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Why Is Writing So Hard?

Overcoming Barriers to Writing and Making Time to Write

If you are an engineer who enjoys academic writing, and enjoys it all the time, then this book may not be for you. Most engineering students do not feel comfortable with or enjoy writing, typically due to lack of practice and previous unpleasant experiences with writing (e.g. teacher feedback, lab reports, and group-writing projects).

For those of you who have to write your first literature review, you may have some apprehension. This is all normal.

And this book is for you.

We can compare writing to running. If we were tasked with running a 10K (6.4 miles) without training, we could perhaps walk the entire thing, or run some and walk some. Regardless, we would not complete the race quickly, and we would likely be sore for a week after. If we tried to run the entire race, we might get hurt or have to quit, and most definitely we would not enjoy the process. After completing the event, we might not run again for a long time, and if we were to start running again, we would have a lot of apprehension and anxiety about running to overcome. We were not in shape for running, and as such, our running experience would be unpleasant and potentially set us up for failure in future running initiatives.

In the same way, productive writers are conditioned. You do not have to enjoy writing to be an academic writer, you simply have to be productive and get through it. To make it to the end of the "race" (or have completed some academic writing task, such as writing a literature review), we also need to unpack why writing is difficult, and confront these issues either directly or peripherally related to writing that impede the writing process. The reasons that writing is difficult for everyone (even good writers struggle!) stem from the fact that writing is a process that is a cognitive activity, a social activity, and is intrinsically an emotional process

So, You Have to Write a Literature Review: A Guided Workbook for Engineers, First Edition.
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Published 2021 by John Wiley & Sons, Inc.

insofar as our ideas of self-worth and academic identity are often tied up with the composing process. Consider this book as your couch-to-5K training plan to guide you through writing a literature review.

Before we start, this is intended to be an **interactive workbook**. While we help facilitate the process, the work is yours to do. If you systematically work through the activities throughout this text, using the spaces and activities provided to actually *work* (we are serious about the word *workbook* in the title), you will have a solid draft of a literature review ready by the end.

To help with time management, we provide an anticipated time that you should devote to complete each activity, just as we would do with our own students in workshops or in class. This will prevent you from not spending too much time on a given activity and will also give you a guideline for how much time you should be spending doing something so it will be as meaningful as we intend it to be. If you need a little more time or a little less, that is fine, but we wanted to give an estimate to help orient you to the process.

1.1 Writing as a Cognitive, Social, and Affective Activity

The process of writing is often considered a cognitive activity – that is, an action that is occurring within the human mind. There is a great deal of literature that investigates the cognitive processes involved in writing. A writer has to juggle a multitude of things at the same time when writing: technical knowledge, audience, the composing process itself, immediate revision for grammar or spelling, and language issues (especially for non-native speakers). The list goes on and on. Hierarchical process models of writing posit that writers are continually thinking about multiple things at the same time while writing [1, 2]. The mind is amazing: humans can actively recall 7 ± 2 bits or chunks of information in their short-term working memory [3]. At the same time, long-term memory allows writers to open a manuscript and continue to work on it, without rereading and replanning the argument structure. This is what allows us to do immediate edits (spelling, word choice) while continually keeping in mind the overall purpose of the paragraph, the structure of the argument as a whole, and the audience who will likely read the document.

Writing is more than just a cognitive activity though. Writing researchers typically refer to writing as a *sociocognitive* activity, that is, it is both social and cognitive. But how can writing be social, especially since much of writing happens quietly, while a writer sits alone at a computer? Writing is actually highly social because whatever we are writing will hopefully be read by an audience and will impact that audience in the future. Therefore, the system of writing has less to do

with how the writer is writing and is much more oriented toward the reader; this concept is often referred to as writer-centered writing versus reader-centered writing. If a reader misinterprets or does not understand what the writer wrote, it is often not the reader's fault: the burden of clarity lies on the writer. We will discuss this concept and help you envision your audience in Chapter 2.

Lastly, writing is an emotional activity in addition to a sociocognitive activity. Discussing the affective dimension of writing is often uncomfortable for engineers, but anyone who has experienced writer's block (so ... everyone!) resonates with the fact that not being able to get started causes stress. Writer's block causes doubts about the capability to complete the task in general, and perhaps even doubts with respect to whether a career in research is even a good fit. To this end, recent research indicates that engineering graduate students' attitudes about the writing process can influence anticipated career trajectories [4, 5]. While we certainly do not propose that disliking writing is the only reason that engineering students depart from engineering graduate programs, it is conceivable that if a student has had a variety of difficult writing experiences, this in turn causes them to have low writing self-efficacy (similar to confidence). These factors could cause students to leave their graduate programs once they are faced with the task of writing a dissertation or thesis; there is an acronym which describes this scenario – ABD (all but dissertation).

As a way to begin to evaluate some of your own attitudes and postures toward writing, take some time to complete Activity 1.1, which asks you to reflect on your past experiences with writing. It is going to be a little uncomfortable, we know. Begin simply by jotting down some notes: Have you had bad experiences with writing? How does the prospect of having to write make you feel? What is your least favorite part about writing? What is the most enjoyable part?

Activity 1.1 Brainstorm Your Thoughts on Writing

Anticipated Duration: 5–7 minutes

In the space provided, spend some time reflecting on the following questions: How do you feel about writing? Have you had positive experiences with writing? Negative experiences? What made those experiences bad? What writing-related anxiety do you bring into the present writing experience?

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(*Continued*)

Activity 1.1 (Continued)

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Researchers are fascinated with these affective dimensions of writing, especially as they influence behaviors with which writers then employ during the writing process (avoidance is a behavior too). Everyone has issues writing, even good writers. In particular, engineering graduate students struggle with procrastination and perfectionism [4–6], which, as you can imagine, sets writers up for a particularly hard time.

1.2 Time Management, Self-Discipline, and the Writing/Research Timeline

In undergraduate engineering classes, you may have been introduced to technical writing in the form of laboratory reports or memos to sponsors during a design course. Often these documents are written after you have accomplished some milestone or completed the lab activity or the project. However, in these cases, the writing occurs after the project has been completed; it rarely occurs during the project.

Accordingly, many engineers envision writing as the final step toward publishing a paper or completing a final deliverable and simply shrug in accepting writing as a painful process, self-fulfilling the narrative that engineers are not good writers. In reality, the data collection, analysis, and writing processes are often intermeshed. Collecting data is mixed in with data analysis, during which researchers are saddened to realize they need to collect new data. This occurs iteratively, often with a crisis moment toward the end where students realize they need to collect all new data before writing their thesis. Crises of morale, self-confidence, and overall frustration with the research process occur even before the writing itself begins and then often continues throughout.

We hope to convince you to avoid some of this chaos. We challenge you to deliberately integrate your writing within your research paradigm, such that as you are working toward major deliverables, you are also working on writing the parts of your document that you can – even if it involves simply formatting references in a bibliography or reordering paragraphs. Expressing your plans and goals to your advisor may help her or him understand that you are seeking

feedback throughout the process – perhaps after each chapter is written, or perhaps more periodically – such that you can make progress on your deliverable and potentially other written deliverables throughout the research process. Ultimately, while there is still some chaos that will inevitably occur toward the end of a project, embedding the writing may shorten your time to degree completion, or help you achieve more publications during your time in your program.

While we intend this book mainly for graduate students or upper-level undergraduates attempting literature reviews, you may not be in an academic setting. You may be an industry professional writing a literature review for a conference paper or another such context. In these cases, you may not have a supervisor or colleague who monitors the success of the paper or project, but we continue to argue that distributing the writing process throughout the research process is an efficient use of time. As humans, we train our brains to have self-discipline, and, to recall the metaphor likening writing with running, distributing the "training" over time will make the entire writing process more palatable.

1.3 Accountability Is an Essential Part of Writing

Few people have the sufficient self-discipline to sit down and write for a prescribed amount of time each day. Even for people who enjoy writing (or at least do not mind it), writing is often the task that gets delayed to the next day ... week ... or month. You can probably identify times when you procrastinated on writing tasks. If you struggle with the trifecta of procrastination, perfectionism, and low writing self-efficacy – common in engineering graduate students [4] – there are multiple mental barriers that you believe prevents you from writing often or well.

To overcome these very real issues, we present five common strategies to help you develop discipline and accountability in writing.

1.3.1 Shut Up & Write Groups

Structured writing groups provide accountability to dedicate time regularly to writing, leveraging the fact that misery loves company, and that typically on an academic campus there are many people who also have to write. During Shut Up & Write (SU&W) sessions, which ideally are around 90–120 minutes long, a small group of people (typically two to three, no more than five) come together in the same room and simply write. The perception of others' productivity can boost your own self-discipline. Turn off your phone and internet connection to free yourself from email or other distractors. One strategy to boost productivity further is to articulate your goals to your colleagues for each particular session. For example, if you commit to writing an ugly draft of a methods section, then at the end of

the writing time, you can report if you hit your target for writing. If you did not hit your target, you must also explain the reasons why: Did you get distracted and read the news instead of write? Did you get distracted on the methods section, but drafted four pages of the analysis section while also populating your table of contents? Did you encounter an article on your same topic and decide you had to use the quiet time to read the article comprehensively to gain a better sense of where your work and their work differed?

Regardless of whether you hit a target or not in a SU&W session, one way to structure these meetings to achieve maximum productivity involves these six steps:

1) Write down and say aloud your goal for each writing session.
2) Break that goal into several accomplishable steps so you can track progress.
3) Write the next step in the process in the event that if you finish the task you set at the outset, you already know the next item to work on.
4) Set your timer for the desired amount of time (90 minutes is optimum, no longer than 2 hours).
5) At the end of the time, highlight where you are in the document, jot a few notes about where you will pick up next time, discuss with your partners what you accomplished, and then shut down your computer. It is better to end the session with a sense of accomplishment.
6) If you are nearing a deadline on a large project, schedule a full-day SU&W session on a Saturday or over holiday recess. Depending on the needs of the group and the immediacy of the deadline, you may agree to a 6-, 8-, or 10-hour session; in such cases (which can be incredibly productive), plan to set your timer for 60–90 minutes maximum and make sure you regularly get up and walk around, eat snacks, and drink water or coffee.

1.3.2 Accountability Partners

In this strategy, you identify a colleague or friend to be an accountability partner. They do not have to attend the same institution as you or even live in the same time zone. An accountability partner is someone that you can text or email – at any time – to commit to accomplishing a certain goal. The beauty of an accountability partner is they do not need to be paying attention for it to be beneficial – you simply promise to work on some well-defined writing task (for example, the ugly draft of the methods section) and then report back to them; your accountability partner does not need to be an active part of the process.

Bonus points, though, if you find an accountability partner who encourages you to be self-disciplined. The best accountability partners are those who do not mind holding you to your own goals. They might be in your discipline, or perhaps not; ideally, though, accountability partnerships are reciprocal, and you help each

other stay on track. In addition, you may find some helpful peer mentorship occurring along the way, which can help with the isolation and emotional exhaustion that can occur in graduate school or research.

1.3.3 Schedule Your Writing in a Scientific Way

For writers who are strengthening their writing skills, regular training times are essential. Block your writing times off on your calendar and then preserve those times as if they were the most important thing you have to do that day. The trick to scheduling writing time is to place your writing – a highly difficult, cognitive, social, and affective task – in a part of the day when your mind is most *on*. We challenge you to identify when your brain is most optimized for writing. For many people, the morning is a great writing time, cognitively speaking. For some, the very early morning hours (4–7 a.m., for example) are optimal, especially because there are not emails flying about, and typically other members of your household are asleep. Other people are highly productive late at night. Do some experiments. When are you most productive at writing? When you decide, make your writing a regularly scheduled occurrence.

1.3.4 Deliberate and Distributed Practice

Scheduling writing for long periods of time easily leads to fatigue. Begin with 90-minute writing sessions. At the end of the session, save your work and move to another task, checking your daily writing off your list. We find that forcing yourself to write for longer time periods (e.g. blocking off an entire afternoon or entire day for writing) is counterproductive, as you will find your mind and attention wandering away from the task of writing, unless you have gotten into a state of cognitive flow [7]. The exception to this rule is, of course, if you have a deadline to meet.

If you do have deadlines commanding you to write for longer durations, consider alternating longer stretches of writing time with shorter sprints. You may have heard of the pomodoro method for productivity: work 25 minutes, break for 5 minutes, and repeat for several rounds [8]. And by break we mean, try to get up and walk around. Go outside and do some jumping jacks. Do not just check social media or read your favorite blog; the idea of taking a break is to disengage with your electronic device so you can come back to it with a clear head and fresh set of eyes. These strategies are easily applied to writing.

By developing daily writing habits and taking advantage of these strategies, you will build your writing self-discipline and build self-confidence and resiliency. You will also begin to notice that some days are harder than others while other days are more productive and satisfying [9]. Moreover, as you will not be devoting an entire day to writing, you can quickly check your writing time off the list and

move to other tasks. Indeed, this structure to writing helps to distribute the workload leading into high-pressure deadlines. While at a deadline, you will be dedicating a great deal of time to finalizing a written document, the distributed training will kick in and you will be able to make much more progress at the end, and will not be so drained once it is over.

1.3.5 Bribery

When all else fails, bribe yourself. Perhaps this means having your writing session at your favorite coffee shop or saving money in a jar for some purchase. Perhaps it is intangible, such as taking a 20-minute walk around campus after your writing session. Identify what motivates you to write and use it to leverage your productivity using Activity 1.2 to formulate a strategic writing plan.

Activity 1.2 Develop Your Plan for Writing and Accountability

1) What is your goal? Why are you writing a literature review? What is the venue?

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2) When will you write?

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3) What are your strategies for writing accountability? Who can you reach out to as an Accountability Partner or to develop a Shut Up & Write group?

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4) What happens if you start to fall off your writing plan?

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So, what happens if you fall off your writing plan? We have some strategies to get back on track. The first is acknowledging that you diverted from your plan. Do not ignore it – the problem will not go away on its own. Then, schedule a writing period as soon as you identify that you are slipping. Even if means writing for only 15 minutes. Do not get out of the habit. Clear some time, or say no to that extra coffee break, and just write – make yourself feel like you are still on the track. Third, double down on finding accountability partners or a writing group, especially if you are a repeat offender. These accountability partners can encourage you or help you realized that you are not achieving your writing goals. Finally, re-incentivize yourself. What can you be working toward as a reward for yourself? Write yourself notes about it: Stick them on your mirrors, your computer, your refrigerator, or coffeemaker – be single-minded about keeping your eye on the prize.

For all writers, celebrate your victories. It is important to shame yourself only so far as it helps you do better next time – but really, people respond best to positive reinforcement. When you write for some time, or some number of days in a row, praise yourself. Brag on yourself to your accountability partners and then celebrate together as you accomplish goals. These positive feelings help to overcome those inevitable ruts, writer's block, or nasty self-talk.

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