Writing well in experimental science
Judith A. Swan, Ph.D., Princeton Writing Program

Writing well is hard.
Don't underestimate the time and energy it requires.

Writing is doing science.
The data never speak for themselves; they only appear to when the writer has structured the data into a form that makes the message visible. The unwritten experiment is as ephemeral as the unfinished one.

Writing is a process with discrete and different stages:
Prewriting differs from revision, which differs from invention/drafting; learn to recognize each stage and when it is progressing.

Writers don't matter; readers do.
Scientific documents are professional documents, and professionals are not interested in the writer—no one cares much about how hard you've worked, how brilliant you are, or how much you've improved. Professionals care about the science. Get over it.

The reader is always right.
Once the prose leaves the writer's hands, it belongs to the reader. If the reader understands it differently from the writer, the reader's interpretation is the only one that matters. The writer's job is to shape the readers' interpretation to the writer's intended message.

Readers use structure as instruction.
They interpret information based upon where in the writing it occurs, at all levels—in sentences, paragraphs, sections, documents, etc.

In general, give the readers what they need and expect when they need it.
Readers read linearly through time, from left to right, and their short-term memory is finite. They do not carry all the information along simultaneously and wait to interpret it; they interpret as they go, based on the information at hand. The more a writer understands how readers interpret, the more effectively the writer can shape that interpretation.

Writing is never good or bad in isolation; it's always in context.
Good writing communicates; bad does not—regardless of its correctness, elegance, or lack thereof. Don't separate the language from the thought; they're two sides of the same hand.

The only rule is there are no fixed rules.
Any expectation can be violated to good effect. Writing well requires judgment, not algorithms.

Sources: Elbow, Peter, Writing without Teachers, Oxford University Press, 1998