How to Write in Science

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Outline

General Advice

Clarity Above All

"There is really only one essential goal in scientific writing: clarity."

– Robert Day [1]

- Consider your audience: background, jargon, and interests.
- Structure and clarity help readers navigate your writing.
- Use simple, precise language to avoid unnecessary complexity.

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Example: Improving Clarity

Original:

Factors such as root depth, root density, water availability through different irrigation methods and more recently rhizosphere management affect rice crop hydration.

Revised:

Rice crop hydration is affected by factors such as root depth, root density, water availability through different irrigation methods, and rhizosphere management.

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Factores como la profundidad de las raíces, la densidad radicular, la disponibilidad de agua a través de diferentes métodos de riego y, más recientemente, la gestión de la rizosfera afectan la hidratación del cultivo de arroz.

Revisado:

La hidratación del cultivo de arroz se ve afectada por factores como la profundidad de las raíces, la densidad radicular, la disponibilidad de agua mediante distintos métodos de riego y la gestión de la rizosfera.

Claridad en Español

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Active or Passive Voice

Active vs. Passive Voice: The Basics

Active Voice

- The subject (actor) comes first and performs the action.
- The object (recipient) follows the verb.
- Example: The team calculated the optimum pH.

Passive Voice

- The object (recipient) comes first.
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- Additional words (*is, was, are, being, by*) are required.
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When to Use Active Voice

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Proper Grammar

Different tenses serve different purposes:

- Present tense: Established facts, research questions, and beliefs at the time of the study.
- Past tense: Describing methods, results, and attributing previous work that is not yet established fact.

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Adjectives

- Use strong adjectives when justified: *urgent, dangerous, essential*.
- Avoid weak or unnecessary adjectives: *particular, apparent, notable*.

Adverbs

- Use adverbs only when they add meaning.
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Constructing a Strong Paragraph

A **paragraph** is not just a collection of sentences.

A well-constructed paragraph should:

- Contain a group of related ideas.
- Follow a logical order (e.g., most important to least important, earliest to latest).
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Before:

The impact of screen time on psychological health is controversial. Smartphone use in younger people has consistently increased in recent years. Controversy always arises around the appropriate use of new disruptive technology. The arguments often collapse into scaremongering claims. We remain influenced by correlational findings. The confusion continues. We need to critically appraise current research. We need to identify the key questions. We need to determine what research is needed to answer these questions.

After:

*The impact of screen time on psychological health is controversial. **In recent years**, smartphone use among younger people has consistently increased. Controversy always arises regarding the appropriate use of new disruptive technology. **However**, arguments often collapse into scaremongering claims, **and** we remain influenced by correlational findings. **Consequently**, confusion persists. **To advance**, we must critically appraise current research, identify key questions, **and** determine what studies are needed to answer them.*

Antes:

El impacto del tiempo frente a la pantalla en la salud psicológica es controvertido. El uso de teléfonos inteligentes entre los jóvenes ha aumentado constantemente en los últimos años. Siempre surge controversia sobre el uso apropiado de nuevas tecnologías disruptivas. Los argumentos a menudo se reducen a afirmaciones alarmistas. Seguimos influenciados por hallazgos correlacionales. La confusión continúa. Necesitamos evaluar críticamente la investigación actual. Necesitamos identificar las preguntas clave. Necesitamos determinar qué investigaciones se necesitan para responderlas.

Después:

*El impacto del tiempo frente a la pantalla en la salud psicológica es controvertido. **En los últimos años**, el uso de teléfonos inteligentes entre los jóvenes ha aumentado constantemente. Siempre surge controversia sobre el uso apropiado de nuevas tecnologías disruptivas. **Sin embargo**, los argumentos a menudo se reducen a afirmaciones alarmistas, **y** seguimos influenciados por hallazgos correlacionales. **En consecuencia**, la confusión persiste. **Para avanzar**, debemos evaluar críticamente la investigación actual, identificar las preguntas clave, **y** determinar qué estudios se necesitan para responderlas.*

Writing a Document

Avoid staring at a blank page—begin with structured planning.

- Write the **Methods** section first (often the easiest part).
- Prepare key figures and tables before writing results.
- Summarize findings in short sentences to guide the message.
- Draft a **problem statement** before tackling introduction and discussion.

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Create an electronic **mindmap** early in your research.

- Include four sections: Introduction, Methods, Results, Discussion.
- Continuously update it as ideas evolve.
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- Selection and source of materials/participants.
- Study design (temperature, time, dose, etc.).
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Present key findings in a logical sequence.

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- Use "significant" only for statistical results.
- Use precise descriptions.
- Use figures/tables with clear legends to avoid redundancy.

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- Repeating visual data in text.
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- Methods (minimal details).
- Results (bulk of the abstract, 50
- Conclusion (essential).

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Bibliography

References

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Thank you for your attention!

Questions?