

# Writing in the Sciences: Turning Complexity into Clarity

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Although science is a complex field of study, writing for the sciences doesn't have to be. It is important to remember that the purpose of scientific writing is to communicate with other scholars (scientists) in the field. When you are writing in the sciences, your goal as a writer is to convey information to your reader clearly, factually, and objectively.

## Conventions of Scientific Writing

### Purpose

Communicate information to other scientists in the field

### Style

Scientific writing requires a standard format (APA, CSE) and concise sentence structure

- Replace empty phrases with more concise choices (ex: “a downward trend” → “a decrease”)
  - See *Empty Phrases* handout.
- Eliminate ambiguity in your writing (*this, that, it, which*)

### Tone

Provide factual information and remain objective in your writing

- Your role as an author is to communicate information without including your perspective or opinion

### Point of View

The third person point of view is appropriate because it allows the writer to remain objective. This means that the writing does not address the reader or reflect the writer's perspective.

- student(s), participant(s), observer(s), researcher(s), one
- third person pronouns (*he, she, they*)

### Verb Tense

- Use the past tense when reporting your own work and findings – because new data is not yet considered “established knowledge.” (Abstract, Materials and Methods, Results)
- Use the present tense when discussing the published work of others (Introduction and Discussion)

### Active and Passive Voice

Although the passive voice is necessary in some scientific writing, the active voice can also be used. When deciding whether to use the active or passive voice, consider what you want to emphasize in the sentence:

PASSIVE:                Skin extract solution *was presented* to the fish through a plastic tube.

ACTIVE:                *The researcher presented* skin extract solution to the fish through a plastic tube.

In this example, it would be more appropriate for the writer to emphasize the action and receiver (*the fish*), rather than the subject doing the action (*The researcher*). The passive voice is commonly used in the Methods and Materials section while the active voice can be used to make sentences more direct and concise.

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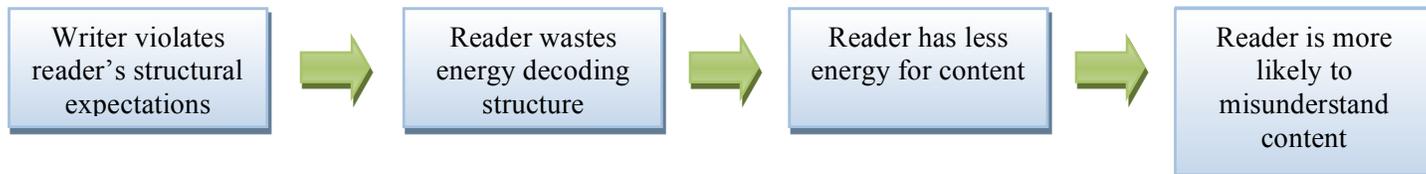
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## Writing with the Reader in Mind

Because of the technical jargon and complex concepts presented in scientific writing, it is important to write with the reader in mind:

- Readers interpret based on structural cues or expectations.
- It is easier for audiences to uniformly interpret information if it is where they expect it to be.
- Knowing the reader's expectations gives the writer more control over the reader's interpretation.

*When reader's expectations are not taken into account, the unexpected happens:*



### Structural Expectations of Readers in Scientific Writing

- The verb should arrive immediately after the subject of the sentence.
  - The verb should be the action of the sentence.
- The context, or old information, should come first in the sentence.
- The emphatic information, or new information, should come last in the sentence.
- There should be no logical gaps in the writing.

### Place the verb immediately after the subject, and make the verb the action of the sentence.

- After the subject, the reader anticipates the verb and largely ignores everything else that comes in between.
- Getting to the point quickly keeps the reader invested, helps them interpret the text, and limits confusion.
- It is important to minimize generic/passive verbs such as: *is/was; has/have; can; and will.*

### The context should come first in the sentence and is also referred to as the topic of the sentence.

- Information in the topic position should link back to old information, provide context for new information, and provide perspective for the reader.
- New information in the topic sentence disorients the reader.

### The emphatic information should come last in the sentence, and is also referred to as the stress position.

- As a sentence is ending, the reader starts to exhale, naturally stressing the information at the end of the sentence.
- Take advantage of the natural stress by placing emphatic (new or important) information at the end of the sentence.
- When emphatic information is in the wrong place, the reader may emphasize unimportant information, not notice important information, or waste time looking for emphatic information elsewhere in the sentence.

### There should be no logical gaps in the writing.

- Logical gaps occur when writers jump from old information to new information without explaining the connection for the reader.
- When the connections are clear in the writer's mind but they underestimate the difficulty of bridging the gaps on paper, logical gaps are often the result.

The information for this handout was compiled from the following sources:

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- Knisley, K. (2009). *A student handbook for writing in biology* (3<sup>rd</sup> ed.). Sunderland, MA: Sinauer.
- McMillan, V. E. (2001). *Writing papers in the biological sciences* (3<sup>rd</sup> ed.). Boston, MA: Bedford/St. Martin's.

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