“Acknowledge the reality: Writing is hard work. OK, now, get started. A serious scholar pursues technical writing competence persistently, without apology, and without timidity until the game is called on account of darkness.”
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IN GENERAL

IN THE SHORT TERM, DOCTORAL STUDENTS who desire to attain doctoral candidacy status must possess satisfactory technical writing skills. In the long–term, developing and maintaining these skills consumes a career for most professionals.

There are no specific courses in the WF ED graduate program that are targeted to help students acquire technical writing skills. Faculty members in many graduate programs believe that doctoral students must demonstrate these skills, which the students, as mature adults, presumably developed during their formative years and over their professional lives.

For the most part, almost all performance that is valued in a doctoral program is produced in writing. Communications...course papers...professional materials...professional publications—all require well–honed technical writing skills. Without these skills, success in doctoral studies is doubtful. Most WF ED graduate faculty members identify possession of satisfactory technical writing skills as a major factor that differentiates successful from unsuccessful doctoral students and that forecasts professional success.

Writer, teacher, and editor, William Zinsser, once wrote that, “Writing is thinking on paper.” Cluttered, vague, imprecise, and dull technical writing reveals cluttered, vague, imprecise, and dull thinking. It is probably not good strategy for completing a doctoral program for a student to reveal to WF ED graduate faculty members unfit thinking through unfit writing.

Skilled technical writing creates a context within which readers can consider, interpret, and evaluate ideas and data. If a doctoral student does not write well, perhaps the student’s considerations, interpretations, and evaluations are muddied. And, if so, how can such a student expect to inform or persuade the serious readers of the student’s prose?
Good technical writing presents interesting and informative ideas, is organized logically, portrays a professional “voice” that is individual and appropriate, uses specific and memorable words, contains smooth and expressive sentences, and applies conventions of spelling, grammar, and usage that are correct and communicative in a field of practice.

There is much truth in the statement that a person really knows nothing until that person has written about it successfully. I invite you to make some tests of this apothegm:

- Can you tie a shoelace? A bow tie? Write instructions for another person to follow flawlessly to a successful outcome of shoe or bow tying.
- Believe you know something about physics? Write an explanation of the concept of “potential energy” in 60 or fewer words that the typical 12–year old can comprehend.
- Do you tell others that you “get” mathematics? Write a description of the meaning of a “derivative of a function” that your grandmother—a grandmother, that is, who is not math savvy—can read and, then, return a clear explanation of the concept to you.
- Pick some fuzzy concept from the field of practice of organization development—say, “organization learning”—and write a one–page letter to persuade your significant other that you should devote the next four years, thoroughly foregoing earned income and contact with family and friends, to study this concept.¹

Successful technical writers are made through hard work, not “to the manor born.” Technical writing is a skill that is developed. It is a craft, not an art. Although creativity is a plus, technical writing with excessive stylistic flair can be distracting. Understanding of grammar, sentence structure, and, especially, the information needs of intended audiences often is more valuable to the writer and, eventually, to the reader.

In a complementary manner, brevity is valued highly in technical writing. WF ED faculty sometimes are asked to specify how many words

¹ Without a doubt, this sort of rhetorical flourish had to be created by many WF ED students before they could apply for graduate studies.
a paper should contain or how many printed pages a thesis should hold. The answer, of course, is: as many words or pages as it takes to tell the “story” of a paper or a thesis—and, not one more word or page. William Strunk, Jr., author in 1918 of the touchstone for writers, *The Elements of Style*, wrote that “A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should have no unnecessary lines and a machine no unnecessary parts.”

Many opportunities exist to begin or expand your repertoire of technical writing skills. Described in the remainder of this document are a few of these opportunities.

**GET SOME STYLE**

*The Publication Manual of the American Psychological Association has been designed to advance scholarship by setting sound and rigorous standards for scientific communication*” (from the “Forward” to the 6th ed.).

SEE, ESPECIALLY, CHAPTER 3 (“Writing Clearly and Concisely”) and Chapter 4 (“The Mechanics of Style”) in the *Publication Manual of the American Psychological Association* (6th ed.). In fact, the Manual can answer definitively just about any important question that a WF ED graduate student can ask about the preparation of written documents. The *Publication Manual* is the official style guide for the WF ED program. Therefore, acquiring skills in the application of the Manual’s guidelines will be repaid by effectiveness and efficiency in the preparation of documents required in the WF ED program.

The *Publication Manual of the American Psychological Association* is geared toward preparing manuscripts for publication. The Thesis Office of Penn State’s Graduate School provides additional style guidelines for doctoral students pointing their efforts toward writing doctoral theses. The *Chicago Manual of Style* considers many issues of style pertinent to technical academic writing.
MASTER THE MECHANICS OF DOCUMENT LAYOUT & Formatting

“An ugly layout suggests an ugly product” (David Ogilvy, Scottish–born British military intelligence officer & later top advertising executive, 1911-1999)

The Chicago Manual of Style is an excellent source of information about the layout and formatting of technical documents. For instance, how is table formed to fit on a page of a manuscript? How is a manuscript edited? What are conventions for displaying mathematical copy? How are illustrations accommodated in a manuscript? These and many other questions about layout and format have become quite important for ordinary writers who not only prepare copy for their manuscripts, but, with the advent of word processing capabilities and desktop printing quality, also compose final, camera-ready copy of their manuscripts. WF ED students typically compose final copy for their course papers and for their theses.

ACQUIRE A WORKING KNOWLEDGE OF ENGLISH GRAMMAR

“The greater part of the world’s troubles are due to questions of grammar” (Michel de Montaigne, French philosopher & writer. 1533–1592).

The Perrin-Smith Handbook of Current English, or a similar compendium of grammatical forms and rules, should be on everyone’s book shelf.
BUILD ON THE AGENCY OF ENGLISH USAGE

“If you want to build a ship, don’t drum up people to collect wood and don’t assign them tasks and work, but rather teach them to long for the endless immensity of the sea” (Antoine de Saint-Exupery, French writer & aviator, 1900–1944).

HENRY FOWLER’S BOOK, A Dictionary of Modern English Usage, originally was published in 1926, but there still is no better guide available to help create a direct, vigorous writing style. For example, should you write “different than” or “different from”? Is it “compared with” or “compared to”? “Which” or “that”? It’s all in Fowler’s book, friend.

READ CRITICALLY THE WORK OF OTHER WRITERS

“Skepticism is the chastity of the intellect, and it is shameful to surrender it too soon or to the first comer” (George Santayana, Spanish–born American philosopher, poet & humanist, 1863–1952).

SELECT WRITERS IN YOUR FIELD OF PRACTICE who are acknowledged by reputation or by reward as successful technical writers. Read their work. Ask yourself, what makes their writing successful? Read published research papers. How do authors compose and integrate tables and figures into their manuscripts? How do published authors make their ideas flow throughout their manuscripts? How have the authors maintained consistency throughout their manuscripts? How are headings and sub–headings used to guide the reader?

Writing in the passive voice (“The wine is carried by Joe.”) in English makes technical writing seem distant and detached. The active voice (Joe carries the wine”) often feels more direct and engaging. How have published technical writers you admire handled the mix of passive/active voice?
As you read critically, spare no one. Just because someone’s work is published in a refereed journal does not certify that the published author is a skilled technical writer. Identify the flaws in published manuscripts and consider how the writing in these instances could be improved. Learn from other writers.

**SPELL CORRECTLY THE WORDS THAT YOU WRITE**

“When our spelling is perfect, it’s invisible. But when it’s flawed, it prompts strong negative associations” (Marilyn vos Savant, contemporary American writer, 1946–).

**SPELLING SHOULD BE A “NO–BRAINER.”** Use the spell checker provided in the word processing program that you use. The simple rule: Allow no spelling errors. That being written, you will find that, even with a spell checker active, you must be watchful when you have updated a document, especially when the updates seem so trivial that you are tempted not to check the spelling one more time. Do not let your guard down.

**DEVELOP AN EAR FOR MEANING**

“When silence is better than unmeaning words” (Pythagoras, philosopher & mathematician, 580-500 BC).

**PRECISION IN THE SELECTION AND USE of words is a sine qua non for skilled technical writing.** Keep an actual or virtual dictionary close as you write. Challenge the meanings of even the words that are most familiar to you. Ask yourself whether the words you have chosen actually convey the meaning you intend.

Consultation of a thesaurus might lead you to words that more precisely portray the meanings you wish to denote and connote. The aim is not to use a $5 word where a 25¢ word would do. However, use the $5
word without hesitation if its use results in more precise meaning. The aim is to write accurately and correctly. Exactness of meaning counts in technical writing.

READ YOUR PROSE ALOUD

“Everything becomes a little different as soon as it is spoken out loud” (Hermann Hesse, German-born Swiss poet, novelist, & painter, 1877–1962).

ALTHOUGH HAVING AN INDEPENDENT, disinterested third–party proofread your work always is helpful, perhaps reading your work aloud, not silently, is the best way to spot grammatical lapses, spelling errors, incorrect punctuation, discontinuities, inconsistencies, logical flaws, and rhythmic awkwardness in the flow of words. Better yet, have someone else read your written documents aloud to you.

Listening to prose read aloud seems to cure most of these perceptual ills that can occur during the process of editing. While reading silently, we subliminally fill in lapses, ignore errors, and even skip over entire phrases containing dropped words and other errors that we perceive to understand so that we can read a written passage quickly. We apprehend the meaning of entire phrases and paragraphs, not necessarily the individual words and specific grammatical structure, when we read silently. It is only (or magnificently) human to capture the meaning of written prose in this way. Silent reading, however, can result in skipping over flaws in prose.
DEVELOP A SYSTEMATIC PROCESS FOR WRITING

“A system is a network of interdependent components that work together to try to accomplish the aim of the system. A system must have an aim. Without the aim, there is no system” (W. Edwards Deming, consultant, statistician, & educator, 1900-1993).

LEARN WHAT WRITING PROCESSES AND environments work best for you. Install personal supports that facilitate your writing (e.g., writing location, incense, flavored coffee, death metal music, monastic silence, chocolate, etc.).

If your first language is not English, seek and use resources (people or software) that can filter out most of the mistakes that can creep into your writing due to the dissimilarities between your first language and English. For example, perhaps your first language does not use articles (“a,” “an,” “the”) or does not include personal pronouns (“he,” “she,” “they”). Perhaps preferred word order in your first language is different than word order that is common in English (e.g., in English: “The big, black, floppy dog”; perhaps in your language: “Dog big black floppy”). Develop a system to check and correct such “translation” problems that can land in your written English prose.

There is an old joke that poses three questions. The first question: “What do you call a person who knows three languages?” The answer, of course, is “trilingual.” The second question: What do you call a person who speaks two languages? “Bilingual.” The final question: What do you call a person who speaks only one language? The answer: “An American.”

The cultural and linguistic demands on a WF ED doctoral student whose first language is not English often are heavier than for students whose first language is English. Non-native English users must be at least bilingual, which can add a great burden to graduate studies. Nevertheless, as stated in Penn State’s Graduate Degree Programs...
Bulletin, “The language of instruction at Penn State is English.” Figure out a way to master it.

LET YOUR GUARD DOWN

“If a seed of lettuce will not grow, we do not blame the lettuce. Instead, the fault lies with us for not having nourished the seed properly” (reputedly, a Buddhist proverb).

“Criticism may not be agreeable, but it is necessary. It fulfills the same function as pain in the human body. It calls attention to an unhealthy state of things” (Winston Churchill, British orator, author, & Prime Minister, 1874-1965).

Not everyone will agree with everything you write. Criticism is inevitable. There is no better barometer of the maturity of a writer than how the writer reacts to criticism.

Consider: a writer molds words into sentences, sentences into paragraphs, paragraphs into sections, and sections into a finished work. Because the writer was the source of the work, carried it through gestation, and delivered it to a waiting world, the writer imbues a great deal of love, pride, and attachment in the written work that has emerged. Then, when a thoughtful, exacting reader—perhaps an academic advisor of the writer, a journal editor, or, God forbid, the writer’s significant other—criticizes this reputedly beautiful child of the writer’s mind and soul, defensiveness can take over. Denial. Rejection. Endless explaining. Argumentative justification. Grasping for straws. Withdrawal. The tragic unraveling of the defensive writer seems to be a situation that begs for admission to a twelve-step program of personal healing or to a detox center for the self-centered (hey, an entrepreneurial opportunity?).

Defensive responses to criticism of written work do not improve the written work. Rather, these behaviors merely protect the writer’s pimply,
fragile psyche only temporarily. What is needed, however, is to get on with the writing work at hand.

Remember, writing is an asymmetrical exchange between the writer and the reader. The obligation of the writer is to engage, inform, and persuade the reader. That is a tall order. The inquiring reader merely must be receptive to making this transformation happen. However, if the writer’s words and the reader’s intellect do not bond, the writer must either conclude that the reader is not in the writer’s target audience or, more realistically, that the writer did not communicate with the reader. The burden in the communication process always weighs more on the writer than the reader. After all, the writer is the one who wants the writer’s message to become the reader’s earworm.

The writer’s response to criticism should not be “What is wrong with this knuckle-dragging dunce who hates this beautiful baby I created and nurtured?,” but rather “Why does my baby seem so ugly to people?” Listen to the readers of your writing, and consider their feedback as exciting and as useful as found money. Stop carping and complaining, and get on with it. Let your first reaction be a warm, genuine smile when someone criticizes your writing.

MOST OF ALL, WRITE

“A rock pile ceases to be a rock pile the moment a single man contemplates it, bearing within him the image of a cathedral” (Antoine de Saint-Exupéry, French writer & aviator, 1900–1944).

“The palest ink is better than the best memory” (reputedly, a Chinese proverb)

Skills are built and perfected through practice. So, you must, in fact, write to acquire technical writing skills. Reading about the process of writing or ruminating about what you might write are nothing less than
instances of procrastination. If you wait until you write your thesis to begin serious technical writing, all is lost. As the Spaniards like to say, “It’s not the same to talk of bulls as to be in the bullring.”

Of course, the decision to avoiding writing is one of the easier choices graduate students make. Many hedonistic tendencies support the avoidance of writing. Procrastination is common.

Life certainly is easier if you decide to communicate mostly by talking, and not by writing. Writing can be more painful than talking because writing opens ideas to wider scrutiny and criticism than talk ever can.

On one hand, talk is cheap, ephemeral, and, often, quixotic. It typically occurs in convivial settings among friends or with good sparring partners. Ideas can be wound, unwound, twisted, rewound, transformed, and spun eccentrically at dazzling speeds in ordinary conversation. Persuasion in conversation can depend more on the “sizzle on the steak” (i.e., setting, status of speaker, florid theatrics, body language, body odor) than on solid argument.

On the other hand, technical writing is demanding, available permanently for close examination once in print, and judged by its logic and practicality. It often evolves in solitary, almost monastic, settings. The word is the atom of technical writing, on which all is built and all stands or falls. The ideas communicated by assembled words are exhibited naked before their friendly peers as well as their opponents, who eye them up and down and, then, attempt to nibble them to tiny, unrecognizable pieces like ducks do to stale crackers.

For many, the mind-set conducive to technical writing is unnatural. Successful technical writing requires a critical, disputatious approach to topics, which is alien to many people and, therefore, must be developed and honed assiduously. It is far easier on your workload and interpersonal relationships to be known as a believer rather than a doubter. However, a skeptical, “show me” attitude serves a technical writer well, for the truth with a capital “T,” not the affect around it, is the prize.

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As Gene Fowler, an American, author, and dramatist, once wrote. “Writing is easy: All you do is sit staring at a blank sheet of paper until drops of blood form on your forehead.” Acknowledge the reality: Writing is hard work. OK, now, get started. A serious scholar pursues technical writing competence persistently, without apology, and without timidity until the game is called on account of darkness.