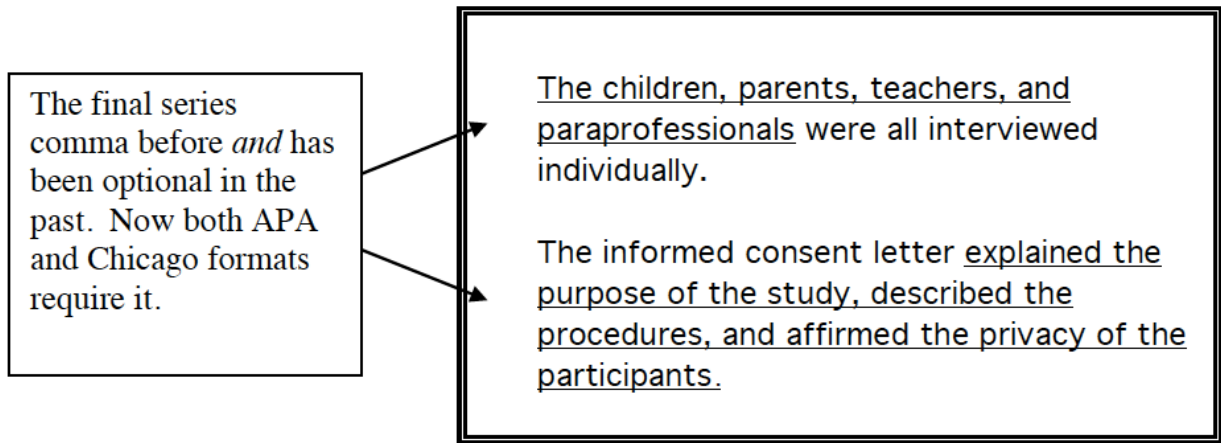
1. You don't need to learn 30 comma rules. If you can remember four uses and two misuses, most of the others are really only applications of them.
2. The only time commas have anything to do with breathing is when something is going to be sung. Unless you are planning for someone to sing your academic paper or dissertation, then base your comma usage on sentence structure, not on projections of when a hypothetical reader needs to breathe.

Use 1: Use a comma to set off an introductory element. This usage relates to the principle of setting off elements that distract from the sentence core. The comma after an introductory element tells the reader that you are finished with the introduction, and the core is coming up.



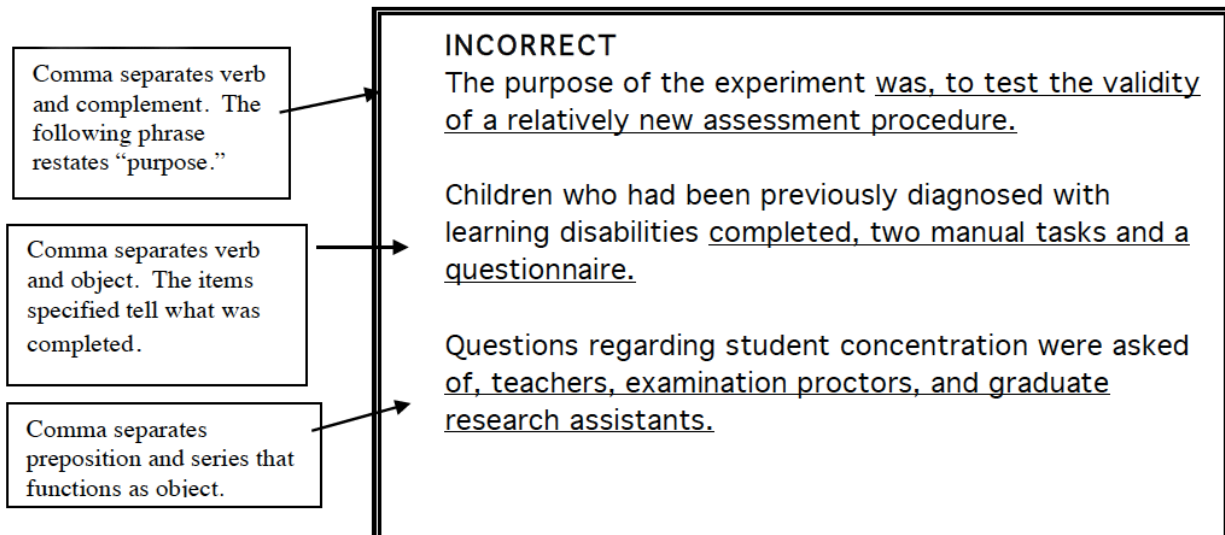
Use 2: Use comma(s) to set off nonrestrictive elements. This rule simply puts terminology on a principle already established and emphasized.

- **Nonrestrictive** means that something does *restrict* or *change*. A nonrestrictive element, though it may convey important information, doesn't actually change the core elements.
- **Restrictive** means that something does *restrict* or *change*. Information that interrupts in the middle or tags on at the end and does not change or restrict the core elements is set off by comma(s). Information that actually changes elements in the core is considered to be bound into the core and therefore is not set off by commas.



Use 3: Use commas between items in a simple series of three or more. Ah, a rule that's fairly easy. A *simple* series is one that does not contain commas within the series items

Misuse 1: Do not use a comma when it would separate core elements (subject and verb, verb and object, or verb and complement). Add to this preposition and object.



Misuse 2: Do not use a comma between items in a series of two. The pair of items functions as a unit, so they should not be split. In effect, splitting them creates a false intersection.

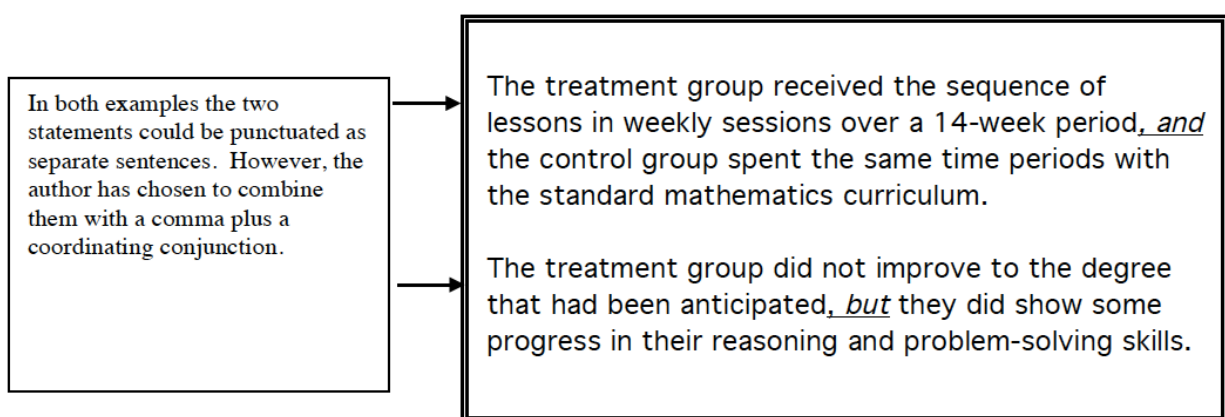
<p>INCORRECT</p> <p>The <u>students with mild mental retardation, and their parents or guardians</u> answered open-ended questions concerning their reactions to the inclusion experience.</p> <p>The researcher <u>administered the revised questionnaire, and conducted</u> semi-structured interviews with 30 randomly selected participants.</p>	<p>The series consists of two subjects; splitting them actually splits the sentence core.</p>
<p>ACCEPTABLE</p> <p>The researcher administered the revised <u>questionnaire, and she</u> conducted semi-structured interviews with 30 randomly selected participants.</p>	<p>The subject is performing two actions; splitting them would split the sentence core.</p> <p>If you don't like this much bulk without a comma, repeat the subject to create an independent statement</p>

A Comma Plus a Coordinating Conjunction Changes the Blinking Yellow Light to a Blinking Red Light

When traffic becomes heavier and a complete stop is necessary before proceeding into the intersection, the blinking yellow light may be changed to blink red. This signals a brief complete stop. A comma combined with a coordinating conjunction (and, but, for, or, nor, yet, or so) is like changing the blinking yellow light to blinking red. It signals a brief but complete mental stop.

The comma plus coordinating conjunction is used to join independent statements (clauses) into one sentence. The stop needs to be complete because a whole new core is coming up.

- A comma alone is not enough to join independent statements. The error of using the comma alone between independent statements is called a *comma splice*. It is considered a serious error.
- A coordinating conjunction alone is not enough to join independent statements. An *and*, *but* or other coordinating junction (*for*, *or*, *nor*, *yet*, *so*) without a comma signals a continuation of the last statement, not a new one.



A Semicolon is a Stop Sign

A semicolon is the stop sign of punctuation: It signals a brief but complete stop. Its most common use is between independent statements when there is no coordinating conjunction. Yes, the semicolon is equivalent to the comma plus coordinating conjunction, just as a stop sign is equivalent to a blinking red light in what it signals the driver to do.

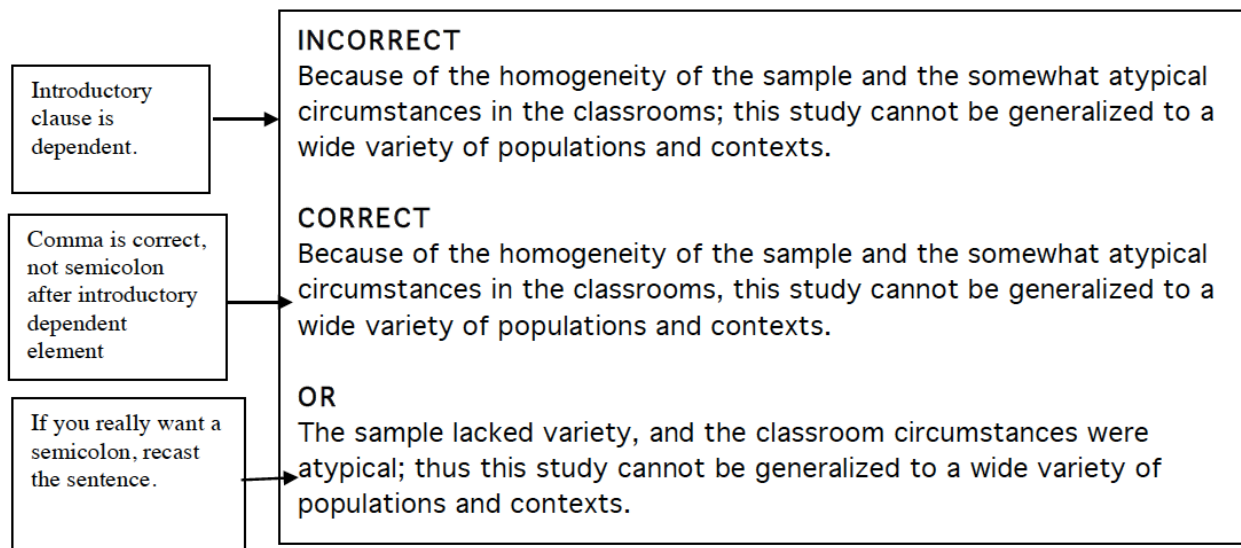
Use 1: Use a semicolon between independent statements (clauses) when there is no coordinating conjunction.

<p>Children in the treatment group were shown television programs portraying pro-social situations and behavior; those in the control group watched standard commercial children's programming.</p> <p>Children who had watched the pro-social programming responded to a series of stories portraying social conflict situations; their comments demonstrated a predisposition to settle problems peaceably.</p> <p>The children who had watched the commercial programming did not respond with as strong a pro-social disposition as those in the treatment group; however their responses did show a general disposition to avoid conflict or aggression.</p>	<p>Statements could stand alone but have been combined to emphasize the contrast. The abrupt break provided by the semicolon emphasizes the relationship more than the more casual-sounding "comma-and" sort of connective.</p> <p>Statements could stand alone, but have been joined because of the clear causal relationship. The semicolon structure emphasizes this relationship.</p> <p>When a connective like <i>however</i>, <i>therefore</i>, <i>nevertheless</i>, <i>moreover</i>, <i>in fact</i>, etc. is used between independent statements, the semicolon must still be used. Only the seven short coordinating conjunctions discussed earlier can connect two independent statements with a comma: <i>and</i>, <i>but</i>, <i>for</i>, <i>or</i>, <i>nor</i>, <i>yet</i> and <i>so</i>.</p>
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Use 2: Use semicolon to separate items in a complex series. A complex series is one that contains items that have commas within them. A stop signal is needed to keep these items from running together.

<p>INCORRECT</p> <p>Participants in the study included 6 teachers, all with at least 5 years of teaching experience, 65 students, all reading at least 2 years below grade level, and 3 graduate students, all working on degrees at the master's level.</p> <p>CORRECT</p> <p>Participants in the study included 6 teachers, all with at least 5 years of teaching experience; 65 students, all reading at least 2 years below grade level; and 3 graduate students, all working on degrees at the master's level.</p> <p>Interviews were structured as follows: first, questions to establish basic demographics; second, specific questions designed for precise response; third, open-ended questions to assess more personal response.</p>	<p>Confusing, too many commas, units do not come through as distinct.</p> <p>Semicolons create more complete stops to set off the units more clearly.</p> <p>Even series markers and transitions can be confusing. Use semicolons in any complex series.</p>
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Misuse: Never use a semicolon between dependent and independent elements.



The Colon is a Green Light

The colon is punctuation's green light. It signals an important intersection, but it tells you to keep going rather than stop. Although the basic sentence core is completed, there is something ahead that you need in order to understand it accurately.

Use a colon to connect explanatory information to a completed sentence core.

Two conditions are necessary in order for a colon to be correct.

- **It must be preceded by a complete statement (sentence core).**
- **It must be followed by a sentence element that explains, expands, exemplifies, or specifies the preceding statement.** You should be able to mentally insert one of the following:
 - namely
 - specifically
 - as follows

Complete statement is followed by independent statement specifying what is meant by *slowly*. First word following the colon is capitalized because it is an independent statement that could stand alone as a sentence.

Independent statement is followed by a phrase specifying what that project is. The phrase following the colon is not capitalized—it's not independent.

Complete statement is followed by an example.

Complete statement is followed by a series which specifies what that sequence is.

Complete statement is followed by a quotation demonstrating the optimism.

We recommend that this procedure be implemented slowly: Teachers will probably want to introduce no more than two new activities per week.

After completing the series of lessons, teachers faced the greatest challenge of the project: implementing appropriate assessment procedures.

As they work in a multicultural classroom, teachers need to be sensitive to subtle value differences: For example, competitive games and activities can be offensive to some Hispanic or Native American students.

The basic lesson sequence is based on a direct instruction paradigm: (a) anticipatory set, (b) introduction of skill or concept, (c) demonstration or modeling, (d) guided practice, (e) individual practice.

In explaining the potential benefits of a literature-based conflict resolution program, Marshall (2002) was optimistic: "This approach can engage children in ways no other methodology can" (p. 47).

A Dash is a Construction Flare

A dash can be compared to a construction flare. A dash or pair of dashes warns the reader that something is broken up or diverted. Dashes can call special attention or give a casual tone to what you say (but not in your dissertation, of course).

Use 1: Use a dash to indicate an abrupt shift in meaning or tone.

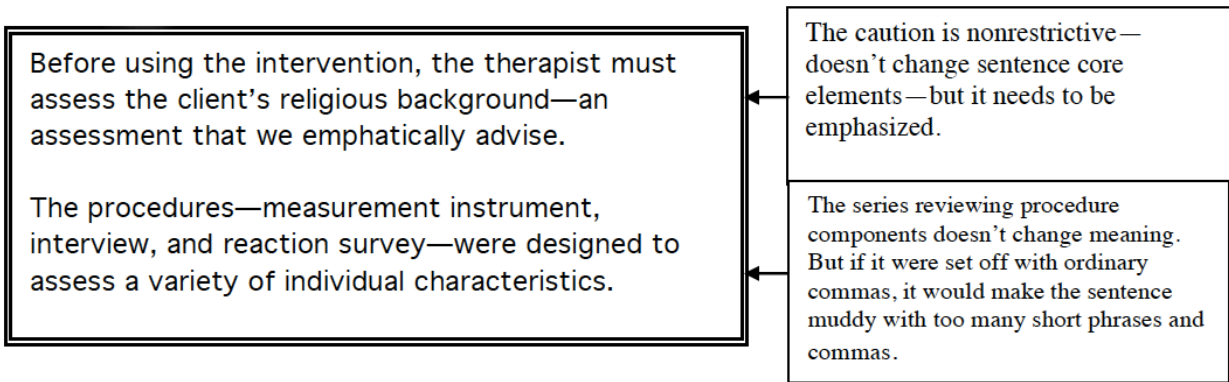
The subjects showed a surprising disposition toward denial—but this will be considered further in Chapter 3.

But as Mark Twain said, "Man is the only animal that blushes—or needs to."

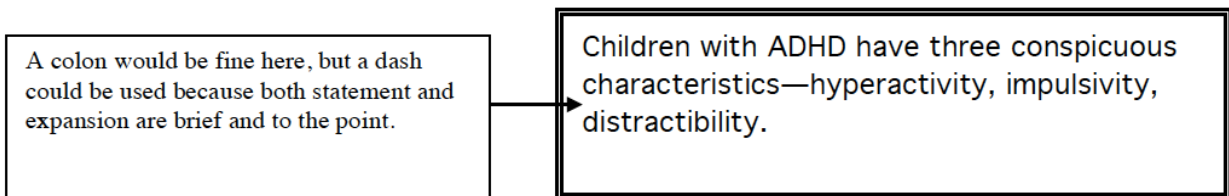
Thought is obviously broken off because elaboration would be distracting at this point.

You probably wouldn't use this much in a dissertation, but it's great in personal writing.

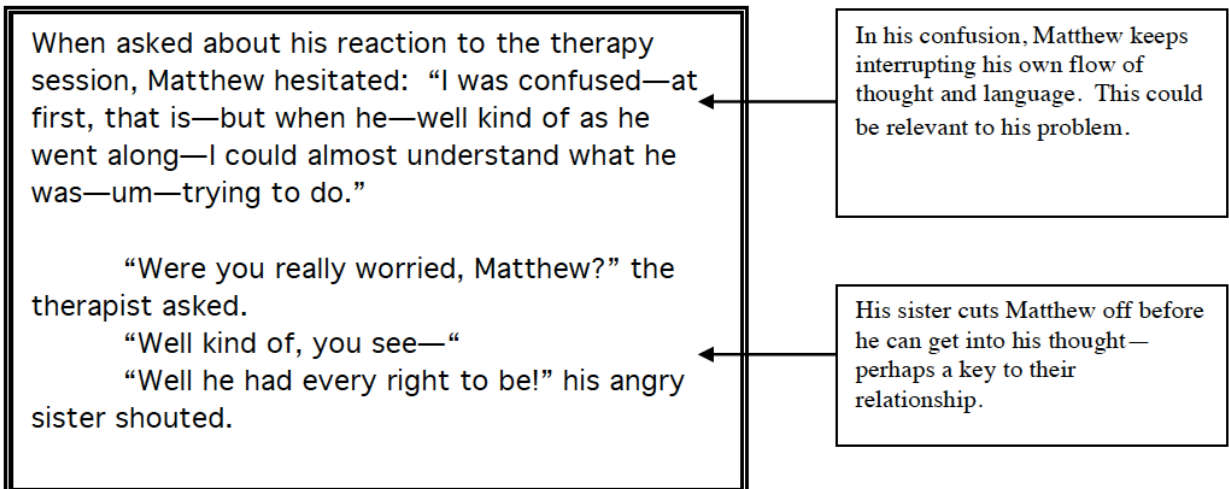
Use 2: Use a dash or pair of dashes to set off a nonrestrictive element that needs special emphasis or clarity.



Use 3: You may use a dash in place of a colon if the elements are short or the tone is informal.



Use 4: Use a dash in dialogue or other forms of transcribed oral communication to indicate interruption—of oneself or of someone else.



Misuse: The main misuse of dashes is overuse. The dash can be a very important mark of punctuation if you do not compromise its potential for emphasis by overusing it.

Step 5: Trimming

Steps for Trimming Fat

First, determine who did what and how, aligning the most important information with the sentence core. More words are required to edge information in around the core than to use it correctly. Like inexperienced bakers who may fill the sagging middle of a cake with extra icing, when you don't get the basics in place, you usually end up loading on too much.

OBESE

It was the stated opinion of the therapist that the state of depression experienced by the young women could be attributed to the fact that they did not receive adequate encouragement from their parents.

- Who is acting here? The parents actually seem to be the ones at fault, even though they are buried at the end of the sentence.
- What are they doing? Failing to encourage their daughters?
- What resulted? Depression, according to the therapist.

More Trim

The parents were failing to give their daughters adequate encouragement, resulting in the young women's depression, explained the therapist.

- Occasionally you need to emphasize outcome rather than agent, thus you could make depression the subject of the sentence (ex. 1 below).
- You could put the therapist in an introductory rather than a concluding element if you want to draw more attention to the source of the opinion (ex. 2 below).

Alternatives

1. The young women's depression seemed to be caused by inadequate parental encouragement, noted the therapist.
2. According to the therapist, the young women suffered depression due to inadequate parental encouragement.

Second, get rid of redundancy. We all tend to bloat our sections and even our paragraphs by saying things more than once to be sure they are said. Unfortunately, we tend to do this to our sentences as well. We just don't realize that we do it. Once you get your basic structure in place, you don't need extra layers and flourishes. Generally they just confuse things. In writing, simple and palatable is better.

OBESE

It was evident that the symptoms that they showed included that they were discouraged in their outlook, self-centered in their behavior, and unmotivated in their undertakings, resulting in signs of classic depression which they experienced.

- If it weren't evident, the researchers wouldn't be reporting it.
- Discouragement is an aspect of outlook, self-obsession is a form of behavior, and motivation requires something to be unmotivated about. So these are redundancies (like "small is size" and "red in color").
- Symptoms are things that are shown.
- The fact that they are experiencing symptoms doesn't need to be expressed twice.

REDUCED

~~It was evident that their symptoms that they showed included that they were being discouraged in their outlook, self-obsessed in their behavior, and unmotivated in their undertakings, resulting in signs of classic depression which they experienced.~~

REDUCED FURTHER

Their symptoms of classic depression included discouragement, self-obsession, and lack of motivation.

Third, avoid twisting words out of their natural usage so that you need extra words to get them to function. Identify what is really functional and how it needs to function. Twisting or elaborating things to be fancy generally (usually) just confuses them. **Also avoid stretching words into phrases.**

OBESE

The implementation of the strategic procedure was operationalized through the instrumentality of collaborative groupings of cooperative nature representing unification of diverse entities.

- Begin by letting the air out of some of these overblown words and phrases.
- Let verbs be verbs and nouns be nouns etc. Avoid distortions like *operationalized*, *instrumentality*, and *unification*: *operate* and *unify* are verbs; *instrument* is a noun.

REDUCTION PROCESS

~~The implementation of **implemented** the strategic procedure **strategy** was operationalized **was operated** through the instrumentality of **by** or **through** **unified** collaborative groupings **groups** of cooperative nature representing unification of diverse entities.~~

REDUCED

The strategy was implemented by unified collaborative groups.

Common Sources of Sentence Calories

Avoid piling on sugary fluff in the form of unnecessary adjectives and adverbs. Many of us damage our positions by overstating them with descriptive words. A simple, clear statement will have more impact on a critical reader than an

inflated one.

- Concerning adjectives, Mark Twain advised, “When in doubt strike it out” (as qtd. by Trimble, 2000, p. 77).
- As far as adverbs are concerned, writing guru John Trimble (2000) remarked, “Minimize your adverbs . . . especially trite intensifiers like *very*, *extremely*, *really*, and *terribly*, which show a 90% failure rate” (p. 77).

OBESE

It is extremely important to recognize the very significant and costly weaknesses of the study, which really show terribly inconsistent procedures on the part of the research team.

REDUCED

Scholars must recognize inconsistency in the procedures, which weakens the study.

Avoid fattening phrases that provide less nutrition than their simpler alternatives.

Problem	Category	Typical Examples
Words used as wrong part of speech	verb to noun	<i>to implement/implementation</i>
		<i>to contain/containment of</i>
		<i>to assign/assignation of</i>
		<i>to characterize</i>
		<i>/characterization of</i>
	noun to verb	<i>operation/operationalize</i>
		<i>context/contextualize</i>
		<i>margin/marginalize</i>
		<i>strategy/strategize</i>
		<i>institution/institutionalize</i>
	adjective to noun	<i>minimum/ minimalization</i>
		<i>better/betterment</i>
Superfluous phrases	false core	<i>It is a fact that</i>
		<i>It can be discerned that</i>
		<i>There has been an observation</i>
		<i>that</i>

	redundant classification	<i>small in size, red in color</i> <i>tedious in nature, despondent in mood, behaviorist in orientation, period of time</i>
Extra words	immediate restatement	<i>necessary essentials, basic foundation, honest truth, unique individuality</i>
	phrase instead of word	"due to the fact that" / <i>because</i> "at the time that" or "during the period that" / <i>when</i> "in a manner similar to" / <i>like</i>

The most important aspects of writing your paper, thesis, dissertation, or article are understanding your information and dealing with it thoughtfully, accurately, and creatively. Your chair and your committee will guide you with these aspects. Your sentences are just your medium for conveying the content. But the medium can betray your efforts if you are not able to use it competently.

As with the organizational and paragraph strategies discussed in the previous chapter, the techniques, strategies, practices and rules discussed here may seem like a lot to apply. Actually they are. But they become more natural and later semi-automatic as you get used to them. Refer to this set of instructions when you need to.

Crafting effective sentences doesn't have to be a mysterious process. Just remember the basic steps, and you should be able to solve and present your cases effectively:

- Get in step
- Make your case
- Punctuate for clarity
- Apply specific (punctuation) rules
- Trim down

Keep professors, editors, deans, and other such critics off your case!

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Hurdles

Avoiding Clashes and Crashes

Sharon Black

Now your text follows basic format conventions (Chapter 2.1), is well structured and coherent (Chapter 2.2), and is well supported by an accurately represented reference base (Chapter 2.3). You have even expressed your work in clear, efficient, correctly punctuated sentences (Chapter 2.4). There are a few hurdles left, however—professional hurdles. A reader can understand your text if quotations are handled incorrectly: At least the words are still there. But professionals (including professors) will not be impressed with your performance; the sloppiness is somewhat comparable to arriving on the other side of the hurdle but knocking it over in the process. And there are some slips with handling quotations that can get you sidelined with ethics issues as well. Correct handling of lists and series and of verb forms and tenses are not so risky with ethics, but errors often result in a sprawling jumbled mess that does not represent you well. Like the hurdler, you need a clean, skillful performance, with no sloppy distractions to discredit you. Mechanics is the least important aspect of writing, but errors can prejudice a reader and interfere with the ways the more important aspects are received.

Quotations 1: Keeping Bounds Safe and Accurate

It's a good thing that not more than 10% of your masterpiece will be in the form of direct quotations (see Chapter 6), because there are so many little details to keep track of when quoting someone else's words. There are a number of hazards—conventions that are easy to miss. Also there are a number of tools—devices you can use to make quotations more applicable to your text and clearer to your reader.

Challenge 1: Select Quotations Carefully and Be Sure You Understand Them

When you recognize that an author is using key words about your topic, it's tempting to take a chunk with a nice-sounding sentence or two, put quotation marks around it, and just slip it into a skimpy paragraph. But this isn't very safe. Be sure you understand not only what the *words* mean but what the *author* means by them.

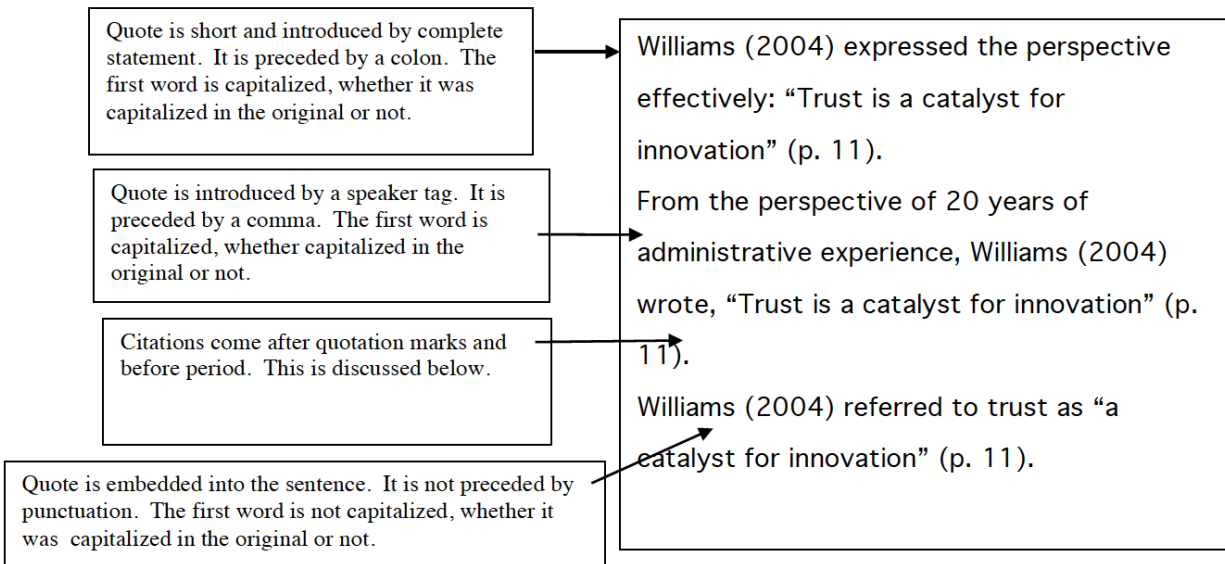
Engage in mental discipline. Don't quote to avoid having to paraphrase. Don't quote anything you haven't paraphrased first in your own mind in terms of your approach and in consideration of the other information you plan to use around it.

Challenge 2: Format Quotations Correctly

In formatting quotations, you are playing a numbers game. For APA format, you will incorporate.

Incorporated quotations are introduced coherently, set off by quotation marks, and typed carefully into the paragraph. They may be handled in several ways.

- Introduced by a complete statement. Q.W. Johnson's (2002) statement has become classic: "Xxxx xxxxxx xxx xxx" (p. 27).
- Set off with a speaker tag. Smith (2015) commented, "Xxxx xxxx xxxx" (p. 47).
- Embedded in the sentence. Rothman's opinion was "xxxx xxx xxx" (2015, p. 4).



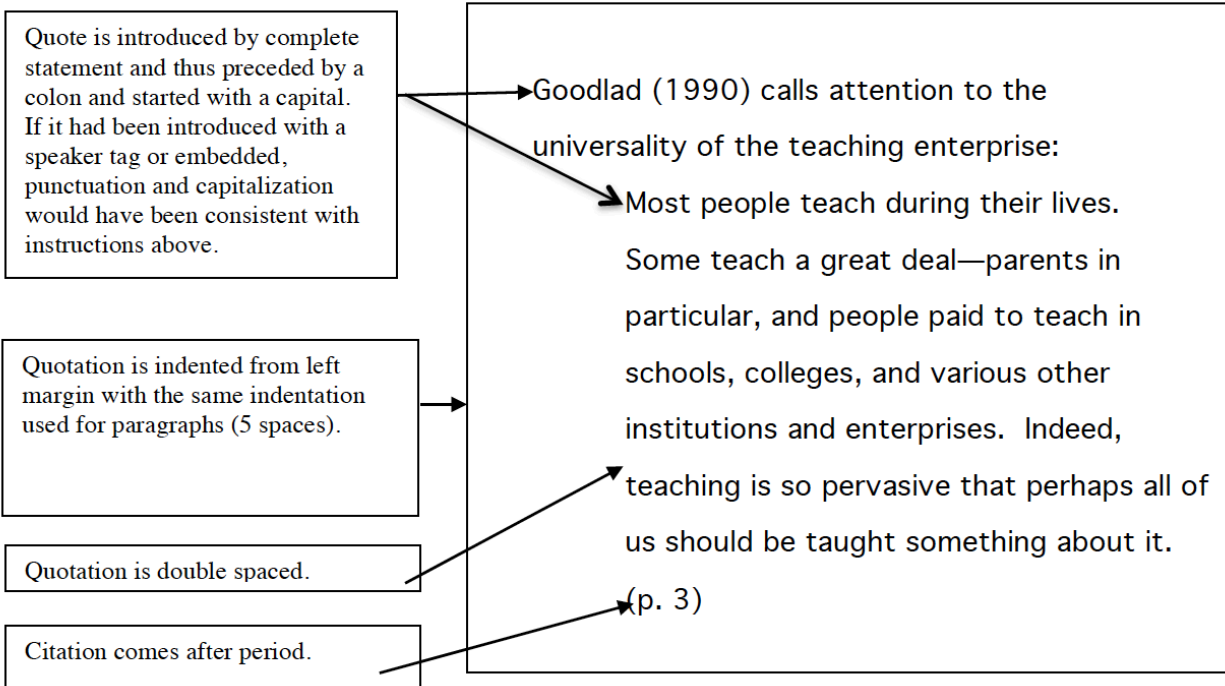
Small Stuff

Short quotations (less than 40 words) are incorporated into the text as smoothly and naturally as possible (see examples above). Don't just shove them in abruptly so that they are awkward and intrusive.

Big Stuff

Quotations of 40 words or more are blocked: indented on the left 5 to 7 spaces, the same number of spaces as the paragraphs.

Quotation marks are NOT used in a blocked quotation. The blocking takes the place of quotation marks.



Use common sense in choosing the introduction and punctuation marks that precede block quotes.

Some authors occasionally embed a long quotation within a sentence and as a result have a block without punctuation or capital. But it looks a little weird, and some handbooks explicitly discourage it. For the sake of your reader's sense of visual balance, just introduce with a complete statement or a speaker tag. It doesn't take too much energy to type in "Jones concluded," or "Smith explained."

Longer quotations may stand by themselves in the middle of the page, but the meaning should still be worked in smoothly with the rest of the text. Tie them in clearly and coherently with the text that comes before ("Jones gives an example," "Smith suggests an application," "Brown offers a caution"). After the quotation, move smoothly into the rest of the text ("An additional consideration," "A contrasting situation," "A further result"). Don't leave a conspicuous participant alone and unconnected.

Challenge 3: Introduce Quotations Ethically and Appropriately

Not only is an unintroduced quotation awkward, it can be confusing and may lead to accidental plagiarism. A reader must be able to tell easily who said what, as well as whether a quotation following a paraphrase is by the same or a different author. If you're tired of using the same old "he said" speaker tags, here are a few others—courtesy of the author's memory, along with a number of thesauruses.

Speaker Tags and Other Useful Quote Labels

- acknowledges
- advocates
- affirms
- agrees
- allows
- announces
- establishes
- argues
- asserts
- analyzes
- calls attention to
- concludes
- comments
- cites
- clarifies
- describes
- defends
- references
- shares
- explains
- comments
- gives a summary
- disagrees
- discusses
- elucidates
- enlightens
- gives an opinion
- gives an explanation
- gives an understanding
- gives a justification
- gives an analysis
- justifies
- informs
- implies
- interprets
- infers
- reviews
- makes a case
- makes a statement
- makes an observation
- makes note of
- makes a point
- makes a comment
- makes reference to
- makes sense of
- records
- refers

- notes
- remarks
- states
- **says!**

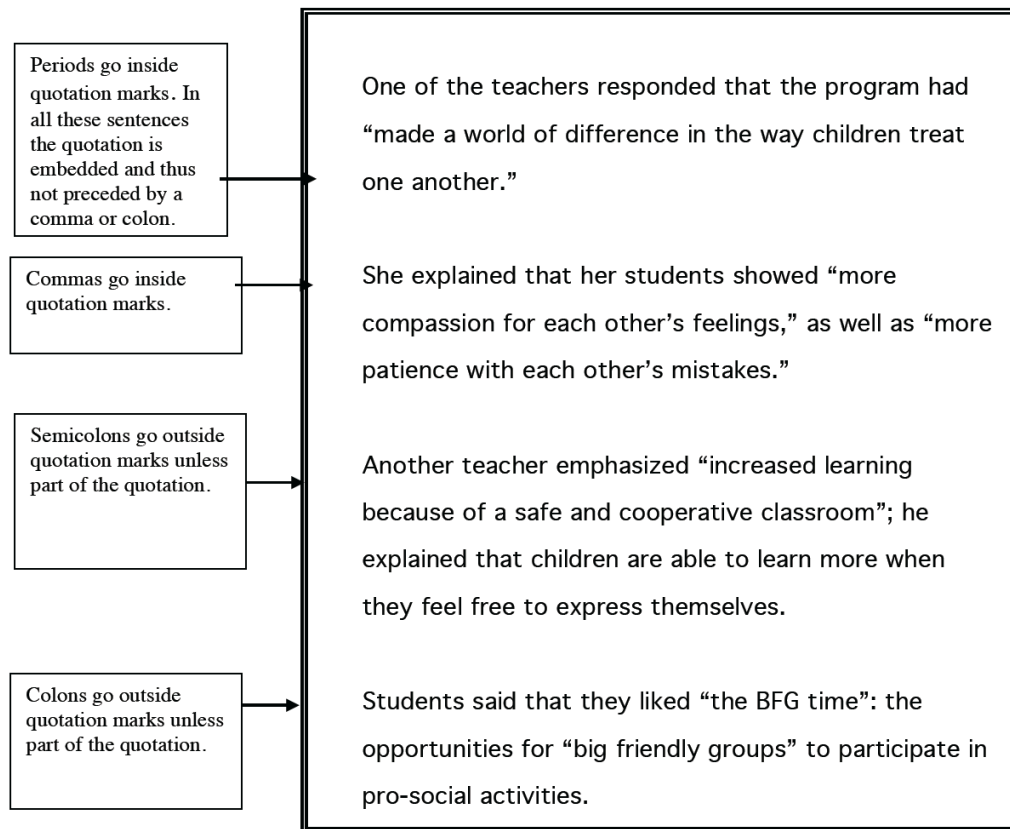
Challenge 4: Place Concluding Punctuation and Citations Correctly

Getting out of quotations can be as sticky as getting into them. There are conventions that need to be followed—not because they are particularly striking or sensible, but because they are expected.

Give page numbers for all direct quotations.

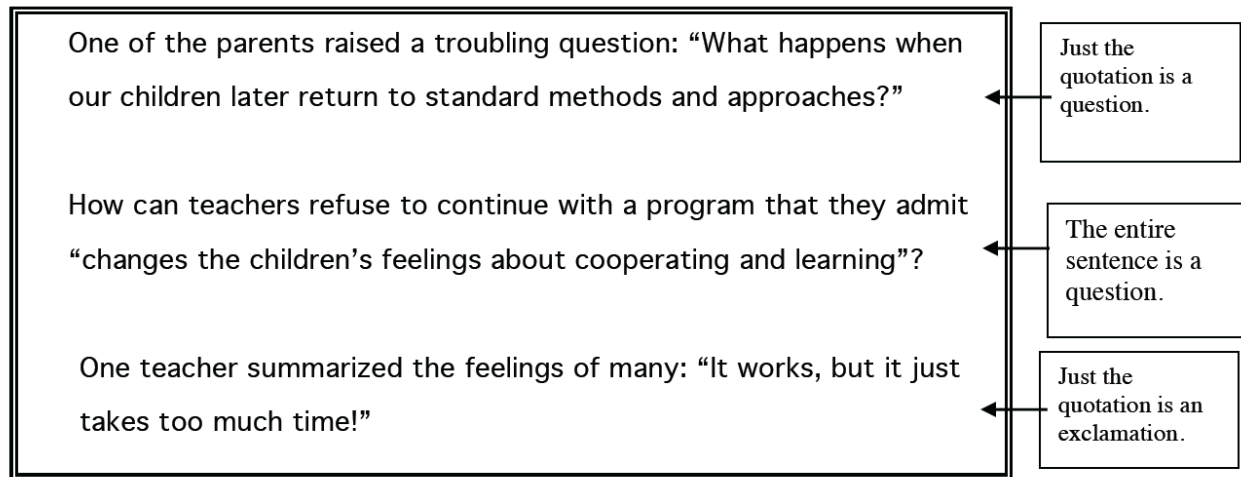
- **For quotations incorporated in paragraphs**, the most common position is at the end of the quotation immediately following quotation marks, preceding the period (as shown above).
- **For quotations that are blocked**, place the page number outside the period.

For incorporated quotations that do not end in a citation, usage specifies placement of end punctuation with quotation marks.



Remember that the little ones go inside, and the tall ones go outside. Actually this is the reason—not a teacher's made-up memory device. Printers thought the text looked better.

IT'S A MATTER OF INTERPRETATION. As often happens, question marks and exclamation points are in a class by themselves. They go inside or outside the quotation marks depending on whether the overall statement or just the quoted material is a question or exclamation.



Challenge 5: Use Single Quotation Marks Correctly

Use single quotation marks ONLY for a quotation within a quotation that is enclosed in standard double marks.

Rumors have started somewhere that single quotation marks are a more artistic alternative to standard marks or that they should be used for short quotations. But neither is true—at least not in U.S. usage.

Single marks are only for internal quotes that would require confusing sets of marks. You can think of them as the inside set.

Goodlad (1990) discusses the importance of teachers reflecting on and engaging in dialogue regarding moral principles. “Such teachers and their calling,” he comments, “warrant the designation ‘professional’” (p. 28).

Use standard quotation marks for quotations within blocked quotations, since there is no outer set of marks (no conflict of interest, if you want to look at it that way).

Quotations 2: Making Necessary Adaptations

Adaptation 1: Use Square Brackets for Necessary Additions and Changes

Use brackets to keep things sorted and make relationships clear. You can think of them as little memos to help the reader see things more accurately.

Use brackets to fill in necessary information that does not appear in the segment you quote.

Antecedent, explanation or clarification can be supplied right next to trouble spot.

Alternate wording can be substituted in brackets.

Goodlad (1990) acknowledges that “they [educators] must examine and rework the structures and practices that have always been out of sync for some students” (p. 2).

OR

Goodlad (1990) acknowledges that “[educators] must examine and rework the structures and practices that have always been out of sync for some students” (p. 2).

Use brackets to make minor changes in the text that will help it fit better into your use of it.

Goodlad’s original statement was written in plural: “they must examine and rework.” However, as the student is using the context of the individual educator, she has changed to singular pronouns, using brackets to show that she has made this change.

Any educator would be wise to take Goodlad’s (1990) advice and “rethink what education is, what schools are for; and [he or she] must examine and rework the structures and practice that have always been out of sync for some students” (p. 2).

- Brackets are often used to change tense to fit more coherently with the text.
- Changes in singulars and plurals are also often made in this way.

Use brackets to acknowledge added emphasis to a quotation.

As Goodlad (1990) affirms, “Educators must rethink what education is, what schools are for [italics added]” (p. 2).

Use [sic] to indicate an error in the original.

(He is the one who is sic.—not I)

Even authors and publishers have bad days, and sometimes you will find a mistake in a text that you are quoting. If this is likely to confuse your readers, use sic (Latin for thus) to show that the error isn’t yours. You do not need to do this if you are quoting dialogue or presenting something written by a young child or a person with a disability. In such cases the source of the error is obvious.

As R.J. Malinsky (2003) explained, “The gains were immediate and striking; however, whether [sic] the differences will be lasting is not evident” (p. 70).

Adaptation 2: Use Ellipses to Omit Unnecessary Bulk from Quotations

Sometimes defenders and advocates get overly repetitious and wordy. And often they veer off in directions that don’t interest you at all. When you’re quoting their words in print, you can eliminate unnecessary bulk or irrelevant comments by using ellipsis (three spaced periods) to indicate your omission.

Use three spaced periods (. . .) to indicate that words have been left out of the middle of a sentence.

Use four spaced periods (ellipsis plus period) to indicate that the words left out have ended a sentence.

Original quotation:

Most people teach during their lives. Some teach a great deal—parents in particular, and people paid to teach in schools, colleges, and various other institutions and enterprises. Indeed, teaching is so pervasive that perhaps all of us should be taught something about it. (Goodlad, 1990, p. 3)

In discussing the pervasive nature of the teaching enterprise, Goodlad suggests, “Indeed . . . perhaps all of us should be taught something about it” (1990, p. 3).

Goodlad affirms, “Most people teach during their lives. . . . Indeed, teaching is so pervasive that perhaps all of us should be taught something about it” (1990, p. 3).

Standard block quotation. But maybe you don’t need all of it.

Information is left out of the middle of a sentence.

Information is left out between sentences. The first period is the sentence period.

Do not use ellipsis to indicate something left out at the beginning or end of a quotation.

Ellipsis used to be used before or after a quotation to indicate that the writer had broken into the middle of a sentence or stopped before the end of a sentence. This was changed more than 20 years ago. Neither opening or closing ellipsis is currently used.

Correct

Goodlad (1990) proposes that since almost all of us teach, “perhaps all of us should be taught something about it” (p. 3).

Out of Date

Goodlad (1990) proposes that since most of us teach “ . . . perhaps all of us should be taught something about it” (p. 3).

Just a word on ethics: You can’t use ellipsis or brackets to make an author say something he or she did not intend. You can’t say—

The Bible says, “Thou shalt . . . commit adultery.”

The Bible says, “Thou shalt [not] love thy neighbor as thyself.

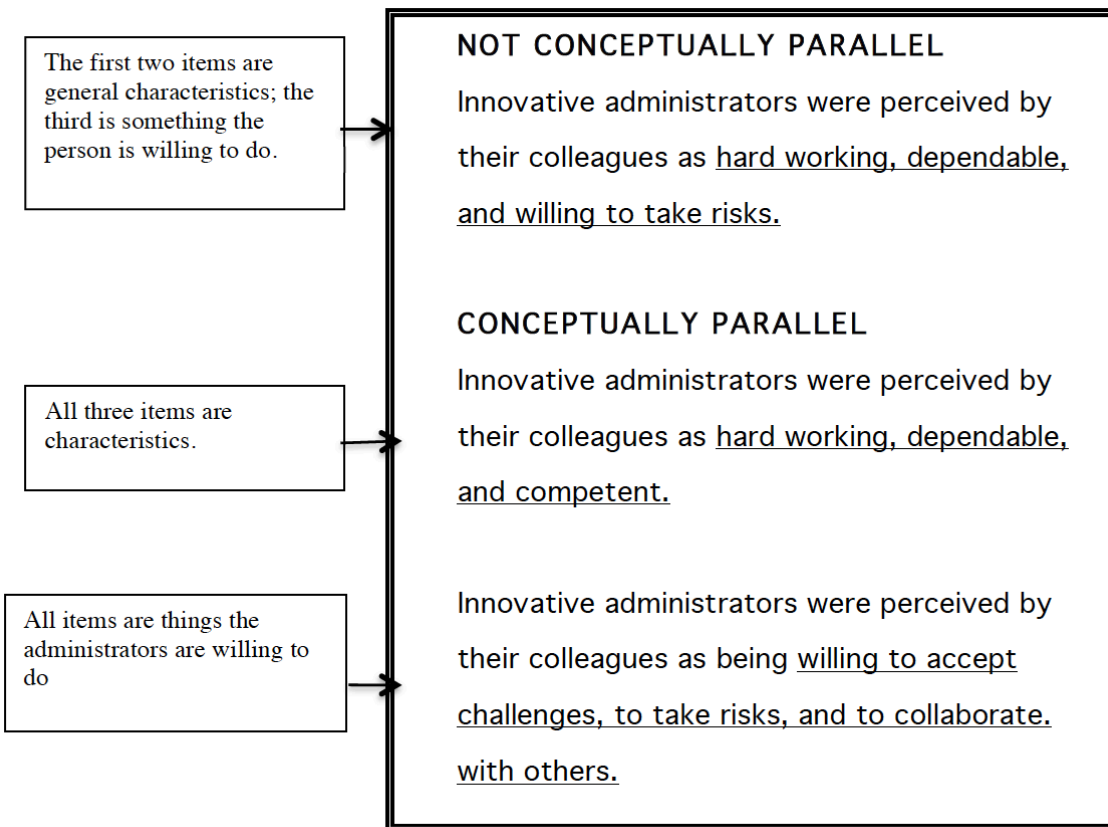
Seriation: Handling Appropriate and Inappropriate Alliances

As humans we tend to like to clump things into groups and series. Doing so seems to give us a sense that we are in control. Sometimes this is true; other times we are just clumping things. In an important paper, thesis, or dissertation, the writer must manage clearly and efficiently—clumping is not an option for those who do not like rewriting and resubmitting. Here are a few hints for both managing and presenting potential series items.

Management Factor 1: Be Sure that Series Items Actually Belong in the Series

The *Publication Manual of the American Psychological Association* says that items in a series must be “conceptually parallel” and grammatically parallel as well (2001, p. 117).

Basically conceptually parallel means that you do not make a series out of apples, oranges, and broccoli—or worse still, apples, oranges, and automobiles. The meaning represented by the series items must be comparable.

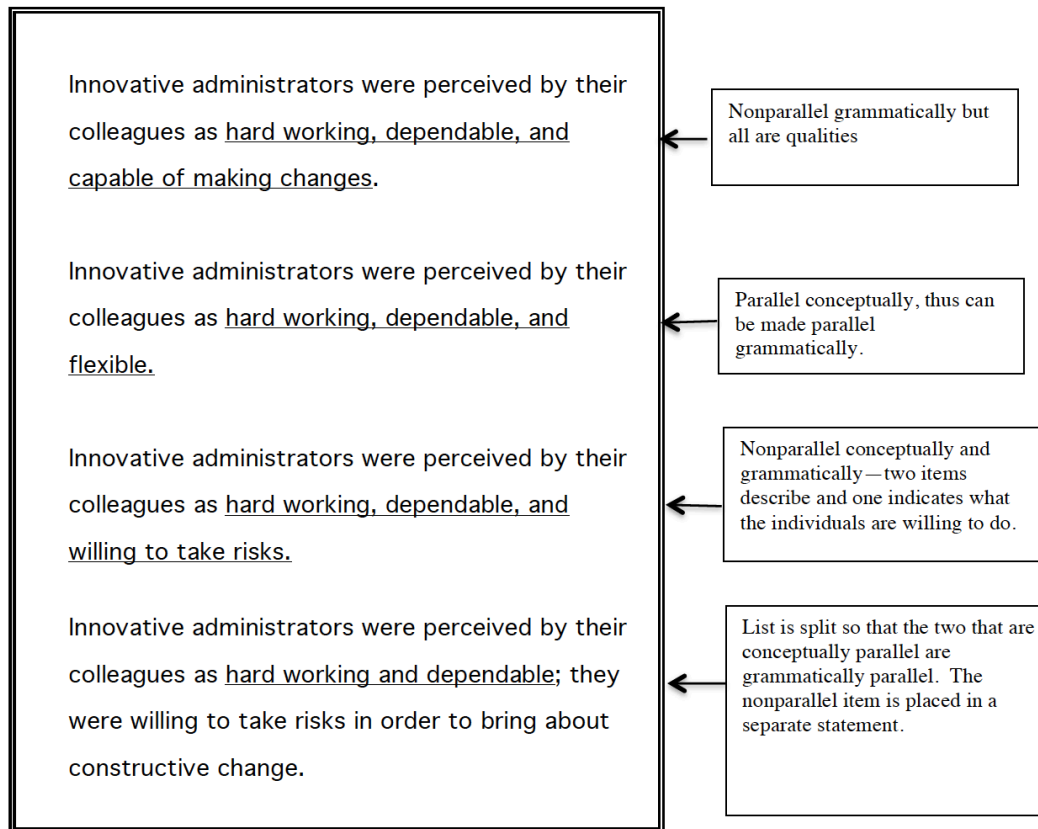


Management Factor 2: Put Series in Grammatically Parallel Form

If items are the same kind of material, you should be able to put them in the same basic mold. If one or more of the items cannot be adapted to the method or materials of shaping, it may belong in a different group. Grammatical form is a way of shaping statements. If they are not the same kind of statement, they probably will not shape out the same way.

Try to adapt the pattern of expression to make the items fit.

- If you can't make them fit, check to see if they *should* fit—if they really belong as part of the series.
- If an item or items do not belong, split the series.



Does it matter? Actually it does. People respond consciously or subconsciously to rhythm in thought and in language. William Strunk Jr. and E.B. White, whose 1959 book *The Elements of Style* is still the “bible” for many skilled writers, explained, “The likeness of form enables the reader to recognize more readily the likeness of content and function” (p. 26).

Readers might not have the terminology or the inclination to think, “Yuk—nonparallel,” but they won’t process as smoothly or recall things as well. Nonparallel seriation just “feels” wrong. People who can’t tell you the musical intervals involved in a dischord can still tell that something is wrong with the way the notes go together. Same thing.

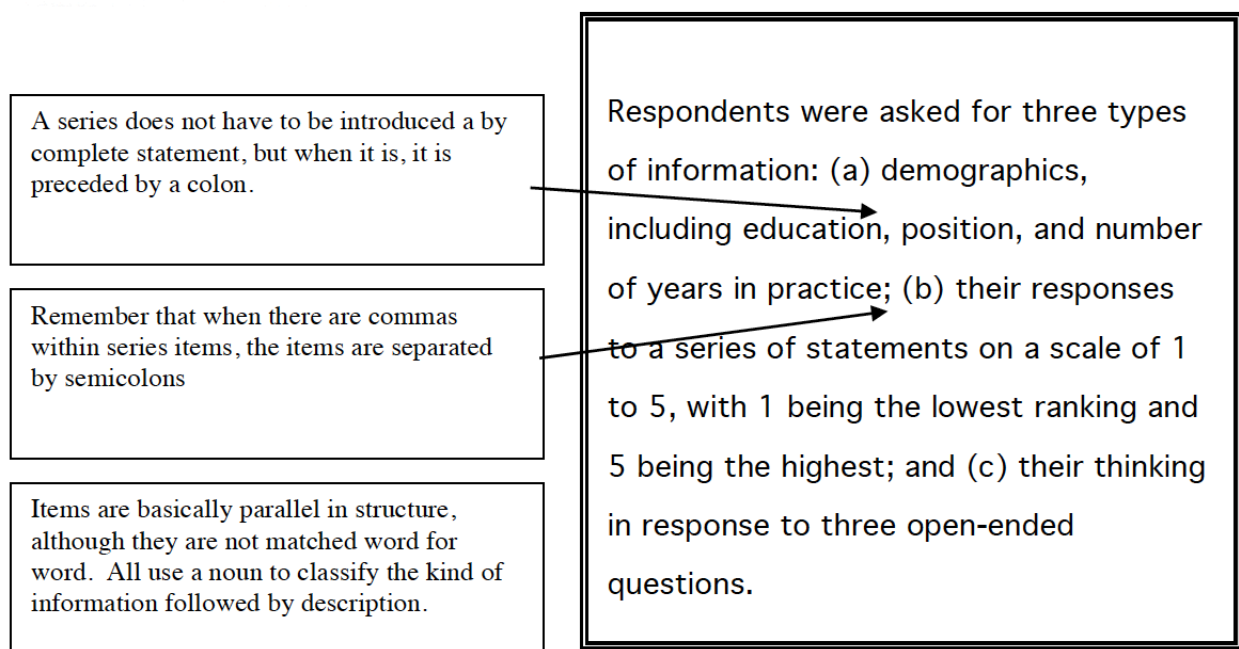
Management Factor 3: Select the Most Effective Format for Series and Lists

Format depends on the size, nature, complexity, and purpose of the grouping.

A short, relatively simple series can usually be put in a horizontal list.

Things that are brief, tightly connected, and carefully coordinated don’t need much space for the reader to process them easily.

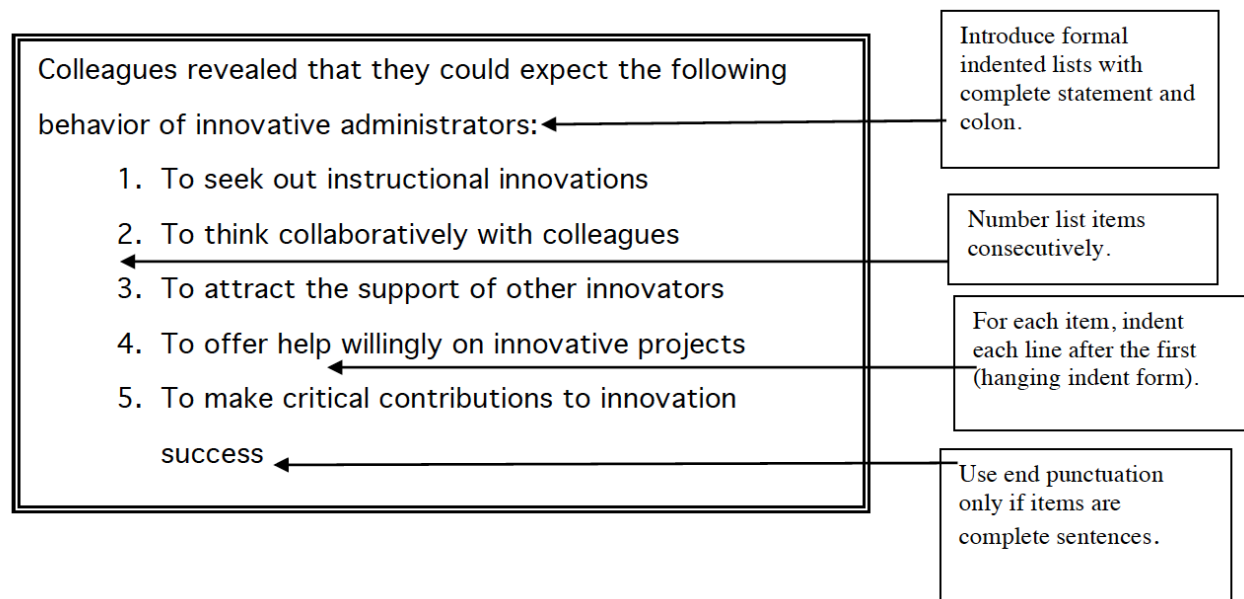
Series items that are more complex or need more emphasis—but still are not terribly long or detailed—can be placed in a horizontal list with series markers. APA format specifies that series items within a sentence or paragraph should be lettered rather than numbered.



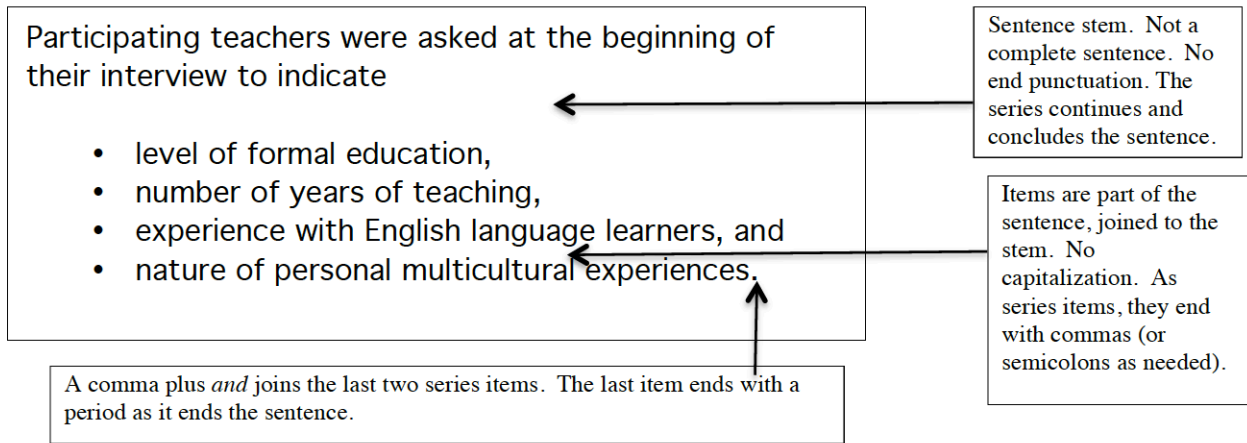
Lists that are quite long and complex will be clearer and more emphatic if set off in hanging indent form.

- **Use numbers rather than letters, and consider each item as a separate paragraph.**
- **Items on the list need to be parallel in concept and function and at least basically parallel in grammatical form.**
As with shorter lists, if they are conceptually parallel, they should be reasonably easy to cast in parallel structure.

This list seems to go in a number of different directions. The differences in grammatical structure of the hastily compiled inferences from data seem to reflect different kinds of information, although all were obtained in response to the same question. All seem to be characteristic actions; thus they could possibly be cast in parallel form as actions.



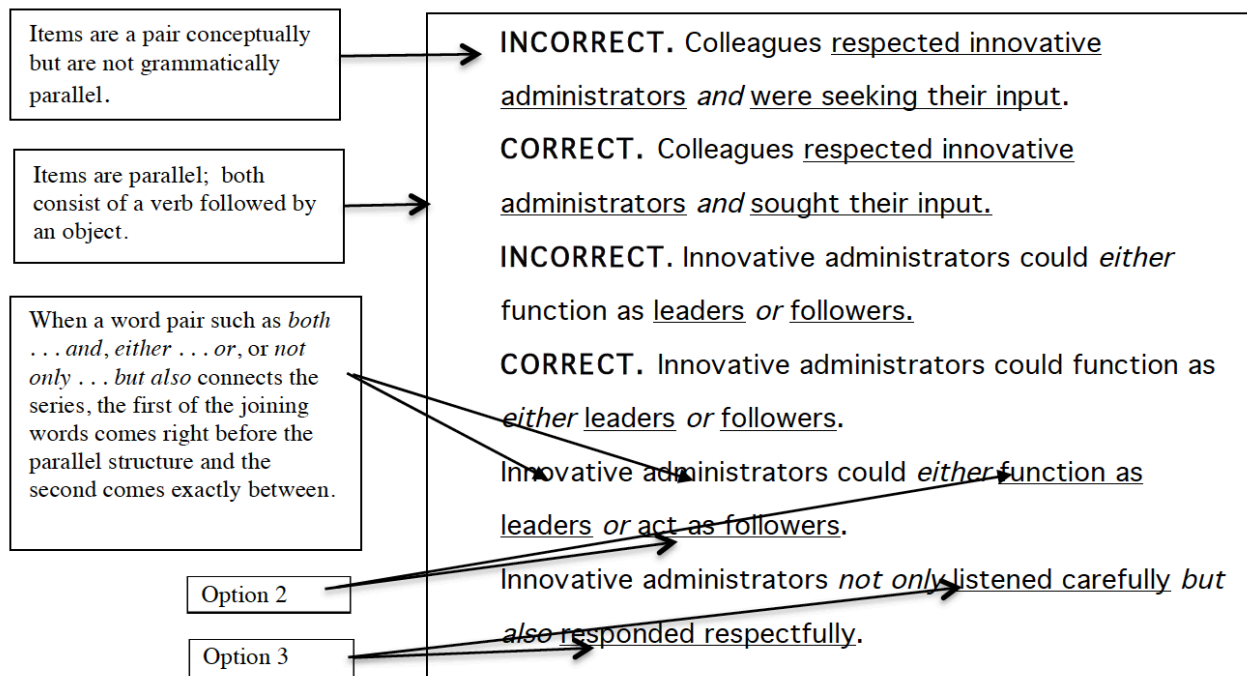
If items on the list are short and are clearly grammatical continuations of the sentence, they may be listed without capitalization and followed by commas or semicolons (as appropriate), with a period after the final item. This format is allowed by APA but not used by as many writers as the one above.



Do not combine the formats and use commas or semicolons after capitalized fragments

Management Factor 4: Remember that a Pair is Also a Series

Pairs must be parallel as well. Remember that a series of two still represents items with the same function and thus requires the same grammatical format. Be sure that the conjunction (or pair of conjunctions) is the balance point between the parallel items.



Verb Use: Keeping Verbs and Verb Forms Straight

Consideration 1: Use Active and Passive Voice Appropriately

Active is more active. But passive does have its uses.

Learn the distinction between active and passive voice.

- In active voice, the subject acts: Jones and Brown conducted the experiment.

- In passive voice, the subject receives rather than initiates action: The study was conducted by Jones and Brown.

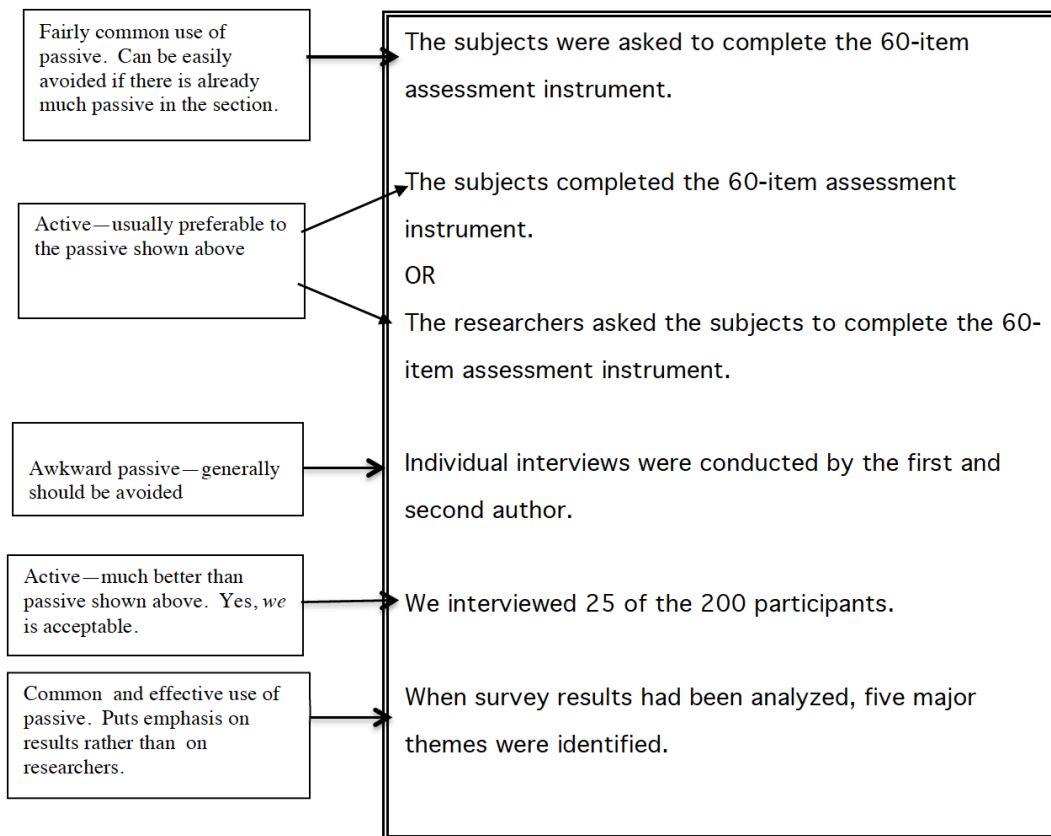
Recognize common misconceptions.

If you've heard that research should never be reported in passive voice or that research must be reported mostly in passive voice, use your mental eraser. Both are somewhat common conceptions, and both are misconceptions.

Learn appropriate uses for active and passive voice.

- Active voice emphasizes agent and action.
- Passive voice deemphasizes or even conceals agent.

Active voice should be used for most sentences; however passive voice can be useful when you know what you are doing. Passive voice is heavier and wordier than active. **Do not overuse passive voice.**



Don't let your writing become too weighted down. It's sometimes tempting to let passive predominate, particularly in methods sections. But too much passive voice makes your writing flat and wordy. Even if you have a reason for trying to avoid first person, use active voice as much as you can (e.g., "The first and second author interviewed 25 of the 200 participants.").

Consideration 2: Select Your Verb Tenses Carefully

No matter how you set up your questions, answers, perspectives, and conclusions, you have to keep the sequences consistent and logical: a.k.a. watch out for tense use—one of the most common slip-up areas in academic writing.

Select basic tenses for the sections by applying APA suggestions. In reading a variety of books and articles on your topic, you will see tenses and tense sequences handled in different ways. The American Psychological Association (2010) suggests the following general guidelines (pp. 33, 42, 43).

APA Suggestions for Using Tense in Various Sections and Circumstances

Use	Tense	Reason
Something that has occurred at definite time in the past	Past	What is reported has already happened.
Review of literature	Past or present perfect	Research has already taken place either at one time (past tense) or continuously over time (present perfect).
Procedures	Past or present perfect	Procedure has already taken place (past) or began in the past and continues (present perfect).
Results	Past	Results were discerned and analyzed in the past.
Conclusions	Present	Present tense invites the reader to join in deliberation. If you are reporting them as current, we assume they are still true. Conclusions can also be reported in present perfect

Vary tenses as necessary for shades of meaning; be aware of how to use the perfect tenses as well as simple past, present, and future.

Use present perfect for something that began in the past and extends into the present.

During the three years of the experiment, subjects have shown steady progress in their ability to master the target skills.

Since the turn of the century, researchers have undertaken a variety of studies concerned with this topic.

Use past perfect for something that happened prior to past time being discussed.

After the subjects had completed the preliminary assessment instrument, the researchers began to implement the baseline phase of the study.

After Stein had publicized his findings, additional researchers undertook further experimentation.

Use future perfect for something that will have happened prior to a predicted future time.

By the time the procedures specified in the grant have been completed, more than 4,000 children will have had an opportunity to participate in a science fair project.

We predict that when the students have completed the treatment program they will have progressed at least two grade levels in reading.

Consideration 3: Be Sure that Verbs Agree with their Subjects

Sometimes when you are dealing with multiple individuals and/or complex actions, you may have to remove the packaging to figure out what the REAL subject is.

Intervening words or phrases do not change the subject-verb relationship. This goes back to the core question of who really did what.

Interview Subject 4, among the 47 assigned to the control group, was able to advance almost a full grade level during the first three months of the study.

The first teacher to implement the program, as well as many of her colleagues who were later inducted into the study, was enthusiastic about the results in her classroom.

Compound subjects are plural.

The first author and the trained undergraduate assistant were responsible for taking extensive field notes during all classroom sessions.

Both the self-report questionnaire and the interview transcription were used to assess each participant's reaction.

Collective nouns (class, group, or other unit) can be treated as singular or plural depending on whether it is the group as a unit or members of the group as diverse individuals who are affected.

The faculty was united in enthusiasm for the intervention (unit together).

The group of parents were diverse and unsettled in their thinking (group functioning as individuals).

If subjects are joined by *or* or *nor* and one is singular and the other plural, the verb agrees with the subject that is closer.

Neither the teacher nor the students were adequately prepared for the project.

The parents or the teacher has to assume responsibility for reporting.

If you can handle quotations, seriation/parallelism, and verb problems, you should be able to avoid some of the most common errors made by undergraduate and graduate students—and by some more experienced academic writers as well. These conventions and uses may seem to be superficial distinctions that should be relatively unimportant in completing your paper, article, thesis, or dissertation. Compared to your content, of course, they are. But failing to follow the conventions of good grammar and usage can make you appear clumsy and non-professional—labels none of us can afford.

None of these rules or distinctions is difficult. They are relatively easy to apply during the drafting and/or editing process.

The next chapter goes into some of the smaller, stickier grammatical distinctions. Many of them are sets of practices and rules that you will want to be able to look up when you need them rather than memorizing them all. Just consult the *Publication Manual of the American Psychological Association* (2010) or this online handbook when you need one of them. Memorize the rules and distinctions that you need most and use most frequently. Learn approximately where to find the others so you can look them up when you want them.

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Small Stressors

Common Grammar and Usage Errors

Sharon Black

The most important aspects of your paper, article, thesis, or dissertation include the quality of content (your professor or graduate committee), logic and clarity of organization (Chapter 2.2), thoughtful and ethical use of references (Chapter 2.3), and accuracy of expression (Chapter 2.4). Handling professional conventions such as APA format requirements (Chapter 2.1) are important if you are to come across as a qualified professional. Aspects of information handling, such as quotations and seriation (Chapter 2.5), contribute to the impression that you are capable and in control. But it's still hard to come across as a brilliant and well prepared professional if you have dangling modifiers or pronouns and antecedents that don't agree. Most of us realize this irony, and we stress over it.

This chapter focuses in on what might be called the "little stressors": matters of grammar and usage. Though not a valid measure of ability or competence, errors in grammar and usage can cause others to misinterpret and underestimate your ability and competence.

This chapter is not intended as an exhaustive guide to the mysteries of grammar and usage. It does present some fairly efficient charts and discussions to help you in making the most common grammar-usage decisions and avoiding the most common errors

Pronouns: Pesky References and Substitutes

A pronoun takes the place of a noun or noun equivalent. It has to have something to replace that is close by, easy to discern, and consistent with it. A pronoun needs to agree with its antecedent, and it needs to be in the right case.

Common Problems with Pronouns and Antecedents

Problem	Rule	Example
No antecedent	Each pronoun must have a stated antecedent.	Incorrect: They say that extensive assessment must precede treatment. (Who is <i>they</i> ?)

Problem	Rule	Example
		<p>Correct: Researchers affirm that extensive assessment must precede treatment.</p>
Close antecedent	A pronoun must be close to its antecedent, without too much distraction in between.	<p>Confusing: The primary investigators, after long and exhaustive consultation with multicultural advisors representing six prevalent ethnic groups, decided that they would experiment with their selected population. (By the time you get to what was done, you forget who did it.)</p> <p>Clearer: The primary investigators decided that they would experiment with their selected population, having engaged in exhaustive consultation with multicultural advisors representing six prevalent ethnic groups.</p>
Squinting antecedent	A pronoun must refer clearly to one antecedent	<p>Confusing: The subjects were unresponsive to the researchers because they were embarrassed over their difficulty in learning how to read. (Who was embarrassed, and who had difficulty learning to read?)</p> <p>Clearer: In responding to the researchers, the subjects were embarrassed over their difficulty in learning how to read.</p>
Indefinite <i>it</i>	<i>It</i> is a pronoun. Avoid using <i>it</i> without an antecedent.	<p>Incorrect: It is difficult to perform.</p> <p>The teacher had difficulty understanding it.</p> <p>In Jacinski's article it says ,</p> <p>Correct: The literacy intervention is difficult to perform.</p> <p>The teacher had difficulty understanding the instructions.</p> <p>Jacinski's article says,</p>

Problem	Rule	Example
<i>Who, which, and that</i>	Use <i>who</i> for persons	Many children who participated improved their reading scores dramatically.
	Use <i>that</i> for restrictive modifiers (those that actually change sentence meaning).	The intervention that was chosen by the parents was implemented cautiously. (The statement tells which intervention is being discussed.)
	Use <i>which</i> for nonrestrictive elements (Those that add information but do not change meaning). (The which/that distinction is rarely made in common practice, but APA makes it.)	The sampling was not random, which negatively affects the potential of the study to be generalized to additional populations. (The information which follows does not change the fact that the sampling was not random.)
<i>anyone, anybody, someone, somebody, everyone, everybody etc.</i>	These forms are singular and thus require singular verbs and singular pronouns.	<p>Incorrect. Everybody who did not wish to continue their participation in the study was excused.</p> <p>Correct: Everybody who did not wish to continue his/her participation in the study was excused.</p> <p>Better: All who did not wish to continue their participation in the study were excused. (The singular <i>everybody</i> or <i>everyone</i> can usually be changed to the plural <i>all</i> with no loss of meaning.)</p> <p>Also better: Everybody who did not want to continue participating in the study was excused. (Simple restructuring may eliminate the pronoun.)</p>

Pronoun-Antecedent Agreement

Pronoun-antecedent disagreement is one of the most common errors people make. In conversation most people tend to ignore it, and in conversational writing many people do. But you can't get away with it in your major paper, article, thesis, or dissertation. The *Publication Manual of the American Psychological Association* (2001) makes a special point of discussing the problem, so this guidebook will do so as well.

Each parent was asked to support the literacy program by reading for 20 minutes a day with their child.

This sentence has a rather classic agreement problem. Educators of a generation and a half ago would have easily corrected it by using "his child" to designate a parent of either sex. Or they might have written "her child," since most reading parents have traditionally been mothers. But you can't get away with either of those in today's somewhat gender-paranoid society. The chart below gives a number of ways that the difficulty could be corrected without putting you in danger of having your face slapped. They are in approximate order of preference.

Solution	Example
Go to plural	Parents were asked to support the program by reading for 20 minutes a day with their children. (APA prefers this option unless singular is necessary to meaning.)
Use both pronouns	Each parent was asked to support the program by reading for 20 minutes a day with his or her child.
Eliminate pronoun	Each parent was asked to support the program by reading for 20 minutes a day with the child.
Recast sentence	Each parent was asked to support the parent-tutoring program by engaging in shared reading for 20 minutes a day.
Go to passive	The children were supported by having a parent read with them for 20 minutes a day.
Alternate pronouns	You can alternate pronouns by chapter or section: for example, using feminine pronouns to designate either sex in Chapter 1, masculine pronouns in Chapter 2 etc. In a short paper or article, you can alternate in headed sections.

Pronoun Case

Most of us don't have a problem with pronoun case when it's a simple matter of someone or something doing or giving something to someone else. But when you get multiple doers and/or multiple receivers, or when the doers and receivers aren't normal people operating in normal fashion, you can get into some problems.

Where pronouns are concerned, subjects do and objects receive.

Subjective	Objective
As subject or complement	As direct object, indirect object, or object of preposition
I	me
we	us
you	you
he/she/it	him/her/it
they	them
who	whom

The distinction may not seem as clear when you get into compounds or into more complex sentence structure. But still you just decide whether the individual represented by the pronoun is doing or receiving.

Circumstance	Rule	Example
Compound structure	Pronoun case doesn't change.	Dr. Brown has been conducting research in this area; she and her colleagues are preparing an article for

Circumstance	Rule	Example
	To check, remove the compound.	publication. (Subject: she is preparing) An award for original research will be presented to her coauthor, Dr. McArthur, and her. (Object: presented to her)
Appositives (words or phrases that rename nouns or pronouns)	Appositives take the same pronoun case as the word they rename.	I scheduled interviews with 9 randomly chosen participants. These sessions were conducted by two researchers: Dr. Brown and me. (Object: "Dr. Brown and me" renames <i>researchers</i> , thus "conducted by me")
<i>We</i> or <i>us</i> before a noun	Pronoun should be the case it would be without the noun.	We researchers are now concluding the interviews. (Subject: We are concluding) The results have been fascinating to us observers. (Object: fascinating to us)
Comparisons with <i>than</i> or <i>as</i>	When the verb is taken out, put it back mentally in order to choose the right pronoun.	Dr. Smith has been researching this topic longer than I. (Subject: longer than I have) There is no other colleague in the department I respect as much as her. (Object: as much as I respect her)
Use of <i>myself</i>	<i>Myself</i> is reflexive. It refers only to action performed on oneself. It cannot substitute for <i>I</i> or <i>me</i> .	Incorrect: Two graduate students and myself administered the intervention under the direction of Dr. Lewis. Correct: Two graduate students and I administered the intervention. (Subject) The students turned in the surveys to Dr. Lewis and me. (Object)

Modifiers: Getting Extra Information Where It Doesn't Confuse or Embarrass You

When you describe, explain, or elaborate something (modify it), you know what you are describing, explaining, or elaborating. But the reader won't know unless you get the information in the right place. Out-of- place information can have frustrating (and sometimes amusing) results.

Problem	Rule	Examples
Dangling modifier	<p>A modifier has to have something to modify</p> <p>(Get the thing modified into the sentence. If the children had the disabilities, they need to be in the sentence.)</p>	<p>Incorrect: Despite having disabilities, <i>the tests</i> were administered. (Unless the tests had disabilities, something is missing here.)</p> <p>Correct: Despite having disabilities, <i>the children</i> were tested.</p> <p>Also: Although the children had disabilities, <i>the tests</i> were administered.</p>
Misplaced modifier	<p>A modifier needs to be close to what it modifies. If it is closer to another item, it will seem to modify that item.</p>	<p>Incorrect: Subjects for the study were parents raising <i>young children</i> whose income was below poverty level. (Most young children do not earn income, poverty level or otherwise.)</p> <p>Correct: Subjects for the study were <i>parents</i> whose income was below the poverty level who were raising young children.</p>
Squinting modifier	<p>Be careful that a modifier does not point equally to two different items</p>	<p>Incorrect: Proofreading thoroughly bores most of us.</p> <p>Option 1: Proofreading in a thorough manner bores most of us.</p> <p>Option 2: Proofreading is thoroughly boring for most of us.</p>
Inappropriate comparison	<p>Use comparative form for two, superlative form for three or more.</p>	<p>Incorrect: Compared with traditional resource, inclusion has resulted in the best socialization of students with disabilities.</p> <p>Correct: Inclusion has shown better socialization of students with disabilities than traditional resource.</p> <p>Correct: Compared to resource programs and residential schools, inclusion has shown the best socialization of deaf students.</p>
Incomplete comparison	<p>When using a comparative or superlative form, include all necessary items.</p>	<p>Incorrect: Results showed that the treatment group made greater advances in reading comprehension.</p> <p>Use: Results showed that the treatment group made greater advances than the control group in reading comprehension.</p>

Problem	Rule	Examples
Adjective/ adverb confusion	Adjective answers <i>which, what kind, how many</i> . <i>Good</i> is an adjective. Adverb answers <i>when, how, how often, where</i> . <i>Well</i> is an adverb.	Establishing trust can be a slow process. Rice's article gives a good general definition for our purposes. The client was improving slowly. The weekly sessions with Jason seemed to go well.

Apostrophe: To Possess or Not to Possess

Apostrophes allow you to juggle possessions and some omissions. As in life, indicating true possession can be a necessity, but indicating possession that does not exist can be problematic.

Possession

Need	Rule	Examples
Singular nouns not ending in <i>s</i>	Add apostrophe + <i>s</i>	The researcher's conclusion, the article's content, everyone's concern
Singular nouns ending in <i>s</i>	Usually add apostrophe + <i>s</i> , occasionally just add apostrophe	Henry James's novels The hostess' solution (Too many surrounding <i>s</i> sounds makes this statement hard to say.)
Plural nouns not ending in <i>s</i>	Add apostrophe + <i>s</i>	The women's responses, the men's involvement
Plural nouns ending in <i>s</i>	Add apostrophe after <i>s</i>	The parents' input, the committees' responsibilities
Joint possession	Add apostrophe only after last noun if possessed together	McKenzie and McCullough's research study (They are working together on the same study.)
Similar possession	Add apostrophe to all names if possessed item is the same category but not the same item.	Both Taylor's and Curtis's research efforts are impressive. (Both are doing research, but not together.)

Need	Rule	Examples
Do not use apostrophe with possessive pronouns.	You wouldn't use <i>hi's</i> or <i>her's</i> . <i>Its</i> is a personal pronoun, like <i>his</i> and <i>hers</i> . <i>It's</i> is the contraction for "it is."	Incorrect: The instrument was rejected because it's validity was not established. Correct: The instrument will be reconsidered when its validity has been established.
Do not use apostrophe with nouns that are not possessive.	Do not let an <i>s</i> on the end of a word tempt you to add an apostrophe if that word is merely plural, not possessive.	Incorrect: The participants' completed a social validity questionnaire. Correct: The participants found the intervention easy to implement in their classrooms.

Omissions and Plurals

Omissions	Use apostrophe to mark letters left out of contractions.	don't, can't, won't etc.
Plurals	Use apostrophe for plurals of lower case letters and abbreviations with periods. For numbers, capital letters, abbreviations without periods and words used as words, an apostrophe before <i>s</i> is optional.	Many dyslexic students reverse <i>b's</i> and <i>d's</i> . (Letters are italicized, 's is not.) the 1990s, the1990's SLIs, SLI's too many <i>buts</i> or too many <i>but's</i>
Misuse with Plural	Do not use apostrophe with non-possessive plurals, except as shown above	Incorrect: Tests were administered to the student's. Incorrect: The entrepreneurs' gave permission for their records to be examined.

Hyphen: The Modest Joiner

Now that word processing has eliminated most of the need for end-of-line division, the main use for the hyphen is to link up things that need to be kept together in order for their meaning to be clear. You might want to think of them as "word partners"—equally linked companions in the wisdom or mischief of expression.

Common Uses and Misuses of Hyphens

Usage	Rule	Examples
Hyphenate		
Two words that function as a modifying unit	Hyphenate if the unit comes before the noun. Do not hyphenate if it comes after.	<p>Many high-ranking authorities are cited.</p> <p>Many of the authorities are high ranking.</p> <p>Do not accept out-of-date information.</p> <p>The information he gave was out of date.</p>
<i>Self</i> , <i>all</i> , and <i>ex</i> (meaning former) words	Hyphenate words beginning with these prefixes.	<p>self-concept, self-esteem, self-efficacy</p> <p>all-encompassing, all-inclusive</p> <p>ex-partner, ex-compatriot</p>
Prefix ending with same vowel with which root begins	Hyphenate if confusion is possible. (<i>Pre</i> and <i>re</i> rarely hyphenate.)	anti-illiteracy, meta-analysis
A prefix-root blend that has another meaning)	Hyphenate the less common of the words.	<p>re-recreate/recreate</p> <p>co-operative/cooperative</p> <p>re-lease/release</p>
Compound beginning with a number	Hyphenate when it precedes the term modified.	<p>fourth-grade students</p> <p>two-part analysis</p>
Compound when the base word is compound	Hyphenate for clarity.	non-English-speaking children
Prefix added to root word beginning with a capital	Hyphenate when adding a prefix.	un-American, anti-Semitic,
Letter, numeral, or abbreviation as root word	Hyphenate when adding a prefix.	<p>a pre-NCLB assessment</p> <p>post-2000 research</p>

Usage	Rule	Examples
Two or more prefixes sharing a base	Hyphenate both.	pre- and post-treatment interviews short- and long-term results
Do not Hyphenate		
Two adjectives do not function as a unit.	If function is separate, do not hyphenate.	Three-counselor offices are now common. Three counselor offices are located on the first floor.
Units with an /y adverb	Do not hyphenate these compounds—they won't be confused.	This is a slowly evolving field of study. She chose a carefully documented methodology.
Units with a letter or numeral as the second partner	Do not hyphenate.	Type A personality Phase 2 reaction
A comparative or superlative adjective	Do not hyphenate.	the least competent research assistant

Generalizations to Remember

Hyphenation is a tool for clarity.

If the relationship of the words is quite obvious, you do not need to hyphenate, even though the compound may meet one of the above criteria.

Some words are established as hyphenated regardless of usage or placement.

If your visual memory tells you that the combination doesn't "look right" without a hyphen, check your dictionary

Do not space before or after a hyphen.

Capitalization: Recognizing What Is Proper

It's a matter of what is "proper." Several common uses of capitalization are applied because of the way elements fit together into a sentence, a title, a heading or visual element. When capitalization of a name is involved, a proper (specific, individual) title, is generally capitalized. A generic label is not. Religions, races, ethnicities, and nationalities (and words derived from them) are considered proper and capitalized out of respect.

General Use of Capitals

Usage	Rule	Example
Beginnings	The first word in a sentence	This study was designed to . . .
Statements following colons	The first word following a colon if the following statement is a complete sentence.	The researcher's expectation was fulfilled: The students performed better in experimental conditions.
Titles in text (books, articles, plays, poetry, other artistic works)	Capitalize major words (usually not short conjunctions, articles or short prepositions). All words of four letters or more.	<i>Publication Manual of the American Psychological Association</i>
Titles of books and articles on reference list	Capitalize only the first word and the first word following a colon or dash.	Social issues in the classroom: Focusing on thinking skills <i>Looking in classrooms</i>
Headings	Capitalize major words in all heading that are centered or at the left margin (Levels 1 and 2). Capitalize only the first word of headings at beginnings of paragraphs (Levels 3-5)	Early Research (1) Research Prior to 2000 (2) Early concept identification. (3) <i>Historical background.</i> (4)
Tables and figures	Capitalize major words in titles and legends	Figure 1: Timeline for Early Research Efforts
Numbers or letters in a series	Capitalize nouns that precede numerals or letters, except for common parts of books or tables	(see Figure 4) Note changes during Baseline 3 but refer to chapter 5
Sections of the same manuscript	Capitalize headings and subheadings	See Methods section

Proper Names and Titles

- **Capitalize one person, one place, one specific unique thing.**
- **Capitalize words derived from a proper noun.**

Category	Capitalize	Do Not Capitalize
People	Sir Isaac Newton/Newtonian physics Dean Prater	a physicist a professor

Category	Capitalize	Do Not Capitalize
		the dean of the McKay School
Places	Spain/Spanish	a country, a language
	Timpview High School	a local high school
Things	Yellowstone National Park	a park, a wilderness area
Events	World War I	war, battle, confrontation
Periods	Renaissance (periods, events)	fifteenth century (not centuries)
Colleges, departments	Brigham Young University, Department of Teacher Education	the university
		a department
Courses	English 400, Introduction to Humanities (catalogue titles)	a psychology class, humanities courses, but an English course (derived from name of country)
Religions, races, nationalities	Christianity, Buddhist, African American, Japanese	
Seasons	Do not capitalize seasons, even for term titles.	in the spring
		during fall semester
Academic titles	William Brown, PhD	a doctoral degree
Brand names, trademarks	Xerox, Prozac	copy machines, depression medication
Models, laws, theories	APA does not capitalize models, laws, and theories.	sensorimotor stage
		response to intervention
		Renzulli's triad model (name is capitalized, model title is not)
Exact titles of tests	Minnesota Multiphasic Personality Inventory	a standardized personality assessment
Test subscales	Capitalize heading but not <i>test</i> or <i>scale</i>	Depression scale

Category	Capitalize	Do Not Capitalize
Experiment groups or conditions	Condition C, Phase 2 (capitalize noun preceding number or letter)	control group, intervention group, tutoring condition (do not capitalize general designations)
Variables, factors, effects	Capitalize names of derived factors but not word <i>factor</i> . Behavior Disability factor. Capitalize when preceding number or letter: Factor 2.	Variables and effects are not capitalized unless written with multiplication signs: a significant Gender X Age interaction, but a significant gender effect.

Italics vs. Quotation Marks: A Matter of Size and Significance

Quotation marks have a labeling function in addition to their major use of identifying direct quotations.

Both italics and quotation marks call attention to a title. If you want a basic principle of division, think of italics as a larger, more significant label.

Quotation Marks, Labels for Short or Common Things

Use	Examples
To set off the title of a short work: article, chapter, short story, poem song etc.	Short work: In the chapter "The Idea of Multiple Intelligences," in the book <i>Frames of Mind</i> (1983), Gardner first gave an extensive rationale for the theory. (Note the chapter is in quotation marks, the book is italicized)
Occasionally to set off ironic or slang usage or to indicate a coined expression.	Casual or personally distinctive usage: Children will go to great lengths to avoid being "uncool." In the schoolroom Jason was an "average" child. His teachers did not see Jason as a "nuclear physicist in process."

Italics, More Distinctive Labels for Longer, Larger or More Inclusive Items

Use	Examples
To indicate the title of a long work: book, periodical, ERIC or other microfilm document, play, opera, etc.	This research has been influenced by Gardner's <i>Intelligence Reframed</i> (1999) and by extensions and applications from the journals <i>Gifted International</i> and <i>Roeper Review</i> .
To indicate a technical term or important label introduced as a label.	This form of adaptation for the gifted, commonly called <i>curriculum compacting</i> , is widely used to allow time for enrichment.

Use	Examples
To indicate that a letter, word or phrase is used as a linguistic example.	As social scientists we are prone to lean too heavily on vague words such as <i>outcome based</i> . We may use them almost as heedlessly as we grade things <i>A, B</i> or <i>C</i> .
To indicate that a letter is used as a statistical symbol or algebraic variable	A <i>t</i> test was used to determine the relationship during the period of trial <i>c</i> .
To indicate scientific names and foreign words not in common use	In the classroom, Simon acted the part of the <i>enfant terrible</i> . But it was not Simon's rowdy behavior per se that was most troubling to his teacher. (Italics not needed for fairly common usage like per se)
To indicate anchors in a survey or testing scale	Respondents were asked to evaluate on a scale of 1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>).
Only occasionally for emphasis. (DO NOT USE BOLD FOR EMPHASIS.)	The likelihood of childhood depression in such cases <i>should not be underestimated</i> .

Numbers: Conventions and Quirks

Like it or not, social scientists are forced to be number crunchers, and with the particular conventions in APA format, we can end up feeling a little crunched ourselves. APA follows the basic conventions with occasional quirks.

APA Conventions and Preferences

The chart below is based on the usage indicated in the *Publication Manual of the American Psychological Association* (2010), pp. 111-114.

Use	Examples
USE WORDS	
Any number beginning a sentence or a title or heading. APA advises rewording sentence to try to avoid this.	Fifty-two participants substantially raised their scores.
Numbers below 10 that do not represent precise measurements.	three survey instruments, two treatment programs, approximately six weeks
Fractions	one half, two thirds
USE NUMERALS	

Use	Examples
Numbers 10 and above	30 interviews, the 21 respondents, between 30 and 35 years of age, 12th-grade students
Numbers 10 and above even when grouped with lower numbers	the fifth of 22 questions; a reference base consisting of 24 articles, nine books, and 12 Internet sites
Units of measurement, mathematical or statistical data, scores on scales, quantities, ratios percentages etc.	the 85th percentile; 96% agreement; rated 3 on a 5-point scale; scored 85% and 94%, respectively
Items in a numbered series	Phase 3, Posttest 2, Table 5, chapter 7, page 82
Items representing time, dates, ages etc.	exactly 4 years ago, 9-year-olds, August 22, 2004
All numbers in the abstract	This study followed the academic and social progress of 8 students with autism, as observed by the 2 authors and 4 trained research assistants.
USE A COMBINATION OF WORDS AND NUMERALS	
Rounded numbers of millions or more	at least 3 million people affected a \$3 million grant
Confusing modifiers	Avoid: three three-person work groups, 18 6-year-olds Use: Three 3-person work groups, eighteen 6-year-olds

Ordinal Numbers

Ordinal numbers follow the same usage.

- third item
- 30th item
- 3rd, 10th, and 14th items
- fourth appointment scheduled
- 4th and 5th year of the study

Matters of Clarity and Efficiency

- Use 0 before a decimal if the number could be more than 1 but isn't. If it couldn't be more than one, don't bother.
 - The final calculation was 0.78
 - It was at the .05 level of significance.
- Round off decimal places as much as possible if doing so does not interfere with anticipated reader's use or with a matter of statistical accuracy.

- Use roman numerals only when they are part of published and widely accepted terminology: for example, “This project could be classified as one of Renzulli’s Type III critical/creative activities.”
- Use commas within most numbers over 1,000 with the exception of several contexts that could be awkward: page numbers, temperatures, acoustic frequencies.
- Form plurals of numbers by adding *s* or *es* as appropriate: threes, sixes, eights, 10s, 1990s.

For specific information on metrification, statistics, and tabular presentations, see the *Publication Manual of the American Psychological Associations* (2010), pp. 115-118.

Word Usage: Things Your Spell Check Can’t Tell You

Ironically, that wonderful spell check on your word processing program can keep you from misspelling incubus, but it can’t keep you from missing affect. To add to your stress, there are some word usages and distinctions that you just have to learn.

English is a rich and varied language, but it can be a very confusing language. Because it is a hybrid of many languages—including German, Latin, Danish, and French, as well as the languages of the early British inhabitants—it’s not particularly consistent. Words can be pronounced the same way or close to the same way and yet be different in how they are spelled and/or in what they mean. And of course words can have the same or very similar meanings and be spelled or pronounced in widely different ways. Another problem we have is that we often use words sloppily or inappropriately without realizing we have done so.

In conversation sloppiness seems to be a matter of mutual agreement—people listen just as sloppily as they talk. But in writing—particularly academic writing—we just have to be more careful. Following are some of the most common usage problems that trip us up. Memory devices have been included to help you recall distinctions. Most of these are not technical or even logical reasons—just tricks.

Word 1	Word 2	Trick for Recall: Not Linguistic Reasons
Advice: That which is offered. The mentor offered useful advice.	Advise: The process of offering it. The mentor advised the novice to assess carefully.	<i>Advice</i> has “ice” in it. It’s already happened, so it’s more solid.
Affect: Verb meaning “to make a difference.” The teacher affects the child’s ability to learn.	Effect: Noun meaning a result. The effect of the treatment was positive.	Remember the e’s and a’s: <i>Effect</i> is a result; <i>affect</i> is action. Occasionally <i>effect</i> will be used as a verb meaning to cause, and <i>affect</i> will sometimes be used as a noun meaning a feeling or mood.
All ready: Indication that something is prepared. The experiment is all ready to proceed.	Already: Indication that time has passed quickly. We are already half way through the procedure.	If you could insert <i>are</i> , then use the two-word phrase: “all are ready” is <i>all ready</i> .

Word 1	Word 2	Trick for Recall: Not Linguistic Reasons
All together: Indication of gathering. Researchers for this project are all together on campus.	Altogether: Conversational intensifier. There is altogether too much noise in this classroom.	This pair works the same way as the pair above: If you could add <i>are</i> , use the two words—"all are together" is <i>all together</i> .
All right: Indication that all concerned are correct or satisfactory. The child's answers were all right.	Alright: Incorrect usage This is a popular error, but it's still an error.	It is not all right to jam <i>all right</i> together into " <i>alright</i> ."
A lot: A vague and somewhat conversational way of say <i>often</i> or <i>much</i> .	Alot: Incorrect usage Allot is a different word; it means to apportion a share of something. We need to allot sufficient time.	You wouldn't write "alittle," so don't write "alot."
Beside: A preposition meaning next to. Sitting beside a child implies a supportive relationship.	Besides: An indication of something in addition or in exception. Besides making symptom assessment, a counselor should consider cultural affiliation.	<i>Beside</i> is alongside. The addition of <i>s</i> makes it an addition.
Device: An implement or tool. It was a useful device.	Devise: To create or figure out. The research team will need to devise a more accurate strategy.	Similar to <i>advice</i> / <i>advise</i> . <i>Device</i> contains ice ; it's the more solid form. <i>Devise</i> is more slippery.
Conscience: A person's intuitive mechanism for telling right from wrong. An individual's conscience may function in healthy or unhealthy ways.	Conscious: A state of being awake or aware. The accident victims were interviewed soon after they became conscious.	<i>Conscience</i> contains science . Social scientists do study conscience as a phenomenon. <i>Consciousness</i> , or awareness, is a little vaguer.
Disinterested: A state of purposeful impartiality. In student conflicts, a teacher needs to take a disinterested stance.	Uninterested: A state of not caring. A symptom of depression is to become uninterested in activities formerly enjoyed.	<i>Disinterested</i> is more deliberate. <i>Uninterested</i> is—uh,uh—well just unconcerned.
Especially: An adverb meaning particularly or exceptionally. The counselor is especially concerned with the immigrant child's adjustment problems.	Specially: An adverb used to indicate that something was done for a specific purpose. The treatment was specially designed for children with mild to moderate disabilities.	<i>Specially</i> refers to specific or specification .

Word 1	Word 2	Trick for Recall: Not Linguistic Reasons
Farther: An indication of additional distance (literally or figuratively). We are farther from understanding the concept than we had realized.	Further: An indication of a greater degree or extent. Can overlap <i>farther</i> for this meaning. Can be used as a verb meaning to aid or extend progress. He was instrumental in helping to further research in the area.	Farther refers mostly to distance (<i>far</i> usually does). Further is a little softer and can be used for softer, more abstract concepts.
Few or fewer: An indication of small quantity, used for items that could be counted. There are fewer subjects in Classroom 1 than in Classroom 2.	Less: Opposite of more. Used for items that cannot be counted. There will be less time to complete this study than we had originally planned.	Remember that <i>few</i> is the opposite of <i>many</i> ; less is the opposite of <i>more</i> : many problems/few problems; more experience/less experience.
Fortunate: An indication that something positive happened. It was fortunate that the subjects were well prepared.	Fortuitous: An indication that something happened by chance—not planned or anticipated. It was fortuitous that three of the randomly chosen subjects were from racial/cultural minority groups.	If something is fortunate , it happened by good fortune . If something is fortuitous , it is unplanned and unsolicited .
Good: An adjective, used to describe a person, place or thing. We were fortunate to be able to work with a good teacher.	Well: Most often an adverb used to describe actions. The subjects performed well.	Just remember the common “good job” and “well done.” You wouldn’t say “good done,” so don’t say “you’ve done good.”
Imply: To try to cause your reader or listener to think something without saying it explicitly. The subject didn’t accuse the therapist of being incompetent, but he implied it as he gave his account of the session.	Infer: To figure out what the writer or speaker is really saying but not stating directly. From the subject’s account of the session, we inferred that he considered the therapist incompetent.	<i>Imply</i> and <i>Infer</i> are two ends of the process—imply is what the communicator does, and <i>infer</i> is the recipient’s part. You might consider the related words: An implication is what a writer makes; an inference is what the reader makes.
Its: A possessive pronoun, similar to <i>his</i> and <i>hers</i> . The study is nearing its conclusion.	It’s: A contraction for “it is.” It’s late in the data gathering process.	Remember that you wouldn’t write “hi’s,” “her’s,” or “your’s”; <i>it</i> is a pronoun, not a noun.

Word 1	Word 2	Trick for Recall: Not Linguistic Reasons
Later: A comparative time relationship. On most days social studies was taught later than writing or mathematics.	Latter: A sequence relationship involving two items. Of the two studies mentioned, the latter is more convincing.	You can remember that later involves time because it has <i>late</i> in it. Since latter has two <i>t</i> 's, you can remember that it involves a sequence of two.
Lie: An action one performs oneself: The client needs to lie down until he is calmer.	Lay: An action one performs on something or someone else. Please lay the weapon on the floor.	Saying one is going to “lay down” or “lay out” is a very common error. Just remember that the only thing you can really “lay” on a sun deck is a bottle of sunscreen.
Loose: A state of not being tight, precise, or restrained. The comment is vague and is open to loose interpretation.	Lose: A verb meaning to misplace something or have it taken away. If he does not fulfill his commitment, he may lose his place on the research team.	Something which is loose is likely to have loopholes . Occasionally <i>loose</i> is used as a verb to indicate the action of making something loose: The judge has been known to loose the bonds of strict interpretation.
Media: Plural form of <i>medium</i> , often used to refer to public communications media such as television, radio, and journalism. Media publicity is a powerful tool.	Medium: A means for conveying messages. Television is a powerful and potentially dangerous medium of communication.	Since we often think of a “medium” as one who conducts a séance, picture the medium sitting at a table, all alone, without other voices to validate her. The media, of course, have plenty of collaboration and back up.
Moral: Something consistent with one’s code of ethics. Teaching involves moral dimensions and choices.	Morale: Positive feeling or attitude. Morale was high among teachers undertaking the inclusion experiment.	Remember that moral is ethical. If you like to think of ale as giving one spirited feelings, you could remember morale in that way.
Number of: Quantity of something that can be counted. A large number of potential subjects are available.	Amount of: Quantity of something that cannot be counted. The report contains a significant amount of specialized information.	Children learn numbers by using manipulatives—items that can be counted and assigned specific numbers. Don’t use numbers for things they can’t manipulate.
People: A group of individuals in a general, overall sense. Most people are concerned with violence in today’s schools.	Persons: A small, specific, countable group of individuals. Nine persons volunteered to be interviewed.	Both words mean the same thing. The context makes the difference—and it’s not a major one. Just remember the preamble: “We the people of the United States. . . .”

Word 1	Word 2	Trick for Recall: Not Linguistic Reasons
Phenomenon: Something which can be observed, often applied to something out of the ordinary. We were startled as we observed the phenomenon.	Phenomena: Plural of <i>phenomenon</i> . Several unexpected phenomena were observed with this study.	As with <i>medium</i> and <i>media</i> , the “a form” is the plural.
Practical: Designation for a concrete, sensible, useful way of doing something. Singing a well-known song is a practical way of calming young children after recess	Practicable: Designation for something that can be done. The experimental procedure was complicated but practicable.	<i>Practicable</i> means you are able to put something into practice . <i>Practical?</i> If you calculate practicality, you can ask if it makes sense to do it.
Precede: Something comes before something else. Hard work precedes discovery.	Proceed: Something moves forward. We need to proceed with the steps of implementation.	<i>Pre</i> always means before. For <i>proceed</i> , remember <i>progress</i> .
Principal: A general term meaning first or main—often specifically applied to the chief administrator of a school or other organization. The principal consideration is time efficiency. The principal called a meeting of faculty.	Principle: A rule, law, or assumption on which thinking or activity is based. The controversy over school prayer is based on the principle of separation of church and state.	School children used to recite, “The principal is the student’s pal.” This is a good device for remembering the distinction. Another little trick is to remember that <i>principle</i> and <i>rule</i> end in the same way.
Rise: The action of someone or something moving upward or increasing. The number of adolescents with eating disorders is rising. Education is a means for helping people rise above poverty.	Raise: The action of moving something or someone else upward or of increasing a quantity. We need to raise the percentage of children who are reading on grade level. We need to help raise children’s self-esteem.	<ul style="list-style-type: none"> The distinction is the same as between <i>lie</i> and <i>lay</i>. <i>Rise</i>, like <i>lie</i>, is something you do for yourself. It even has the same internal sound as <i>lie</i>. <i>Raise</i> is something you do for someone or something else. It has the same internal sound as <i>lay</i>. Both can apply to persons, to things, or to abstract quantities.
Sit: The action of placing oneself in a sitting position. The children were asked to enter quietly and sit at their tables.	Set: The action of placing something or someone else, usually in a specific position or on a surface. As they took their seats, the children set their notebooks and pencils on the tables in front of them.	The <i>sit/set</i> pair is a first cousin of <i>lie/lay</i> and <i>rise/raise</i> . The “i” word is what “I do for myself”; the other is what I do to something or someone else.

Word 1	Word 2	Trick for Recall: Not Linguistic Reasons
Then: A position word that indicates time sequence. The therapist makes a simple request and then observes the child's response.	Than: A word indicating comparison. Working together is more effective than working in isolation.	If you read your sentence aloud, your ear will pick up the difference. Many of us are more conditioned to the sound than to the spelling.
There: Indication of place (put the table over there) or existence (there are three children involved).	Their: Possessive pronoun. (The research assistants completed their report.)	They're: Contraction of "they are." There is not really a trick. People just train their visual memory.
To: Preposition indicating position or possibly destination (to the front of the room, to the students). Also the function word for the infinitive form of the verb (to walk, to seem, to study).	Too: Adverb meaning also or in addition. (After the mothers had agreed to implement the program, many of the fathers agreed to participate too.) Can also be used to indicate that something is excessive. (The procedure took too much time.)	Two: Number between one and three. Two teachers initially implemented the program. Again, visual memory seems to be the best trick. You can think of <i>too</i> as having too many <i>o's</i> .
Whether: Introduction to an indirect question or to an expression of doubt. I do not know whether the test has been administered.	Weather: Atmospheric condition. The weather interfered with the planned activity.	Remember that <i>whether</i> works like <i>which</i> , <i>when</i> , and <i>who</i> . Just place it in its proper family, and you shouldn't have any problem with it.

When in doubt about any word, check your dictionary—paper or online. Doing so only takes a moment, and it can save a good deal of embarrassment.

Questionable Language: Avoiding Offense

Because language reflects attitude and disposition, we can offend unintentionally by the words we use. Carelessness or outdated usage can be hurtful, even when we do not intend for it to be.

Even if you do not feel personally offended by usage, others do; and your writing will not be effective if you offend members of your audience. Just to be safe, be careful with the following.

Category	Sample Problem Words	Safer Usage
"Man" words used to indicate both sexes	man (as species), mankind, man-made, manpower policeman, chairman	humans or people, humankind, human-made, work force, police officer, chair
Person-first language (The person is more important)	retarded child, handicapped adolescent, autistic individual	child with mental retardation, adolescent with a disability, individual with autism

Category	Sample Problem Words	Safer Usage
than the disability—put the person first.)		
Referring to a person with a condition or disability by the disability.	<p>The depressive requested an appointment.</p> <p>The retard requires special help.</p> <p>The handicap needed individual teacher attention.</p>	<p>The client who was depressed requested an appointment. The person with retardation requires special help.</p> <p>The child with a disability needed individual teacher attention.</p>
Words formerly accepted for ethnic or racial groups that are considered today to hint at disrespect.	<p>Indian, Negro, Eskimo, Oriental</p> <p>If you have doubts as to the term preferred by a group you have observed or worked with in a study, ask someone who is a member of that group.</p>	<p>Native American, African American (some prefer Black—be sure to capitalize it), Inuit, Asian (Asian American)</p> <p>Hispanic individuals may prefer Latino/Latina. Be as specific as possible on national groups: Korean rather than Asian, Navajo rather than Native American.</p>
Sexual references and sexual orientation	<p>A full 54% of the participants were of the female sex.</p> <p>The client explained to the therapist that she had homosexual feelings.</p>	<p><i>Gender</i> is used for social or cultural groups; <i>sex</i> is used in discussing physical processes. Participants were of the female gender.</p> <p>Use “lesbian feelings.” Avoid the label <i>homosexual</i>.</p>

Don't set the “little stressors” cause you even a little stress. Look up potential problems and take care of them. If you can avoid the common errors pointed out in this chapter, you can avoid a lot of the difficulties students have in getting the response they want to their papers, theses, dissertations and articles. Errors in mechanics are not a measure of intelligence or ability, but unfortunately people react to them as if they were. Just take the time to proofread carefully. When you have a question about something look it up in this manual, in your old freshman English handbook, or on one of the excellent writing laboratory sites on the Internet (e.g., Purdue's Online Writing Lab; OWL). You wouldn't take risks in the way you dress or groom yourself for your defense. Don't take comparable risks in the way you groom your written work.

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Sharon Black

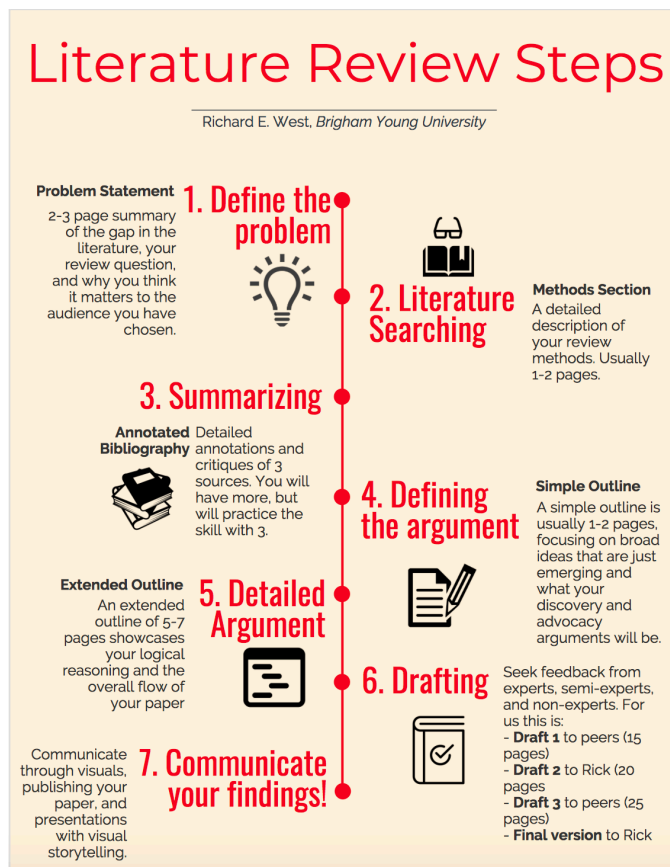
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Literature Reviews



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Frederiksen, L., & Phelps, S. F. (n.d.). *Literature reviews for education and nursing graduate students*. PressBooks. Retrieved from <https://edtechbooks.org/-mj>

Introduction to Literature Reviews

What is a Literature Review?

How to Get Started

Where to Find the Literature
Evaluating Sources
Documenting Sources
Synthesizing Sources
Writing the Literature Review
Concluding Thoughts on Literature Reviews



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Introduction to Literature Reviews

Linda Frederiksen, Sue F. Phelps, & Royce Kimmons

Learning Objectives

At the conclusion of this chapter, you will be able to:

- Identify the purpose of the literature review in the research process;
- Distinguish between different types of literature reviews.

What is a Literature Review?

Pick up nearly any book on research methods and you will find a description of a literature review. At a basic level, the term implies a survey of factual or nonfiction books, articles, and other documents published on a particular subject. Definitions may be similar across the disciplines, with new types and definitions continuing to emerge. Generally speaking, a literature review is a:

- “comprehensive background of the literature within the interested topic area...” ([O’Gorman & MacIntosh, 2015, p. 31](#)).
- “critical component of the research process that provides an in-depth analysis of recently published research findings in specifically identified areas of interest.” ([House, 2018, p. 109](#)).
- “written document that presents a logically argued case founded on a comprehensive understanding of the current state of knowledge about a topic of study” ([Machi & McEvoy, 2012, p. 4](#)).

As a foundation for knowledge advancement in every discipline, it is an important element of any research project. At the graduate or doctoral level, the literature review is an essential feature of thesis and dissertation, as well as grant proposal writing. That is to say, “A substantive, thorough, sophisticated literature review is a precondition for doing substantive, thorough, sophisticated research...A researcher cannot perform significant research without first understanding the literature in the field.” ([Boote & Beile, 2005, p. 3](#)). It is by this means, that a researcher demonstrates familiarity with a body of knowledge and thereby establishes credibility with a reader. An advanced-level literature review shows how prior research is linked to a new project, summarizing and synthesizing what is known while identifying gaps in the knowledge base, facilitating theory development, closing areas where enough research already exists, and uncovering areas where more research is needed. ([Webster & Watson, 2002, p. xiii](#))

A graduate-level literature review is a compilation of the most significant previously published research on your topic. Unlike an annotated bibliography or a research paper you may have written as an undergraduate, your literature review

will outline, evaluate and synthesize relevant research and relate those sources to your own thesis or research question. It is much more than a summary of all the related literature.

It is a type of writing that demonstrate the importance of your research by defining the main ideas and the relationship between them. A good literature review lays the foundation for the importance of your stated problem and research question.

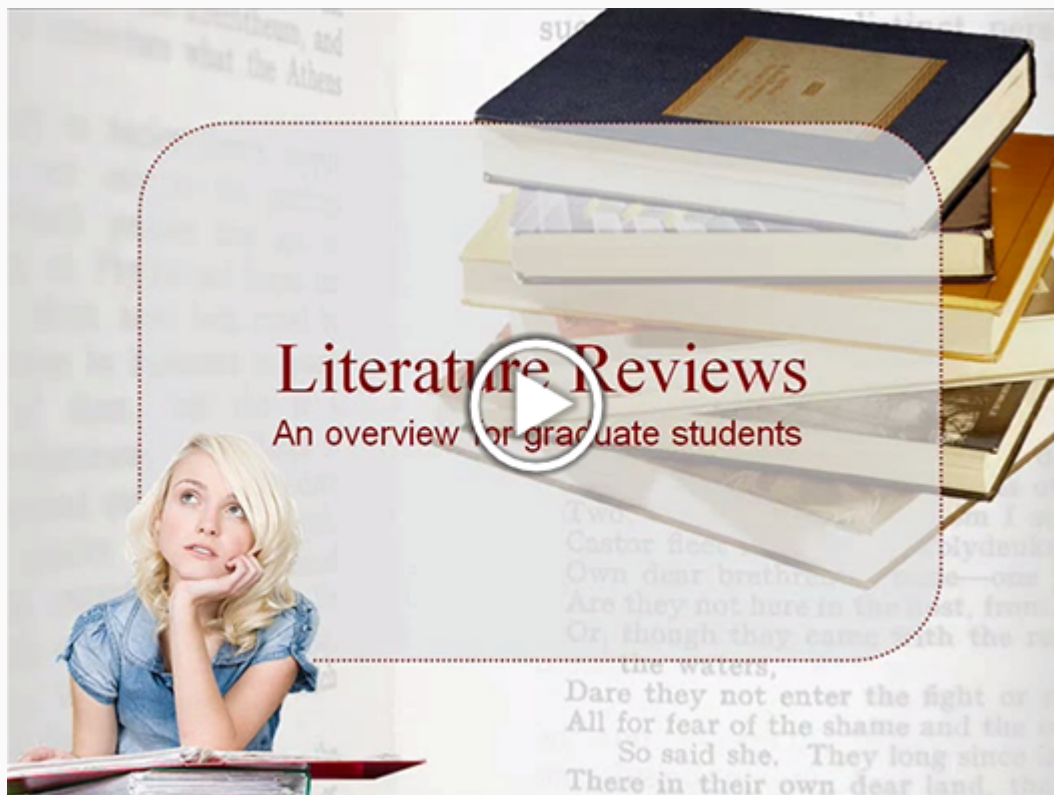
Literature reviews do the following:

- define a concept
- map the research terrain or scope
- systemize relationships between concepts
- identify gaps in the literature ([Rocco & Plathotnik, 2009, p. 128](#))

In the context of a research study, the purpose of a literature review is to demonstrate that your research question is meaningful. Additionally, you may review the literature of different disciplines to find deeper meaning and understanding of your topic. It is especially important to consider other disciplines when you do not find much on your topic in one discipline. You will need to search the cognate literature before claiming there is "little previous research" on your topic.

Well developed literature reviews involve numerous steps and activities. The literature review is an iterative process because you will do at least two of them: a preliminary search to learn what has been published in your area and whether there is sufficient support in the literature for moving ahead with your subject. After this first exploration, you will conduct a deeper dive into the literature to learn everything you can about the topic and its related issues.

Literature Review Tutorial



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Literature Review Basics

An effective literature review must:

- Methodologically analyze and synthesize quality literature on a topic
- Provide a firm foundation to a topic or research area
- Provide a firm foundation for the selection of a research methodology
- Demonstrate that the proposed research contributes something new to the overall body of knowledge of advances the research field's knowledge base. ([Levy & Ellis, 2006](#)).

All literature reviews, whether they are qualitative, quantitative or both, will at some point:

1. Introduce the topic and define its key terms
2. Establish the importance of the topic
3. Provide an overview of the amount of available literature and its types (for example: theoretical, statistical, speculative)
4. Identify gaps in the literature
5. Point out consistent finding across studies
6. Arrive at a synthesis that organizes what is known about a topic
7. Discusses possible implications and directions for future research

Types of Literature Reviews

There are many different types of literature reviews, however there are some shared characteristics or features that all share. Remember a comprehensive literature review is, at its most fundamental level, an original work based on an extensive critical examination and synthesis of the relevant literature on a topic. As a study of the research on a particular topic, it is arranged by key themes or findings, which may lead up to or link to the research question. In some cases, the research question will drive the type of literature review that is undertaken.

The following section includes brief descriptions of the terms used to describe different literature review types with examples of each. The included citations are open access, Creative Commons licensed or copyright-restricted.

Conceptual

Guided by an understanding of basic issues rather than a research methodology, the writer of a conceptual literature review is looking for key factors, concepts or variables and the presumed relationship between them. The goal of the conceptual literature review is to categorize and describe concepts relevant to the study or topic and outline a relationship between them, including relevant theory and empirical research.

Examples of a Conceptual Review:

- The formality of learning science in everyday life: A conceptual literature review ([Dohn, 2010](#)).
- Are we asking the right questions? A conceptual review of the educational development literature in higher education ([Amundsen & Wilson, 2012](#)).

Empirical

An empirical literature review collects, creates, arranges, and analyzes numeric data reflecting the frequency of themes, topics, authors and/or methods found in existing literature. Empirical literature reviews present their summaries in quantifiable terms using descriptive and inferential statistics.

Examples of an Empirical Review:

- Impediments of e-learning adoption in higher learning institutions of Tanzania: An empirical review ([Mwakyusa & Mwalyagile, 2016](#)).

Exploratory

The purpose of an exploratory review is to provide a broad approach to the topic area. The aim is breadth rather than depth and to get a general feel for the size of the topic area. A graduate student might do an exploratory review of the literature before beginning a more comprehensive one (e.g., synoptic).

Examples of an Exploratory Review:

- University research management: An exploratory literature review ([Schuetzenmeister, 2010](#)).
- An exploratory review of design principles in constructivist gaming learning environments ([Rosario & Widmeyer, 2009](#)).

Focused

This type of literature review is limited to a single aspect of previous research, such as methodology. A focused literature review generally will describe the implications of choosing a particular element of past research, such as methodology in terms of data collection, analysis, and interpretation.

Examples of a Focused Review:

- Language awareness: Genre awareness-a focused review of the literature ([Stainton, 1992](#)).

Integrative

An integrative review critiques past research and draws overall conclusions from the body of literature at a specified point in time. As such, it reviews, critiques, and synthesizes representative literature on a topic in an integrated way. Most integrative reviews may require the author to adopt a guiding theory, a set of competing models, or a point of view about a topic. For more description of integrative reviews, see [Whittemore & Knafl \(2005\)](#).

Examples of an Integrative Review:

- Exploring the gap between teacher certification and permanent employment in Ontario: An integrative literature review ([Brock & Ryan, 2016](#)).

Meta-analysis

A subset of a systematic review, a meta-analysis takes findings from several studies on the same subject and analyzes them using standardized statistical procedures to pool together data. As such, it integrates findings from a large body of quantitative findings to enhance understanding, draw conclusions, and detect patterns and relationships. By gathering data from many different, independent studies that look at the same research question and assess similar outcome measures, data can be combined and re-analyzed, providing greater statistical power than any single study alone. It's important to note that not every systematic review includes a meta-analysis but a meta-analysis can't exist without a systematic review of the literature.

Examples of a Meta-Analysis:

- Efficacy of the cooperative learning method on mathematics achievement and attitude: A meta-analysis research ([Capar & Tarim, 2015](#)).
- Gender differences in student attitudes toward science: A meta-analysis of the literature from 1970 to 1991 ([Weinburgh, 1995](#)).

Narrative/Traditional

A narrative or traditional review provides an overview of research on a particular topic that critiques and summarizes a body of literature. Typically broad in focus, these reviews select and synthesize relevant past research into a coherent discussion. Methodologies, findings and limits of the existing body of knowledge are discussed in narrative form. This requires a sufficiently focused research question, and the process may be subject to bias that supports the researcher's own work.

Examples of a Narrative/Traditional Review:

- Adventure education and Outward Bound: Out-of-class experiences that make a lasting difference ([Hattie, Marsh, Neill, & Richards, 1997](#)).
- Good quality discussion is necessary but not sufficient in asynchronous tuition: A brief narrative review of the literature ([Fear & Erikson-Brown, 2014](#)).

Realist

This specific type of literature review is theory-driven and interpretative and is intended to explain the outcomes of a complex intervention program(s).

Examples of a Realist Review:

- Unravelling quality culture in higher education: A realist review ([Bendermacher, Egbrink, Wolfhagen, & Dolmans, 2017](#)).

Scoping

This type of review tends to be a non-systematic approach that focuses on breadth of coverage rather than depth. It utilizes a wide range of materials and may not evaluate the quality of the studies as much as count the number. Thus, it aims to identify the nature and extent of research in an area by providing a preliminary assessment of size and scope of available research and may also include research in progress.

Examples of a Scoping Review:

- Interdisciplinary doctoral research supervision: A scoping review ([Vanstone, Hibbert, Kinsella, McKenzie, Pitman, & Lingard, 2013](#)).

Synoptic

In contrast to an exploratory review, the purpose of a synoptic review is to provide a concise but accurate overview of all material that appears to be relevant to a chosen topic. Both content and methodological material is included. The review should aim to be both descriptive and evaluative as it summarizes previous studies while also showing how the body of literature could be extended and improved in terms of content and method by identifying gaps.

Examples of a Synoptic Review:

- Theoretical framework for educational assessment: A synoptic review ([Ghaicha, 2016](#)).
- School effects research: A synoptic review of past efforts and some suggestions for the future ([Cuttance, 1981](#)).

Systematic Review

A rigorous review that follows a strict methodology designed with a presupposed selection of literature reviewed, systematic reviews are undertaken to clarify the state of existing research, evidence, and possible implications that can be drawn. Using comprehensive and exhaustive searching of the published and unpublished literature, searching various databases, reports, and grey literature, these reviews seek to produce transparent and reproducible results that report details of time frame and methods to minimize bias. Generally, these reviews must include teams of at least 2-3

to allow for the critical appraisal of the literature. For more description of systematic reviews, including links to protocols, checklists, workflow processes, and structure see "[A Young Researcher's Guide to a Systematic Review](#)".

Examples of a Systematic Review:

- The potentials of using cloud computing in schools: A systematic literature review ([Hartmann, Braae, Pedersen, & Khalid, 2017](#)).
- The use of research to improve professional practice: a systematic review of the literature ([Hemsley-Brown & Sharp, 2003](#)).

Umbrella/Overview of Reviews

An umbrella review compiles evidence from multiple systematic reviews into one document. It therefore focuses on broad conditions or problems for which there are competing interventions and highlights reviews that address those interventions and their effects, thereby allowing for recommendations for practice. For a brief discussion see "[Not all literature reviews are the same](#)" (Thomson, 2013).

Examples of an Umbrella/Overview Review:

- Reflective practice in healthcare education: An umbrella review ([Fragknos, 2016](#)).

Why do a Literature Review?

The purpose of the literature review is the same regardless of the topic or research method. It tests your own research question against what is already known about the subject.

First – It's part of the whole.

Omission of a literature review chapter or section in a graduate-level project represents a serious void or absence of a critical element in the research process.

The outcome of your review is expected to demonstrate that you:

- can systematically explore the research in your topic area
- can read and critically analyze the literature in your discipline and then use it appropriately to advance your own work
- have sufficient knowledge in the topic to undertake further investigation

Second – It's good for you!

- You improve your skills as a researcher
- You become familiar with the discourse of your discipline and learn how to be a scholar in your field
- You learn through writing your ideas and finding your voice in your subject area
- You define, redefine and clarify your research question for yourself in the process

Third – It's good for your reader.

Your reader expects you to have done the hard work of gathering, evaluating, and synthesizing the literature. When you do a literature review you:

- Set the context for the topic and present its significance
- Identify what's important to know about your topic – including individual material, prior research, publications, organizations and authors.
- Demonstrate relationships among prior research
- Establish limitations of existing knowledge
- Analyze trends in the topic's treatment and gaps in the literature

So, why should you do a literature review?

- To locate gaps in the literature of your discipline
- To avoid reinventing the wheel
- To carry on where others have already been
- To identify other people working in the same field
- To increase your breadth of knowledge in your subject area
- To find the seminal works in your field
- To provide intellectual context for your own work
- To acknowledge opposing viewpoints
- To put your work in perspective
- To demonstrate you can discover and retrieve previous work in the area

Common Literature Review Errors

Graduate-level literature reviews are more than a summary of the publications you find on a topic. As you have seen in this brief introduction, literature reviews are a very specific type of research, analysis, and writing. We will explore these topics more in the next chapters. Some things to keep in mind as you begin your own research and writing are ways to avoid the most common errors seen in the first attempt at a literature review. For a quick review of some of the pitfalls and challenges a new researcher faces when he/she begins work, see "[Get Ready: Academic Writing, General Pitfalls and \(oh yes\) Getting Started!](#)".

As you begin your own graduate-level literature review, try to avoid these common mistakes:

- Accepting another researcher's finding as valid without evaluating methodology and data
- Ignoring contrary findings and alternative interpretations
- Providing findings that are not clearly related to one's own study or that are too general
- Allowing insufficient time to defining best search strategies and writing
- Reporting rather than synthesizing isolated statistical results
- Choosing problematic or irrelevant keywords, subject headings and descriptors
- Relying too heavily on secondary sources
- Failing to transparently report search methods
- Summarizing rather than synthesizing articles

In conclusion, the purpose of a literature review is three-fold:

1. to survey the current state of knowledge or evidence in the area of inquiry,
2. to identify key authors, articles, theories, and findings in that area, and
3. to identify gaps in knowledge in that research area.

A literature review is commonly done today using computerized keyword searches in online databases, often working with a trained librarian or information expert. Keywords can be combined using the Boolean operators, "and", "or" and sometimes "not" to narrow down or expand the search results. Once a list of articles is generated from the keyword and subject heading search, the researcher must then manually browse through each title and abstract, to determine the suitability of that article before a full-text article is obtained for the research question.

Literature reviews should be reasonably complete and not restricted to a few journals, a few years, or a specific methodology or research design. Reviewed articles may be summarized in the form of tables and can be further structured using organizing frameworks such as a concept matrix.

A well-conducted literature review should indicate whether the initial research questions have already been addressed in the literature, whether there are newer or more interesting research questions available, and whether the original research questions should be modified or changed in light of findings of the literature review.

The review can also provide some intuitions or potential answers to the questions of interest and/or help identify theories that have previously been used to address similar questions and may provide evidence to inform policy or decision-making ([Bhattacharjee, 2012](#)).

Test Yourself

Question 1

The purpose of a graduate-level literature review is to summarize in as many words as possible everything that is known about my topic.

☐ True

☐ False

Question 2

A literature review is significant because in the process of doing one, the researcher learns to read and critically assess the literature of a discipline and then uses it appropriately to advance his/her own research.

☐ True

☐ False

Question 3

Read the following abstract and choose the correct type of literature review it represents.

The focus of this paper centers around timing associated with early childhood education programs and interventions using meta-analytic methods. At any given assessment age, a child's current age equals starting age, plus duration of program, plus years since program ended. Variability in assessment ages across the studies should enable everyone to identify the separate effects of all three time-related components. The project is a meta-analysis of evaluation studies of early childhood education programs conducted in the United States and its territories between 1960 and 2007. The population of interest is children enrolled in early childhood education programs between the ages of 0 and 5 and their control-group counterparts. Since the data come from a meta-analysis, the population for this study is drawn from many different studies with diverse samples. Given the preliminary nature of their analysis, the authors cannot offer conclusions at this point. ([Duncan, Leak, Li, Magnuson, Schindler, & Yoshikawa, 2011](#)).

☐ Focused

☐ Synoptic

☐ Meta-analysis

☐ Realist

Question 4

Read the following abstract and choose the correct type of literature review it represents.

In this review, Mary Vorsino writes that she is interested in keeping the potential influences of women pragmatists of Dewey's day in mind while presenting modern feminist re readings of Dewey. She wishes to construct a narrowly-focused and succinct literature review of thinkers who have donned a feminist lens to analyze Dewey's approaches to education, learning, and democracy and to employ Dewey's works in theorizing on gender and education and on gender in society. This article first explores Dewey as both an ally and a problematic figure in feminist literature and then investigates the broader sphere of feminist pragmatism and two central themes within it: (1) valuing diversity, and diverse experiences; and (2) problematizing fixed truths. ([Vorsino, 2015](#)).

- ☐ Scoping
- ☐ Exploratory
- ☐ Synoptic
- ☐ Focused

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What is a Literature Review?

Linda Frederiksen, Sue F. Phelps, & Royce Kimmons

Learning Objectives

At the conclusion of this chapter, you will be able to:

- Recognize how information is created and how it evolves over time;
- Identify how the information cycle impacts the reliability of the information;
- Select information sources appropriate to information need.

Overview of information

Because a literature review is a summary and analysis of the relevant publications on a topic, we first have to understand what is meant by 'the literature'. In this case, 'the literature' is a collection of all of the relevant written sources on a topic. It will include both theoretical and empirical works. Both types provide scope and depth to a literature review.

Disciplines of knowledge

When drawing boundaries around an idea, topic, or subject area, it helps to think about how and where the information for the field is produced. For this, you need to identify the disciplines of knowledge production in a subject area.

Information does not exist in the environment like some kind of raw material. It is produced by individuals working within a particular field of knowledge who use specific methods for generating new information. Disciplines are knowledge-producing and -disseminating systems which consume, produce, and disseminate knowledge. Looking through a course catalog of a post-secondary educational institution gives clues to the structure of a discipline structure. Fields such as political science, biology, history and mathematics are unique disciplines, as are education and nursing, with their own logic for how and where new knowledge is introduced and made accessible.

You will need to become comfortable with identifying the disciplines that might contribute information to any search strategy. When you do this, you will also learn how to decode the way how people talk about a topic within a discipline. This will be useful to you when you begin a review of the literature in your area of study.

For example, think about the disciplines that might contribute information a the topic such as the role of sports in society. Try to anticipate the type of perspective each discipline might have on the topic. Consider the following types of questions as you examine what different disciplines might contribute:

- What is important about the topic to the people in that discipline?
- What is most likely to be the focus of their study about the topic?
- What perspective would they be likely to have on the topic?

What would be some key questions or issues related to the topic in education?

- how schools privilege or punish student athletes
- how young people are socialized into the ideal of team cooperation
- differences between boys' and girls' participation in organized sports

We see that a single topic can be approached from many different perspectives depending on how the disciplinary boundaries are drawn and how the topic is framed. This step of the research process requires you to make some decisions early on to focus the topic on a manageable and appropriate scope for the rest of the strategy ([Hansen & Paul, 2015](#)).

'The literature' consists of the published works that document a scholarly conversation in a field of study. You will find, in 'the literature,' documents that explain the background of your topic so the reader knows where you found loose ends in the established research of the field and what led you to your own project. Although your own literature review will focus on primary, peer-reviewed resources, it will begin by *first* grounding yourself in background subject information generally found in secondary and tertiary sources such as books and encyclopedias. Once you have that essential overview, you delve into the seminal literature of the field. As a result, while your literature review may consist of research articles tightly focused on your topic with secondary and tertiary sources used more sparingly, all three types of information (primary, secondary, tertiary) are critical to your research.

Definitions

- Theoretical – discusses a theory, conceptual model or framework for understanding a problem.
- Empirical – applies theory to a behavior or event and reports derived data to findings.
- Seminal – “A classic work of research literature that is more than 5 years old and is marked by its uniqueness and contribution to professional knowledge” ([Houser, 4th ed., 2018, p. 112](#)).
- Practical – “...accounts of how things are done” ([Wallace & Wray, 3rd ed., 2016, p. 20](#)). Action research, in Education, refers to a wide variety of methods used to develop practical solutions. ([Great Schools Partnership, 2017](#)).
- Policy – generally produced by policy-makers, such as government agencies.
- Primary – published results of original research studies .
- Secondary – interpret, discuss, summarize original sources
- Tertiary – synthesize or distill primary and secondary sources. Examples include: encyclopedias, directories, dictionaries, handbooks, guides, classification, chronology, and other fact books.
- Grey literature – research and information released by non-commercial publishers, such as government agencies, policy organizations, and think-tanks.

'The literature' is published in books, journal articles, conference proceedings, theses and dissertations. It can also be found in newspapers, encyclopedias, textbooks, as well as websites and reports written by government agencies and professional organizations. While these formats may contain what we define as 'the literature', not all of it will be appropriate for inclusion in your own literature review.

These sources are found through different tools that we will discuss later in this section. Although a discovery tool, such as a database or catalog, may link you to the 'the literature' not every tool is appropriate to every literature review. No single source will have all of the information resources you should consult. A comprehensive literature review should include searches in the following:

- Multiple subject and article databases
- Library and other book catalogs
- [Grey literature sources](#)

Information Cycle

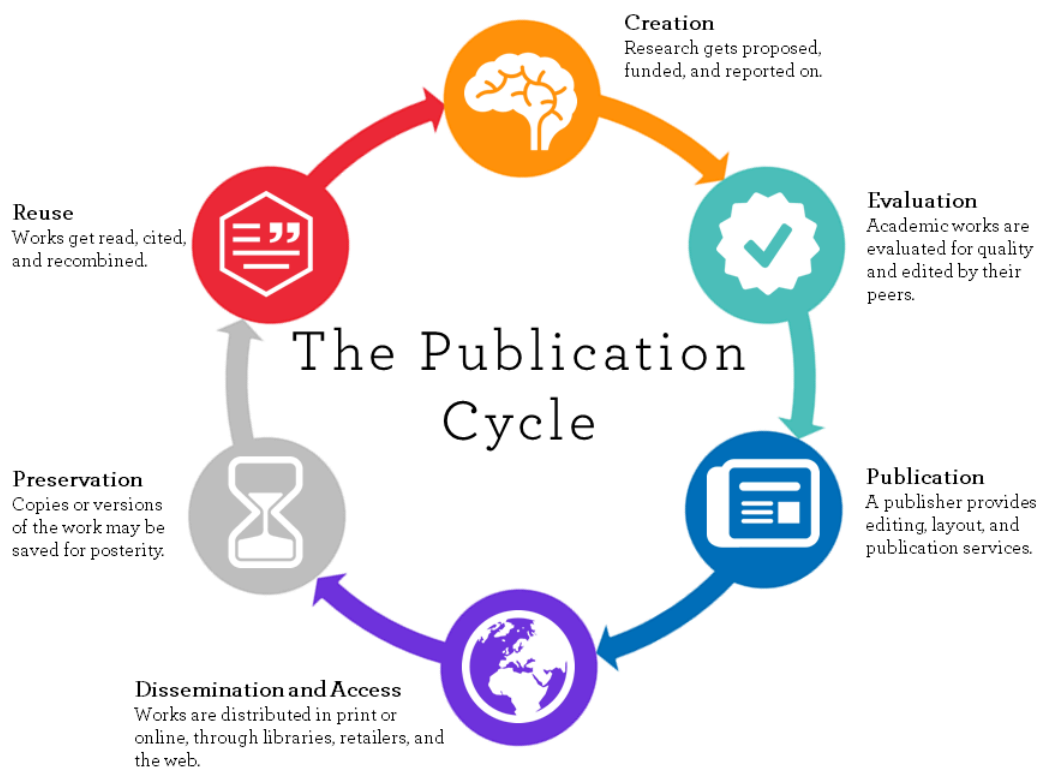
To get a better idea of how the literature in a discipline develops, it's useful to see how the information publication lifecycle works. These distinct stages show how information is created, reviewed, and distributed over time.

The following chart can be used to guide you in searching literature existing at various stages of the scholarly communication process (freely accessible sources are linked, subscription or subscribed sources are listed but not linked):

Steps in the Scholarly Communication Process	Publication Cycle	Access Points
Research and develop idea	Unpublished documents such as lab notebooks, personal correspondence, graphs, charts, grant proposals, and other 'grey literature'	Limited access Google Scholar HSRR (Health Services and Sciences Research Resources) RePORTER (Database of NIH funded research projects) Institute of Education Sciences
Present preliminary findings	Preliminary reports: letters to the editor or journals, brief (short) communication submitted to a primary journal	PubMed (limiting search results to Letter under Limits) Web of Science (Science Citation Index)
Report research	Conference literature: preprints, conference proceedings	PapersFirst ProceedingsFirst Conference web sites Preprint services
	Research reports: master's theses, doctoral dissertations, interim or technical reports	Dissertations & Theses British Library EThOS Theses Canada Portal Electronic Theses and Dissertations Center PubMed (limiting search results to Technical Report under Limits) Current Grey Literature Report Professional association web sites

Publish research	Research paper (scholarly journal articles): research papers published in peer-reviewed/refereed journals	PubMed CINAHL PsycINFO Web of Science ERIC
Popularize research findings	Newspapers, popular magazines, TV news reports, trade publications, web sites	PubMed (limiting search results to News and Newspaper Article under Limits) Media outlets Internet search engines
Compact and repackage information	Reviews, systematic reviews, guidelines, textbooks, handbooks, yearbooks, encyclopedias	Cochrane Library Library Catalogs WorldCat

Guide to searching for literature at various stages of the scholarly communication process



Information Types

To continue our discussion of information sources, there are two ways published information in the field can be categorized:

- Articles by the type of periodical in which an article it is published, for example, **magazine, trade, or scholarly publications**.
- Where the material is located in the information cycle, as in **primary, secondary, or tertiary information sources**.

Popular, Trade, or Scholarly publications

Types of Periodicals

Journals, trade publications, and magazines are all periodicals, and articles from these publications they can all look similar article by article when you are searching in the databases. It is good to review the differences and think about when to use information from each type of periodical.

Magazines

A magazine is a collection of articles and images about diverse topics of popular interest and current events.

Features of magazines:

- articles are usually written by journalists
- articles are written for the average adult
- articles tend to be short
- articles rarely provides a list of reference sources at the end of the article
- lots of color images and advertisements
- the decision about what goes into the magazine is made by an editor or publisher
- magazines can have broad appeal, like *Time* and *Newsweek*, or a narrow focus, like *Sports Illustrated* and *Mother Earth News*.



Popular **magazines** like *Psychology Today*, *Sports Illustrated*, and *Rolling Stone* can be good sources for articles on recent events or pop-culture topics, while *Harpers*, *Scientific American*, and *The New Republic* will offer more in-depth

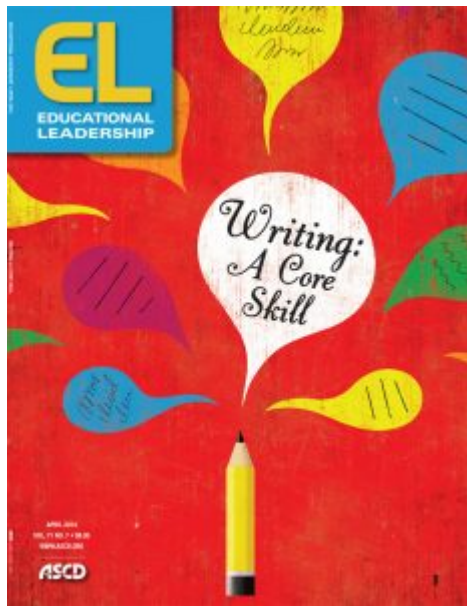
articles on a wider range of subjects. These articles are geared towards readers who, although not experts, are knowledgeable about the issues presented.

Trade Publications

Trade publications or trade journals are periodicals directed to members of a specific profession. They often have information about industry trends and practical information for people working in the field.

Features of trade publications:

- Authors are specialists in their fields
- Focused on members of a specific industry or profession
- No peer review process
- Include photographs, illustrations, charts, and graphs, often in color
- Technical vocabulary



Trade publications are geared towards professionals in a discipline. They report news and trends in a field, but not original research. They may provide product or service reviews, job listings, and advertisements.

Scholarly, Academic, and Scientific Publications

Scholarly, academic, and scientific publications are a collections of articles written by scholars in an academic or professional field. Most journals are peer-reviewed or refereed, which means a panel of scholars reviews articles to decide if they should be accepted into a specific publication. Journal articles are the main source of information for researchers and for literature reviews.

Features of journals:

- written by scholars and subject experts
- author' credentials and institution will be identified
- written for other scholars
- dedicated to a specific discipline that it covers in depth
- often report on original or innovative research
- long articles, often 5-15 pages or more
- articles almost always include a list of sources at the end (Works Cited, References, Sources, or Bibliography) that point back to where the information was derived
- no or very few advertisements
- published by organizations or associations to advance their specialized body of knowledge



Scholarly journals provider articles of interest to experts or researchers in a discipline. An editorial board of respected scholars (peers) reviews all articles submitted to a journal. They decide if the article provides a noteworthy contribution to the field and should be published. There are typically few little or no advertisements. Articles published in scholarly journals will include a list of references.

A word about open access journals

Increasingly, scholars are publishing findings and original research in *open access journals*. *Open access journals* are scholarly and peer-reviewed and open access publishers provide unrestricted access and unrestricted use. Open access is a means of disseminating scholarly research that breaks from the traditional subscription model of academic publishing. It is free of charge to readers and because it is online, it is available at anytime, anywhere in the world, to anyone with access to the internet. The Directory of Open Access Journals ([DOAJ](#)) indexes and provides access to high-quality, peer-reviewed scholarly articles.

In summary, newspapers and other popular press publications are useful for getting general topic ideas. Trade publications are useful for practical application in a profession and may also be a good source of keywords for future searching. Scholarly journals are the conversation of the scholars who are doing research in a specific discipline and publishing their research findings.

Primary, Secondary, and Tertiary Sources

Primary sources of information are those types of information that come first. Some examples of primary sources are:

- original research, like data from an experiment with plankton.
- diaries, journals, photographs
- data from the census bureau or a survey you have done
- original documents, like the constitution or a birth certificate
- newspapers are primary sources when they report current events or current opinion
- speeches, interviews, email, letters
- religious books
- personal memoirs and autobiographies
- art work
- pottery or weavings

There are different types of primary sources for different disciplines. In the discipline of history, for example, a diary or transcript of a speech is a primary source. In education and nursing, primary sources will generally be original research, including data sets.

Secondary sources are written about primary sources to interpret or analyze them. They are a step or more removed from the primary event or item. Some examples of secondary sources are:

- commentaries on speeches
- critiques of plays, journalism, or books
- a journal article that talks about a primary source such as an interpretation of Steinbeck’s *The Grapes of Wrath*, or the flower symbolism of Monet’s water garden paintings
- textbooks (can also be considered tertiary)
- biographies
- encyclopedias
- websites

Tertiary sources are further removed from the original material and are a distillation and collection of primary and secondary sources. Some examples are:

- bibliography of critical works about an author
- textbooks (also considered secondary)
- factbooks
- guidebooks
- manuals

A comparison of information sources across disciplines:

Subject	Primary	Secondary	Tertiary
Education	Journal article reporting on quantitative study of after school programs	Article in Teacher Magazine about after school programs	Handbook of afterschool programming ERIC database
Psychology	Patient notes taken by clinical psychologist	Magazine article about the patient’s psychological condition	Textbook on clinical psychology

Information Sources

In this section, we discuss how to find not only information, but the sources of information in your discipline or topic area. As we see in the graphic and chart above, the information you need for your literature review will be located in

multiple places. How and where research and publication occurs drives how and where the information is located, which in turn determines how you will discover and retrieve it. When we talk about information sources for a literature review in education or nursing, we generally mean these five areas: the internet, reference material and other books, empirical or evidence-based articles in scholarly, peer-reviewed journals, conference proceedings and papers, dissertations and theses, and grey literature.

Web

The internet can be an excellent place to satisfy some initial research needs.

- It is a good resource for background information and for finding keywords for searching in the library catalog and databases.
- It is a good tool for locating professional organizations and searching for information and the names of experts in a given discipline.
- [Google Scholar](#) is a useful discovery tool for citations, especially if you are trying to get the lay of the land surrounding your topic or if you are having a problem with keywords in the databases. You can find some information to refine your search terms. It is NOT acceptable to depend on Google Scholar for finding articles because of the spotty coverage and lack of adequate search features.

Books and Reference Sources

Reference materials and books are available in both **print** and **electronic** formats. They provide gateway knowledge to a subject area and are useful at the **beginning** of the research process to:

- Get an overview of the topic, learn the scope, key definitions, significant figures who are involved, and important timelines;
- Discover the foundations of a topic;
- Learn essential definitions, vocabulary terms, and keywords you can use in your literature searching strategy.

Scholarly Articles in Journals

Another major category of information sources is scholarly information produced by subject experts working in academic institutions, research centers, and scholarly organizations. Scholars and researchers generate information that advances our knowledge and understanding of the world. The research they do creates new opportunities for inventions, practical applications, and new approaches to solving problems or understanding issues.

Academics, researchers and students at universities make their contributions to scholarly knowledge available in many forms:

- masters' theses
- doctoral dissertations
- conference papers
- journal articles and books
- individual scholars' web pages
- web pages developed by the researcher's home institution (Hansen & Paul, 2015).

Scholars and researchers introduce their discoveries to the world in a formal system of information dissemination that has developed over centuries. Because scholarly research undergoes a process of "peer review" before being published (meaning that other experts review the work and pass judgment about whether it is worthy of publication), the information you find from scholarly sources meets preset standards for accuracy, credibility and validity in that field.

Likewise, scholarly journal articles are generally considered to be among the most reliable sources of information because they have gone through a peer-review process.

Conference Papers & Proceedings

Conferences are a major source of emerging research where researchers present papers on their current research and obtain feedback from the audience. The papers presented in the conference are then usually published in a volume called a conference proceeding. Conference proceedings highlight current discussion in a discipline and can lead you to scholars who are interested in specific research areas.

A word about conference papers: several factors contribute to making these documents difficult to find. It may be months before a paper is published as a journal article, or it may never be published. Publishers and professional associations are inconsistent in how they publish proceedings. For example, the papers from an annual conference may be published as individual, stand-alone titles, which may be indexed in a library catalog, or the conference proceedings may be treated more like a periodical or serial and, therefore, indexed in a journal database.

It is not unusual that papers delivered at professional conferences are not published in print or electronic form, although an abstract may be available. In these cases, the full paper may only be available from the author or authors.

The most important thing to remember is that if you have any difficulty finding a conference proceeding or paper, ask a librarian for assistance.

Dissertations and Theses

Dissertations and theses can be rich sources of information and have extensive reference lists to scan for resources. They are considered gray literature, so are not “peer reviewed”. The accuracy and validity of the paper itself may depend on the school that awarded the doctoral or master’s degree to the author.

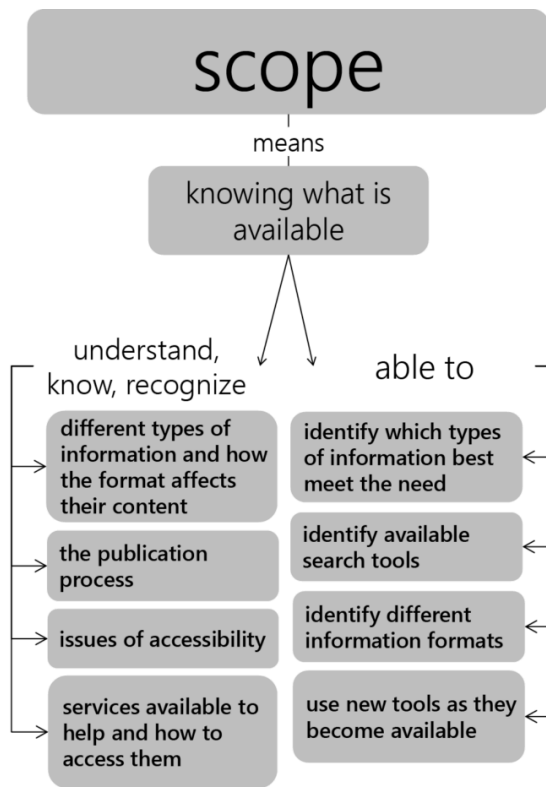
Conclusion

In thinking about ‘the literature’ of your discipline, you are beginning the first step in writing your own literature review. By understanding what the literature in your field is, as well as how and when it is generated, you begin to know what is available and where to look for it.

We briefly discussed seven types of (sometimes overlapping) information:

- information found on the web
- information found in reference books and monographs
- information found in scholarly journals
- information found in conference proceedings and papers
- information found in dissertations and theses
- information found in magazines and trade journals
- information that is primary, secondary, or tertiary.

By conceptualizing or scoping how and where the literature of your discipline or topic area is generated, you have started on your way to writing your own literature review.



Information literacy skills

Finally, remember:

"All information sources are not created equal. Sources can vary greatly in terms of how carefully they are researched, written, edited, and reviewed for accuracy. Common sense will help you identify obviously questionable sources, such as tabloids that feature tales of alien abductions, or personal websites with glaring typos. Sometimes, however, a source's reliability—or lack of it—is not so obvious... You will consider criteria such as the type of source, its intended purpose and audience, the author's (or authors') qualifications, the publication's reputation, any indications of bias or hidden agendas, how current the source is, and the overall quality of the writing, thinking, and design." ([Writing for Success, 2015, p. 448](#)).

We will cover how to evaluate sources in more detail in a later chapter.

Practice

For each of these information needs, indicate what resources would be the best fit to answer your question. There may be more than one source so don't feel like you have to limit yourself to only one. See Answer Key for the correct response.

1. You are to write a brief paper on a theory that you only vaguely understand. You need some basic information. Where would you look?
2. If you heard something on the radio about a recent research involving an herbal intervention for weight loss where could you find the actual study?
3. You are going to be doing an internship in a group home for young men. You have heard that one issue that comes up for them is anger. Where would you look for practical interventions to help you manage this problem if it came up?
4. You have the opportunity to work on a research project through a grant proposal. You need to justify the research question and show that there is an interest and a need for this research. What resources would you cite in your application?
5. You have been assigned a project to find primary sources about classroom discipline used in early 20th-century schools. What primary sources could you use and where would you find them?
6. You have an idea for a great thesis but you are afraid that it has been done before. Since you would like to do something original, where could you find out if someone else has done the project?
7. There was a post on Facebook that welfare recipients in Arizona were recently tested for drug use with only three in 140,000 having positive results. Where can I find out if this number is accurate?

Test Yourself

Question 1

Match the type of periodical to its content

Trade publication

- ☐ Contains articles about a variety of topics of popular interest; also contains advertising.
- ☐ Has information about industry trends and practical information for professionals in a field.
- ☐ Contains articles written by scholars in an academic field and reviewed by experts in that field.

Scholarly journal

- ☐ Contains articles about a variety of topics of popular interest; also contains advertising.
- ☐ Has information about industry trends and practical information for professionals in a field.
- ☐ Contains articles written by scholars in an academic field and reviewed by experts in that field.

Magazine

- ☐ Contains articles about a variety of topics of popular interest; also contains advertising.
- ☐ Has information about industry trends and practical information for professionals in a field.
- ☐ Contains articles written by scholars in an academic field and reviewed by experts in that field.

Question 3

Given what you know about information types and sources, which of the following is the most accurate and reliable.

- ☐ Books and encyclopedias.
- ☐ News broadcasts and social media directly following an event.
- ☐ Analysis of an event in the news media or popular magazine weeks after an event.
- ☐ Articles written by scholars and published in a journal.

Question 4

Given what you know about information types and sources, which of the following is the least accurate and reliable.

- ☐ Books and encyclopedias.
- ☐ News broadcasts and social media directly following an event.
- ☐ Analysis of an event in the news media or popular magazine weeks after an event.
- ☐ Articles written by scholars and published in a journal.

Question 5

What is information called that is either a diary, a speech, original research, data, artwork, or a religious book.

- ☐ Primary
- ☐ Secondary
- ☐ Tertiary
- ☐ Empirical

Question 6

To find the best information in the databases you need to use keywords that are used by the scholars. Where do you find out what keywords to try?

- ☐ From websites
- ☐ In journal articles
- ☐ In books

Question 7

Which of the following is NOT true about scholarly journals?

- ☐ They contain the conversation of the scholars on a particular subject.
- ☐ They are of interest to the general public.
- ☐ The articles are followed by an extensive reference list.
- ☐ They contain reports of original research.

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How to Get Started

Linda Frederiksen, Sue F. Phelps, & Royce Kimmons

Learning Objectives

At the conclusion of this chapter, you will be able to:

- Develop and refine a viable research question for your literature review

Topic selection

If the longest journey begins with the first step, most graduate-level literature reviews begin with choosing a relevant, appropriate, interesting topic about which to do the review. Whether the topic is assigned, chosen from a list of possible options, or (most likely) developed on your own, a good way to begin your thinking is to take a general issue or subject and formulate it into a question. You may want to start to think about a single aspect in your field or discipline that might be interesting to pursue, such as 'science education' or 'diabetes treatment.'

A good topic selection plan begins with a general orientation into the subject you are interested in pursuing in more depth. Although finding a good research question may initially feel like looking for a needle in a haystack, choosing a general topic is the first step.

Things to think about when choosing a topic area:

1. Pick an area of interest; pick an area of experience; or, pick an area where you know there is a need for more research.
2. It may be easier to start with "what" and "why" questions and expand on those. For example, what is media literacy and why is it significant to education sciences?
3. If you are a teacher or other education practitioner, you might think about a current problem in the workplace such as, classroom management or parent interaction and expand from there. Nurses may want to consider a current issue in a clinical or hospital setting, like hand washing or patient falls.

Other suggestions for choosing a topic include:

- Ask a professor, preferably one active in research, about possible topics.
- Read departmental information on research interests of the faculty. Faculty research interests areas vary widely, so do some research on their past publications. Most departmental websites post faculty CVs.
- Read a research paper that interests you. The paper's literature review or background section will provide insight into the research question the author was seeking to address with his/her study. Is the research incomplete, imprecise, biased, or inconsistent? As you're reading the paper, look for what's missing. These may be "gaps in the literature" that you might explore in your own study. The conclusion or discussion section at the end may also offer some questions for future exploration. A recent blog posting in *Science* ([Pain, 2016](#)) provides several tips from researchers and graduate students on how to effectively read these papers.
- Think about papers you enjoyed researching and writing as an undergraduate and choose a topic that reflects those interests.
- Sift through the table of contents of annual reviews journals in your area of interest – such as, the [Annual Review of Psychology](#) and the [Review of Research in Education](#).
- Identify and browse journals related to your research interests. Faculty and librarians can help you identify relevant journals in your field and specific areas of interest.

Although it's sometimes a good idea to avoid subjects that are too personal or emotional as these can interfere with an unbiased approach to the research, it's also important to make sure you have more than a passing interest in the topic. You will be with this literature review for an extended period of time and it will be difficult to stick with it even under the best circumstances. A graduate student in psychology said, "My advice would be to NOT choose a topic that is an unappealing offshoot of your adviser's work or a project that you have lukewarm feelings about in general...It's important to remember that this is a marathon, not a sprint, and lukewarm feelings can turn cold quickly" ([Dittman, 2005](#)).

Question formulation

Now, take that general idea and begin to think about it in terms of a question. What do you really want to know about the topic? As a warm-up exercise, try dropping a possible topic idea into one of the blank spaces below. The questions may help bring your subject into sharper focus and provide you with the first important steps towards developing your topic. The type of paper you want to write (Definition, Analysis, Narration, etc.) can also be a useful way to begin thinking about your research question. For example, if you're interested in parent involvement in early childhood education, your research question might be "What are the various features of parent involvement in early childhood education?" Or, if you want to do an evaluative literature review, your research question could be "What is the value of infant vaccination?"


1. What does ___ mean? (Definition)
2. What are the various features of ___? (Description)
3. What are the component parts of ___? (Simple analysis)
4. How is ___ made or done? (Process analysis)
5. How should ___ be made or done? (Directional analysis)
6. What is the essential function of ___? (Functional analysis)
7. What are the causes of ___? (Causal analysis)
8. What are the consequences of ___? (Causal analysis)
9. What are the types of ___? (Classification)
10. How is ___ like or unlike ___? (Comparison)
11. What is the present status of ___? (Comparison)
12. What is the significance of ___? (Interpretation)
13. What are the facts about ___? (Reportage)
14. How did ___ happen? (Narration)
15. What kind of person is ___? (Characterization/Profile)
16. What is the value of ___? (Evaluation)
17. What are the essential major points or features of ___? (Summary)
18. What case can be made for or against ___? (Persuasion)
19. What is the relationship between ___ and the outcome of ___? (Explorative)

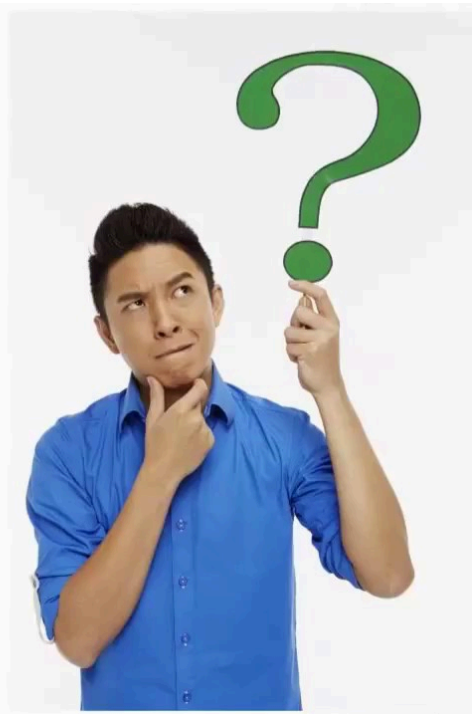
For more information about how to form a research question, check out this video tutorial:

A beginning researcher may ask:

Question

- What is the effective use of media rich technology in education on students?





[Watch on YouTube](#)

At this point, you will want to do an initial review of the existing literature to see what resources on your topic or question already exist. Based on what you find, you may decide to alter your question in some way before going too far along a path that perhaps has already been well-covered by other scholars.

Research Question or Hypothesis?

Some things to keep in mind at this beginning stage of the research process is whether your literature review will be in the form of a research question or a hypothesis. One way to determine that outcome is to compare the two and decide which format will work best for you. For example, if the area you are researching is a relatively new field, and there is little or no existing literature or theory that indicates what you will find, then your literature review will likely be based on a **research question**.

Research question criteria

The question should express a relationship between two or more variables – for example, how is A related to B? It should be clearly stated in a question form – such as, “How do grades (A) affect participation in class (B)?” or “How does parental education level (A) affect children’s vaccination status (B)?” Your literature review, in turn, may become:

Grades as a classroom participation motivator: A literature review, or

Education level and vaccinations: A literature review

Your question should also imply possibilities for empirical testing—remember, metaphysical questions are not measurable and a variable that cannot be clearly defined cannot be tested.

Hypothesis criteria

If, however, your literature review tests something based on the findings of a large amount of previous literature or a well-developed theory, your literature review will be to test of a hypothesis, rather than answer a question. The statement should indicate an expected relationship between variables and it must be testable. State your hypothesis as simply and concisely as possible. For example, if A, then B, as in: “If patient is obese, he/she will also be deaf.” ([Dhanda & Taheri, 2017](#)). Or, “For those who stutter, unusual temperament or anxiety is a causal factor.” ([Kefalianos, 2012](#))

Research Question	Hypothesis
Is A related to B?	If A, then B
How are A and B related to C?	If A & B, then C
How is A related to B under conditions C and D?	If A, then B under conditions C and D

Hypothesis criteria

Decide what type of relationship you would like to study between the variables. Now, try to express the relationship between the concepts as a single sentence—in the form of either a research question or a hypothesis.

Refining the question

Once you have selected your topic area and reviewed literature related to it, you may need to narrow it to something that can be realistically researched and answered. In addition to asking Who, What, When, Where, Why, and How questions, other types of questions you might begin to ask to further refine your topic include those that are: Descriptive, Differential or Comparative, Associative or Relational.

You might beginning by asking a series of **PICO** questions. Although the PICO method is used primarily in the health sciences, it can also be useful for narrowing/refining a research question in the social sciences as well. A way to formulate an answerable question using the PICO model could look something like this:

- **Patient, Population or Problem:** What are the characteristics of the patient or population? For example, gender, age, other demographics. What is the situation or disease you are interested in? For example, diabetes or classroom management
- **Intervention or exposure:** What do you want to do with the patient, person, or population (e.g. treat, diagnose, observe)? Such as, observe classroom behavior or reaction to a specific type of treatment
- **Comparison:** What is the alternative to the intervention (e.g. placebo, different drug, surgery)? For example, how does a sample group that is assigned homework compare to a similar group that is not assigned homework?
- **Outcome:** What are the relevant outcomes (e.g. morbidity, death, complications)? For example, how do lower cholesterol numbers or improved scores in spelling impact the target population?

Some examples of how the PICO method is used to refine a research question include:

- “Is play-based learning an effective approach in early childhood education? – Population (early childhood) / Intervention (play-based learning)”
- “Can music therapy help autistic students improve their communication skills? – Population (autistic students) / intervention (music therapy)”

Another mnemonic technique used in the social sciences for narrowing a topic is **SPICE**. An example of how SPICE factors can be used to develop a research question is given below:

Setting – for example, Canada

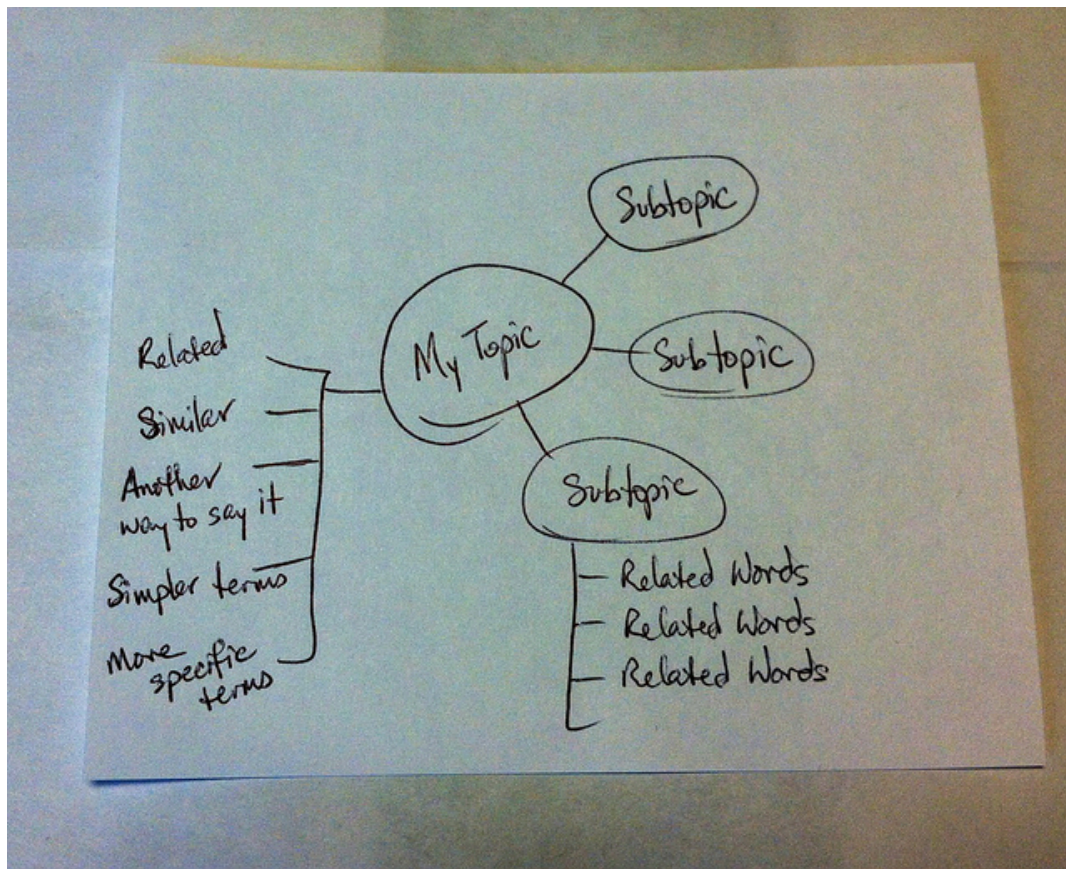
Perspective – for example, Adolescents

Intervention – for example, Text message reminders

Comparisons – for example, Telephone message reminders

Evaluation – for example, Number of homework assignments turned in after text message reminder compared to the number of assignments turned in after a telephone reminder

Likewise, developing a concept map or mind map around your topic may help you analyze your question and determine more precisely what you want to research. Using this technique, start with the broad topic, issue, or problem, and begin writing down all the words, phrases and ideas related to that topic that come to mind and then ‘map’ them to the original idea.



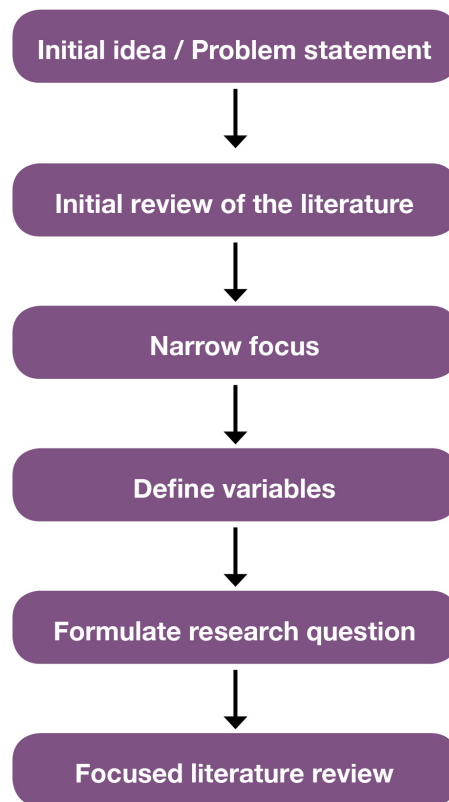
This mapping technique aims to improve the “description of the breadth and depth of literature in a domain of inquiry. It also facilitates identification of the number and nature of studies underpinning mapped relationships among concepts, thus laying the groundwork for systematic research reviews and meta-analyses.” ([Lesley, Floyd, & Oermann, 2002](#); [D’Antoni & Pinto Zipp, G., 2006](#)). Its purpose, like the other methods of question refining, is to help you organize, prioritize, and integrate material into a workable research area; one that is interesting, answerable, realistic in terms of resource availability and time management, objective, scholarly, original, and clear.

Check out this YouTube video for more basic information on how to map your research question:



[Watch on YouTube](#)

In addition to helping you get started with your own literature review, the techniques described here will give you some keywords and concepts that will be useful when you begin searching the literature for relevant studies and publications on your topic.



Basic literature review process

For example, perhaps your initial idea or interest is 'how to prevent obesity.' After an initial search of the relevant nursing literature, you realize the topic of 'obesity' is too broad to adequately cover in the time you have to do your literature review. You decide to narrow your focus to 'causes of childhood obesity.' Using PICO factors you further narrow your search to 'the influence of family factors on overweight children.' A potential research question might then be "What maternal factors are associated with toddler obesity in the United States?" You're now ready to begin searching the literature for studies, reports, cases, and other information sources that relate to this question.

Similarly, for a broad topic like 'school performance' or 'grades,' and after an initial literature search that provides some variables, examples of a narrow research question might be:

- "To what extent does parental involvement in children's education relate to school performance over the course of the early grades?"
- "Do parental involvement levels differ by family social, demographic, and contextual characteristics?"
- "What forms of parent involvement are most highly correlated with children's outcomes? What factors might influence the extent of parental involvement?" ([Early Childhood Longitudinal Program, 2011](#)).

Practice

Take a general topic such as “Reading Comprehension” or “Technology Integration” and identify a slightly more narrow concept by using the questions provided in the worksheet.

- Next refine your topic further by choosing one of the PICO factors
- Now practice writing your topic as a research question or hypothesis
- Is your question or hypothesis interesting, answerable, and clear? Ask a classmate to read your question or hypothesis and explain to you what the research will be.

Good question? Bad question? Why?

Each of the questions below has advantages and disadvantages. Based on some of the criteria for formulating a research question discussed in this section, which of the following questions seems the most viable for further study and why?

☐

Do adult learners in a rural adult education setting have characteristics that are similar to adult learners in general?

☐

What are the characteristics of rural adult learners in an adult education program?

☐

How does the U.S. Department of Education serve rural learners?

Look at these recent publications in the literature for nursing and education. Can you spot the research question? Which PICO factors were used in each example?

1. Music in Peacebuilding: A Critical Literature Review (Sandoval, 2016).
2. English language learners and reading instruction: A review of the literature. ([Snyder, Witmer, & Schmitt, 2017](#)).

Test Yourself

Question 1

This is an effective research question: Do school breakfast programs in Washington and Oregon differ?

☐ True

☐ False

Question 2

Which of the questions below is more effective?

☐ Are females smarter than males?

☐ Do females aged 18-36 score higher on the Graduate Record Exam than adult males between the ages of 18-35?

Question 3

Which of the following research question is more effective?

☐ Five methods of assessing nursing students' critical thinking skills within the context of clinical practice are: 1) Observation, 2) Questions, 3) Conferences, 4) Problem-solving strategies, and 5) written assignments. The literature is reviewed on each of these methods.

☐ Critical thinking is an important competency needed by nursing students. Varied methods can be used for assessing critical thinking.

Question 4

This is the research question: What impact has the No Child Left Behind (NCLB) program had on high school graduation rates? What information sources will I need to find to begin my literature review?

☐ statistics on graduation rates before and after the program went into effect

☐ statistics on the success or failure of other retention programs

☐ information about government education programs before and after the era of NCLB

Question 5

Is the scope of this information reasonable:

I will review 30 online nursing training programs developed over a span of 10 years?

☐ Yes

☐ No

Question 6

PICO questions are a good way to narrow your research focus. What does PICO mean?

☐ Parents, Intermediaries, Corporations, Oscillations

☐ Populations, Interventions, Comparisons, Outcomes

☐ Problems, Instruments, Channels, Operations

☐ Patients, Interference, Courses, Origins

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Where to Find the Literature

Linda Frederiksen, Sue F. Phelps, & Royce Kimmons

Learning Objectives

At the conclusion of this chapter, you will be able to:

- Search a library catalog to locate electronic and print books.
- Search databases to find scholarly articles, dissertations, and conference proceedings.
- Retrieve a copy or the full text of information sources
- Identify and locate core resources in your discipline or topic area

Overview of discovery

Discovery, or background research, is something that happens at the beginning of the research process when you are just learning about a topic. It is a search for general information to get the big picture of a topic for exploration, ideas about subtopics and context for the actual focused research you will do later. It is also a time to build a list of distinctive, broad, narrow, and related search terms.

Discovery happens again when you are ready to focus in on your research question and begin your own literature review. There are two crucial elements to discovering the literature for your review with the least amount of stress as possible: **the places you look** and **the words you use in your search**.

The **places you look** depend on:

- The stage you are in your research
- The disciplines represented in your research question
- The importance of currency in your research topic

Review the information and publication cycles discussed in Chapter 2 to put those sources of this information in context.

The **words you use** will help you locate existing literature on your topic, as well as topics that may be closely related to yours. There are two categories for these words:

- Keywords – the natural language terms we think of when we discuss and read about a topic
- Subject terms – the assigned vocabulary for a catalog or database

The words you use during both the initial and next stage of discovery should be recorded in some way throughout the literature search process. Additional terms will come to light as you read and as your question becomes more specific. You will want to keep track of those words and terms, as they will be useful in repeating your searches in additional databases, catalogs, and other repositories. Later in this chapter, we will discuss how putting the two elements (the places we look and the words we use) together can be enhanced by the use of Boolean operators and discipline-specific thesauri.

Discovery is an iterative process. There is not a straight, bright line from beginning to end. You will go back into the literature throughout the writing of your literature review as you uncover gaps in the evidence and as additional questions arise.



Finding sources: Places to look

Let's take some time to look at where the information sources you need for your literature review are located, indexed, and stored. At this stage, you have a general idea of your research area and have done some background searching to learn the scope and the context of your topic. You have begun collecting keywords to use in your later searching. Now, as you focus in on your literature review topic, you will take your searches to the databases and other repositories to see what the other researchers and scholars are saying about the topic.

The following resources are ordered from the more general and established information to the more recent and specific. Although it is possible to find some of these resources by searching the open web, using a search engine like Google or Google Scholar, this is not the most efficient or effective way to search for and discover research material. As a result, most of the resources described in this section are found from within academic library catalogs and databases, rather than internet search engines.

Finding books and ebooks

Books

Look to books for broad and general information that is useful for background research. Books are “essential guides to understanding theory and for helping you to validate the need for your study, confirm your choice of literature, and certify (or contradict) its findings.” ([Fink, 4th ed., 2014, p. 77](#)). In this section, we will consider print and electronic books as well as print and electronic encyclopedias.

Most academic libraries use the Library of Congress classification system to organize their books and other resources. The Library of Congress classification system divides a library's collection into 21 classes or categories. A specific letter of the alphabet is assigned to each class. More detailed divisions are accomplished with two and three letter combinations. Book shelves in most academic libraries are marked with a Library of Congress letter-number combination to correspond to the Library of Congress letter-number combination on the spines of library materials. This is often referred to as a call number and it is noted in the catalog record of every physical item on the library shelves. ([Bennard et al, 2014a](#))

The Library of Congress (LC) classification for Education (General) is L7-991, with LA, LB, LC, LD, LE, LG, LH, LJ, and LT subclasses. For example,

LB3012.2.L36 1995

Beyond the Schoolhouse Gate: Free Speech and the Inculcation of Values

In Nursing, the LC subject range is RT1-120. A book with this LC call number might look like: R121.S8 1990 *Stedman's Medical Dictionary*. Areas related to nursing that are outside that range include:

R121 Medical dictionaries

R726.8 Hospice care

R858-859.7 Medical informatics

RB37 Diagnostic and laboratory tests

RB115 Nomenclature (procedural coding – CPT, ICD9)

RC69-71 Diagnosis

RC86.7 Emergency medicine

RC266 Oncology nursing

RC952-954.6 Geriatrics

RD93-98 Wound care

RD753 Orthopedic nursing

RG951 Maternal child nursing / Obstetrical nursing

RJ245 Pediatric nursing

RM216 Nutrition and diet therapy

RM301.12 Drug guides

In most libraries, there is a collection of reference material kept in a specific section. These books, consisting of encyclopedias, dictionaries, thesauri, handbooks, atlases, and other material contain useful background or overview

information about topics. Ask the librarian for help in finding an appropriate reference book. Although reference material can only be used in the library, other print books will likely be in what's called the "circulating collection," meaning they are available to check out.

Ebooks

The library also provides access to electronic reference material. Some are subject specific and others are general reference sources. Although each resource will have a different "look" just as different print encyclopedias and dictionaries look different, each should have a search box. Most will have a table of contents for navigation within the work. Content includes pages of text in books and encyclopedias and occasionally, videos. In all cases you will be able to collect background information and search terms to use later.

North American academic libraries buy or subscribe to individual ebook titles as well as collections of ebooks. Ebooks appear on various publisher and platforms, such as Springer, Cambridge, ebrary (ProQuest), EBSCO, and Safari to name a few. Although access to these ebooks varies by platform, you can find the ebook titles your library has access to through the library catalog. You can generally read the entire book online, and you can often download single chapters or a limited number of pages. You may be able to download an entire ebook without restrictions, or you may have to 'check it out' for a limited period of time. Some downloads will be in PDF format, others use another type of free ebook viewing software, like ePUB. Unlike public library ebook collections, most academic library ebooks are not be downloadable to ereader devices, such as Amazon's Kindle

The Library Catalog

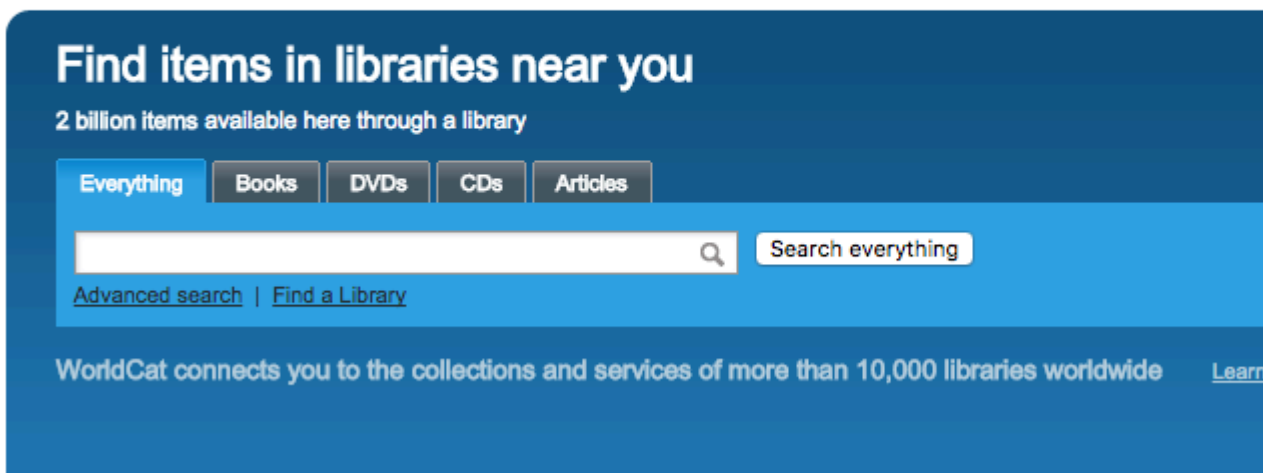
In general, everything owned or licensed by a library is indexed in "the library catalog". Although most library catalogs are now sophisticated electronic products called 'integrated library systems', they began as wooden card filing cabinets where researchers could look for books by author, title, or subject.



While the look and feel of current integrated library systems vary between libraries, they operate in similar ways. Most library catalogs are quickly found from a library's home page or website. The library catalog is the quickest way to find books and ebooks on your topic.

Here are some general tips for locating books in a library catalog:

- Use the search box generally found on a library's home page to start a search.
- Type a book title, author name, or subject keywords into the search box.
- You will be directed to a results page.
- If you click on a book title or see an option to see more details about the book, you can look at its full bibliographic record, which provides more information about the book, as well as where to find the book. Pay particular attention to subjects associated with the item, adding relevant and appropriate terms to your list of search terms for future use.
- If you want to have more control over search results, you can try an "Advanced Search" within the library catalog
 - Look for an "Advanced Search" option near the basic or single search box
 - The options within the advanced catalog search window allow you to limit searches by:
 - Publication Year
 - Subject
 - Call number
 - And more...
- There is generally a "Format" list on the advanced search page screen. This list will give you options for limiting format to Print Books or Ebooks.
- You can limit searches to a specific library or libraries to narrow by location or 'search everything' to broaden your search.



OCLC WorldCat (<https://www.worldcat.org/>) is the world's largest network of library content and it provides another way to search for books and ebooks. For students who do not have immediate access to an academic library catalog, WorldCat is a way to search many library catalogs at once for an item and then locate a library near you that may own or subscribe to it. Whether you will be able to check the item out, request it, place an interlibrary loan request for it, or have it shipped will depend on local library policy. Note that like your own library catalog, WorldCat has a single search box, an Advanced search feature, and a way to limit by format and location.

Finding scholarly articles

While books and ebooks provide good background information on your topic, the main body of the literature in your research area will be found in academic journals. Scholarly journals are the main forum for research publication. Unlike books and professional magazines that may comment or summarize research findings, articles in scholarly journals are written by a researcher or research team. These authors will report in detail original study findings, and will include the data used. Articles in academic journals also go through a screening or peer-review process before publication, implying

a higher level of quality and reliability. For the most current, authoritative information on a topic, scholars and researchers look to the published, scholarly literature. That said,

Journals, and the articles they contain, are often quite expensive. Libraries spend a large part of their collection budget subscribing to journals in both print and online formats. You may have noticed that a Google Scholar search will provide the citation to a journal article but will not link to the full text. This happens because Google does not subscribe to journals. It only searches and retrieves freely available web content. However, libraries do subscribe to journals and have entered into agreements to share their journal and book collections with other libraries. If you are affiliated with a library as a student, staff, or faculty member, you have access to many other libraries' resources, through a service called interlibrary loan. Do not pay the large sums required to purchase access to articles unless you do not have another way to obtain the material, and you are unable to find a substitute resource that provides the information you need. (Bennard et al, 2014a)

Databases

A database is an electronic system for organizing information. Journal databases are where the scholarly articles are organized and indexed for searching. Anyone with an internet connection has free access to public databases such as PubMed and ERIC. Students can also search in library-subscribed general information databases (such as EBSCO's Academic Search Premier) or a specialized or subject specific database (for example, a ProQuest version of CINAHL for Nursing or ERIC for Education).

Library databases store and display different types of information sets than a library catalog or Google Scholar. There are different types of databases that include:

- Indexes– with citations only
- Abstract databases – with citations and abstracts only
- Full text databases – with citations and the full text of articles, reports, and other materials

Library databases are often connected to each other by means of a "link resolver", allowing different databases to "talk to each other." For example, if you are searching an index database and discover an article you want to read in its entirety, you can click on a link resolver that takes you to another database where the full-text of the article is held. If the full-text is not available, an automated form to request the item from another library may be an option.

Why search a database instead of Google Scholar or your library catalog? Both can lead you to good articles BUT:

- The content is wide-ranging but not comprehensive or as current as a database that may be updated daily.
- Google Scholar doesn't disclose its criteria for what makes the results "scholarly" and search results often vary in quality and availability.
- Neither gives you as much control over your search as you get in a database.

Citation searches

Another way to find additional books and articles on your topic is to mine the reference lists of books and articles you already found. By tracing literature cited in published titles, you not only add to your understanding of the scholarly conversation about your research topic but also enrich your own literature search.

A citation is a reference to an item that gives enough information for you to identify it and find it again if necessary. You can use the citations in the material you found to lead you to other resources. Generally, citations include four elements:

- Author
- Title
- Source
- Date

For example,

Author	Year	Article title
Schrecker, E.	(2003).	The Free speech movement: Reflections on Berkeley in the 1960s. <i>Pacific Historical Review</i> . 72 (4) 669-670.
Pages of article	Journal title	Volume Issue

For a good summary of how to read a citation for a book, book chapter, and journal article in both APA and MLA format, see this explanation at: <https://edtechbooks.org/-jFG>

Finding conference papers

Conference papers are often overlooked because they can be difficult to locate in full-text. Sometimes the papers from an annual proceeding are treated like an individual book, or a single special issue of a journal. Sometimes the papers from a conference are not published and must be requested from the original author. Despite publication inconsistency, conference papers may be the first place a scholar presents important findings and, as such, are relevant to your own research. Places to look for conference papers:

WorldCat

- use keywords from the conference name (NOT the article title)
- it often helps to leave out terms like: conference, proceedings, transactions, congresses, symposia/symposium, exposition, workshop or meeting
- include the year of the conference
- include the city in which the conference took place

Google Scholar

- Search by keyword and add the word 'conference' and the year to your search, for example: 'conference education 2008'

Databases

- For Education: ERIC, limit to 'Collected Works–Proceedings' or 'Speeches/Meeting papers'
- For Nursing: CINAHL, limit to proceedings in the "Publication Type" box
- For Education: Education Full Text, limit to 'proceeding' in the "Document Type" box
- PsychInfo: limit to 'Conference Proceedings' in the "Record Type" Box
- Web of Science: limit to 'conference'

Professional Societies & Other Sponsoring Organizations

Check the web sites of the organizations that sponsor conferences. Listings of conference proceedings are often under a "Publications" or "Meetings" tab/link. The National Library of Medicine maintains a [conference proceedings subject guide](#) for health-related national and international conferences. Though many papers/proceedings are not available for free, the organization web site will often contain citations of proceedings that you can request through interlibrary loan.

Finding dissertations

In addition to journal articles, original research is also published in books, reports, conference proceedings, theses and dissertations. Both theses and dissertations are very detailed and comprehensive accounts of research work. Dissertations and theses are a primary source of original research and include "referencing, both in text and in the reference list, so that, in principle, any *reference to the literature* may be easily traced and followed up." ([Wallace & Wray](#),

[p. 187](#)). Citation searching of the reference list or bibliography in a dissertation is another method for discovering the relevant literature for your own research area. Like conference papers, they are more difficult to locate and retrieve than books and articles. Some may be available electronically in full-text at no cost. Others may only be available to the affiliates of the university or college where a degree was granted. Others are behind paywalls and can only be accessed after purchasing. Both CINAHL and ERIC index dissertations. Individual universities and institutional repositories often list dissertations held locally. Other places to look for theses and dissertations include:

[Dissertations Express](#) – search for dissertations from around the world. Search by subject or keyword, results include author, title, date, and where the degree was granted. Some are available in full-text at no cost, however most require payment.

[EThOS](#) – the national thesis service for the United Kingdom, managed by the British Library. It is a national aggregated record of all doctoral theses awarded by UK Higher Education institutions, providing free access to the full text of many theses for use by all researchers to further their own study.

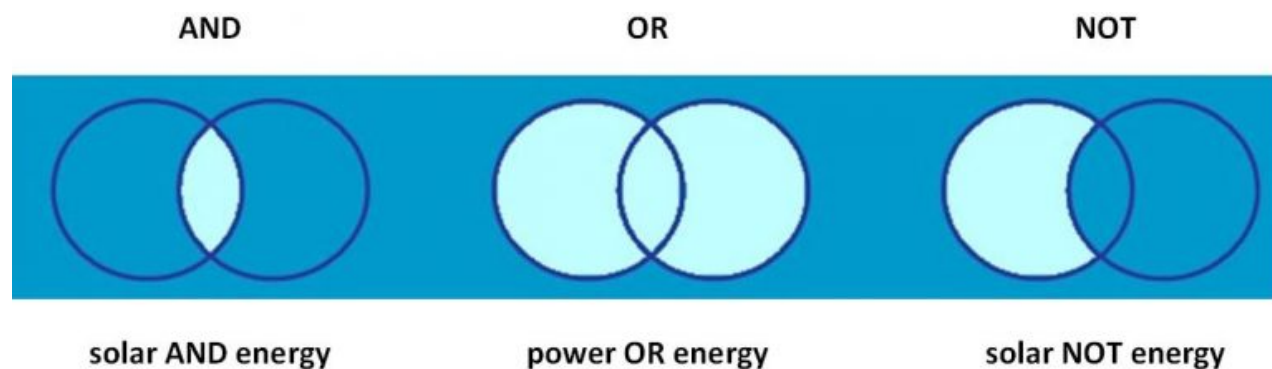
[Theses Canada](#) – a collaborative program between Library and Archives Canada (LAC) and nearly 70 accredited Canadian universities. The collection contains both microfiche and electronic theses and dissertations that are for personal or academic research purposes.

Advanced searching

Now that you have an idea of some of the places to look for information on your research topic and the form that information takes (books, ebooks, journals, conference papers, and dissertations), it's time to consider not only how to use the specialized resources for your discipline but how to get the most out of those resources. To do a graduate-level literature review and find everything published on your topic, advanced search and retrieval skills are needed.

Search Operators

Literature review research often necessitates the use of Boolean operators to combine keywords. The operators – AND, OR, and NOT – are powerful tools for searching in a database or search engine. By using a combination of terms and one or more Boolean operator, you can focus your search and narrow your search results to a more specific area than a basic keyword search allows.



Boolean operators – allow you to combine your search terms using the keywords **AND**, **OR** and **NOT**. Look at the diagrams in Figure 4.6 to see how these terms will affect your results.

Truncation – If you use **truncation** (or wildcards), your search results will contain documents including variations of that term.

For example: **light*** will retrieve, of course, **light**, but also terms like: **lighting**, **lightning**, **lighters** and **lights**. Note that the truncation symbol varies depending on where you search. The most common truncation symbols are the asterisk (*) and question mark (?).

Phrase searching – Phrase searching is used to make sure your search retrieves a specific concept. For example “durable wood products” will retrieve more relevant documents than the same terms without quotation marks.

For a description of these more advanced search features, watch this [short video tutorial](#) on effective search strategies. ([Clark, 2016](#)).

Finding sources in your discipline or topic area

It’s time to put these tips and your search skills to use. This is the point, if you have not done so already, to talk to a librarian. The librarian will direct you to the resources you need, including research databases to which the library subscribes, for your discipline or subject area. Literature reviews rely heavily on data from online databases, such as CINAHL for Nursing and ERIC for Education. Unfortunately, the costs to subscribe to vendor-provided products is high. Students affiliated with large university libraries that can afford to subscribe to these products will have access to many databases, while those who do not have fewer options.

Students who do not have access to subscription databases such as CINAHL or ERIC through Ebsco and ProQuest should use PubMed for Nursing at <https://edtechbooks.org/-ws> and the public version of ERIC at <https://eric.ed.gov/> for literature review research.

Although a librarian is the best resource for learning how to use a specific tool, [an online tutorial on how to search PubMed](#) may be useful and informative for those who do not have access to a librarian or a subscription database. Likewise, this document, titled “[How does the ERIC search work](#),” provided by the Institute of Education Sciences provides some helpful tips for searching the public version ERIC.

Specialized vocabulary

One major source of search terms in a database is a specialized dictionary, or thesaurus, used to index journal articles. Thesauri provide a consistent and standardized way to retrieve information, especially when different terms are used for the same concept. According to Fink ([2014](#)), “evidence exists that using thesaurus terms produces more of the available citations than does reliance on key words...Using the appropriate subject heading will enable the reviewer to find all citations regardless of how the author uses the term.” (p. 24).

In Education and Nursing, thesauri are available. In subscription databases, as well as in PubMed and the public version of ERIC, look for the thesaurus to guide you to appropriate and relevant subject terms.

Citation Searching

Citation searching works best when you already have a relevant work that is on topic. From the document you identified as useful for your own literature review, you can either search citations forward or backward to gather additional resources. Cited reference searching and reference or bibliography mining are advanced search techniques that may also help generate new ideas as well as additional keywords and subject areas.

For cited reference searching, use Google Scholar or library databases such as Web of Science or Scopus. These tools trace citations forward to link to newly published books, journal articles, book chapters, and reports that were written after the document you found. Through cited reference searching, you may also locate works that have been cited numerous times, indicating what may be a seminal work in your field.

With citation mining, you will look at the references or works cited list in the resource you located to identify other relevant works. In this type of search, you will be tracing citations backward to find significant books, journal articles, book chapters, and reports that were written before the document you found. For a brief discussion about [citation searching](#), check out this article by Hammond & Brown ([2008](#)).

Practice

The two most important finding tools you will use are a library catalog and databases. Looking for information in catalogs and databases takes practice.

Get started by setting aside some dedicated time to become familiar with the process:

1. Practice by locating one reference book and one ebook in your library catalog or WorldCat
2. Practice searching in freely available databases such as [PubMed](#) or [ERIC](#)
3. Talk to a librarian about using a subject specific subscription database like Ebsco's CINAHL or ProQuest's ERIC. Be sure to explore the various bells and whistles that the database provides to improve the precision of your search
 1. Try some of the limiters to see what each does to your search results
 2. Once you find an article, what do you need to do to get it in full-text?
4. Find out how to use interlibrary loan or document delivery.

Next, complete this exercise:

1. Browse through a popular or scientific publication such as the science section of the *New York Times* or *Scientific American*. Find a short article that looks interesting and is easy to understand.
2. Look for the following:
 - an article that reports on a recent study published in a scholarly journal;
 - the title of the journal;
 - the name of the author(s); and
 - an indication of when the original study appeared. Note: sometimes the source will say that the research was published in a latest issue of *Science* or *Nature*.
3. Once you find some of these facts (journal title and the authors should be sufficient), you can start to search for the primary source in a library catalog or the library's databases.
4. Catalog search: find out if your school subscribes to a particular journal by searching for the journal by title.
5. Best case scenario: the library subscribes to the journal.. The next step is to figure out the available format(s). You might have several options:
 - Electronic subscription—great! It means you can access the journal right away. Once you get to the online (or electronic) version of the journal, you are given a choice of searching within this publication. An author search should be sufficient to locate the article.
 - Print subscription version—good! You can search in databases or a discovery service tool for your article by entering the journal title and the authors. Once you locate a record about the article, which will include volume and issue number, page numbers, the article title, you can go to the shelves where you will find the issue of the journal that includes your article.
 - Microform version—still good! Again, after searching databases and locating the exact information about the article, you should be able to locate the appropriate microfilm reel or microfiche. Before the widespread and easy access to online versions of materials, microforms were used to save space by preserving documents on film. Libraries are equipped with microform readers—if you need help using a reader, ask the library staff. ([Bennard et al, 2014b](#))

Test Yourself

Get an article

- Access PubMed or ERIC
- Do a subject search, using the thesaurus (for ERIC) or MeSH terms (for PubMed)
- Do a keyword search
- Supplement your subject search with keywords, using advanced search tools like Boolean operators, truncation, or phrase searching
- Limit your search by language, date of publication or PICO factor
- Access the full text of an article you find.
- If full text is not available, find out how to request the article through interlibrary loan

In your general topic area, do you know:

1. The core source materials?
2. The most significant theories?
3. The major issues and debates surrounding your topic area?
4. The key political, social, economic, legal, environmental, and/or technological aspects of your topic?
5. The origins of your topic?
6. The definitions for your topic?
7. How knowledge in your topic area is organized?
8. What problems or solutions have been addressed to date?
9. If you don't know the answers to these questions, do you know how to find the answers?

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Evaluating Sources

Linda Frederiksen, Sue F. Phelps, & Royce Kimmons

Learning Objectives

At the conclusion of this chapter, you will be able to:

- Critically evaluate the sources of the information you have found.
- Evaluate the content of selected material for your purposes.

Overview of evaluation of sources

Searching for information is often nonlinear and iterative, requiring the evaluation of a range of information sources and the mental flexibility to pursue alternate avenues as new understanding develops ([Association of College & Research Libraries, 2016](#)).

You developed a viable research question, compiled a list of subject headings and keywords and spent a great deal of time searching the literature of your discipline or topic for sources. It's now time to evaluate all of the information you found. Not only do you want to be sure of the source and the quality of the information, but you also want to determine whether each item is appropriate fit for your own review. This is also the point at which you make sure that you have searched out publications for all areas of your research question and go back into the literature for another search, if necessary.

In general, when we discuss evaluation of sources we are talking about looking at quality, accuracy, relevance, bias, reputation, currency, and credibility factors in a specific work, whether it's a book, ebook, article, website, or blog posting. Before you include a source in your literature review, you should clearly understand what it is and why you are including it. According to Bennard et al., ([2014](#)), "Using inaccurate, irrelevant, or poorly researched sources can affect the quality of your own work." (para. 4).

When evaluating a work for inclusion in, or exclusion from, your literature review, ask yourself a series of questions about each source.

Evaluating books

For primary and secondary sources you located in your search, use the ASAP mnemonic to evaluate inclusion in your literature review:

Age

Is it outdated? The answer to this question depends on your topic. If you are comparing historical classroom management techniques or building on educational theory, something from 1965 might be appropriate.

If relying on the book to provide empirical evidence, however, a general rule of thumb would be 5-10 years for education or technology.

Sources

Check reference or bibliography sources as well as those listed in footnotes or endnotes. Skim the list to see what kinds of sources the author used. When were the sources published? If the author is primarily citing works from 10 or 15 years ago, the book may not be what you need.

Author

Does the author have the credentials to write on the topic? Does the author have an academic degree or research grant funding? What else has the author published on the topic?

Publisher

Look for academic presses, including university presses. Books published under popular press imprints (such as Random House or Macmillan, in the U.S.) will not present scholarly research in the same way as Sage, Oxford, Harvard, or the University of Washington Press.

Other questions to ask about the book you may want to include in your literature review:

- What is the book's purpose? Why was it written? Who is the intended audience?
- What is the conclusion or argument? How well is the main argument or conclusion supported?
- Is it relevant to your research? How is it related to your research question?
- Do you see any evidence of bias or unsubstantiated data?

Evaluating websites

In your research, it is likely you will discover information on the web that you will want to include in your literature review. For example, if your review is related to the current policy issues in public education in the United States, a potentially relevant information source may be a document located on the National Center for Education Statistics (NCES) website titled [The Condition of Education 2017](#). Likewise, for nursing, an article titled [Discussing Vaccination with Concerned Patients: An Evidence-Based Resource for Healthcare Providers](#) is available through the nursingcenter.com website. How do you evaluate these resources, and others like them?

Use the RADAR mnemonic ([Mandalios, 2013](#)) to evaluate internet sources:

Relevance

How did you find the website and how is it relevant to your topic?

- Was it recommended by a reliable source?
- Was it cited in a scholarly source, such as a peer-reviewed journal?
- Was it linked from a reputable site?

Authority

Look for the About page to find information about the purpose of the website. You may make a determination of its credibility based on what you find there. Does the page exhibit a particular point of view or bias? For example, a heart

association or charter school may be promoting a particular perspective – how might that impact the objectivity of the information located on their site? Is there advertising or is there a product information attached to the content?

Date

- When was the page created?
- Is it kept up to date?
- Are the links current and functional?

Appearance

- Does the information presented appear to be factual?
- Is the language formal or academic?
- How does it compare to other information you have read on the topic?
- Are references or links to cited material included?

Reason

What is the web address or URL? This can give you a clue about the purpose of the website, which may be to debate, advocate, advertise or sell, campaign, or present information. Here are some common domains and their origins:

- .org – An advocacy website for an organization
- .com – A private or commercial site
- .net – A network organization or Internet provider/no longer frequently used
- .edu – The site of a higher educational institution
- .gov – A federal government site
- .wa.us – A state government site which may include public schools and community colleges
- .uk, .ca, .jm – A country site

Mike Caulfield (2017), the author of [Web Literacy for Student Fact-Checkers](#), recommends a few simple strategies to evaluate a website (as well as social media):

- **Check for previous work:** Look around to see if someone else has already provided a synthesis of the research described.
- **Go upstream to the source:** Go “upstream” to the source of the claim. Most web content is not original. Get to the original source to understand the credibility and reliability of the information.
- **Read laterally:** Read laterally. Once you get to the source of a claim, read what other people say about the source (publication, author, etc.). The truth is in the network.

Evaluating journal articles

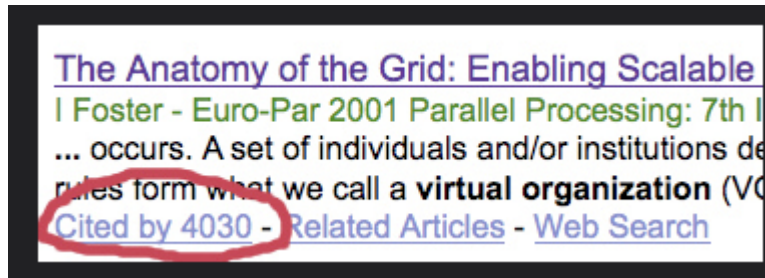
It is likely that most of the resources you locate for your review will be from the scholarly literature of your discipline or in your topic area. As we have already seen, peer-reviewed articles are written by and for experts in a field. They generally describe formal research studies or experiments with the purpose of providing insight on a topic. You may have located these articles through Google, Google Scholar, a subscription or open access database, or citation searching. You now may want to know how to evaluate the usefulness for your research. As with the other resources, you are again looking for authority, accuracy, reliability, relevance, currency, and scope. Looking at each article as a separate and unique artifact, consider these elements in your evaluation:

Credibility/Authority

ASK: Who is the author? Is this person considered an expert in their field?

- Search the author's name in a general web search engine like Google.
- What are the researcher's academic credentials?
- What else has this author written? Search by author in the databases and see how much they have published on any given subject.
- How often or frequently has this article been cited by other scholars?

Citation analysis is the study of the impact and assumed quality of an article, an author, or an institution, based on the number of times works and/or authors have been cited by others. Google Scholar is a good way to get at this information.



Google Scholar

Accuracy

Check the facts. ASK:

- Were the methods of data collection and analysis transparent?
- Can statistics be verified through other sources?
- Are the data and results trustworthy?
- Does the information seem to fit with what you have read in other sources?

Reliability/Objectivity

ASK: Is there an obvious bias? That doesn't mean that you can't use the information, it just means you need to take the bias into account.

- Is a particular point of view or bias immediately obvious, or does it seem objective at first glance?
- What point of view does the author represent? Are they clear about their point of view?
- Is the article an editorial that is trying to argue a position?
- Is the article in a publication with a particular editorial position?

Relevance

ASK: The hard questions:

- Is the information relevant to your topic/thesis?
- How does the article fit into the scope of the literature on this topic?
- Who is the intended audience for this source?
 - Is the material too technical or too clinical?
 - Is it too elementary or basic?
- Does the information support your thesis or help you answer your question, or is it a challenge to make some kind of connection?
- Does the information present an opposite point of view so you can show that you have addressed all sides of the argument in your paper?

Currency

ASK:

- When was the source published?
- How important is current information to your topic, discipline, or paper type?
- Does older material add to the history of the research? Or do you need something more current to support your thesis?

Scope and Purpose

To determine and evaluate in this category, ASK:

- Is it a general work that provides an overview of the topic or is it specifically focused on only one aspect of your topic?
- Does the breadth of the work match your expectations?
- Is the article meant to inform, explain, persuade or sell something? Be aware of the purpose as you read the content and take that into consideration when deciding whether to use it or not.
- What are the research methods used in the article?

Evaluating social media

Although social media (for example, Twitter or Facebook) is generally treated as an object under study rather than a source of information on a topic, the prevalence of social media as communication and sharing platforms must be acknowledged. It's important to be skeptical of these sources, especially for inclusion in a literature review. However, as with any other web resource, you can evaluate a social media posting for authenticity by asking the following questions:

- Location of the source – Is the author in the place they are tweeting or posting about?
- Network – Who is in the author's network and who follows the account?
- Content – Can the information be corroborated from other sources?
- Contextual updates – Does the author usually post or tweet on this topic? If so, what did past or updated posts say? Do they fill in more details?
- Reliability – does the author cite sources and are those sources reliable? ([Sheridan Libraries, 2017](#))

In summary

Another way to think about evaluation of sources is to ask the 5W questions:

- **What** type of document is it?
- **Who** created it?
- **Why** was the material published?
- **When** was it published?
- **Where** was the resource published?
- And also, how was the information gathered and presented? ([Radom, 2017](#))

Locating sources for your literature review by using discovery layers, library catalogs, databases, search engines, and other search platforms may take a great deal of time and effort. Does everything you found and retrieved have value or worth to you as you write your own literature review? If the resource has not met the criteria above and you can't justify its place in your literature review, it doesn't deserve to be mentioned in your work. Include high-quality materials that are current, accurate, credible, and most importantly relevant to your research question, hypothesis, or topic.

Practice

Evaluate a Website



[Watch on YouTube](#)

Using a search engine like Google, do a quick search for a topic that interests you. Select a website from your list of results and evaluate it using the elements of website evaluation listed earlier in this chapter.

- How did you find the website?
- What is the domain name (the URL) of the site?
- What can you learn about the author/s of the site?
- When was the site last updated?
- Is it accurate based on what you know about the topic?
- Are there references?
- Do you notice any bias?
- Is the site functional? (re links working? Or do they lead to non-functional pages?)

Evaluate a Book

Select a subject specific book or ebook that you can access quickly and evaluate it based on the ASAP criteria.

- Author
- Sources
- Age
- Publisher

Evaluate an Article

You can practice evaluation using the attached articles. You don't need to spend a lot of time with the article, but see if you can identify each of the elements of evaluation. Remember the elements of evaluation for articles are:

- Authority/Credibility or Study Design for Nursing
- Accuracy
- Reliability/Objectivity
- Relevance
- Currency
- Scope and Purpose

Example article: [Quality standards in e-learning: A matrix of analysis](#) (Frydenberg, 2002).

Test Yourself

Your topic is music therapy in kindergarten classrooms in the United States. Which of the two resources would you include in your literature review?

☐ Simpson, Kate, and Deb Keen. "Music Interventions for Children with Autism: Review of the Literature." *Journal of Autism and Developmental Disorders* 41, no. 11 (November 2011): 1507-1514.

☐ Bowman, Robert. "Approaches for Counseling Children Through Music." *Elementary School Guidance and Counseling* 21, no. 4 (April 1987): 284-91.

Why?

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Documenting Sources

Linda Frederiksen, Sue F. Phelps, & Royce Kimmons

Learning Objectives

At the conclusion of this chapter, you will be able to:

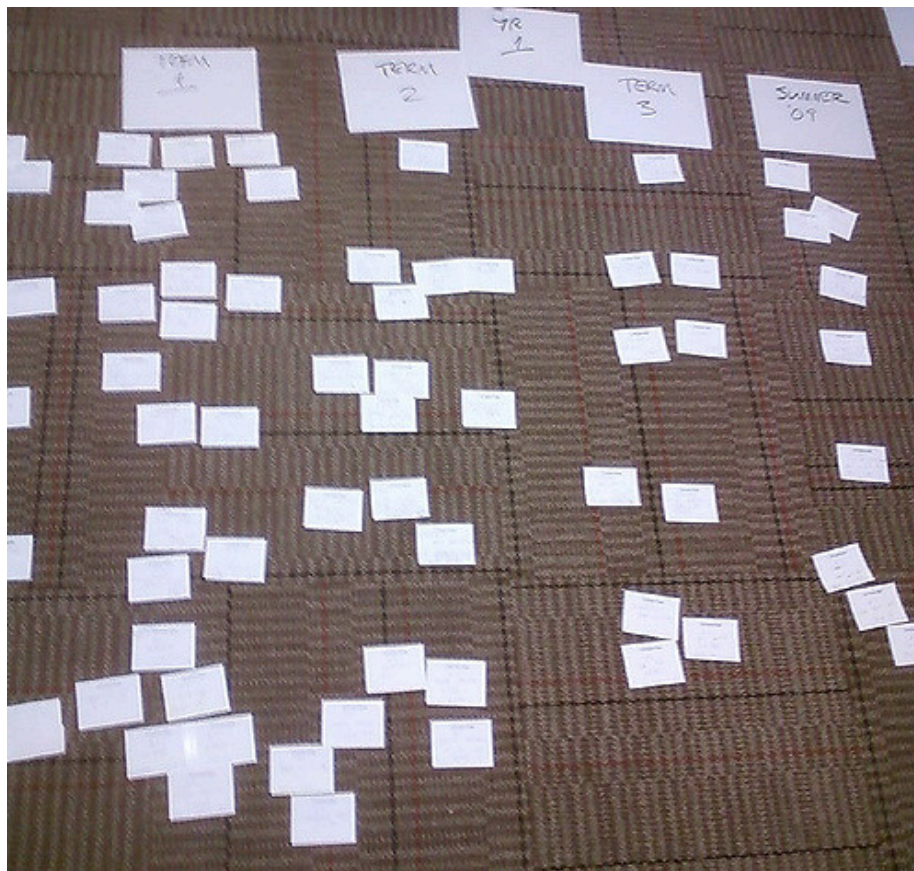
- Select a citation management system that works for you
- Record and organize relevant material in a citation management system

Overview of documenting sources

A graduate-level literature review is a significant undertaking and will require some decisions about information organization, record-keeping, and notes management. Make these decisions *before* you begin your intensive review of the literature. Some of the decisions you will need to make include things like document-naming conventions, choosing a citation management tool that fits your needs, and setting up journal alerts.

Once you have identified and located materials for your literature review, you will organize, analyze, and synthesize them as the next step in literature review process. Here are some general guidelines for how you treat the articles at this stage:

1. Skim the articles as you gather them to get an idea of the general purpose and content. Focus on the abstract, introduction, first few paragraphs, and the conclusion.
2. Record notes and impressions on the article directly in the citation management tool you choose. Record specific aspects or significant keywords of the article that are relevant to your review. General remarks, such as 'good source' or 'interesting idea,' won't help you later on.
3. Pay special attention to major trends or patterns, possible gaps in the literature, and relationships among studies, especially noting or highlighting landmark studies that led to subsequent ones in the same area.
4. Group the articles into categories or folders, such as topics and subtopics. Also group articles that you have placed within these categories chronologically. You can print out each article and organize the paper copies into categories or you take advantage of technology by using citation management software to store and organize your articles.



Begin to group sources into broad categories and then organize chronologically or alphabetically by author's last name. Broad general categories might include:

- Themes or Concepts
- Theories
- Policies
- Programs
- Populations
- Methodologies
- Questions for further research

Other broad organization schemes might relate to the PICO or SPICE models mentioned in Chapter 3. We will discuss organization and synthesis in more detail in Chapter 7.

5. Develop a standardized naming convention for folders and files. Names should be kept as short as possible whilst also being meaningful, concise, and standardized. For example, PolicyCttee2017 or GuidelinesRegulationsHarrison is more useful than LitReviewArticle1.

Other useful file naming conventions can be found The University of Edinburgh Records Management Office ([2017](#)). Examples include:

- [Avoid unnecessary repetition and redundancy in file names and file paths.](#)
- [Use capital letters to delimit words, not spaces or underscores](#)
- [When including a personal name in a file name give the family name first followed by the initials.](#)
- [Avoid using common words such as 'draft' or 'letter' at the start of file names, unless doing so will make it easier to retrieve the record.](#)
- [Order the elements in a file name in the most appropriate way to retrieve the record.](#)
- [Avoid using non-alphanumeric characters in file names.](#)

Take the time to think about your organizational system before you begin researching and compiling sources in earnest. "Organizing now will save much time and heartache later." ([Machi & McEvoy, 2012, p. 31](#)).

Citation Management Tools

One of your first decisions – after selecting your topic – will be to determine which citation manager will work the best for you. Citation managers are software packages, such as EndNote or Zotero, used to create personalized databases of citations and notes. Citation management tools help users:

- import citations from databases, websites, and library catalogs
- create bibliographies
- format citations in a variety of styles such as APA, MLA, Chicago, and more
- manage, categorize, and organize citations and documents
- attach PDFs, images, and notes to citations in your collection.

While most current citation managers are generally similar, individual workflow may determine which tool to use. For example, if you will be working from multiple computers and locations, a web-based tool such as RefWorks and Mendeley will work better for you than a client-based or centrally hosted website. Other needs to consider when evaluating different citation managers:

- I need to work offline.
- I'll be doing a lot of my research on freely available websites and need to be able to save copies of webpages.
- I'm working on a group project and need to share my references with others.
- I'm not so comfortable with technology and may potentially need a lot of help with my tool.
- I will be working on a mobile device.

Tips for choosing the right tool

There are many tools to choose from and you want to experiment with a few as well as discuss with professional colleagues, fellow students, or faculty before making a final decision on which to use. Choosing a tool ultimately depends on your personal workflow preferences and your needs.

General tips for choosing the right citation management tool:

- Consult Wikipedia's detailed and updated [comparison chart](#) of citation management tools to determine if any tool is clearly the best fit for you.
- Talk to people in your department. Do individuals in your discipline tend to use one tool more often than another? Does your department or university already provide access to a specific tool?
- Talk to your subject librarian; s/he can recommend a tool based on your needs.
- Critically assess your technology skills and interests. Although all the tools advertise ease of use, there is a learning curve. Take a look at the free tutorials, help documents, and instruction manuals and rate your level of understanding and confidence.

Choose your citation management tool carefully. Try some out. Talk to colleagues. Once you've chosen a tool and started using it, changing to a different tool is problematic on several levels. If you save citations in two different

products, it can be difficult to keep track of citations. Learning a new product or migrating information from one citation tool to another when you are in the middle of a project can also be difficult, time-consuming, and stressful. Choose carefully, but do choose and then stick with it.

Alerts

Alerts are an excellent way to keep up with the literature of your discipline. Alerts allow you to stay up to date with current research relevant to your topic. Once an alert is set up, you will automatically receive an email when an author's publication, keywords, affiliations, or other search criteria appear in a database. You will be able to connect to the citation, download the citation and full text (when available) from the alert, and (if relevant) save to your citation manager. Alerts are a way to save time AND stay up-to-date in your topic area.

Why use alerts?

- Do you ever feel overwhelmed by the amount of time it takes to stay aware of the latest research and trends in your discipline?
- Do you have so many articles and journals in your "to read" pile that they end up being irrelevant by the time you get to them?
- Do you have a due date for your literature review, but can't find time to check back for the latest updates on the topic?

If you answered yes to any of these questions, note that a number of database aggregators like ProQuest and EBSCO, as well as individual databases, such as ERIC and CINAHL, offer free alert services informing you of new journal issues, recently published articles related to your interests, and more. Most databases and journals use e-mail alerts to inform users of new content. Many researchers set up alerts through Google Scholar. For tips on how to set up alerts in Google Scholar, see the help page at: <https://edtechbooks.org/-iz>

Types of alerts

1. Table of Contents (TOC) Alerts – These alerts inform users about new journal issues. Depending on the database and your preferred method of delivery, you will receive a table of contents for the issue or links to the full-text articles. Most TOC alerts are delivered via email, but they can also be subscribed to via RSS. A directory of thousands of current and scholarly TOCs is browsable at <https://edtechbooks.org/-EW>. For a short 2 minute tutorial on how to set up journal alerts through PubMed, see <https://edtechbooks.org/-aRw>
2. Saved Searches – A saved search alert will notify you when the database identifies new articles related to a customized search. You can specify how often you would like to receive updates (weekly, monthly, etc.).
3. Citation Alerts – These alerts will inform you when a specified article is cited in a new publication.

Within your citation manager, you can set up custom folders to not only store new articles but also to share both alerts and articles with colleagues or fellow students researching similar topics.

Bibliographic citation format


Once you begin gathering sources for your literature review, you will need to organize and document them. Citations document the source of an idea, statement, or study. A uniform citation style helps both the reader and the writer. A standardized editorial style removes the distraction and confusion of puzzling over the correct punctuation for every reference or the proper formatting for numbers and other data in text. Those elements are codified in the rules of the format style, allowing the reader to focus energy on the substance of the research, rather than how the paper is constructed.

An author writing for publication must follow the rules established by the publisher to avoid inconsistencies. Without established rules of style, each manuscript might use different spellings, notations, and citations, which would confuse and distract readers. The need for a consistent style becomes more apparent and more visible when complex material

is presented, such as tables or statistics. Without standardized rules for presentation of data, the reader would spend too much time and energy looking for meaning among the structure.

Likewise, a systematic and standardized bibliographic citation format helps the writer of the literature review keep track of references as they accumulate and find them more efficiently later in the process. “You will be rewarded for your hard work, if not in heaven, then certainly when you come to write your report. You will be able to locate information easily, to regroup and reclassify evidence and to produce referenced quotations to support your arguments.” ([Bell, 2005, p. 74](#)).

There are numerous different bibliographic citation format styles. APA (American Psychological Association), MLA (Modern Language Association), Chicago, Turabian, ACS (American Chemical Society), AMA (American Medical Association), and IEEE (Institute of Electrical and Electronic Engineers) are some of the more common formats in use, but there are many more. The different styles, and different versions within each style, are a source of stress for generations of students and researchers in all disciplines, including those in the health sciences and education. In the social sciences, APA style is frequently used as the default citation style. Your department or discipline may require another format and, if so, that is the one you should accustom yourself with using to document your sources.

 illustrates four different article citation styles and includes examples for APA, Chicago, MLA, and AMA. Differences between styles occurs in punctuation and placement of citation elements.

As there are over a dozen different citation styles and different disciplines prefer different styles, always check to see if your instructor requires a particular style. Also because the rules for citation styles can change and can be extensive, it is best to refer to the official handbooks/style guides when you can. ([Teaching & Learning, 2015, p. 6](#)).

Whatever citation style and format you decide to use, now is the time to make that decision. Consistently documenting your sources as you read is another way to plan and organize information as you go along, rather than at the end or in the middle.

In addition to print and online manuals detailing the specifics of each citation style, there are numerous websites and other resources that provide document citation formatting help. The [Online Writing Lab \(OWL\)](#) at Purdue University, for example, can answer most questions about APA, MLA, and Chicago style. University writing labs and subject specialist librarians may also help with correctly documenting sources and formatting style.

A useful open resource for graduate students in the social sciences is [Professional Writing in the Health Disciplines](#) by Sandra Collins (2016). In addition to discussing how to structure a graduate-level paper, a chapter on APA citation and reference formatting provides extensive detail on how to document sources. Additionally, [Choosing & Using Sources: A Guide to Academic Research](#) ([Teaching & Learning, 2015](#)) provides examples and advice for documenting sources using APA style formatting.

Practice

1. Review a short introductory tutorial or brochure from each of these 4 citation management tools:
 1. [EndNote](#)
 2. [Mendeley](#)
 3. [RefWorks](#)
 4. [Zotero](#)
2. Decide which citation management tool you are going to use and request a free trial or download/install a free version to test.
3. Using the [Google Scholar Alerts](#), set up one or more alerts related to your topic.

Test Yourself

Question 1

Choose a good folder and file naming convention:

- ☐ MyLitReview/Miscellaneous1
- ☐ RandomTheories/Supporting
- ☐ Guidelines/State
- ☐ Regulations/OtherStuff

Question 2

The advantage of choosing and using a citation management program is:

- ☐ import citations from databases, websites and library catalogs with a few clicks
- ☐ create bibliographies in APA style
- ☐ format citations in APA style
- ☐ manage, categorize and organize citations
- ☐ attach PDFs, images and other files to citations
- ☐ add notes, highlight text, share with colleagues

Question 3

In APA style documentation, what is the correct in-text, parenthetical format for a direct quotation?

- ☐ (Barrett, 1991, p. 17)
- ☐ (Barrett, p. 17, 1991)
- ☐ (Barrett : 17)
- ☐ (M.P. Barrett [1991]: 17)

Question 4

For journal articles included in the References list, does citation 1 or citation 2 use the correct APA format style:

☐

Poortman, Ann-Rigt. "How Work Affects Divorce: The Mediating Role of Financial and Time Pressures." *Journal of Family Issues* 26.2 (2005): 168-180.

☐

Poortman, A. (2005). How work affects divorce: The mediating role of financial and time pressures. *Journal of Family Issues* 26(2), 168-180.

QUESTION 5

Select the answer that best describes the function of the reference page:

☐

Sources cited in the paper must appear on the reference page in alphabetical order.

☐

Books and articles read, but not cited in the paper, should be included on the reference page.

☐

Videos and blogs should be cited in the paper, but not included on the reference page.

☐

Sources listed on the reference page do not need to be cited within the paper.

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https://edtechbooks.org/rapidwriting/lit_rev_documenting_sources.

Synthesizing Sources

Linda Frederiksen, Sue F. Phelps, & Royce Kimmons

Learning Objectives

At the conclusion of this chapter, you will be able to:

- synthesize key sources connecting them with the research question and topic area.

Putting the Pieces Together

Combining separate elements into a whole is the dictionary definition of synthesis. It is a way to make connections among and between numerous and varied source materials. A literature review is not an annotated bibliography, organized by title, author, or date of publication. Rather, it is grouped by topic to create a whole view of the literature relevant to your research question.



Your synthesis must demonstrate a critical analysis of the papers you collected as well as your ability to integrate the results of your analysis into your own literature review. Each paper collected should be critically evaluated and weighed for “adequacy, appropriateness, and thoroughness” ([Garrard, 2017](#)) before inclusion in your own review. Papers that do not meet this criteria likely should not be included in your literature review.

Begin the synthesis process by creating a grid, table, or an outline where you will summarize, using common themes you have identified and the sources you have found. The summary grid or outline will help you compare and contrast the themes so you can see the relationships among them as well as areas where you may need to do more searching. Whichever method you choose, this type of organization will help you to both understand the information you find and

structure the writing of your review. Remember, although “the means of summarizing can vary, the key at this point is to make sure you understand what you’ve found and how it relates to your topic and research question” ([Bennard et al., 2014](#)).



shows an example of a simplified literature summary table. In this example, individual journal citations are listed in rows. Table column headings read: purpose, methods, and results.

Summary table

As you read through the material you gather, look for common themes as they may provide the structure for your literature review. And, remember, research is an iterative process: it is not unusual to go back and search information sources for more material.

At one extreme, if you are claiming, ‘There are no prior publications on this topic,’ it is more likely that you have not found them yet and may need to broaden your search. At another extreme, writing a complete literature review can be difficult with a well-trod topic. Do not cite it all; instead cite what is most relevant. If that still leaves too much to include, be sure to reference influential sources...as well as high-quality work that clearly connects to the points you make. ([Klingner, Scanlon, & Pressley, 2005](#)).

Creating a summary table

Literature reviews can be organized sequentially or by topic, theme, method, results, theory, or argument. It’s important to develop categories that are meaningful and relevant to your research question. Take detailed notes on each article and use a consistent format for capturing all the information each article provides. These notes and the summary table can be done manually, using note cards. However, given the amount of information you will be recording, an electronic file created in a word processing or spreadsheet is more manageable. Examples of fields you may want to capture in your notes include:

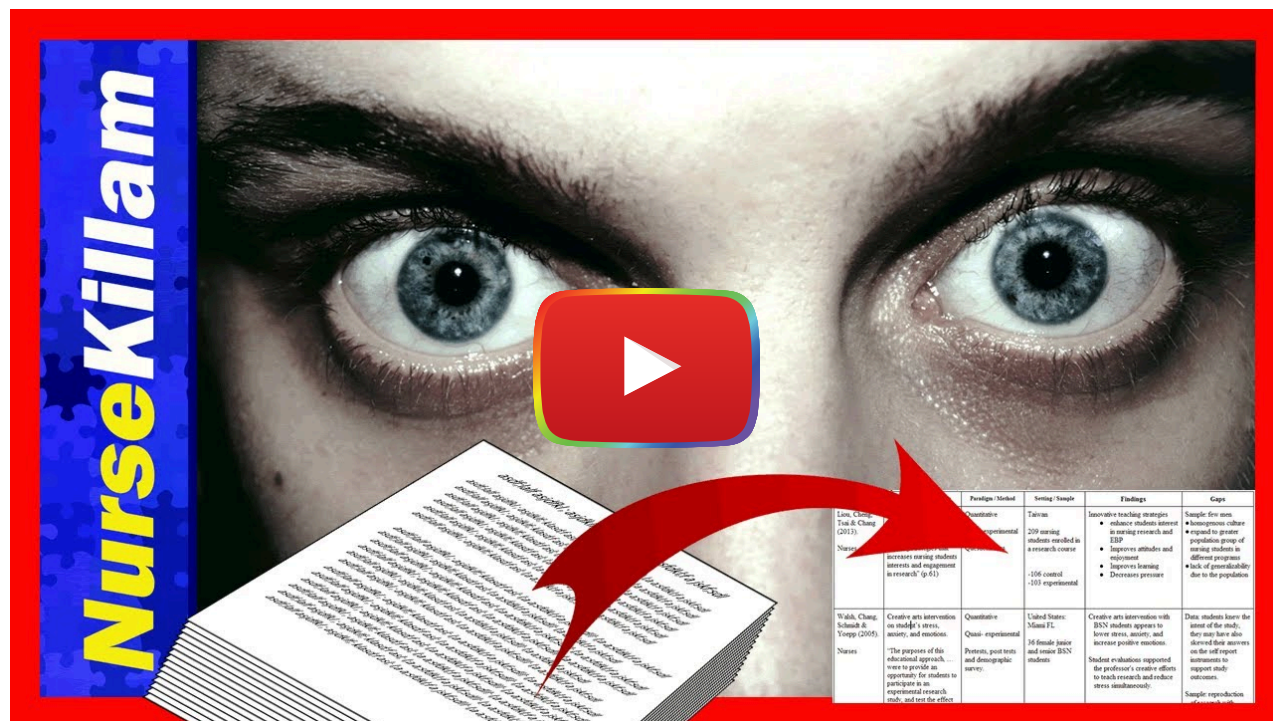
- Authors’ names
- Article title
- Publication year
- Main purpose of the article
- Methodology or research design
- Participants
- Variables
- Measurement
- Results
- Conclusions

Other fields that will be useful when you begin to synthesize the sum total of your research:

- Specific details of the article or research that are especially relevant to your study
- Key terms and definitions
- Statistics
- Strengths or weaknesses in research design
- Relationships to other studies
- Possible gaps in the research or literature (for example, many research articles conclude with the statement “more research is needed in this area”)
- Finally, note how closely each article relates to your topic. You may want to rank these as high, medium, or low relevance. For papers that you decide not to include, you may want to note your reasoning for exclusion, such as ‘small sample size’, ‘local case study’, or ‘lacks evidence to support assertion.’

This short video demonstrates how a nursing researcher might create a summary table.

Creating a Summary Table



[Watch on YouTube](#)

Killam, Laura (2013). Literature review preparation: Creating a summary table. Includes transcript.

<https://edtechbooks.org/-IH>

Summary tables can be organized by author or by theme, for example:

Author/Year	Research Design	Participants or Population Studied	Comparison	Outcome
Smith/2010	Mixed methods	Undergraduates	Graduates	Improved access
King/2016	Survey	Females	Males	Increased representation
Miller/2011	Content analysis	Nurses	Doctors	New procedure

Creating a summary outline

An alternate way to organize your articles for synthesis is to create an outline. After you have collected the articles you intend to use (and have put aside the ones you won't be using), it's time to identify the conclusions that can be drawn from the articles as a group.

Based on your review of the collected articles, group them by categories. You may wish to further organize them by topic and then chronologically or alphabetically by author. For each topic or subtopic you identified during your critical analysis of the paper, determine what those papers have in common. Likewise, determine which ones in the group differ. If there are contradictory findings, you may be able to identify methodological or theoretical differences that could account for the contradiction (for example, differences in population demographics). Determine what general conclusions you can report about the topic or subtopic as the entire group of studies relate to it. For example, you may have several studies that agree on outcome, such as 'hands on learning is best for science in elementary school' or that 'continuing education is the best method for updating nursing certification.' In that case, you may want to organize by methodology used in the studies rather than by outcome.

Organize your outline in a logical order and prepare to write the first draft of your literature review. That order might be from broad to more specific, or it may be sequential or chronological, going from foundational literature to more current. Remember, “an effective literature review need not denote the entire historical record, but rather establish the *raison d’être* for the current study and in doing so cite that literature distinctly pertinent for theoretical, methodological, or empirical reasons.” ([Milardo, 2015, p. 22](#)).

As you organize the summarized documents into a logical structure, you are also appraising and synthesizing complex information from multiple sources. Your literature review is the result of your research that synthesizes new and old information and creates new knowledge.

Additional Resources

- [Literature Review: Synthesizing Multiple Sources](#) / Indiana University
- [Sample Literature Reviews Grid](#) / Compiled by Lindsay Roberts

Practice

Select three or four articles on a single topic of interest to you. Then enter them into an outline or table in the categories you feel are important to a research question.

Test Yourself

1. Select two articles from your own summary table or outline and write a paragraph explaining how and why the sources relate to each other and your review of the literature.
2. In your literature review, under what topic or subtopic will you place the paragraph you just wrote?

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https://edtechbooks.org/rapidwriting/lit_rev_synthesizing_sources.

Writing the Literature Review

Linda Frederiksen, Sue F. Phelps, & Royce Kimmons

Learning Objectives

At the conclusion of this chapter, you will be able to:

- Begin to write your literature review
- Understand and be able to use the appropriate publication guidelines

Writing the literature review

You have discovered, retrieved, evaluated, synthesized, and organized the information you need for your literature review. It's time to turn that stack of articles and papers and notes into a literature review. It's time to start writing.

The graduate-level literature review is about both content and form. In terms of content, keep in mind that your literature review is intended to:

- Set up a theoretical framework for your own research
- Show a clear understanding of the key concepts/ideas/studies/models related to your topic
- Demonstrate knowledge about the history of your research area and any related controversies
- Illustrate that you are able to evaluate and synthesize the work of others
- Clarify significant definitions and terminology
- Develop a space in your discipline for your research

In other words, literature reviews

...clearly describe the questions that are being asked. They also locate the research within the ongoing scholarly dialogue. This is done by summarizing current understandings and by discussing why what we already knows leads to the need for the present research. Literature reviews also define the primary concepts. While this information can appear in any order, these are the elements in all literature reviews.
([Loseke, 2017, p.67](#))

Some questions to ask yourself when you begin to write your first draft include:

- How will my literature review be organized: Chronologically, thematically, conceptually, methodologically or a combination?
- What section headings will I be using?
- How do the various studies relate to each other?
- What contributions do they make to the field?
- What are the limitations of a study/where are the gaps in the research?
- And finally but most importantly, how does my own research fit into what has already been done?

Some questions to ask after the first draft:

- Is there a logical flow from section to section, paragraph to paragraph, sentence to sentence?
- Does the content proceed from topic to topic?
- Does your conclusion match your introduction?
- Were you consistent in documenting and using the correct citation style?

Main features

No matter how you decide to organize your literature review (chronologically, thematically, etc.), it follows a format you will immediately recognize: **Introduction, Body, Conclusion**. We will look at each section individually.

Introduction

The introduction to the literature review contains a statement or statements about the overall topic of your dissertation or theses. This might be an paragraph or section that lets your reader know what your literature review is going to address. You will describe how the literature review will be organized (for example, what are the main points you are going to address and in what order will they appear?). You may choose to briefly describe search criteria (keywords, databases, journals) in this section, or you may do it in different parts of the review. It is suggested that this introductory section be no longer than two pages in length. The purpose is to lead your reader further into the body of the literature review.

In the introduction, you will:

- Define or identify the general topic, issue, or area of concern thereby providing an appropriate context for the remainder of the review
- Point out overall trends in what has been previously published on the topic; or conflicts in theory, methodology, evidence, conclusions, or gaps in research and scholarship
- Establish your reason for reviewing this research (**point of view**); explain the criteria used to search the literature; the organization of the review (**sequence**); and – if necessary – why certain literature either is or is not included (**scope**)
- Demonstrate how your research either closes a gap in the literature, extends earlier work, or replicates an important study thereby contributing new knowledge to your discipline.

More tips for the Introduction:

1. Consider presenting a historical frame of reference
2. Point out a landmark or seminal study
3. Provide definitions for important terms
4. Describe how your literature review was conducted
5. Describe any inclusion or exclusion criteria used

Body

Some general tips for writing the body of your literature review:

- Start broad and then narrow to show how past research relates to your project.
- Make it clear to your reader where you're going, follow a logical progression of ideas
- When appropriate, cite two or more sources for a single point but avoid long strings of references for a single point.
- Use quotes sparingly.
- Keep your own formal academic voice throughout and keep the review focused and objective, following a logical structure.
- Point out consistent findings AND emphasize stronger studies over weaker ones. Point out important strengths and weaknesses of research studies OR contradictions and inconsistent findings.
- Implications and suggestions for further research, or where there are gaps in the current literature, should be specific.

Conclusion

Summarize your literature review, discuss implications, and create a space for future or further research needed in this area. Like the introduction, this section should be around 3-5 pages in length. How do you know when you're done? Can you answer these 11 questions:

1. Have you clearly defined your topic and audience?
2. Did you search and re-search the literature?
3. Took notes while reading?
4. Chosen the type of review you want to write?
5. Have you kept the review focused throughout?
6. Were you critical and consistent in your evaluation and synthesis?
7. Is the structure of your review logical?
8. Did you make use of feedback?
9. Were you able to stay relevant and objective throughout?
10. Did you maintain an objective voice?
11. Did you cite current and older studies? ([Pautasso, 2013](#)).

List of references

The reference list of publications used in your literature review serves two purposes. First, it provides your reader with means to evaluate the quality of your research. Second, accurately and correctly citing all the sources used in your work protects you from possible accusations of plagiarism. Using the words or ideas of others without referencing your source is a very serious academic offense.

The reference list is a reflection of the thoroughness of your review. It also allows others to retrieve the publications you cite. Errors made in authors' names, journal or article titles, page numbers and dates may present barriers to retrieval of articles and may prevent giving credit to authors for their work. Each reference should be checked carefully for errors. Every in-text citation must have a listing in the references and every title in the reference list should connect to an in-text citation.

Tips for Structure

The literature reviews generally move from general to more specific, taking in all the elements mentioned previously.

Build your story by identifying areas of consensus and areas of divergence. For example

- It seems there is agreement among researchers...
- Much debate exists on the issue of...

Possible structures:

Distant to close – the most distantly related to your work leading to the most closely related to your work.

Chronological – earliest related work to most recent related work.

Compare and contrast valid approaches, features, characteristics, theories – that is, one approach, then a 2nd approach, followed by a 3rd approach.

Finally, consider the use of summary paragraphs throughout the body of the review. For example:

- In summary, the evidence presented demonstrates that...
- Rather, this literature supports the theory that...
- Consequently, the population studied may experience...
- However, alternative ideas and findings suggest...

An Example and A Checklist

An example of the possible structure for a literature review:

Introduction

Establish the importance of the topic

Number and type of people affected

Seriousness of the impact

Physical, psychological, economic, social aspects

Definitions of key terms

Literature review strategies

Description of the extent and nature of the literature

Overview of the organization of the rest of the review

Body of the review

Topic 1

Supporting evidence

Topic 2

Supporting evidence

Topic 3

Supporting evidence

Summary of the review

Discussion

Conclusions

Implications

Suggestions for future research

List of references

After you have written your first draft, use this checklist to review your progress:

1. Fill in the topic outline with brief notes.
2. Do not write a string of annotations.
3. Cite two or more sources for a single point, but avoid long strings of references for a single point. Consider using e.g. when there are a large number of sources for a single point.
4. Use quotations sparingly.
5. Emphasize stronger studies over weaker ones.
6. Point out strengths and weaknesses of the research cited.
7. Point out consistent findings in a body of literature.
8. Point out contradictions or inconsistent findings as well.
9. Identify gaps.
10. Indicate when previous literature reviews are cited.
11. Implications and suggestions for future research should be specific, not just 'more research is needed.'

In Summary

Like any effective argument, the literature review must have some kind of structure. For example, it might begin by describing a phenomenon in a general way along with several studies that demonstrate it, then describing two or more competing theories of the phenomenon, and finally presenting a hypothesis to test one or more of the theories. Or it might describe one phenomenon, then describe another phenomenon that seems inconsistent with the first one, then propose a theory that resolves the inconsistency, and finally present a hypothesis to test that theory. In applied research, it might describe a phenomenon or theory, then describe how that phenomenon or theory applies to some important real-world situation, and finally suggest a way to test whether it does, in fact, apply to that situation.

Looking at the literature review in this way emphasizes a few things. First, it is extremely important to start with an outline of the main points that you want to make, organized in the order that you want to make them. The basic structure of your argument then should be apparent from the outline itself. Second, it is important to emphasize the structure of your argument in your writing. One way to do this is to begin the literature review by summarizing your argument even before you begin to make it, "In this article, I will describe two apparently contradictory phenomena, present a new theory that has the potential to resolve the apparent contradiction, and finally present a novel hypothesis to test the theory." Another way is to open each paragraph with a sentence that summarizes the main point of the paragraph and links it to the preceding points. These opening sentences provide the "transitions" that many beginning researchers have difficulty with. Instead of beginning a paragraph by launching into a description of a previous study, such as "Williams (2004) found that...", it is better to start by indicating something about why you are describing this particular study. Here are some simple examples:

Another example of this phenomenon comes from the work of Williams (2004).

Williams (2004) offers one explanation of this phenomenon.

An alternative perspective has been provided by Williams (2004).

We used a method based on the one used by Williams (2004).

Finally, remember that your goal is to construct an argument for why your research question is interesting and worth addressing—not necessarily why your favorite answer to it is correct. In other words, your literature review must be balanced. If you want to emphasize the generality of a phenomenon, then of course you should discuss various studies that have demonstrated it. However, if there are other studies that have failed to demonstrate it, you should discuss them too. Or if you are proposing a new theory, then of course you should discuss findings that are consistent with the theory. However, if there are other findings that are inconsistent with it, again, you should discuss them too. It is acceptable to argue that the balance of the research supports the existence of a phenomenon or is consistent with a theory (and that is usually the best that researchers in psychology can hope for), but it is not acceptable to ignore

contradictory evidence. Besides, a large part of what makes a research question interesting is uncertainty about its answer. ([University of Minnesota, 2016](#)).

Additional resources

[Doing a literature review](#) / University of Leicester

Texas A&M Writing Centre



[Watch on YouTube](#)

Practice

Question 1

What writing problems do you see in the following introductory paragraph?

In the opening chapter I have attempted to outline and motivate my study of graduate student writing in a school of nursing [or education]. The purpose of this chapter is to relate my study to previous scholarly attempts to describe, analyze and explain academic writing and the processes of its acquisition. One purpose here is to establish what has been revealed in other academic contexts as a basis for the findings of my study. Another purpose is to attempt a critical evaluation of the research so far.

Potential Problems

- The tone and style of a literature review is formal, generally written in the third person
- In the first sentence, 'motivate' may not be the correct term. Perhaps 'inform' would be more appropriate here
- Although 'purpose' of the chapter is mentioned several times, it is unclear if the literature review has one purpose or several purposes. If the only purpose of this review is to critically evaluate previous research, that should be stated more clearly
- Later sentences and paragraphs must also:
 - Establish your reason for undertaking this research and your point of view. The reader doesn't know from this paragraph what 'my study' means
 - Define the general topic and thereby provide an appropriate context for the remainder of the review
 - Point out gaps in the existing literature that your research will fill
 - Describe how the lit review will be organized
- Review this module for more ideas on how to prepare an introduction to your own literature review.

Question 2

Write a 3-sentence statement when this is all that is known:

- There are 5 studies
- 3 describe online programs
- 1 study looks at outcomes; one is positive and one is negative
- No studies compare outcomes with in-class teaching

Test Yourself

Read through this summary webpage on literature and make sure you have answered or are able to answer all the questions posed:

[Structuring your assignment](#) / Queensland University of Technology Australia

[Writing a Literature Review](#) / RMIT University Australia

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Concluding Thoughts on Literature Reviews

Linda Frederiksen & Sue F. Phelps

When you began looking through this book, you may have already been an accomplished researcher and writer. As a student, you may have had both research and writing experiences as an undergraduate that prepared you for your first graduate-level literature review. For most graduate students, however, many of the concepts and skills needed to successfully complete this high-stakes document will be new. And, while developing these skills is not always a linear process, the effort put into acquiring them will serve you throughout both your academic and professional life.

Here is a quick review of the main points from each of the chapters in this book:

1. The purpose of a literature review is to survey the current state of knowledge in the area of inquiry; to identify key authors, articles, theories, and findings in that area; and to identify gaps in knowledge in that research area. (Chapter 3.1)
2. Some common errors in many first-time literature reviews include:
 1. Accepts another researcher's finding as valid without evaluating methodology and data
 2. Neglects to consider or mention contrary findings and alternative interpretations
 3. Findings are not clearly related to one's own study or findings are too general.
 4. Allows insufficient time to define best search strategies and writing
 5. Simply reports individual studies rather than synthesizing the results
 6. Problems with selecting and using most relevant keywords and descriptors are evident.
 7. Relies too heavily on secondary sources
 8. Does not record or report search procedures
 9. Summarizes rather than synthesizes (Chapter 3.1)
3. By understanding what the literature in your field is, as well as how and when it is generated, you begin to know what is available and where to look for it. (Chapter 3.2)
4. Most graduate-level literature reviews begin with choosing a relevant, appropriate, interesting topic and then changing it. (Chapter 3.3)
5. Search and discovery of the literature is an iterative process. There are many places to look and many tools and techniques to use to find resources. Advanced researchers master this skill early on and refine it with each project. (Chapter 3.4)
6. You searched the literature and found lots of relevant resources. How do you now determine whether each item is an appropriate fit for your own review? (Chapter 3.5)
7. How will your resources be organized (alphabetically or chronologically)? By broad general theme or theory? Based on a type of methodology or population? What citation management program or software are you going to use to keep track of all your references? (Chapter 3.6)
8. Your literature review is not a summary of all the articles you read but rather a synthesis that demonstrates a critical analysis of the papers you collected as well as your ability to integrate the results of your analysis into your own literature review. (Chapter 3.7)
9. Like any effective argument, the literature review is about both content and form. It should have logical and smooth flow, a clear introduction and conclusion, and use a consistent citation style throughout. (Chapter 3.8)

Remember: Writing a good literature review takes time. Start early. Begin thinking about your topic and collect references even while you work on other tasks. Write a first draft and then revise. Go over the language, style, and form. Focus, sharpen, clarify, and search again. When you are satisfied with the result, you're done.

How is the literature review evaluated?

It is usually judged in three main areas:

1. Selection of the literature

1. Have you clearly indicated the scope and purpose of the review?
2. Have you included a balanced coverage of what is available?
3. Have you included the most recent and relevant studies?
4. Have you included enough material to show the development and limitations in this area?
5. Have you indicated the source of the literature by referencing accurately?
6. Have you used mostly primary sources or appropriate secondary sources?

2. Critique of the literature

1. Have you clearly (and logically) ordered and sorted the research, focusing on themes or ideas rather than the authors?
2. Does the review move from broader concepts to a more specific focus?
3. Is there adequate critique of research limitations, including design and methodology?
4. How do the studies compare or contrast with debates or controversies highlighted?
5. Is the relevance to your problem clear?

3. Summary and interpretation of the literature

1. Have you made an overall interpretation of what is available?
2. Do the implications provide theoretical or empirical justification for your own research questions/hypothesis?
3. Do the implications provide a rationale for your research design? (RMIT University)

We hope that this discussion about literature reviews is useful. After reading this guide, and reviewing the additional resources and activities in each chapter, we hope you have a better understanding of the research and writing process. What conclusions have you reached regarding the content and structure of a literature review that can answer the question, "How do I write a graduate-level literature review?"

Additional Resources

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Technical Tutorials

This appendix provides technical tutorials to assist you in your writing process. Most tutorials focus on a specific technology (e.g., Zotero, AnyStyle) to solve a particular problem and also provide visual guides in the form of images or videos to walk you through the process in a step-by-step manner.

Constructing an Annotated Bibliography with Zotero
Extracting Resource Metadata from a Citation List with AnyStyle.io
Exporting Zotero to a Spreadsheet



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Constructing an Annotated Bibliography with Zotero

Royce Kimmons

Zotero

Annotated Bibliography

Learning Objectives

At the conclusion of this chapter, you will be able to:

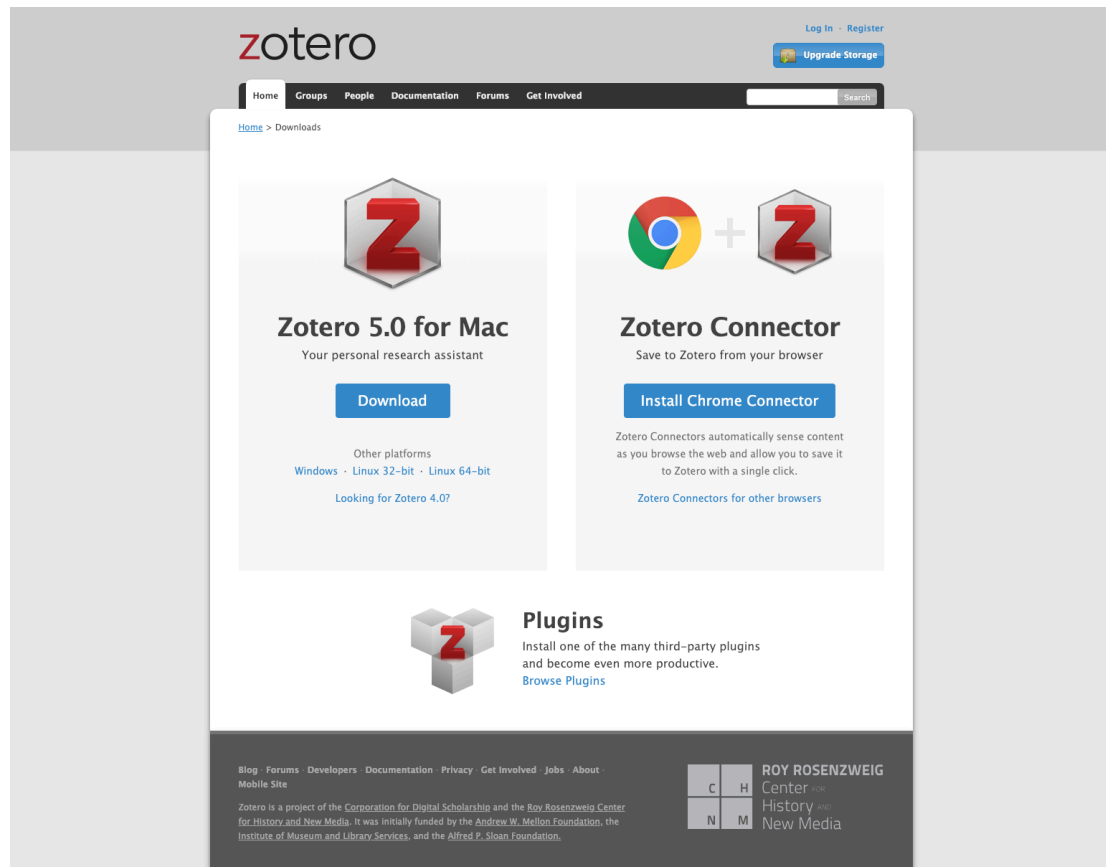
- Generate an annotated bibliography from resources collected in Zotero.

An annotated bibliography can be a useful precursor to a literature review. When engaging in any scholarly writing, it is helpful to begin with an outline that is gradually fleshed out with details and explanations. An annotated bibliography is a structured outline of a literature review topic that includes citations to each resource, summaries of those resources, and syntheses of how the resources fit together within the larger narrative. Thus, an annotated bibliography is both a worthwhile outcome on its own and a good in-between stage for moving from a barebones outline to a fully-fledged literature review.

Because the literature review process requires the management, analysis, and synthesis of many complex resources, such as various research articles that each have their own unique questions, contexts, methods, results, and limitations, staying organized is essential. This means that you need to collect resources and organize them in a way that allows for easy retrieval and that any notes, summaries, and important quotes that you find while reading a resource are attached to that resource in a way that you can make sense of them as you proceed.

As stated in a previous chapter, there are many tools available to support you in the collection, organization, and citation of resources, such as Mendeley, EndNote, and Zotero. Many of these tools are compatible with one another, and a library in one (such as Mendeley) can be exported and then imported into another (such as Zotero). Each of these tools has its own strengths and weaknesses, but for the purposes of this chapter, we will use Zotero, because it (1) allows for folder-level organization of resources, (2) allows for modification of output styles, and (3) can automatically generate a bibliography document that includes unique fields (such as the *Abstract* and *Extra* field).

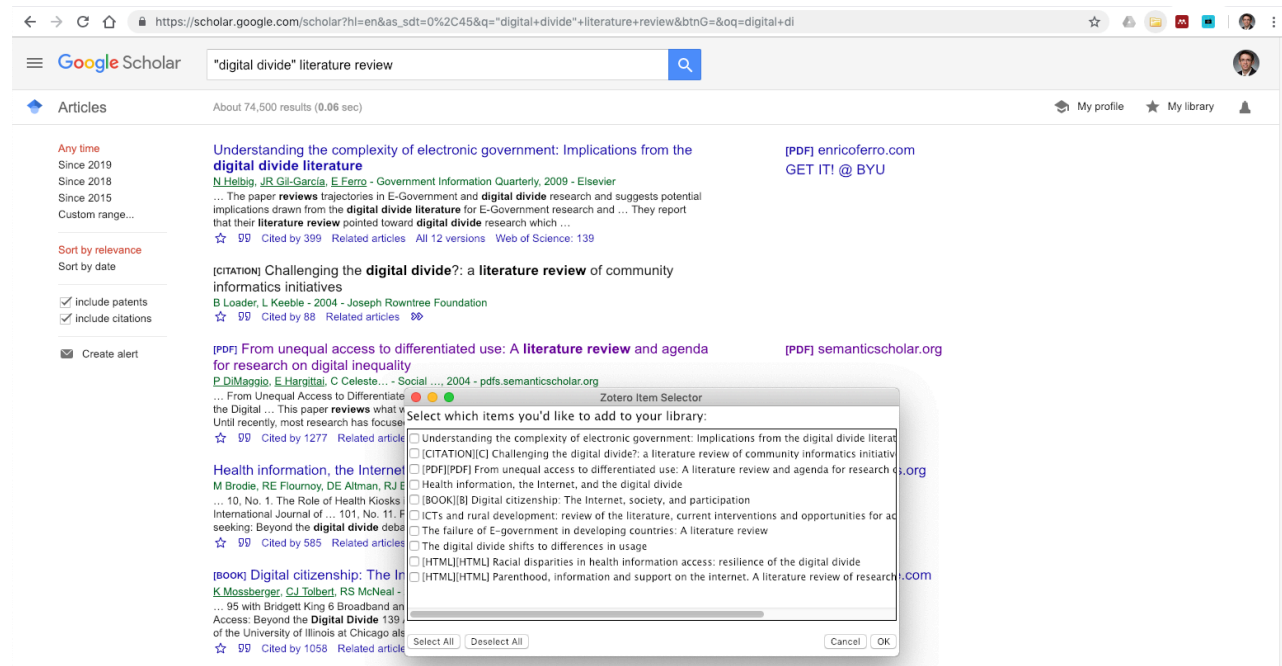
1. Install Zotero and the Appropriate Browser Connector



Zotero can be freely downloaded and installed for various operating systems by going to the [Zotero download page](#). Once you have installed Zotero, you can open the program as a window on your desktop.

After doing this, you will also want to install the appropriate browser connector for Zotero from the [download page](#). This allows you to collect resources directly in your browser that are then piped to Zotero for saving and annotation.

2. Collect a Resource



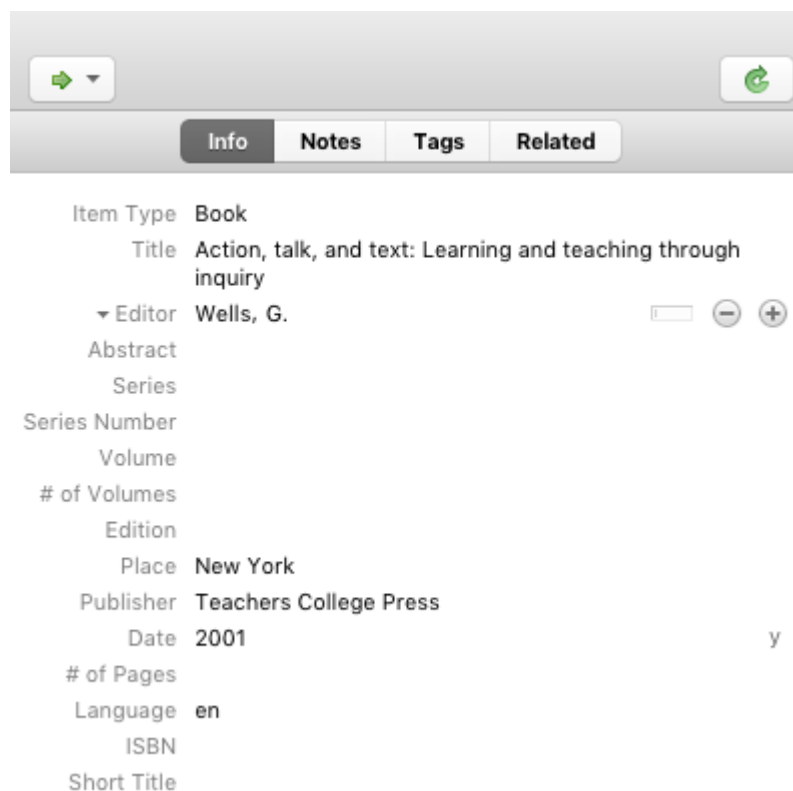
The first step in this process is to begin collecting your resources. Following the guidelines in previous chapters, as you find an appropriate resource, simply click on the Zotero icon at the top-right of your browser window and select the folder you would like to place it in. (The Zotero app must be open on your desktop for this to work.)

Depending on the metadata available on a site, you might be able to do this with either a single resource (such as an open article) or a list of resources (such as from a database search result). Once the resource is saved to Zotero, you can switch to the app to verify that it was saved.

Additionally, if you have access to the PDF for the resource, you can right-click on it in Zotero and choose "Find available PDFs" to allow Zotero to attempt to fetch it for you. If successful, a triangle will appear to the left of the item, which means that the PDF was saved in Zotero. Alternatively, if you have the PDF saved on your computer, you can drag it onto the entry to have Zotero save it for you. To view the PDF, double-click the entry.

Additionally, if you already have a collection of resources in another tool (such as Mendeley), you can export and import them into Zotero (either individually or en masse) by using the RDF format or another standard format (e.g., BibTex, RIS).

3. Update or Verify Information

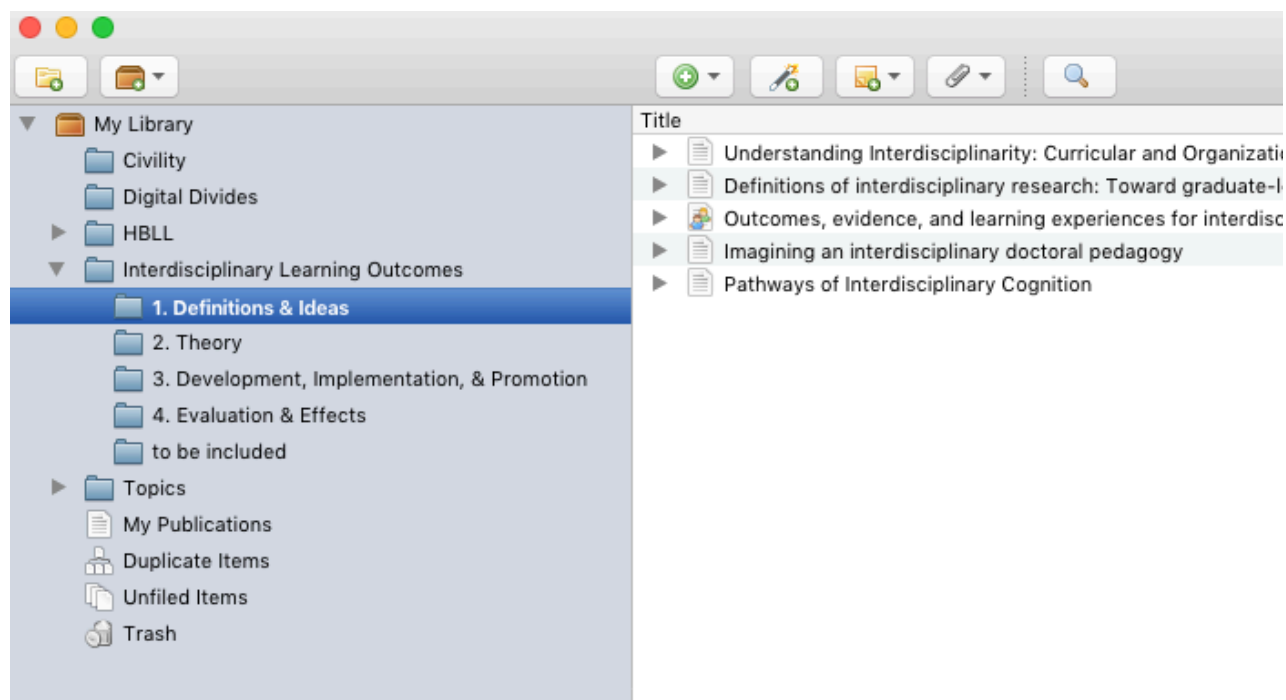


The screenshot shows the 'Info' tab of a Zotero entry. At the top, there are buttons for 'Info', 'Notes', 'Tags', and 'Related'. Below these, the metadata for a book is displayed. The 'Item Type' is 'Book'. The 'Title' is 'Action, talk, and text: Learning and teaching through inquiry'. The 'Editor' is 'Wells, G.'. The 'Abstract', 'Series', 'Series Number', 'Volume', '# of Volumes', and 'Edition' fields are empty. The 'Place' is 'New York', the 'Publisher' is 'Teachers College Press', and the 'Date' is '2001'. The '# of Pages', 'Language', 'ISBN', and 'Short Title' fields are also empty. There are minus and plus buttons next to the 'Editor' field.

Item Type	Book
Title	Action, talk, and text: Learning and teaching through inquiry
Editor	Wells, G.
Abstract	
Series	
Series Number	
Volume	
# of Volumes	
Edition	
Place	New York
Publisher	Teachers College Press
Date	2001
# of Pages	
Language	en
ISBN	
Short Title	

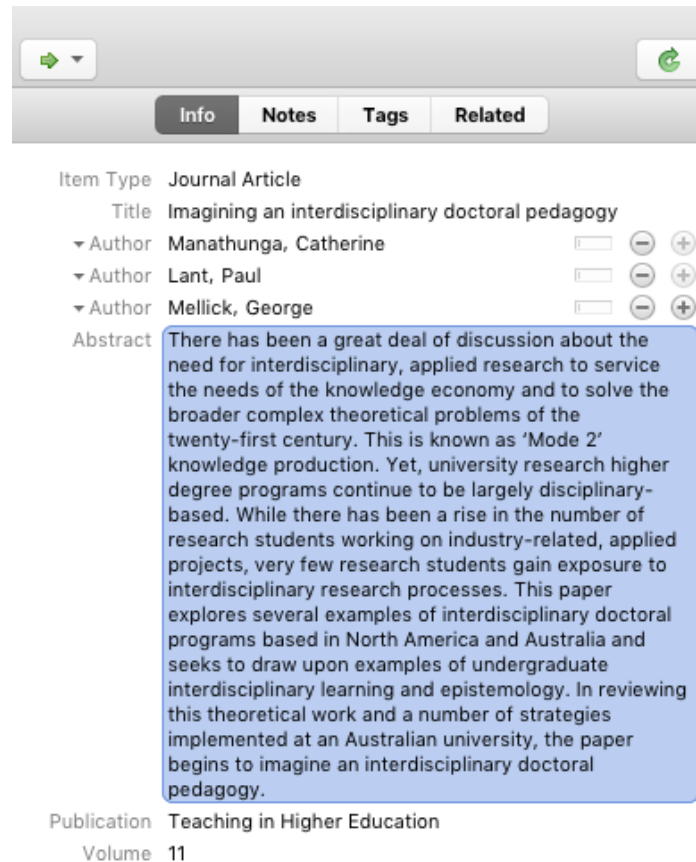
Zotero tries to populate the metadata for each resource as best it can, but it sometimes makes mistakes. For each item, be sure read through the entries for each field and make sure (1) that the information is placed in the correct field and (2) typos and spelling errors are removed.

4. Organize the Resource into a Collection and Subcollection



To keep things organized, you should create a Collection for your topic, and since the overall topic of a bibliography might be huge, you should also create thematic subcollections (much like an outline when you are writing). Example subcollections that are commonly used might be "Definitions," "Theoretical Foundations," or "Empirical Studies." Drag your resource into the appropriate subcollection.

5. Summarize the Resource in its *Abstract* Field



The screenshot shows a digital library interface with a top navigation bar containing 'Info', 'Notes', 'Tags', and 'Related' tabs. Below the tabs, the record details are displayed:

- Item Type: Journal Article
- Title: Imagining an interdisciplinary doctoral pedagogy
- Author: Manathunga, Catherine
- Author: Lant, Paul
- Author: Mellick, George
- Abstract: There has been a great deal of discussion about the need for interdisciplinary, applied research to service the needs of the knowledge economy and to solve the broader complex theoretical problems of the twenty-first century. This is known as 'Mode 2' knowledge production. Yet, university research higher degree programs continue to be largely disciplinary-based. While there has been a rise in the number of research students working on industry-related, applied projects, very few research students gain exposure to interdisciplinary research processes. This paper explores several examples of interdisciplinary doctoral programs based in North America and Australia and seeks to draw upon examples of undergraduate interdisciplinary learning and epistemology. In reviewing this theoretical work and a number of strategies implemented at an Australian university, the paper begins to imagine an interdisciplinary doctoral pedagogy.
- Publication: Teaching in Higher Education
- Volume: 11

Your bibliography should reflect your own understanding of the resources and to avoid plagiarism should 100% reflect your own words. As you read each resource, you should replace any content in the *Abstract* field with your own summary of the resource, explaining what it is about, how it relates to your overall topic, what limits might be placed on the study, and so forth. This should generally be about 100 to 200 words in length and should not include any direct quotes.

6. Include Direct Quotes from the Resource in its *Extra* Field

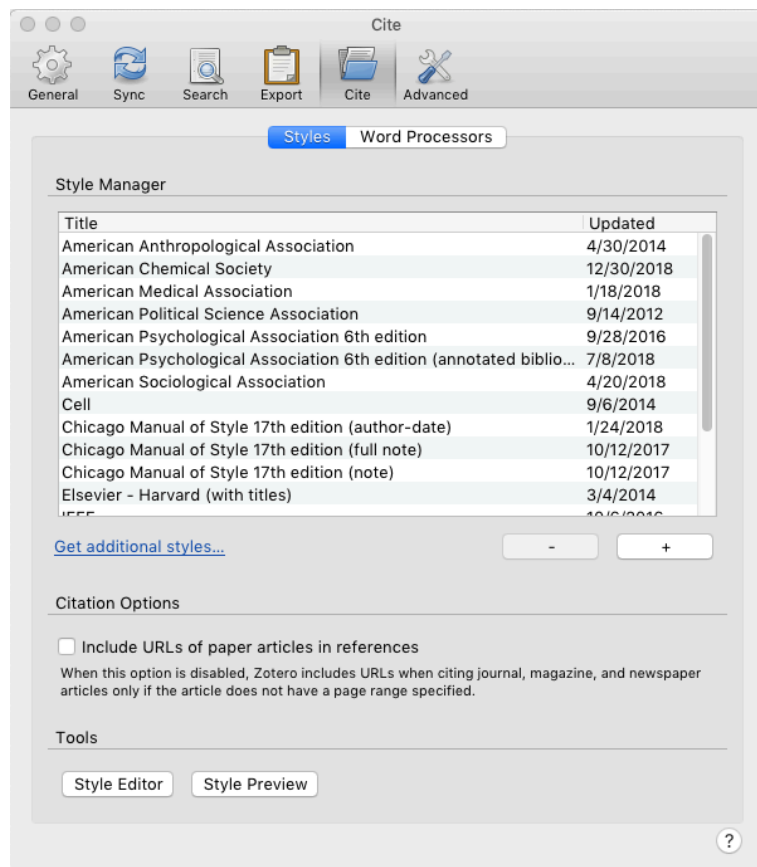
	Info	Notes	Tags	Related
Item Type	Journal Article			
Title	Pathways of Interdisciplinary Cognition			
Author	Nikitina, Svetlana			
Abstract	[my own summary goes here]			
Publication	Cognition and Instruction			
Volume	23			
Issue	3			
Pages	389-425			
Date	September 1, 2005			m d y
Series				
Series Title				
Series Text				
Journal Abbr				
Language				
DOI	10.1207/s1532690xc2303_3			
ISSN	0737-0008			
Short Title				
URL	https://doi.org/10.1207/s1532690xc2303_3			
Accessed	1/4/2019, 1:49:06 PM			
Archive				
Loc. in Archive				
Library Catalog	Taylor and Francis+NEJM			
Call Number				
Rights				
Extra	"This process remains little explored and understood, as few studies have looked at individual thinking in interdisciplinary classrooms in a sustained and systematic way. What are the cognitive operations in which an interdisciplinary mind engages on the path toward the integration of disciplinary ideas?" (p. 390). "Thus, my goal is to accomplish three things: (a) to identify recurrent mental moves that university instructors go through when they develop or teach interdisciplinary courses regardless of their topic or disciplinary background; (b) to put forth a hypothesis (to be further substantiated by new empirical studies) that these processes may be fundamentally similar to our common linguistic and communicative behaviors" (p. 390).			

Especially if you plan to turn your annotated bibliography into a literature review later on, you should also find direct quotations from each resource that are valuable for your topic. Copy and paste this into the *Extra* field. Be sure to encapsulate any direct quote in parentheses (to avoid potential plagiarism down the road) and include an in-text citation with the page number, such as (Kimmons, 2017).

7. Repeat Steps 2 Through 6

Bibliographies may include anywhere from 10 to 1,000 resources. So, repeat Steps 2 through 6 for each resource, and consult other chapters in this book to help you determine what to include, how to manage your scope, and so forth.

8. Install the Custom Style



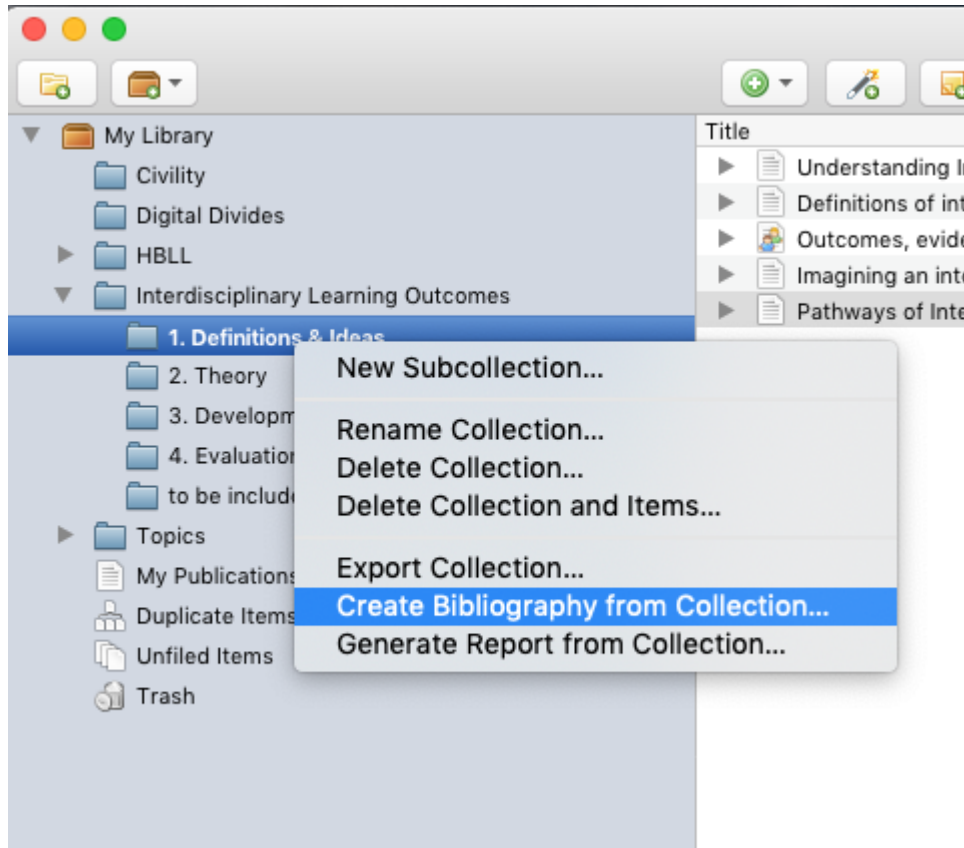
Zotero does not have a default way to export your bibliography with your annotations. To do this, you must install a custom style. Choose the appropriate format from the list below (depending on whether or not you want direct quotes in your bibliography):

- [Annotated bibliography style with the *Abstract* field](#)
- [Annotated bibliography style with the *Abstract* and *Extra* field](#)

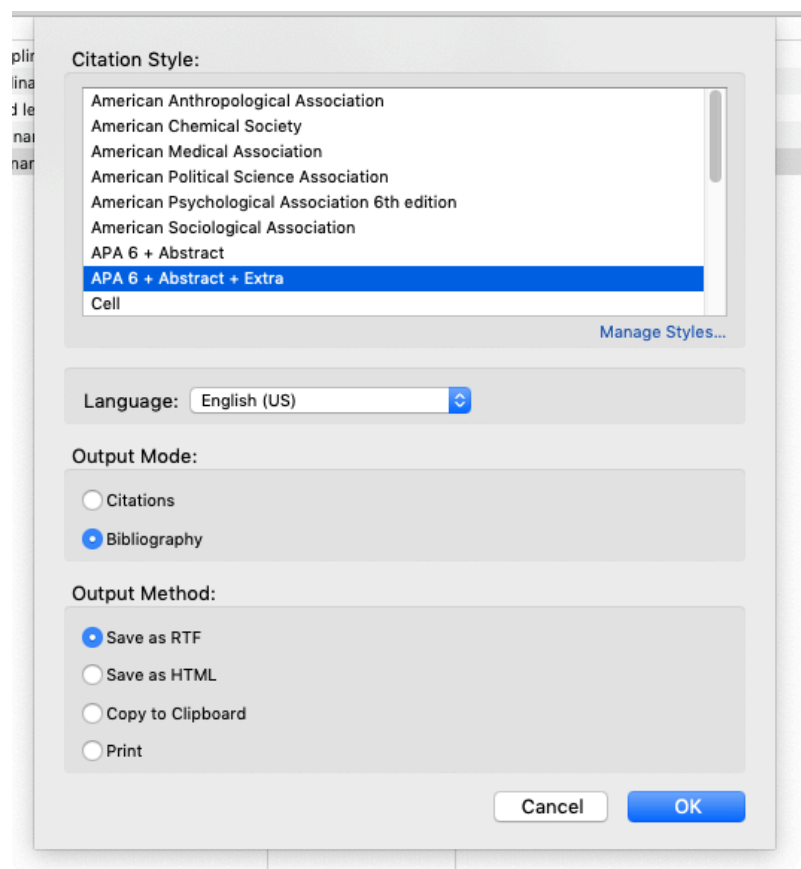
If the file opens in your browser rather than downloading, you will need to go to *File > Save As* or right-click on the link and choose *Save link as...* to save the file to your machine.

Once downloaded, open your *Preferences* tab in Zotero, and click on *Cite > Styles > +*. You can then add your downloaded style to the list of available styles.

9. Export Subcollections Separately



For each subcollection, right-click on the subcollection title, and select *Create Bibliography from Collection....*

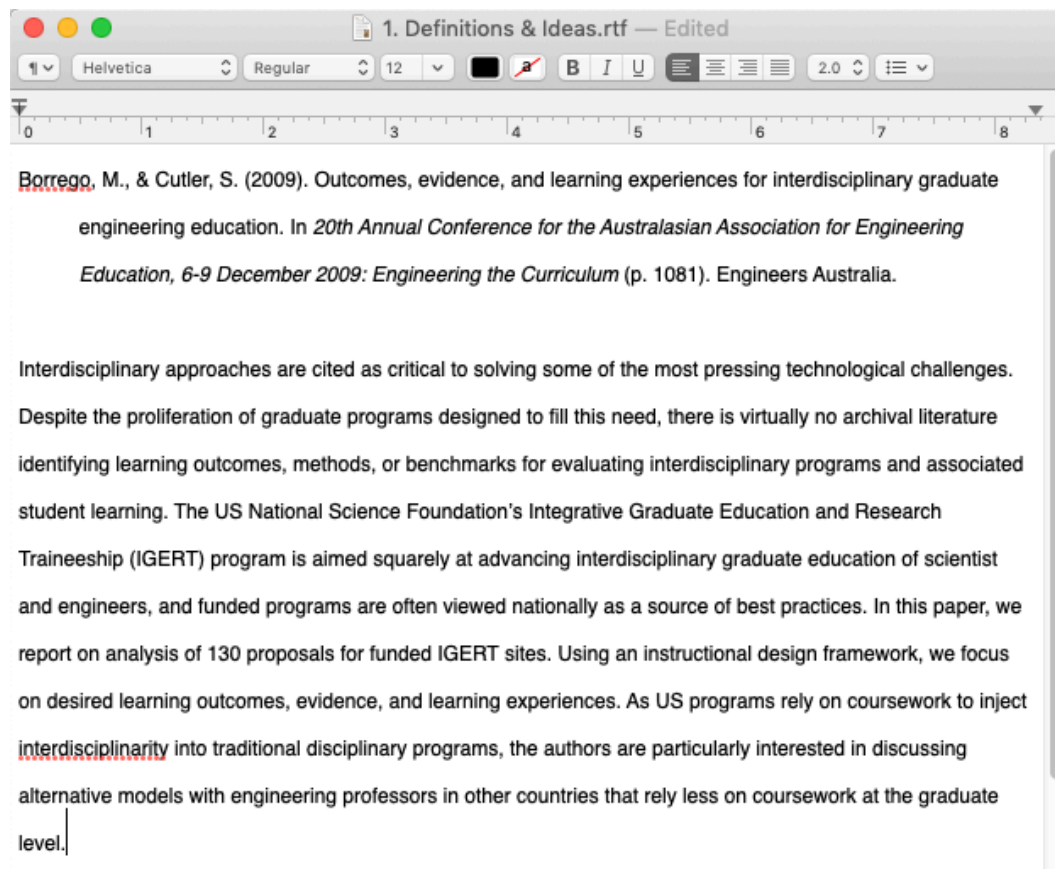


Then select the appropriate style from the available menu (either *APA 6 + Abstract* or *APA 6 + Abstract & Extra*). Be sure that *Output Mode* is set to *Bibliography* and that *Output Method* is set to *RTF*. Click *OK* to save. Give the file an appropriate name, and save it in a place where you can find it.

10. Copy/Paste Subcollection Bibliographies Together in Your Word Processing Application

Once each subcollection is exported, open each one separately and copy/paste the files contents into a master annotated bibliography document. Be sure to create separate headings for each subcollection that you are pasting in so that you are able to keep thematic groups separated.

11. Correct Formatting



Go through this merged document and correct formatting. You may need to add hanging indents to citations and add additional line breaks to provide separation for separate bibliography items.

12. Add Section Summaries

And finally, go through the document and add synthesizing summaries to each subcollection section. These should generally be 100 to 400 words in length and should summarize what the resources in the subcollection as a whole have to say about the topic.

And that's it!

Good luck bibliography-ing!



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Access it online or download it at https://edtechbooks.org/rapidwriting/annotated_bibliography.

Extracting Resource Metadata from a Citation List with AnyStyle.io

Royce Kimmons

Anystyle

One useful way to collect resources on a topic is to check out the list of citations that previous papers on the topic have used. However, it often takes a lot of time to parse through these lists and import them into your citation management software one-by-one for inclusion in your own work.

To work around this, you can use an online service at [AnyStyle.io](https://anystyle.io) to convert the citation list to metadata that your citation management software (e.g., Zotero, Mendeley, EndNote) can understand. Simply follow these steps:

1. Copy the Citation List from the Article



To copy the citation list from your article, open it as a word processing document (e.g., MS Word) or PDF, click and drag to select the text, and go to Edit > Copy. Depending on your file format, this might be easiest to do in multiple steps (copying one chunk of citations, moving on to Step 2, and then coming back).

2. Paste the List to [AnyStyle.io](https://anystyle.io)

The screenshot shows the AnyStyle.io website. At the top, the logo 'AnyStyle' is displayed in white and red. Below it, the text 'Parses scholarly references in no time!' and 'Copy & paste your bibliography below to get started ...' are shown. There are two buttons: 'View on GitHub' and 'Install RubyGem'. Below this, a red heading '1. Parse' is followed by a text box containing seven references. A red button labeled 'Parse 7 references' is positioned below the text box. A large white arrow points down to a grey box labeled '2. Edit'.

AnyStyle

Parses *scholarly references* in no time!
Copy & paste your bibliography below to get started ...

[View on GitHub](#) [Install RubyGem](#)

1. Parse

How to write: Teachers College Press.
Brown, T. L. (2003). Making truth: Metaphor in science. Urbana: University of Illinois Press.
Dennett, D. C. (1991). Consciousness explained. Boston: Little, Brown.
Duschl, R. A. (1990). Restructuring science education: The importance of theories and their development. New York: Teachers College Press.
Duschl, R. A. (1992). Making scientific thinking visible: The role of evidence diversity and theory articulation. In R. A. Duschl & R. J. Hamilton (Eds.), Philosophy of science, cognitive psychology, and educational theory and practice. New York: State University of New York Press.
Duschl, R. A. & Hamilton, R. J. (Eds.). (1992). Philosophy of science, cognitive psychology, and educational theory and practice. New York: State University of New York Press.

Parse 7 references

2. Edit

In a web browser, navigate to [AnyStyle.io](https://anystyle.io) and paste your citations into the Parse box by placing your cursor in the box and clicking Edit > Paste.

3. Clean up the Citation List

For best results, you should make sure that each citation is placed on its own line of text and that unnecessary breaks are removed.

4. Parse and Edit

2. Edit

Author

Duschl, R. A.

Publication date

(1992).

Title

Making scientific thinking visible: The role of evidence diversity and theory articulation.

Editor

In R. A. Duschl&R. J. Hamilton (Eds.).

Title

Philosophy of science, cognitive psychology, and educational theory and practice.

Location

New York:

Publisher

State University of New York Press.

Editor

Duschl, R. A. & Hamilton, R. J. (Eds.).

Publication date

(1992).

Title

Philosophy of science, cognitive psychology, and educational theory and practice.

Location

New York:

Publisher

State University of New York Press.

« 1 2 »

Model last updated 9 days ago

Assign label

Click "Parse X references", and scan through results. If some words are mislabeled, click on the word (holding down Shift to select multiple words) and click "Assign label" to correct them.

5. Save as BibTex

3. Save

☐ Use my changes to train the parser!

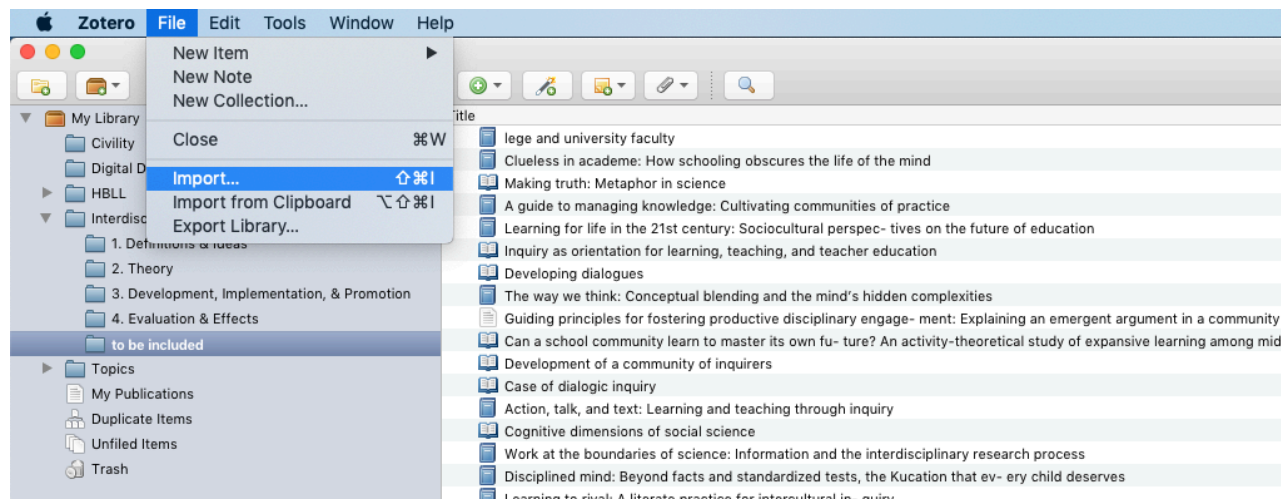
BibTeX

CiteProc/JSON

XML

In the Save area, click BibTeX. This will download a BibTeX file with your metadata.

6. Import to Zotero, Mendeley, or EndNote



In your citation management system, import the file (typically by going to File > Import or dragging and dropping the .bib file onto your open window).



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Access it online or download it at https://edtechbooks.org/rapidwriting/citation_metadata.

Exporting Zotero to a Spreadsheet

Royce Kimmons

Zotero

Spreadsheet

Zotero's a great tool for managing your citation library, but sometimes you need that data elsewhere, and though Zotero has some good export features, you may sometimes want something like a simple spreadsheet of citations to work with. Zotero runs on a SQLite database, which makes report generation and, thereby, conversion to a different format difficult for the lay user. To export Zotero, we will open the SQLite database, submit a query, and then copy the results to Excel, Calc, or another spreadsheet program.

1. First, you will need to download and install the Firefox or Chrome SQLite Manager. Do a quick internet search to find it or search within your browser's add-on or extension library.
2. Restart the browser when prompted.
3. Now, click on the "Tools" menu and select "SQLite Manager."
4. In the manager, you will need to open your Zotero database, which is located in your Firefox profile folder. Rather than querying the database directly, find the zotero.sqlite file on your machine (do a web search if you're unsure where your Firefox profile folder is stored on your particular operating system), and make a copy of it to another location (like your desktop). Though we will not be making any changes to the database, it's better to be safe than to mess up your database. In SQLite Manager, click the folder icon, find your copied database file, and click "Open."
5. This may take a moment. If a popup comes up saying that it's taking a while, just say continue (your database may be large).
6. Now that your database is open, click on the "Execute SQL" tab in the right pane.
7. In the "Enter SQL" box, replace the default "SELECT * FROM tablename" with [this script query](#).
8. Click "Run SQL." (Note: We are not making any changes to the database, just running a Select query. If you would like to make any conditional queries on the database, you can use the notes in the query to help you edit it directly, or you can just wait until you get the data to a spreadsheet program. Feel free to hit "Run SQL" as you make edits to see how the output changes.)
9. In the bottom pane, you will see your output. Left-click on the first entry, scroll all the way down, and then shift+left-click on the last entry to select them all.
10. Right-click on the selected entries and select "Copy Row(s) as CSV" (or use the MS Excel compatible option if appropriate).
11. Finally, open your favorite spreadsheet program, paste your results, and you're done.

(Note: If your spreadsheet does not break up the values properly, you will need to paste the text into Notepad or a similar text editor and save it as a file with the .csv extension. Then, go back to the spreadsheet and import the .csv file.)



Royce Kimmons

Brigham Young University

Royce Kimmons is an Associate Professor of Instructional Psychology and Technology at Brigham Young University where he seeks to end the effects of socioeconomic divides on educational opportunities through open education and transformative technology use. He is the founder of EdTechBooks.org, open.byu.edu, and many other sites focused on providing free, high-quality learning resources to all. More information about his work may be found at <http://roycekimmons.com>, and you may also dialogue with him on Twitter [@roycekimmons](https://twitter.com/roycekimmons).

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Appendices

APA 7 Job Aid
Index of Topics



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APA 7 Job Aid

Basic Stylistic Guidelines

Royce Kimmons

Writing

Academic Writing

APA

This job aid provides a brief guide to common APA 7 rules for academic writing along with tips on how to avoid common mistakes.

Document Formatting

Table 1

Document Setup Guidelines

Element	Formatting
Margins	1" on all sides
Line Spacing	Double-space (without extra line breaks between paragraphs and headings)
Paragraph Indentation	Indent the first line of every paragraph 0.5" (use the indentation feature rather than manual tabs or spaces)
Paragraph Alignment	Left-align

Font Selection

Fonts should use one of the group/size combinations in Table 2. Generally, manuscript text uses a serif font and tabular text uses a sans-serif font.

Table 2

Font Styles

Style Group	Options
Serif	12-point Times New Roman, 11-point Georgia, or 10-point Computer Modern
Sans-Serif	11-point Calibri, 11-point Arial, or 10-point Lucida Sans Unicode

Headings

Table 3

Heading Levels

Level	Formatting
1	Centered, Bold, Title Case
2	Flush Left, Bold, Title Case
3	<i>Flush Left, Bold, Italic, Title Case</i>
4	Indented with Paragraph, Bold, Title Case, Ending with Period.
5	<i>Indented with Paragraph, Bold, Italic, Title Case, Ending with Period.</i>

Headings are best utilized by using your word processor's built-in style system. Here is [a simple Google Docs template](#) with the styles preset so that all you need to do is highlight your heading and apply the appropriate style to apply the proper formatting. Using styles is also preferable to manually formatting each heading because it allows the word processor to identify headings for the purpose of constructing outlines and tables of contents.

Citations

Table 4

Parenthetical Citation Examples

Author Count	Parenthetical Citation	Narrative Citation
One	(Kimmons, 2020)	Kimmons (2020) found that...
Two	(Kimmons & Johnstun, 2019)	Kimmons and Johnstun (2019) argued that...
Three or more	(Kimmons et al., 2020)	Kimmons et al. (2020) suggested that...

Parenthetical citations are used within paragraphs to cite the source of a claim. An example of this would be the following:

Current trends in educational technology reveal that exploring new technologies may be prioritized over addressing persistent educational problems (Kimmons, 2020).

Narrative citations are similar to parenthetical citations but are mainly used if the name of the author is important for adding gravity to the claim or for making clear that the claim is that of the cited author and not your own. An example of this would be the following:

Kimmons and Johnstun (2019) argue that the multihyphenate approach to navigating paradigms in educational technology is superior to alternatives.

Narrative citations referencing an article's title should place the title in quotes and apply sentence capitalization as follows:

Kimmons and Johnston explained in "Navigating paradigms in educational technology" (2019) that paradigms are deep and poorly understood.

Narrative citations referencing the title of a book or journal should italicize the title and apply title case capitalization as follows:

Kimmons et al.'s (2019) article in *The International Review of Research in Open and Distributed Learning* showed that scraping school websites nationwide to glean valuable information was a possibility.

References

References are included at the end of your paper to provide full details for any parenthetical or narrative citations that were included. References should be formatted with a hanging indent of 0.5".

Journal Article

Surname, F. M., & Surname, F. M. (2020). Journal article title goes here. *Journal Title Goes Here*, 1(2).
<https://doi.org/10.10.10/10.10.10>

In this example, the number 1 is the journal volume number and the number 2 is the journal issue number. If there is no issue number, exclude the number and the parentheses.

If a DOI is available, always include it at the end of the reference as a complete URL.

Book

Surname, F. M. (2020). *Book title goes here*. Publisher Name.

Please note that as of APA 7 no publisher location is required. This is a change from APA 6.

Book Chapter from Edited Volume

AuthorSurname, F. M. (2020). Chapter title goes here. In F. M. EditorSurname & F. M. EditorSurname (Eds.), *Book title* (pp. 23-67). Publisher Name.

Here's an example of the chapter you're currently reading:

Kimmons, R. (2018). APA 7 job aid: Basic stylistic guidelines. In R. Kimmons & R. E. West (Eds.), *Rapid Academic Writing*. EdTech Books. https://edtechbooks.org/rapidwriting/apa_formatting_job_aid

Authors

Table 5

Examples of Formatted Author Names

Author Count	Example Reference (Journal Article)
1	Kimmons, R. (2020). Current trends in educational technology research and practice. <i>TechTrends</i> , 64(6).
2	Kimmons, R., & Johnstun, K. (2019). Navigating paradigms in educational technology. <i>TechTrends</i> , 63(5), 631-641.
3-20	Kimmons, R., Graham, C., & West, R. (2020). The PICRAT model for technology integration in teacher preparation. <i>Contemporary Issues in Technology and Teacher Education</i> , 20(1).
21+	One, O., Two, T., Three, T., Four, F., Five, F., Six, S., Seven, S., Eight, E., Nine, N., Ten, T., Eleven, E., Twelve, T., Thirteen, T., Fourteen, F., Fifteen, F., Sixteen, S., Seventeen, S., Eighteen, E., Nineteen, N., ... Last, N. (2020). The PICRAT model for technology integration in teacher preparation. <i>Contemporary Issues in Technology and Teacher Education</i> , 20(1).

Indents

When indentations are necessary, use 0.5" indentations, and use your word processor's built-in indentation tools. Do not use tabs or spaces in place of indentations, as this will create formatting issues later on. Especially do not artificially break a citation with returns to indent subsequent lines.

In Google Docs, you can adjust indents in the ruler bar or by going to *Format > Align & Indent > Indentation Options*.

Page Breaks

If you need to move content down to a new page, do not hit enter/return a bunch of times to create empty paragraphs. Rather, use your word processor's page break feature. In Google Docs you can do this with ctrl+enter/cmd+enter or by clicking *Insert > Break > Page break*. This prevents formatting issues later, such as when you add more content above the break point that might move the content after the break around in unexpected ways.

Lists

Lists can be helpful for grouping content or ideas together. Some general principles to follow when using lists include the following:

- Use unordered (bulleted) or alphabetic (a, b, c) lists instead of ordered/numeric lists (1, 2, 3) unless there is a reason for the order (such as in the steps for following a recipe or process).
- Use parallel structure in list items, such as starting each item with the same form of speech (like a verb or gerund).

In-text Lists

In-text lists can be useful for clarifying breaks between ideas in long pieces of text. Here is an example:

Open education can (a) reduce costs to students, (b) improve teacher flexibility to revise content, and (c) encourage a culture of continuous improvement.

Block Lists

Block lists are useful for lists with larger amounts of content. When creating lists, use your word processor's built-in list feature rather than manually typing the letters, numbers, or bullets. This will help prevent formatting problems and allow you to more easily adjust list content or list item order.

You can introduce a list with a sentence followed by a colon if the sentence is a complete sentence.

Elements of good design include the following: **correct**

- Knowing your user story;
- Focusing on user needs;
- Iteratively improving minimum viable products;
- ...

Elements of good design include: **incorrect**

- ...

Quotations

Direct quotations should generally be used sparingly (relying instead on paraphrasing), but they are sometimes useful for preserving the exact wording used by a cited author or to ensure that you are not misrepresenting an author's claim (especially when you intend to argue against it).

In-text Quotations

When including a direct quotation, you should encapsulate it in quotation marks and include the page number (p. XX) or paragraph number (para. XX) of the quote within the citation. An example of this would be the following:

The authors argued that paradigmatic plurality "may be a necessary reality of addressing complex educational problems" (Kimmons & Johnstun, 2019, p. 632).

Block Quotations

Lengthy quotations of 40 words or more should not be encapsulated in quotation marks, however, and should represent their own block of text with a 0.5" indentation on the left. Include the citation after the final punctuation mark in the blockquote itself unless you have previously referenced the citation in an introductory sentence. An example of this would be the following:

The authors argued the following:

Though the hard sciences may be more amenable to a single-paradigm model (e.g., the Earth and the Sun cannot both be the center of the universe), social sciences and endeavors like education will exhibit greater plurality as professionals harbor fundamental disagreements about morality, people, and the social world. Either way, we have not, as a field, adequately grappled with this plurality nor articulated intentional ways for professionals to navigate it. (Kimmons & Johnstun, 2019, p. 632)

Commas

Commas are perhaps the most misused form of punctuation. Do not use them to merely show when you would take a breath or just because a sentence is getting long. Rather, you should generally only use them in the following situations provided in Table 6, and common examples of comma misuse are provided in Table 7.

Table 6

Correct Comma Usage

Situation	Example(s)	Note(s)
Between Seriated or Listed Elements	The student was sad, angry, and frustrated. correct I collected the data, analyzed the results, and reported on my findings. correct	Use the Oxford rule Use parallel structure
After an Introductory Phrase	First, I collected the data. correct After collecting the data, I ran the results. correct	
To Set Off Nonessential Clauses	Problem-based learning, which is now commonly used, involves giving students a problem to solve. correct	Denoted by "which" or "such as" but not "that"
To Separate Independent Clauses	We collected the data, and we analyzed the results. correct We found one result, but the other team found another. correct	Must use a conjunction, such as "and," "or," or "but"

In lists, also be sure to use Oxford commas, which means placing a comma prior to the last conjunction. This is important because some items in a list might also use conjunctions. Consider the following incorrect example:

My favorite sandwiches are ham and cheese, grilled cheese and peanut butter and jelly. **incorrect**

Does this mean that I like "grilled cheese and peanut butter" sandwiches and also "jelly" sandwiches or "grilled cheese" sandwiches and also "peanut butter and jelly" sandwiches? Rewriting with an Oxford comma makes it clear that "grilled cheese" is its own sandwich and so is "peanut butter and jelly," as follows:

My favorite sandwiches are ham and cheese, grilled cheese, and peanut butter and jelly. **correct**

Table 7

Incorrect Comma Usage

Situation	Example(s)
Before an Essential Clause	Games, that depict violence, are bad for children. incorrect Games that depict violence are bad for children. correct
Between Two Parts of a Compound Predicate	We collected the data, and analyzed the results. incorrect We collected the data and analyzed the results. correct

Semicolons

Semicolons may be used to join two independent clauses into a single compound sentence without using a conjunction, as in this example:

We shouldn't teach students what to think; we should teach them how to think. **correct**

Colons

Colons may be used between an independent introductory clause and a final phrase or clause of illustration, as in this example:

The evidence is clear: Tutoring improves student test performance. correct

Do not use a colon after an incomplete sentence, as in this bad example:

According to the evidence: Tutoring improves student test performance. incorrect

If the text following the colon is a complete sentence, it should be capitalized.

Em Dash

An em dash may be used to set off an element that adds to or digresses from the main clause, as in this example:

Evidence shows that tutoring—direct, one-on-one communication with a more-knowledgeable other—improves student learning. correct

Do not use spaces around the em dash, and do not merely use a dash (-) or two dashes (--) in place of an em dash.

On a Mac, you can use option+shift+dash(-) to get an em dash. On Windows, you can use windows+period(.) to bring up the symbols panel. You can also copy the em dash by copying it from here: —

Hyphens

Hyphens are used to join two words together into a compound word. They are generally used in situations where the meaning of the sentence might be unclear without them, as in this example:

High-achieving students from middle-class families are overrepresented at charter schools. correct

In this example, placing the first hyphen helps clarify that "high" refers to "achieving," while the second clarifies that "middle" applies to "class." One rule of thumb is that if a compound word is being used as an adjective modifying a noun (e.g., "high-achieving" is modifying "students"), then it should be hyphenated.

Tables

Coming soon.

Figures

Coming soon.

Latin Abbreviations

e.g.,

The abbreviation "e.g." is short for the Latin phrase "exempli gratia," translated as "for example." You may use it followed by a comma when providing a single example or a non-exhaustive list of examples, as in this example:

Teachers use many technologies (e.g., Google Docs, interactive whiteboards, and 3D printers) in their classrooms. correct

i.e.,

The abbreviation "i.e." is short for the Latin phrase "id est," translated as "that is." You may use it followed by a comma to restate, define, or clarify something you have already said, as in this example:

Teachers now use interactive whiteboards (i.e., electronic whiteboards with features that allow for tactile interaction) to perform a variety of common tasks. correct

cf.

The abbreviation "cf." is short for the Latin term "confer/conferatur," translated as "compare." You may use it to point your reader to another idea or source related to your statement, as in this example:

Thompson (2019) found that tutoring had little effect on student achievement, unlike previous studies (cf. Adams, 2011). correct

etc.

Generally avoid using "etc." or "et cetera," and use "e.g." instead. Definitely do not use "e.g." and "etc." in the same list, because if you do, "e.g." means that you think it's important to provide some items in a list, but "etc." means that you don't think it's important to provide additional items in the list, which is unnecessary, because you're only providing the needed items to begin with.

Teachers use many technologies (e.g., Google Docs, interactive whiteboards, 3D printers, etc.) in their classrooms. incorrect





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