

# 1



## Writing Is a System, Not an Art

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*Take this brief quiz on writing, answering "T" for True or "F" for False.*

- You're either really good at writing, or you're not.
- There's no such thing as good writing, only rewriting.
- Reading literature or classic essays can improve your writing.
- Imitating or channeling excellent writing can make you write better.
- Paying attention to teachers' and peer feedback on your writing is always important.

*Now award yourself 1 point for each "T" and 0 for each "F."*

*Total your score – and brace yourself.*

If you scored 3–5, your teachers have brainwashed you. However, if you scored 1–2, you've simply heard the usual guff about writing.

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This book is for anyone who scored 2 or above. This book is also for you if you're a quantitative thinker, or if you struggle with English as a second or third language, or if you're just someone who longs for firm answers about why your last paper ended up earning that fat *C* you totally failed to see coming. Why? This book uses scientific data to show you how writing works as a system. Unlike previous books on writing, *Writing for the Reader's Brain* bases its

principles on what happens in your readers' brains as they encounter your sentences and paragraphs. This science-backed, cognitive approach to writing is unique and equips you with the tools to analyze how to make your point clearly, effectively, and concisely, no matter what you're writing about.

Most people approach writing as what sociologists call a black box, a situation where we can see the inputs and outputs but not what actually happens inside the thing. Many of the best writers I ever taught confessed to me that they were terrible at it. At the same time, some of the worst writers I ever encountered bragged about how good their writing was. We seldom see our audiences shuddering over what we wrote or throwing out our emails after the first four sentences. If only writing provided us with the immediate feedback of public speaking or singing. In that case, if you read from your notes in a monotone and raise your head, you'd confront a sea of faces, raptly tuned into their smartphones and deaf to everything you've said. Ditto if you possess the kind of voice that should be reserved for singing in the shower. Try singing in public, and you'll plainly see disbelief, disgust, or pity in the faces around you, provided your voice is loud enough and your audience have left their earbuds at home.

Why is writing so difficult? After all, we have stacks of books dedicated solely to improving writing, thousands of writing courses required in primary, secondary, and higher education, untold hours of seminars and workshops on improving writing in the workplace. Yet writing remains the skill teachers and employers alike gripe about the most for three reasons.<sup>1</sup> First, most of us write poorly in spite of several hundred hours of required writing courses in high school and university, largely because books and courses focus on writing as if you merely need to read the good stuff, imitate it, and practice to get better at it. However, this approach has proven ineffective for decades, since readers fail to learn what makes one sentence seem clear and easy to understand in a single reading, while another requires three readings and strenuous effort to understand it. Try using the imitate-and-practice route to mastery if you want to learn to play, say, a bassoon – without learning how to read music, mastering the embouchure required to play a double-reed instrument, or learning the fingerings for notes. This approach – imitate the good stuff and practice – is unfortunately precisely the method used in countless writing courses, books, and textbooks. Second, we also write poorly because the books we use and many of the people teaching us have visions of literature dancing in their heads, not proposals, technical writing, or the

IMRAD (Introduction, Methods, Results, and Discussion) format for research papers. Finally, the act of writing, just like reading, occurs nearly entirely at the subconscious level.<sup>2</sup> We are unable to name what's going on in our brains as we write, even when writing a twelve-word sentence makes you feel as though you're squeezing blood from a vein on the verge of collapse.

For decades, if you turned to a trusty book on how to write, your writing was unlikely to improve. Textbooks on writing have also long relied on literary sources for their examples of writing, which is their second-greatest shortcoming. However, their greatest limitation lies in their reverence for writing as some form of art, which probably originates in their use of literary examples for sentences and paragraphs. Literary examples can prove helpful to fledgling fiction writers in figuring out how to write scenes or dialogue. Yet, when you merely read a passage from Joan Didion, you learn nothing about what makes a paragraph seem clear and tightly written. Instead, you need to grasp which words in sentences make readers perceive ideas as tightly linked – and learn how to use these words in your sentences and paragraphs.

Excellent writing can seem like a magic trick and prove about as challenging to understand if you aim to imitate it, step by step, without a pro narrating how to accomplish it. In contrast, once you learn how writing works, you can easily take apart and make readable even the wince-inducingly bad stuff. This kind of writing includes sentences that require three rereadings for you to understand what's going on. Or paragraphs that run three pages and resist making anything resembling sense – even after four rereadings and your stashing your phone under the sofa cushions to cut out all possibility of distraction. For that reason, most examples in *Writing for the Reader's Brain* come from the You-Have-To-Read-This-Stuff-To-Believe-It School of Bad Writing. Even better, 99 percent of them come from published writing – and from supposed bastions of literary-quality prose. You'll gain confidence in your own writing, once you realize you can tear apart and revise a passage from someone paid a hefty fee for sentences that could serve as mild forms of torture.

Alas, authors of self-help books, the category for most writing books, typically lack qualifications other than strong opinions and a contract with a publisher. Some writers are grammar mavens with muscular convictions about the correct use of the colon and when you should use *further* rather than *farther*. Scan the ranks of these authors, and you'll discover a film critic, a former US secretary of education, and a small army of English professors. Writing is

unfortunately a subject that begets in most people the opposite of imposter syndrome. Everyone assumes that, because they can write a sentence, they are something of an expert. Throw in a few decades of correcting students who write *it's* for *its*, and you can end up thinking that you're also some kind of expert, mistaking your preferences for iron-clad rules on writing.

We can forgive these writers because the hard data on how writing works lies scattered like buckshot over several fields: linguistics, psycholinguistics, neuroscience, cognitive psychology, and the history of English. Weirdly, despite academia sprouting sub-sub-sub-fields, no one has ever suggested this data should represent the basis of a field like composition studies. That oversight stems from the relevant studies ranging across the social sciences and neuroscience, covering everything from neural circuits,<sup>3</sup> conversation and mimicry,<sup>4</sup> and memory and priming effects,<sup>5</sup> to emotion and pronouns.<sup>6</sup> To gather up and synthesize this research, you would need a perverse absence of focus, which usually spells death to academic researchers whose careers depend on publishing as much as possible on the most specialized of topics.

I stumbled on some of this research decades ago, cultivating my own postage-stamp-sized patch of academic soil, studying how interactive narratives work. Close to forty years ago, this area of study resembled the Here-There-Be-Dragons regions on a map, a field so novel that you needed to rummage around the fringes of a dozen disciplines to study it, where I pursued breadcrumbs of data on reading. However, even I needed more than a decade before I realized this research offered a systematic method for teaching writing, based on hard data from dozens of studies.

With this method, anyone can learn how to write well enough to impress instructors, present and future employers, and even potential investors with deep pockets. Even if you never scored above a *C* on a writing assignment in your life, you can become the go-to person in any organization, the one who can write an email that people actually read to the end – and act on. Furthermore, with this method, you control your readers' responses to your writing. You will understand how writing works – from how a single word can impact a reader's comprehension of a sentence to how to shape readers' memories of your strongest evidence.

Several years ago, a former MBA student discovered I was in New York and invited me to the opening of a not-for-profit performance space he had funded in one of the city's priciest zip codes. I turned up, expecting to haunt

the open bar for a polite ten minutes and then slip away, unnoticed. Instead, my former student almost instantly jogged over from the opposite side of the room and bear-hugged me. Since he was one of the hundreds of unfortunates who graduated into the pit of the Great Recession, I figured maybe he was merely waxing nostalgic for his days on campus. But he wasn't.

"Oh, my god," he said. "I thought I just naturally couldn't write, the way you're either good at math or not. But the way you taught writing, I understood how everything worked. I became the go-to guy for writing everywhere I went. *Me*," he said, as though the shock of being the Good Writer was still fresh, a decade later.

In reality, I invented few of the principles I passed on to the dude who now had a net worth that put him comfortably among the 12 percent of New Yorkers who were multi-millionaires. However, I knew the reason he turned into a fluent and confident writer. After following the principles in this book, he understood how writing works *systematically*.

The system involves understanding how the reading brain makes sense of words on a page. When you understand the machinations of your readers' brains, you acquire the skill to do more than just follow the rules your instructor tells you, like avoiding passive voice. Instead, you can conduct your own cost-benefit analyses on how to phrase things. For example, consider whether you ought to risk making the opening paragraph in a job application letter ten to twelve lines longer than the obligatory, "Please accept my application for the position of Quality Control Manager at Yummy Pelleted Goat Feed. I have always cherished a passion for details and working with cross-functional teams, in addition to having raised Nubian goats as a child."<sup>7</sup>



### EXPERT TIP 1

#### *Ignore Readability Scores on Writing*

Back before researchers had access to brain scans, they struggled to measure what made sentences readable. So they resorted to the only way researchers believed they could assess readability: they counted. All readability scores count the numbers of syllables in words and the numbers of words in sentences. However, this method of scoring is deeply flawed, as any third grader can read the two-syllable *baseball*



easily, but a graduate student may struggle to identify the meaning of the two-syllable *praxis*. Yet, many savvy editors and executives still rely on these readability measures, and most grammar checkers and writing applications offer them as tools to assess writing.

The four main readability scores rely on the averages of syllables and numbers of words per sentence as the basis for scores that supposedly reflect the reading level of every text. To get a Flesch Reading Ease score, for example, you use this formula, which allegedly yields a reliable index of the difficulty of reading any text:

$$\text{Score} = 206.835 - (1.015 \times \text{Average Sentence Length}) \\ - 84.6 (\text{Average Syllables per Word}).^8$$

Clearly, the Flesch Reading Ease score proved as far from reliable as it was difficult to compute, so its creator introduced the Flesch-Kincaid score less than five years later. These Flesch-Kincaid scores correlate Flesch Reading Ease scores with both American standards for reading at grade levels and the estimated percentage of the US population capable of reading at those grade levels.<sup>9</sup> Yet, despite the apparently close relationship between Flesch and Flesch-Kincaid readability measures, their scores reflect opposite values. For instance, higher scores on Flesch indicate easier reading. But, on Flesch-Kincaid, lower scores indicate easier reading. Hungering for a more user-friendly and accurate readability measure? Try the Gunning FOG index:

$$\text{Grade Level} = 0.04 (\text{average sentence length} \\ + \text{hard words of more than two syllables}).^{10}$$

Finally, Lexile<sup>®</sup> claims to assess the reading level of texts, assigning Lexile scores to newspaper articles, websites, and classic novels. Lexile assigns scores based on the average number of words per sentence and the difficulty of words. This difficulty stems from the frequency with which words occur in the company's database of millions of texts. Longer sentences and uncommon words receive higher scores, a measure Lexile breezily claims represents the semantic and syntactic challenges of texts. Moreover, the Lexile equation is itself even more tortuous than the other three readability measures – giving its users a sense of comfort because they lack insight into the way it was put together:



Theoretical Logit =  $(9.82247 * \text{LMSL}) - (2.14634 * \text{MLWF}) - \text{constant}$ , where LMSL = log of the mean sentence length and MLWF = mean of the log word frequency [sic] = Lexile calibration =  $(\text{logit} + 3.3) * 180 + 200$ .<sup>11</sup>

The jiggery-pokery of their equations aside, the four readability measures also assume all sentences are equal. Or, to paraphrase Gertrude Stein, *a sentence is a sentence is a sentence*. However, sentence structure determines the difficulty of sentences far more predictably than length does. For example, take these two 32-word sentences, containing words of roughly the same difficulty:

#### Example A:

*Helicopter parents can prevent their children from developing grit, the ability to try and not give up when things get hard, but, without grit, children may struggle with challenges later in life.*

#### Example B:

*Being born to wealthy parents bound to not let you fail can prove to be a hefty handicap when you consider how anxious parents sheltering children can prevent them from developing grit.*

**Table 1** Readability scores for two 32-word sentences

	Example A	Example B
Flesch	42.2	39.5
Flesch-Kincaid	15.3	15.7
FOG	17.8	19.1

According to the three readability measures in Table 1, these sentences are roughly equal. Flesch ranks Example B as being slightly easier to read than Example A, while Flesch-Kincaid and FOG both rank Example B as slightly harder to read than Example A.

Yet most sixth graders can read Example A with ease, while even a post-doc will read Example B more slowly than Example A. Although the same length, the two sentences differ wildly in the complexity of their sentence structures. For instance, Example A contains two standalone clauses and one conditional clause, plus four relatively easy-to-read prepositional phrases. On the other hand, Example



B presents readers with one conditional and one standalone clause, but with eleven phrases, including embedded participle and infinitive phrases acting as noun clauses that also serve as grammatical subjects and direct objects. In other words, as we'll see in Chapter 2, Example B represents the kind of sentence that most readers must read at least twice to comprehend its meaning. Its sentence structure is as complex as you find in those late Henry James novels now read mainly by post-graduates. Ultimately, sentence length is seldom an accurate proxy for the challenges sentences pose for readers. Even phrases themselves differ dramatically in their challenges. For example, prepositional phrases pose minimal difficulty for readers. On the other hand, gerund and infinitive phrases frequently require at least one rereading of even short sentences. Currently, software can assess the relative lexical and syntactic complexity of writing by using algorithms to scan words and sentence structure.<sup>12</sup> However, these measures now only serve as ways of assessing the growth of fledgling writers, not for measuring readability.

Presumably, writers and editors who rely on these scores find the opaque formulas reassuring because they believe something other than a primitive counting of syllables and words is at work. Yet all four measures share the same central flaw. They rely on the simplistic assumption that low numbers of syllables in words and low numbers of words in sentences correlate with ease in reading. Clearly, Flesch and Gunning failed to consider the challenges of reading words that appear infrequently in texts, like the one-syllable *dirge*. Similarly, the creators of all four measures also failed to understand that two sentences of the same length and roughly the same number of syllables throw different challenges at readers, depending on the simplicity or complexity of their sentence structure. In other words, if you want to measure how readable something is, counting will only get you so far.

*Writing for the Reader's Brain* demonstrates how the 5Cs of writing dominate readers' perceptions of the emails, blogs, papers, articles, and books they read. These 5Cs cover clarity, continuity, coherence, concision, and cadence. As a result, in the chapters to come, we'll focus on how to make



sentences seem clear and their ideas related. You'll also discover how to organize paragraphs and documents so readers spot your main ideas and follow them easily. Moreover, in the chapters that follow, you'll learn how to identify repetitions in your sentences – almost entirely a product of the English language's peculiar origins. In addition, you'll learn how readers "hear" sentences despite centuries of silent reading. Finally, you'll also uncover how this perception of cadence can make readers perceive your writing as rhythmic and sophisticated – or clunky and ham-handed.

Throughout this book you'll encounter principles, examples, and expert tips, enabling you to produce readable writing rapidly and confidently, secure in knowing exactly how your readers will respond to your emails, papers, projects, and proposals. You can also use these rules reasonably flexibly, since only a handful of principles apply across anything you'll write, including email. Need to acknowledge not-so-stellar results from a group project? You can minimize your readers' recall of those results and their impact by placing them in the middle of a paragraph, a veritable dead zone for memorability. Want to ensure your professor remembers your project's innovative research design, despite the dozens of other students in a packed course? Leverage the power of priming, primacy, and recency effects in your mentions of your unusual methodology (see Chapter 3).

*Writing for the Reader's Brain* is a book for anyone who wants to understand how writing works as a system and is especially useful for students in STEM, business, and the professions. Consider this science-based guide your life-preserver, the book you can turn to the night before the deadline for that project you've been putting off for weeks. If you're particularly short on time, consider going straight to the Takeaways at the ends of each chapter. Then, before you submit your project or assignment, you can review *Grammar and Punctuation Made (Relatively) Painless* in the Supplement. This guide helps you understand how grammar and punctuation work functionally and pragmatically, one reason why an earlier version served as IBM's in-house style guide worldwide. Even if the word *gerund* makes you flinch with grammar anxiety, you can still easily master every principle governing grammar and punctuation by seeing how both work to guide readers' comprehension of sentences.

*Writing for the Reader's Brain* offers you research-based principles you can apply to every sentence, paragraph, and document you write, whether it's an

email, dissertation, or project proposal. Use its short “Getting Writing Done” guides to create routines for your writing or to ensure that your research stands out by harnessing the power of paradox. You can also use this content to wrestle with exactly how you work with other writers on projects so you emerge with a completed project and a roster of team-mates you’re still on speaking terms with. Finally, Test Your Chops examples at the end of each chapter enable you to hone your writing skills as you master the 5Cs – clarity, continuity, coherence, concision, and cadence – then check your answers against the suggested revisions in the Diagnoses and Answers at the end of the book. And you can even feel good about your writing every step of the way, as you read less-than-stellar and downright wince-inducing writing in every problematic sentence or paragraph in this book. Nearly all example sentences in *Writing for the Reader’s Brain* come from published examples that appeared in sources widely admired for their writerly flair.

Writing isn’t an art. Instead, writing is a system that evokes predictable reactions from readers. This book removes the pain, guesswork, and uncertainty from the process, while shaving hours off your writing time.

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