

A Primer of Professional Writing

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“The message is clear: eschew obfuscation!”
Dr. W. Leslie Pengelly, University of Montana

Introduction

Communicating effectively through writing will benefit you wherever life takes you. The purpose of this primer is to provide lessons for mastering the craft of professional writing. To get this far in your education, you have completed English grammar and composition training in elementary and secondary schools as well as a freshman English composition course at the college level. These courses provided you with a basic foundation for proper use of the English language but likely stopped short of emphasizing the techniques of professional writing. The lessons in this primer will take you to the next step of improving your ability to write clearly, concisely, and with focus. The return on mastering these lessons will be greater academic achievement and more opportunity to make a difference in our world. We divided the primer into eight sections and begin with an overview of each:

- In **Section I**, we outline the sequential steps for preparing a professional paper. Following these steps will help you maintain proper focus on any writing assignment and facilitate completion of a quality product.
- An important function of professional papers is to synthesize the knowledge of others. In **Section II**, we explain how to properly credit these sources.
- Tables and graphs can add clarity to what you are sharing, but only if they are properly structured. We share tips on how to do this in **Section III**.
- Some writing problems are universal. In **Section IV**, we share eight common problems and show how to avoid them.
- A good writer gets to the point. In **Section V**, we provide advice on how to enhance your ability to write concisely.
- A good writer also chooses the right words to convey information. **Section VI** contains correct definitions of terms that are often misused.
- In **Section VII**, we share six final thoughts about writing to help you develop a full perspective of the craft of writing. We hope you will adopt these ideas as your own.
- We end the primer with **Section VIII**, a list of resources that provide additional advice about writing. We recommend that you refer to the websites often and invest in at least one of these books as a resource to help you improve your writing.

I. Developing Your Document

Writing is a venue for thinking, learning, and teaching. Below we outline the main phases of the writing process. Keep in mind that your understanding of your subject, and therefore your paper, may change repeatedly as you proceed through the process.

A. Determine the subject and scope of your paper

1. *Brainstorm topics to unleash your intuition and curiosity, and to help you discover what interests you most.*

Begin by writing down topics that interest you on a piece of paper. Do not judge the topics; just write them down. (If you are unable to come up with ideas easily, scan your textbook, articles, or the news to consider topics you might be interested in writing about.) Review the list to identify a topic that resonates with your academic and personal interests.

2. *Draw a concept map to help identify the scope of your topic.*

Write your topic in the middle of a piece of paper. Then quickly write down ideas you associate with your topic, allowing the ideas to surround your topic on all sides. Don't judge your ideas. Once you finish writing down ideas, circle related ideas and draw lines between them. Cross out ideas that don't fit.

3. *Create a statement or question based on your mapping exercise to provide focus to your paper.*

Example: How is it possible that alternative energy sources, such as wind and solar energy, successfully reduce our carbon footprint but not our ecological footprint?

4. *List aspects about the topic that your readers need to know in order to understand and appreciate your subject.*

Examples:

- Briefly explain how the wind and sun provide energy.
- Define carbon and ecological footprints.
- Explain the aspects of carbon and ecological footprints of alternative energy development.
- What wildlife species might be most adversely affected?
- What solutions have been or could be implemented?

5. *Gather background literature and information about your topic*

Read pertinent literature carefully, critically, concentrating on information that pertains to your topic. Highlight important statements and take copious notes. Make sure to note the source of the information so you can cite it in your paper. This includes the author(s) name, title, publisher, date of publication, and page numbers.

B. Organize your ideas

1. *Draw a concept map.*

Put each idea on a piece of paper and arrange the pieces in relationship to each other. Patterns will emerge that will serve as a framework for the narrative of your paper.

2. *Create an outline.*

Place major subjects under major numbers and group supporting ideas underneath (Note the organization of this outline). The order of major subjects should reflect a logical flow of ideas that address your focus statement. You may need to revise the outline as you write your first draft of the paper or as you think of better ways to organize your ideas.

The Hourglass Model: A well-organized paper is like an hourglass and consists of three parts: the introduction that gives a broad overview of the subject, the body that provides specific details about the subject, and a conclusion that provides a broad synthesis of important findings.

Introduction: Sets the direction of the paper and contains two parts.

Background: Describe the subject and purpose of the paper. Consider your purpose for writing this paper and what makes it important. Provide a brief overview of what is known about the subject.

Focus Statement or Question: In a scientific paper, this is the hypothesis, question, or objective. Based on what you have stated for background on the subject, describe what you will be addressing or investigating.

Body: Provide specific information about the subject. Include pertinent details from other studies.

Conclusion: **Do not** rehash information already provided in the body. This section should weave together the important findings. Describe one to three lessons that the reader can learn from the information you provided. Provide answers to the focus question. Explain what still needs to be investigated.

C. Create your first draft

1. *Put your initial thoughts on paper.*

Don't worry about making your spelling, grammar, or organization perfect. However, as you complete each paragraph, check that the beginning and ending sentence expresses the subject of the paragraph.

2. *Walk away from your paper if you get to a dead end or can't think of more to write.*

Taking a break from writing can help you come up with new ideas or perspectives. If you do walk away from the paper for awhile, bring a notepad to jot down ideas that come to mind.

D. Revise your paper: Then revise it again...and again...and...

1. *Review your outline.*

Reorganize your paper so it better meets your initial outline. However, if you think of a better order of organization, don't be afraid to make the change.

2. *Review each paragraph and sentence.*

Some paragraphs or sentences will be spot-on perfect as soon as you write them. Others will need to be revised. Yet others will need several revisions. Each successive draft of the paper should contain a diminishing number of problems to solve.

Work on one paragraph at a time. Fix spelling and grammar as you revise each paragraph. Use the most direct wording possible when reconstructing sentences (see *Section IV* Bruce's Pet Peeves and *Section V* Superfluous Words and Suggested Substitutes). Each paragraph should get to the point and provide the needed information as briefly as possible.

When you have revised a paragraph, read the paper through that paragraph to determine if ideas and information flow logically and fit well with the rest of the paper.

E. Peer-Review: Painful, but essential

1. *When you have a fairly clean draft, have a fellow student review your paper.*

By this point you are probably reading right past any mistakes. Another set of eyes will provide a fresh perspective.

2. *Discuss all comments made by your reviewer(s) so you clearly understand all suggested revisions.*

You are not obligated to make all suggested changes, but always be open to improvements. If you don't have the chance to share your paper with a fellow student, slowly read the paper aloud. Reading your paper aloud can help you locate problems in organization, content, flow, and wording.

II. Citing Literature

Citing published materials provides the foundation and justification for the ideas, theories, and facts you present in your paper. It creates credibility for your paper and also honors the writing and research of others. Standards exist for reporting sources of information that allow the reader to readily confirm, evaluate, and relocate references as needed.

A. In the paper

1. *Cite sources parenthetically if possible. For the citation, use the authors' last name(s) and year of publication ONLY with NO comma between them.*

Avoid if possible: Smith and Wesson (1997) found that tigers kill at least one deer each day.

Best: Tigers kill at least one deer each day (Smith and Wesson 1997).

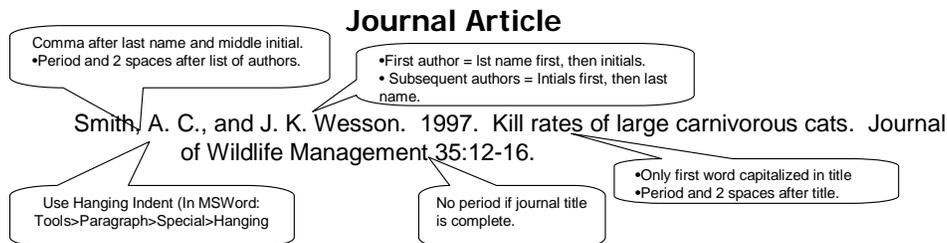
2. *For citations by more than 2 authors, use et al after the first author's name.*

Example: (Jones et al. 2001).

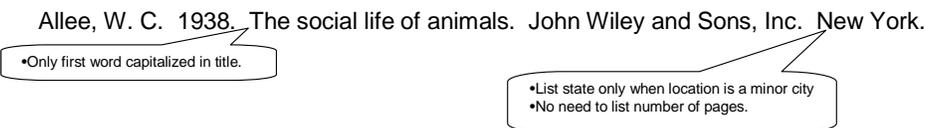
6. *Cite more than one source for the same information in chronological order.*

Example: Tigers kill at least one deer each day (Milne and Dunn 1980, Smith and Jones 1986, Smith and Wesson 1997).

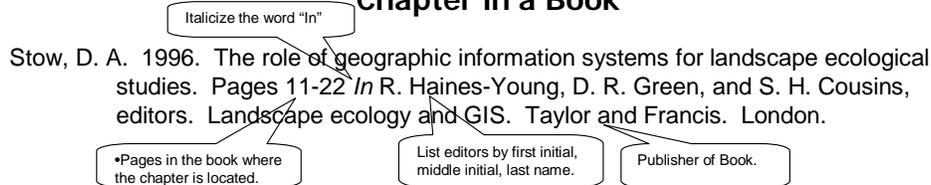
B. In the Literature Cited section



Book



Chapter in a Book



III. Constructing and Citing Tables and Figures

The purpose of tables and figures is to summarize evidence that supports claims made in the body of the paper. Tables and figures should not replace the entire narrative on a specific subject.

Citations of tables and figures in the paper should be parenthetical if possible.

No: “See results in Table 1.”

Yes: “Eagles had longer talons than parrots (Table 1).”

Examples

Legend placed above table.
Number tables sequentially as they are referred to in the paper.

What was measured

Where it was measured

Table 2. Time since residents and campers at 5 sites in New Mexico received information about safety in bear country. Data were collected during 2001-02 at 2 treatment (information was readily available) and 3 control sites (information was not readily available). Treatment sites included the northern Sangre de Cristo Mountains and the northern Sacramento Mountains. Control sites included the central Sangre de Cristo Mountains, the southern Sacramento Mountains, and the southern Gila National Forest. Values are percent of group totals; sample sizes are in parentheses.

When it was measured

Time since Information was Received	Resident-Control	Resident-Treatment	Camper-Control	Camper-Treatment
<3 months	15.4 (266)	23.2 (300)	18.0 (50)	48.6 (186)
3-12 months	15.7 (272)	25.2 (326)	12.6 (35)	7.6 (29)
1-2 years	13.8 (239)	17.8 (230)	12.2 (34)	12.0 (46)
>2 years	20.3 (352)	14.3 (184)	25.5 (71)	19.6 (75)
Never	34.7 (599)	19.5 (251)	31.7 (88)	12.3 (47)

Clear explanation of measurements.

Generally, tables should contain only 3 lines: under the legend, under column headings, and at the base of the table.

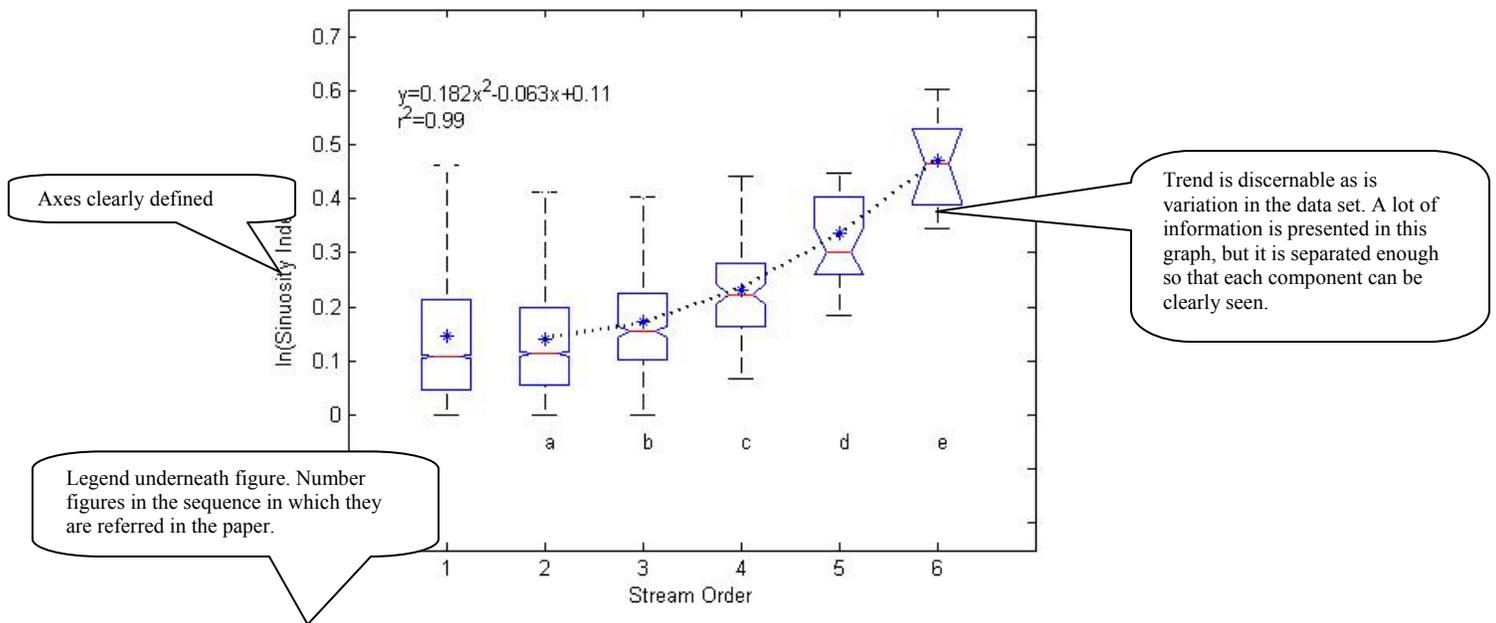


Figure 1. Sinuosity of streams across 6 stream orders in the Whitewater River basin, Kansas. The dashed line represents the regression fit for stream orders 2 through 6. Stars represent mean sinuosity values for each order. Boxplots encompass first and third quartiles with notches representing median values. Whiskers encompass all other values or 1.5 times the interquartile length, whichever is greater. Different letters underneath each boxplot denote differences in means.

Clear definitions of each component of the graph.

III. Bruce's Pet Peeves

The most common problems found in early drafts of papers boil down to a handful of innocent mistakes that can be fixed by practicing a few simple rules. The Pet Peeves listed below are easy to avoid once you learn the rules.

A. Indirect language or passive voice

Avoid by using a "subject-verb-object" structure.

BAD (weak and indirect): The river was visited by Mary.

GOOD (strong and direct): Mary [subject] visited [verb] the river [object].

B. Using objects of scientific culture (e.g., "data", "literature", "research", "scientists") as the subject of a sentence

Instead use natural scientific topics and problems, e.g., "diversity", "population dynamics", "nitrogen cycling".

UNDESIRABLE: The data show that bears eat berries.

UNDESIRABLE: Smith and Johnson (1997) show that bears eat berries.

DESIRABLE: Bears eat berries (Smith and Johnson 1997).

C. Misuse of “effect” (noun) and “affect” (verb)

CORRECT: Smoking has a big effect on health.

CORRECT: Smoking affects health.

D. Extra commas or semicolons within citations

INCORRECT: ... gulls eat mussels (Smith et al.; 1992).

INCORRECT: ... gulls eat mussels (Smith et al., 1992).

CORRECT: ... gulls eat mussels (Smith et al. 1992).

E. Incorrect placement of periods at end of citation

INCORRECT ... gulls eat mussels. (Smith 1992).

CORRECT: ... gulls eat mussels (Smith 1992).

F. Sentences that start with “This” or “These”

INCORRECT: "This fact supports my argument." (Reader wonders, “What fact?”)

CORRECT: Rising population size threatens sustainability.

(Instead of “This” or “This fact” the sentence explains what “this” is.)

G. Incorrect use of tense

Use past tense to describe your results. Use present tense to describe results from published literature.

H. Dangling participles that create indirect, unclear language

INCORRECT: Working at my desk, the sudden noise startled me.

Working is the dangling participle.

CORRECT: I was startled by a sudden noise while I worked at my desk.

Note subject (I), verb (was startled), object (noise) structure of the sentence.

Pet Peeves Exercise: How to Spot ‘em and Fix ‘em

1. Misuse of “effect” (noun) and “affect” (verb).

CORRECT: Smoking has a big *effect* on health.

CORRECT: Smoking *affects* health.

To check if ‘effect’ (a noun) is correct, replace it with the noun “result.” Also check to see if there is an article (the, a, or an) before; if so, you should use “effect” because nouns use articles but verbs don’t. To check if “affect” (a verb) is correct, replace it with a form of the verb “to influence.” Sometimes “effect” is used as a verb: “The provost effected a new plan.” To check if “effect” (a verb) is correct, replace it with the verb “to make happen” or “to bring about.”

Example: “Smoking has a big effect (*noun: a result*) on health.” Seems logical.

Example: “Smoking affects (*verbs: to influence*) health.” Seems logical too.

Exercise: Circle the incorrect uses of effect and affect. Hint: three of the seven are incorrect.

Once upon a time Red Riding Hood (RRH) went to visit her grandmother. On the way, the big bad wolf said, “Your visit won’t have any affect on her, she is starving to death!” RRH said, “No way, the bread in my basket is fortified to great effect!” “Well,” said the wolf, “I guess that some breads affect health more than others, but whatever the effects, you had better prepare for the worse.” Soon RRH arrived at the cottage where Grandma was gasping her last. Quickly, RRH fed Grandma a morsel, which immediately had the desired affect. Grandma sprung out of bed, just in time to escape the wolf. The moral of the story is, the effect of kindness always exceeds the affect of evil.

2. Extra commas or semicolons in citations:

a) INCORRECT: ... gulls eat mussels (Smith et al.; 1992).

INCORRECT: ... gulls eat mussels (Smith et al., 1992).

b) CORRECT: ... gulls eat mussels (Smith et al. 1992).

Exercise: In the incorrect examples above, cross out the errors.

3. Citation follows period.

a) INCORRECT ... gulls eat mussels. (Smith 1992).

b) CORRECT: ... gulls eat mussels (Smith 1992).

Exercise: In the incorrect example above, cross out the error.

4. Sentence starts with “This”, “It”, “These”.

INCORRECT: This fact supports the hypothesis. (Makes reader wonder, “what fact?”)

CORRECT: “Rising population size supports the hypothesis.” Instead of “This” the sentence *says* what “this” is.

Exercise: Substitute a logical noun for “This” and “These” in the following sentences.

a) This means that a rapidly rising population is at risk for exceeding the carrying capacity.

b) These explain how predators and prey interact to produce oscillating populations through time.

Pet Peeves Exercise: How to Spot ‘em and Fix ‘em. (continued)

5. Use simple *present tense* to describe results from the published literature. Use *past tense* to describe your results.

INCORRECT: "Elk have been known to browse fruit trees in suburban orchards."

CORRECT "Elk browse fruit trees in suburban orchards."

(Notice that the present tense eliminates extra words that made the original sentence “wordy”.)

Exercise: Edit the sentence to use the present tense.

"Bears have been known to invade domestic garbage cans."

6. Dangling participles make for indirect, unclear language.

A present participle is a verb that ends in –ing and a past participle is a verb that ends in –ed. They are considered to be dangling participles when the subject of the verb and the subject of the sentence do not agree.

INCORRECT: Working at my desk, the sudden noise startled me.

"Working [at my desk]" is the dangling participle and doesn't match the subject of the sentence "the sudden noise."

CORRECT: A sudden noise startled me while I worked at my desk.

Exercise: Edit the sentences to remove the dangling participles.

"Leaking ink everywhere, Kevin threw away the broken pen."

"If properly installed, you can open the lock without pressing the safety button."

7. Indirect language. Best avoided by using a “subject-verb-object” structure.

WEAK, INDIRECT LANGUAGE (bad): The river was visited by Mary.

STRONG, DIRECT LANGUAGE (good): Mary visited the river. (Subject Mary; Verb visited; Object river).

Exercise: Rewrite the following painful sentence so that it uses direct language:

"Reversal of the relative abundances of algae and herbivores will result from the collapse of wild tuna fisheries due to overfishing, as predicted by the trophic cascade hypothesis."

8. Objects of scientific culture (e.g., “data”, “papers”, “research”, “scientists”) used as subjects. Rather, scientific topics and problems (e.g., “diversity”, “population dynamics”, “nitrogen cycling”) should be the subjects.

UNDESIRABLE:

The *data* show that bears eat berries.

Smith and Johnson (1997) show that bears eat berries.

The literature does not have enough studies of flea diversity in Madagascar.

DESIRABLE: Bears eat berries (Smith and Johnson 1997).

Flea diversity in Madagascar needs more study.

Exercise: Rewrite the sentence to make "seagulls" the subject, "prefer" the verb, and "mussels" the object.

"Previous studies have shown that seagulls prefer medium size mussels and actively select them from the wild population (Monteith 1967, Pianka 1986)."

V. Superfluous Words and Suggested Substitutes

(Source: http://joomla.wildlife.org/documents/Manuscript_Guidelines_2008.pdf)

Superfluous wording

the purpose of this study was to test the hypothesis
in this study we assessed
we demonstrated that there was a direct
were responsible for
played the role of
on the basis of evidence available to date
in order to provide a basis for comparing to
as a result of
for the following reasons
during the course of this experiment
during the process of
during periods when
for the duration of the study
the nature of
a large (or small or limited) number of
conspicuous numbers of
substantial quantities
a majority
a single
an individual taxon
seedlings, irrespective of species
all of the species
various lines of evidence
they do not themselves possess
were still present
the analysis presented in this paper
indicating the presence of
despite the presence of
checked for the presence of
in the absence of

Suggested substitute

I (or we) hypothesized
we assessed
we demonstrated direct
caused
were
consequently
compare
through, by
because
during the experiment
during
when
during the study
(omit by rearrangement)
many (or few)
many
much
most
one
a taxon
all seedlings
all species
evidence
they lack
persisted, survived
our analysis
indicating
despite
checked for
without

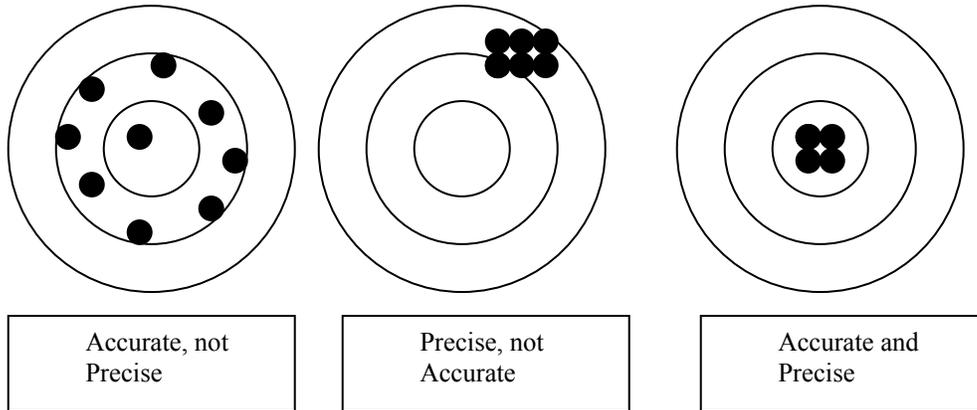
Superfluous Words and Suggested Substitutes (continued)

Superfluous wording	Suggested substitute
a series of observations	observations
may be the mechanism responsible for	may have caused
in a single period of a few hours	in a few hours
occur in areas of North America	are in North America
adjacent transects were separated by at least 20 m	≥20 m apart
in the vicinity	nearby
separated by a maximum distance of 10	10 m apart
the present-day population	the population
their subsequent fate	their fate
whether or not	whether
summer months	summer
are not uncommon	may be
due to the fact that	(omit by rearrangement)
showed a tendency toward higher survival	had higher survival
devastated with drought-induced desiccation	killed by drought

V. Commonly Misused Words with Definitions for Proper Usage

(Adapted from: http://joomla.wildlife.org/documents/Manuscript_Guidelines_2008.pdf)

accuracy (see precision): extent of correctness of a measurement or statement.



affect (see effect): verb, to cause a change or an effect; to influence.

among (see between): use in comparing >2 things. Example: The money was divided among four players.

between (see among): use in comparing only 2 things. Example: The agreement was between Steve and Bill.

circadian: approx 24 hr.

conterminous: having a common boundary; meeting at the ends without an intervening gap.

continual: going on in time with no, or with brief, interruption.

continuous: going on in time or space without interruption.

contiguous: in close proximity. May or may not come in contact.

decimate: to destroy a great number or proportion of.

desiccation: to dry up; to drain of emotion or intellectual vitality. (Note spelling: one “s” followed by 2 “c’s”).

diurnal: recurring every 24 hr; occurring in daylight hr.

effect: (see affect): usually a noun, the result of an action; as an adverb (rare), to bring about or cause to exist, or to perform.

e.g. (see i.e.): for example.

enable (see permit): to supply with means, knowledge, or opportunity; to make possible.

ensure (see insure): to make certain or guarantee.

farther: more distant in space, time, or relationship.

fluctuation: continual change from one point or condition to another. Undulation.

further: going beyond what exists, to move forward.

Commonly Misused Words with Definitions for Proper Usage, continued

i.e. (see e.g.): that is.

incidence (see prevalence): no. of cases developing per unit of population per unit of time.

insure (see ensure): to assure against loss.

logistic: symbolic logic.

logistics: operational details of a project or activity.

mass (see weight): proper international use for measures of mass.

percent: adjective, adverb, or noun. Spell out only when the value is spelled out or when used as an adjective. Use “%” with numerals.

percentage: noun, part of a whole expressed in hundredths; often misused as an adjective, e.g., percent error, not percentage error.

permit (see enable): to allow, to give formal consent.

precision: (see accuracy): degree of refinement with which a measurement is made or stated; e.g., the number 3.43 shows more precision than 3.4, but is not necessarily more accurate.

prevalence: (see incidence): number of cases existing per unit of population at a given time.

sensu: as understood or defined by; used in taxonomic reference.

since: from some past time until present; not a synonym for “because” or “as.”

presently: in the future, not synonymous with “at present” or “currently.”

principal (see principle): first in rank or importance.

principle (see principal): accepted rule of conduct. Primary laws or truths, i.e., the laws of physics.

that (see which): pronoun introducing a restrictive clause (seldom immediately preceded by a comma). Example: The lawn mower that is broken is in the garage. (Tells which one).

usage: firmly established and generally accepted practice or procedure.

utilization, utilize: avoid by using “use” instead.

various: of different kinds.

varying: changing or causing to change. Do not use for “different”.

very: a vague qualitative term; avoid in scientific writing.

weight (see mass): should seldom be used.

which (see that): pronoun introducing a nonrestrictive clause (often preceded by a comma or preposition [for, in, or of which]); the word most often misused in professional manuscripts. Example: The lawn mower, which is broken, is in the garage. (Adds a fact about the lawn mower).

while: during the time. Use for time relationships but not as synonym for “whereas,” “although,” and “similarly,” which do not imply time.

VI. Six Final Thoughts about Writing

1. **You and Your Words: a nice acquaintance, not a marriage.** The harder you work on getting words on paper, the less you are willing to give them up. Fight that feeling! The first draft is never the final draft; revision is part of the process. All words, sentences, and paragraphs should be fodder for improvement.
2. **Brevity is next to Godliness.** Yes, we know the correct phrase is “Cleanliness is next to Godliness”. Our point is to *get to the point*. Your readers are busy, and just like you, have a lot of thoughts competing for their attention. Your goal is to provide them pertinent information about the subject in a compelling and interesting way. Delete information that you *would like to tell* but your reader *doesn't need to know*.

Getting to the Point: A Lesson from History

(information from www.wikipedia.org)

Do you know who gave the Gettysburg Address?

Sorry, that's not correct.

Edward Everett, a prominent statesman and great orator of the time, was invited to give the keynote address at the dedication of the cemetery at Gettysburg. Abraham Lincoln was essentially no more than a “ribbon-cutter” with his role limited to a few brief dedicatory remarks. Yet, after the ceremony, Everett wrote Lincoln and told him that the 2 minute (270 word) speech of the President summarized the importance of the occasion much better than Everett's own 2 hours (13,607 words!) of oratory.

Lincoln's words are some of the most quoted in American History.

Can you recall *anything* that Everett said?

We can't either.

3. **Writing requires Thinking.** A paper comprised mainly of generalities with little detail usually means the writer did not adequately think about the subject matter. Ask (and answer!) probing questions as you write and revise. Good writing takes concentration. To facilitate this, we strongly recommend a quiet environment; that means *turn off your iPod™!*
4. **Writing is Hard Work.** Poor grammar, poor sentence structure, and poor organization are evidence of a lack of effort. Stay rested and well-fed during the writing process. In addition, stay disciplined. Write for set periods of time (say 1 hour) and then give yourself a 20 minute break. Exception: If the words are flowing, stay with it until you are finished or the momentum slows down.
5. **Boring, but Essential: Buy a dictionary and a book on grammar and writing .** Master what the book on grammar and writing says. Keep both the dictionary and writing book on your desk and refer to them as you write.
6. **Be a Better Reader to become a Better Writer.** You can gain a lot of ideas on style, sentence structure, and use of words by regularly reading professional papers in your discipline. *Any* reading (even an occasional trashy novel!) can improve your mastery of the English language.

VII. Suggested Resources

UNM CAPS Writing Lab

Zimmerman Library, Third Floor. <http://caps.unm.edu/writing>

Online Writing Sources

Purdue Online Writing Lab: <http://owl.english.purdue.edu/>

Research and Documentation Online (Diana Hacker, Bedford St. Martin's):
<http://www.dianahacker.com/resdoc/>

Merriam Webster Online Dictionary: <http://www.merriam-webster.com/>

Knight Cite (The Hekman Library at Calvin College)
<http://www.calvin.edu/library/knightcite/> (Online citation generator service)

U.C. Berkeley Libraries: Finding and Evaluating Information on the Internet:
<http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/FindInfo.html>

Printed Writing Sources

Hacker, Diana. 2010. *A Writer's Reference*. 6th ed. Bedford St. Martins. Boston.

Knisely, Karin. 2009. *A Student Handbook for Writing in Biology*: Copublished by Sinauer Associates, Inc. and W. H. Freeman. Sunderland, MA

Williams, Joseph M. 2006. *Style: The Basics of Clarity and Grace*. 2nd ed. Pearson/Longman. New York.

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