



Workshop:
Strategies to improve your scientific writing
-
Estrategias para mejorar su redacción científica
auspiciado por Springer Nature

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Presentation

Klaus Mehltreter

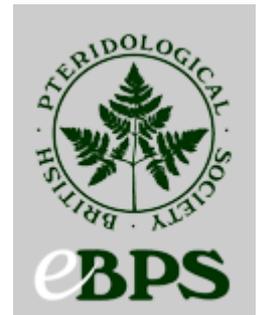
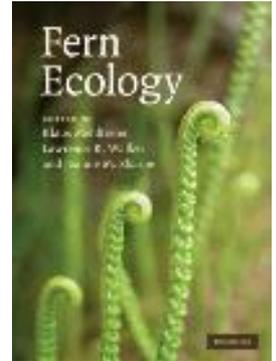
Researcher at Instituto de Ecología, A.C.,
Xalapa, Ver., Mexico

Research interest: Fern Ecology

Reviewer of 35 journals

Associate Editor of American Fern
Journal and Fern Gazette

Postgraduate course: “Redacción y
publicacion científica en inglés” (since
2011)



Taller - Workshop

- Not an English class, not even a grammar lesson
- However,
 - some reflections about writing
 - short exercises
 - common errors
 - tricks and tips to improve
 - recommendations for students

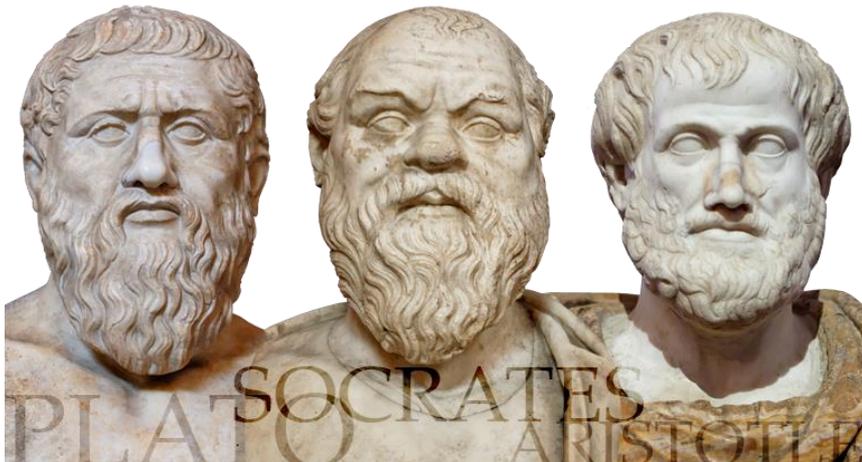
The need for scientific publication

Unfortunately, the education and training of scientists are often so overwhelmingly committed to science that the communication arts are neglected or ignored. In short, many good scientists are poor writers. Certainly, many scientists do not like to write.

(Day 1979)

The beginnings

In Plato's *Paedrus*, Socrates describes how the Egyptian god Theuth, inventor of writing, came to Thamus, the king of Egypt, and offered to bestow his wonderful invention upon the Egyptian people.



The beginnings (2)

“Here is a branch of learning that will...improve their memories,” Theuth said to the Egyptian king. “My discovery provides a recipe for both memory and wisdom.”

But Thamus was reluctant to accept the gift. “If men learn this, it will implant forgetfulness in their souls,” he told the god.

(Foer, J. 2011. Moonwalking with Einstein. Penguin Books: London)

In Greek times written manuscript were not made to read, they were an aid to memorize facts and stories.



Remember the Greek wrote their manuscripts on scrolls and used as “*Scriptio continua*”. Manuscripts need to be read by speaking them aloud.

- no index
- no page numbers
- no punctuation marks
(first ca. 200 B. C.)
- no lowercase letters
- no spaces
(became common 800 A.D.)



Tip: You write for the readership

- You want to be understood.
- You want to write clearly.
- You want to be readable.

Trouble



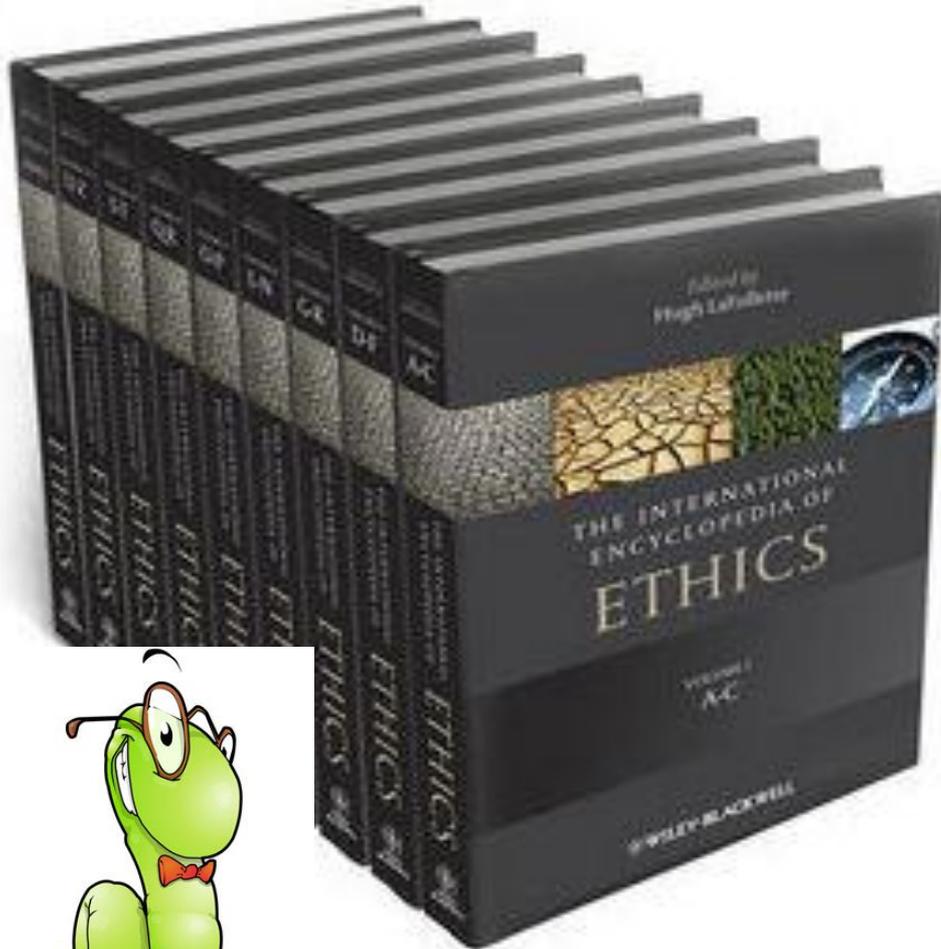
WWW.PHDCOMICS.COM

Is this familiar to you?

Email and chat do not necessarily amend our writing abilities

Hola Dr... le envié un cordial saludo antes que nada una disculpa me perdí un rato para lo del trabajo de xxxxxx en yyyyyyy, le escribo para decirle que aun sigue en pie el trabajo ya estoy iniciando con la materia de experiencia recepcionista para ya dar de alta mi trabajo y la documentación que piden en mi facultad, estuve trabajando en el protocolo el cual le envié espero pueda checarlo y darme sus puntos vista aun no salgo a campo no se me a autorizado; pero ya me dedico al trabajo estos meses atte zzzzzzz

Riddle: The bookworm



A bookworm is born on the first page of an encyclopedia of 10 volumes.

It feeds on a straight line to the last page of the 10th volume, where it dies.

What distance did the bookworm cover?

- The pages of each volume are in total 10 cm thick.
- Each cover of each volume is 0.5 cm thick.

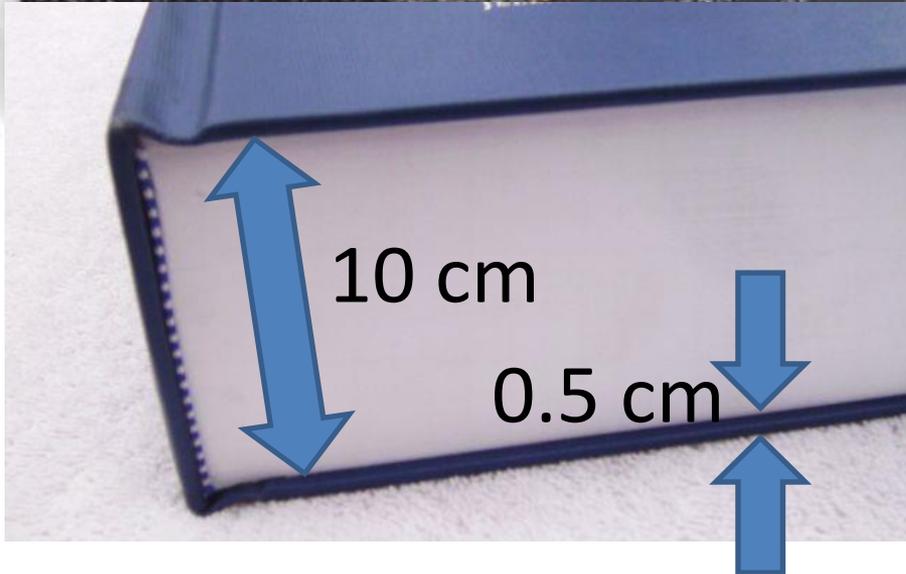
The bookworm



A bookworm is born on the first page of an encyclopedia of 10 volumes.

It feeds on a straight line to the last page of the 10th volume, where it dies.

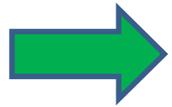
What distance did the bookworm cover?



- The pages of each volume are in total 10 cm thick.
- The cover of each volume is 0.5 cm thick.

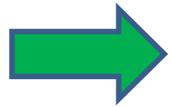
Exercise of self-evaluation

1. Do you think that you publish enough?



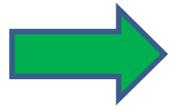
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2. If not, what are the reasons that you do not publish as many papers as you should?



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1. Do you think that you publish enough?
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3. Do your current language skills of English limit your publication output?



Exercise of self-evaluation

1. Do you think that you publish enough?
2. If not, what are the reasons that you do not publish as many papers as you should?
3. Do your current language skills of English limit your publication output?
4. If you answered with yes, how many scientific articles do you publish per year in Spanish?

Exercise of self-evaluation

1. Do you think that you publish enough?

How many publications do you consider that are enough:

- for your ego? 1 per year?
- for your research career? 2 per year?
- for your institution? 3 per year?
- to be national researcher level III? 4 per year?

Tip: Set yourself a realistic but ambitious goal

Exercise of self-evaluation

2. If not, what are the reasons that you do not publish as many papers as you should?

- Lack of time? Too busy with administration?
- Lack of institutional support? Insufficient equipment to perform high-quality research?
- Lack of statistical knowledge?
- Poor language skills of English?

Exercise of self-evaluation

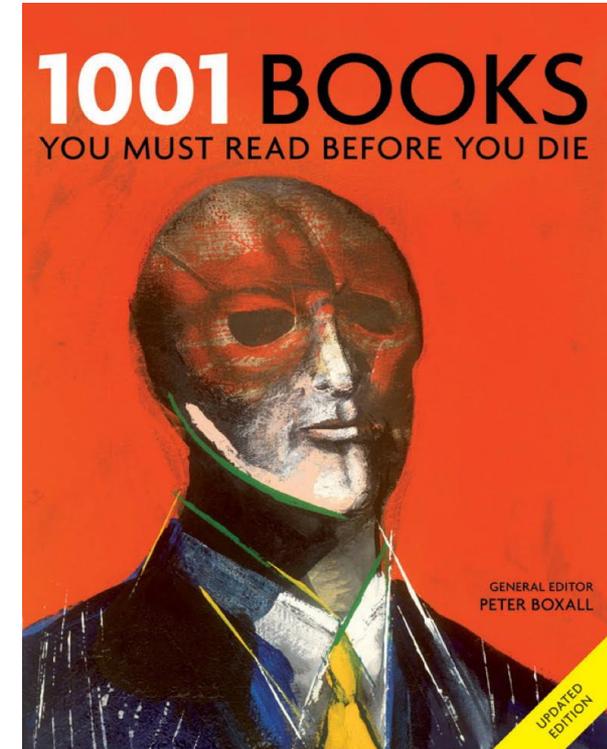
3. Do your current language skills of English limit your publication output?

4. If you answered with yes, how many scientific articles do you publish per year in Spanish?

If you consider that your linguistic proficiency limits your number of publications in English, than you should already publish 3-4 articles per year in Spanish.

What can you do to publish more?

- Option 1: write in Spanish and hire a professional to translate your manuscript
- Option 2: collaborate with a productive group of academics
- Option 3: amend your English proficiency by spending a year in the US or UK
- Option 4: read English books (I mean novels and non-fiction!)



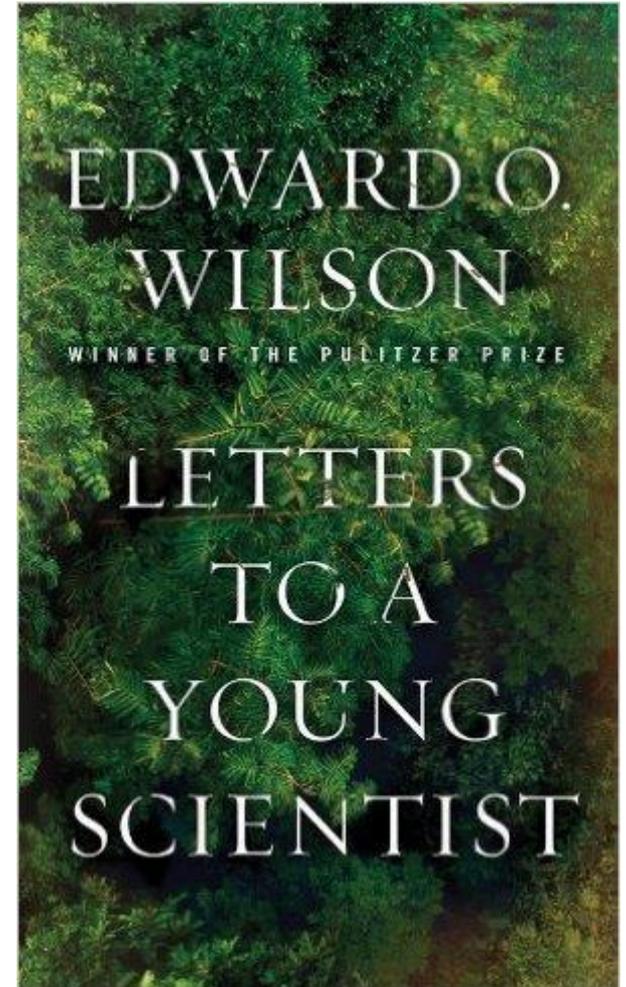
If you want to learn to write in a specific language:

1. You should be interested in the language and the culture of the countries where it is spoken,
2. You have to read publications in the same language,
3. You have to practice as much as possible:
Read, listen, talk and write.

Recommendation to read

“First and foremost, I urge you (the student) to stay on the path (of science) you have chosen, and to travel on it as far as you can. The world needs you – badly.”

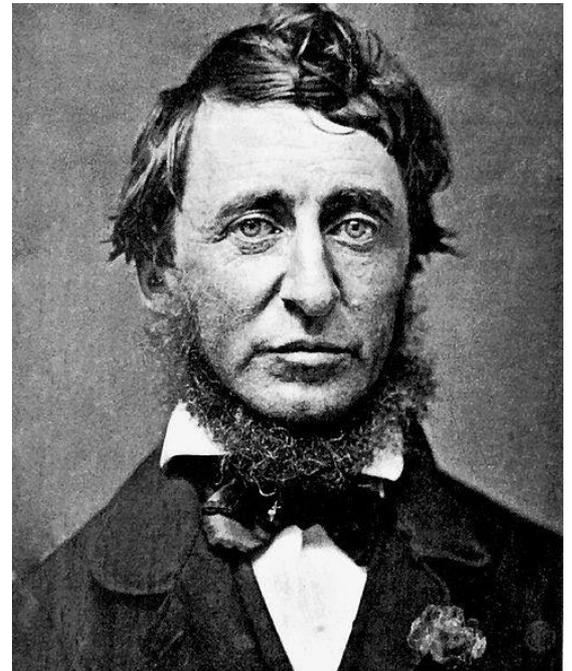
(Wilson, E.O. 2013: Letters to a young scientist. Liveright, New York. 244 pp.)



Your philosophy should be...

"If one advances confidently in the direction of his dreams and endeavors to live the life, which he has imagined, he will meet with success unexpected in common hours."

--- Henry David Thoreau (1817-1862)



Tip: Practice

As a single footstep will not make a path on the earth, so a single thought will not make a pathway in the mind.

To make a deep physical path, we walk again and again.

To make a deep mental path, we must think over and over the kind of thoughts we wish to dominate our lives.

--- Henry David Thoreau

Writing is easy. All you do is stare at a blank sheet of paper until drops of blood form on your forehead.

G. Fowler

Tip: Assign some of your most productive time to write daily

Think before you write

Never sit down to write before you have thought long enough and hard enough about your

1. research question,
2. experimental design,
3. data analyses (incl. statistics), and
4. read enough about your research area,

so that you can present and discuss your work logically and honestly.

Writing is relatively easy to learn, if you have something to say.

(adapted from Vaughan Payne 1965)

The title of your publication

- What is a good title?
- How can you we find the best title for your manuscript?
- Do journals with higher IF have better titles?

Titles

- Vague unclear: “Studies on *Dryopteris*”
- Composed title: “Studies on *Dryopteris*: biogeography of the *D. patula* complex in South America.”
- Questions: “Is the alcohol extract of *Dryopteris carthusiana* the cure of breast cancer?”
- Mini-Summary: “Alcohol extracts of *Dryopteris carthusiana* cure breast cancer.”

Tip: How to find the best title for your manuscript?

- Write down the current title of your manuscript.
- Think about three alternative titles and write them down.
- Choose the title, which is the best in your opinion. Explain it to yourself!

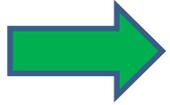
Good or bad titles? 10 examples

Qualify the following 10 titles:

1. very good
2. good, but improvable
3. bad

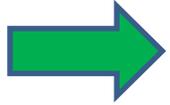
Do you know what the article is dealing with by reading the title?

Is the title clear, informative and detailed, without being too long?



Good or bad titles?

1. Germination and sporophytic development of *Regnellidium diphyllum* Lindman (Marsileaceae) in the presence of hexavalent chromium.
2. *Isoetes laosiensis*, a new species from Lao PDR.
3. Fern distortion syndrome of leatherleaf fern in Costa Rica: symptoms, incidence, and severity.
4. A note on pteridophytes of the Indravati Tiger Reserve, Dantewada, Chhattisgarh.
5. A cyanobacterium and fern, good alone but better together.



Good or bad titles?

6. Variation in formaldehyde removal efficiency among indoor plant species.
7. Importance of montane riparian forest and influence of wildfire on nest-site selection of ground-nesting birds.
8. Abrupt deceleration of molecular evolution linked to the origin of arborescence in ferns.
9. Molecular phylogeny, character evolution, and biogeography of the grammitid fern genus *Lellingeria* (Polypodiaceae).
10. *Megalastrum* (Dryopteridaceae) in Central America.

Good or bad titles?

1. Very good:

3, 8, 9

2. Good but improvable:

1, 2, 5, 6, 7

3. Bad: 4, 10

Good or bad titles?

1. Very good:

3 (2.449)

8 (5.146)

9 (2.664)

2. Good, but

improvable: 1 (0.688)

2 (0.407)

5 (symp. abstract)

6 (0.778)

7 (1.522)

3. Bad:

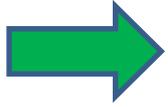
4 (no-ISI)

10 (no-ISI)

Structure of an article: IMRAD

- Abstract
- **I**ntroduction: What question was studied?
- **M**ethod: How were the studies performed?
- **R**esults: What were the findings?, **and**
- **D**iscussion: What do these findings mean?
- Conclusion

This structure is also followed in the abstract.



Abstract writing sample

This paper reports studies on the territorial behavior patterns shown by males of the dragonfly species *Plathemis lydia* at a small pond in the vicinity of Earlville, NY. A total of 51 male dragonflies were marked with small spots of enamel paint applied to the abdominal portion of the body and were observed under natural conditions during the month of June 2005. It was found that males showed a strong tendency to defend individual areas at the pond. These males chased away other males of their species, and also, on occasion, even males of other species of dragonflies. Threat behavior, as opposed

to behavior involving physical contact, was the most common aggressive behavior displayed by males defending their areas against intruders. Males typically remained at the same area of the pond for 2 h or longer on a single day. Also, they usually were observed returning to the same area on successive days. These observations suggest the possibility that male territorial behavior in this species serves the adaptive function of enabling the owners to monopolize particular areas. These areas may be visited by females who are in the act of seeking mates.

(McMillan 2006)

Eliminate repetitions and superfluent words

~~This paper reports studies~~ on the territorial behavior patterns shown by males of the dragonfly species *Plathemis lydia* at a small pond in the vicinity of Earlville, NY. A total of 51 male dragonflies were marked with ~~small spots of enamel~~ paint applied to the abdomen ~~at portion of the body~~ and were observed under natural conditions during the month of June 2005. ~~It was found that~~ males showed a strong tendency to defend individual areas at the pond **and**. ~~These males~~ chased away other males of their species, and also, on occasion, even males of other species of dragonflies. Threat behavior, as opposed

to behavior involving physical contact, was the most common aggressive behavior displayed by males defending their areas against intruders. Males typically remained at the same area of the pond for 2 h or longer ~~on a single day~~. ~~Also, they usually~~ were observed returning to the same area on successive days. These observations suggest the possibility that male territorial behavior in this species serves the adaptive function of enabling the owners to monopolize particular areas. These areas may be visited by females who are in the act of seeking mates.

(McMillan 2006)

Possible solution after rewriting

I studied the territorial behavior of male dragonflies (*Plathemis lydia*) at a small pond near Earlville, NY. Fifty-one males were marked with enamel paint on the abdomen and observed under natural conditions during June 2005. Males defended individual areas from male conspecifics and occasionally from males of other species. Aggressive interaction generally involved threat behavior rather than physical contact. Territory owners typically remained at the same area for at least 2 h and returned to the same location on successive days. Territorial behavior in

this species may be adaptive for males, enabling them to monopolize areas likely to be visited by females seeking mates.

Abstract structure of this example

Intro: I studied the territorial behavior of male dragonflies (*Plathemis lydia*) at a small pond near Earlville, NY.

Method: Fifty-one males were marked with enamel paint on the abdomen and observed under natural conditions during June 2005. **Results:** Males defended individual areas from male conspecifics and occasionally from males of other species. Aggressive interaction generally involved threat behavior rather than physical contact. Territory owners typically remained at the same area for at least 2 h and returned to the same location on

successive days. **Discussion:** Territorial behavior in this species may be adaptive for males, enabling them to monopolize areas likely to be visited by females seeking mates.

Tips:

Check structure

Clear aim of the study

Verify abstract length (author guidelines)

Writing sentences: word order matters

1. Peter saw a fox looking out of the window of the room.
2. Mother cooked a meal for the visitor made of oysters.
3. Uncle Thomas called his grandson who is over ninety.
4. The boy wrote to the President who lives next door.

Writing sentences: word order matters

1. Peter saw a fox looking out of the window of the room.

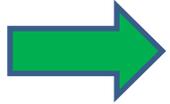
Correct: Looking out of the window of the room
Peter saw a fox.

2. Mother cooked a meal for the visitor made of oysters.

Correct: Mother cooked a meal made of oysters for the visitor.

Writing sentences: sentence length

- The average sentence length should not be more than 30-40 words.
- Longer sentences are more difficult to understand.
- MSWord's grammar checker finds long sentences but does not provide help.
- The variation in sentence length provides a natural rhythm of speech.



Too short sentences

We sat down. The children played around. We loved this place. The grass was green. The fox was red. Tim was not hungry. He was lying in the hay. We had a picnic. My mom had made apple pie. Karen was crossing the river. The dogs were following her. The birds were singing. The wind blew. It was a happy moment.

Order and combine sentences.

Too short sentences

We had a picnic, for which my mom had made apple pie. We sat down while the children played around. Karen was crossing the river and the dogs were following her. Tim was lying in the hay, because he was not hungry. The grass was green, the fox was red, and the birds were singing while the wind blew. We loved this place. It was a happy moment.

Standard devices

- Pro:
- The project had value. It could save our enterprise in times of crisis.
- The project had value. **Consequently**, it could save our enterprise in times of crisis.

- Contra:
- The project had value. It wasted time.
- **Admittedly**, the project had value. **But** it was wasted time.

Standard transitional devices

Pro	Con
Admittedly	But
And	Despite that
Certainly	Even so
Clearly	However
Consequently	Nevertheless
Furthermore	On the other hand
In addition	Still
In fact	Yet
Indeed	
Moreover	
Obviously	
Of course	
Therefore	
Thus	

Hooks and combinations

- Elephants are huge savage animals turning down and destroying everything in their way. They are aggressive and use their brutal force against any enemy.

But they touch their babies as softly as a butterfly.

Their hostile nature disappears completely when they touch their babies as softly as a butterfly.

Their hostile nature disappears, **however**, when they touch their babies as softly as a butterfly.

Too long sentences

"Their honour precarious, their liberty provisional, lasting only until the discovery of their crime; their position unstable, like that of the poet who one day was feasted at every table, applauded in every theatre in London, and on the next was driven from every lodging, unable to find a pillow upon which to lay his head, turning the mill like Samson and saying like him: "The two sexes shall die, each in a place apart!"; excluded even, save on the days of general disaster when the majority rally round the victim as the Jews rallied round Dreyfus, from the sympathy--at times from the society--of their fellows, in whom they inspire only disgust at seeing themselves as they are, portrayed in a mirror which, ceasing to flatter them, accentuates every blemish that they have refused to observe in themselves, and makes them understand that what they have been calling their love..."

Marcel Proust: In search of lost time.

958 words

Writing sentences: One idea per sentence

Bob Metz stood in the beating sun Thursday and looked out at the spot in the San Diego reservoir where his brother showed him where he and a pilot had ditched a WWII dive bomber back in 1945.

Shorter sentences with a single idea per sentence are better understood by everyone

Bob Metz stood in the beating sun Thursday, watching as divers lifted a WWII plane out of the water. Years before, Metz had stood in the same spot with his brother, who pointed out the spot where the plane went down. Metz's brother and a military pilot had ditched the plane in 1945, when its engine failed. They swam to safety and hitchhiked to a nearby military base.

Paragraph writing

Content and structure of a paragraph

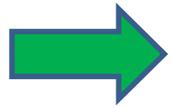
- 3 parts:
- Beginning (topic sentence)
- Middle (sentences explaining, illustrating and developing the idea of the topic sentence in more detail)
- End (concluding sentence)

Click for example and details

[http://www2.actden.com/writ_den/tips/paragrap/index.
htm](http://www2.actden.com/writ_den/tips/paragrap/index.htm)

Paragraph writing example

There are three reasons why Canada is one of the best countries in the world. First, Canada has an excellent health care system. All Canadians have access to medical services at a reasonable price. Second, Canada has a high standard of education. Students are taught by well-trained teachers and are encouraged to continue studying at university. Finally, Canada's cities are clean and efficiently managed. Canadian cities have many parks and lots of space for people to live. **As a result, Canada is a desirable place to live.**



Materials writing sample

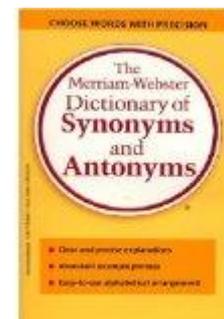
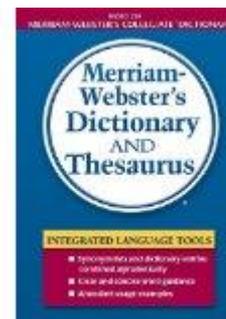
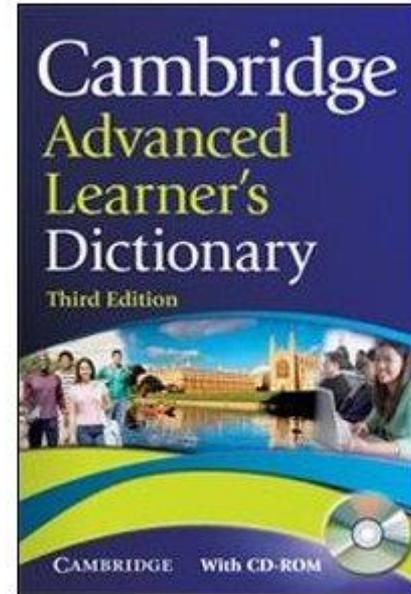
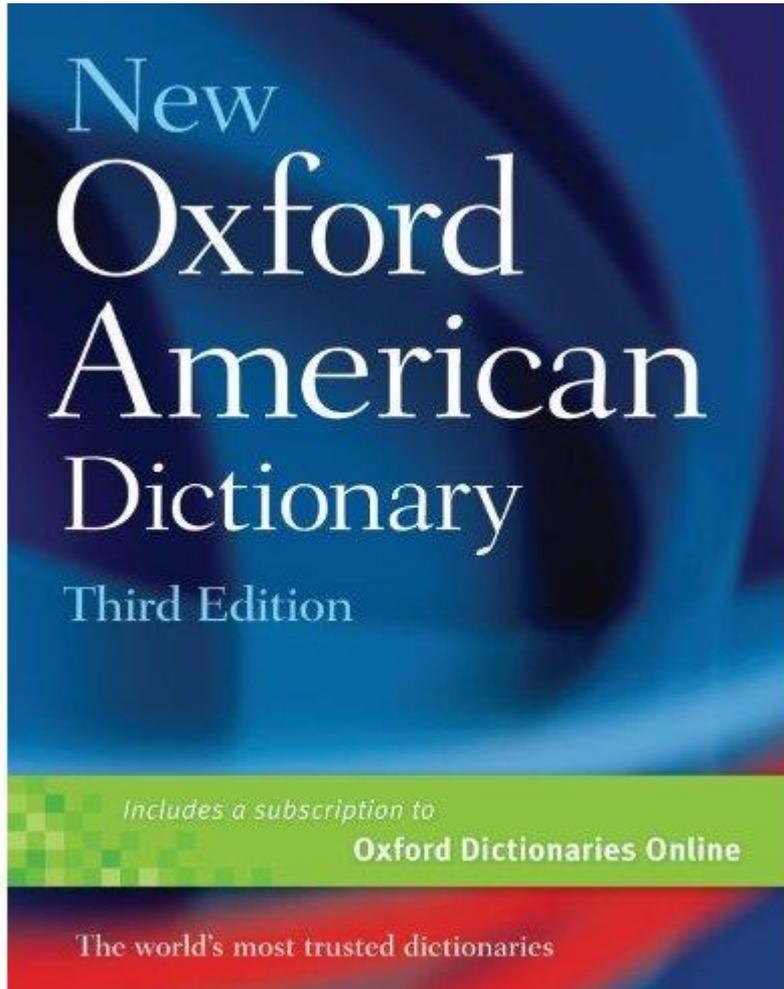
Golden hamsters (*Mesocricetus auratus*) used for this research were adult males. Temperature conditions were kept at 22-24 °C. Animals were fed Purina chow. Hormonal studies were performed on 23 individuals. The photoperiod was 16 h. Animals were housed with littermates of the same sex, and feeding was once each day. All hamsters had been weaned at 3 wk.

(McMillan 2006)

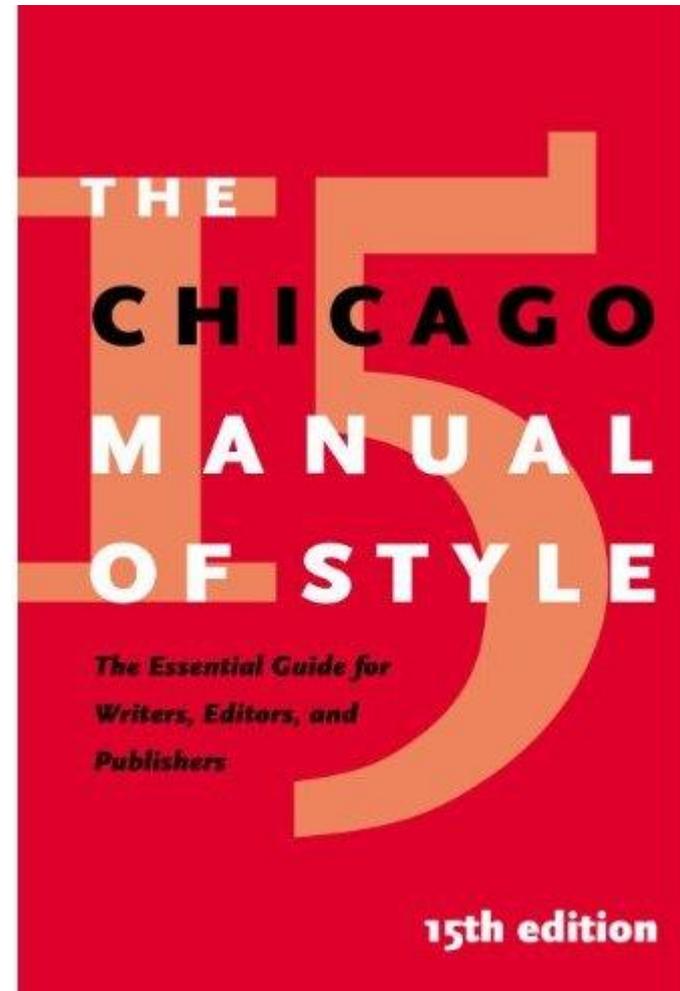
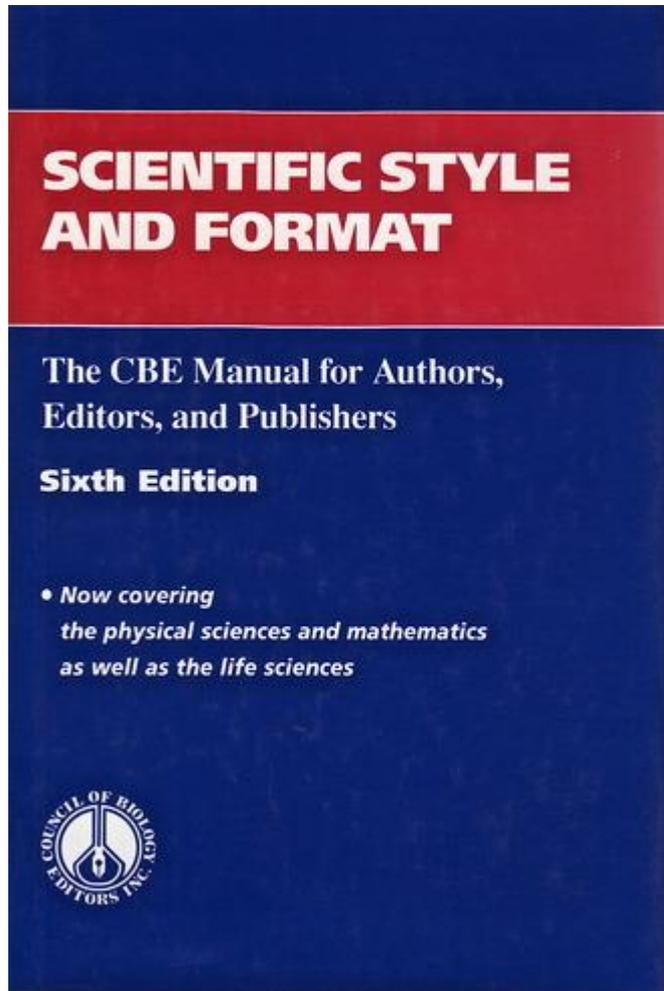
Possible solution

Hormonal studies were performed on 23 adult male golden hamsters (*Mesocricetus auratus*). All had been weaned at 3 wk and housed with littermates of the same sex. They were reared under conditions of 22-24 °C and a photoperiod of 16 h and were fed Purina chow once daily.

Writing tools: Dictionaries



Manuals of style



Software

Larousse Gran Diccionario Inglés-Español/Spanish-English

Fichero Ayuda



LAROUSSE
GRAN DICCIONARIO
INGLÉS - ESPAÑOL
SPANISH - ENGLISH

Ayuda Créditos Salir

Búsqueda por índice

Inglés-español

Borrar

A
A-1
a
AA
^^^

A, a [eɪ] *n*
-1. (*letter*) A, a *f*
-2. **IDIOMS to get from A to B** ir de un lugar a otro; **from A to Z** de principio a fin
 A to Z (*street guide*) *Esp* callejero *m*, *Am* guía *f* de la ciudad; **an A to Z of gardening** una guía completa de jardinería

Electronic devices



e.g. Franklin Merriam
Webster, MWD 1500
Ca. 40 USD

Online resources

The image shows two overlapping web browser screenshots. The top screenshot is from the Oxford Dictionaries website, displaying the 'translate' page with a search bar and navigation links. The bottom screenshot is from the Cambridge Dictionaries Online website, showing the 'Diccionario Password inglés-' page with a search bar and social media statistics.

Oxford Dictionaries
Language matters
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1.93 m Likes 72.35 k Followers 2.51 k Fans

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Aplicaciones Nueva pestaña Importado de Intern... Altmetric it Stage Structured Le... Otros marcads

a multilingual free encyclopedia
Wiktionary
[ˈwɪkʃənəri] n., a wiki-based Open Content dictionary
Wileo Pwyl karni

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4,188,854 entries with English definitions from over 1550 languages
Appendices • Abbreviations • Thesaurus • Rhymes • Frequency lists • Phrasebooks
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"Spanish-English, espanol-ingle".

<http://www.oxforddictionaries.com/definition/english/>

<http://dictionary.cambridge.org/es/diccionario/espanol-ingles/>

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Good to know



LESSONS

INTRODUCTION

Introduction

Disclaimer

Lesson I

Subjects/Actions

Principles

Examples

Worksheet

Lesson II

Cohesion/Emphasis

Principles

Examples

Worksheet

Lesson III

Why is writing important in science?

Writing is the most common form of scientific communication, yet scientists have a reputation for being poor writers. Why? One reason could be that writing is never really taught to scientists. Better writing will benefit your science career in several ways. Within the scientific community, improved communication leads to improved collaboration, easier access to cross-disciplinary knowledge, and faster, less painful training. Besides this, you will be able to communicate better not only with other researchers, but with the public, who funds your research. If scientists were better writers, the gap between the public and academy would shrink.



UNIVERSITY WRITING CENTER



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WRITING

is a struggle against silence.

-Carlos Fuentes

<http://writingcenter.tamu.edu/Home>

TOPICSAdjectives
.....Adverbs
.....Business Writing
.....

Welcome to EnglishGrammar.org!

Here you'll learn all aspects of the English written language, enabling you to improve your writing skills in both personal and formal communications.

Bibliography

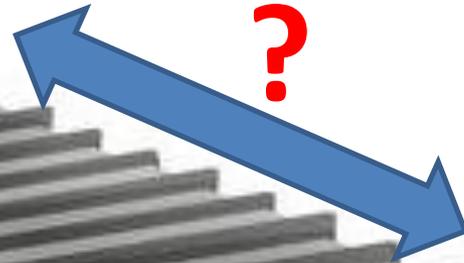
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The bookworm

- What distance did the bookworm cover?
 - 110 cm?
 - 109 cm?
 - 100 cm?
 - 89 cm?



The bookworm covered a distance of 89 cm!

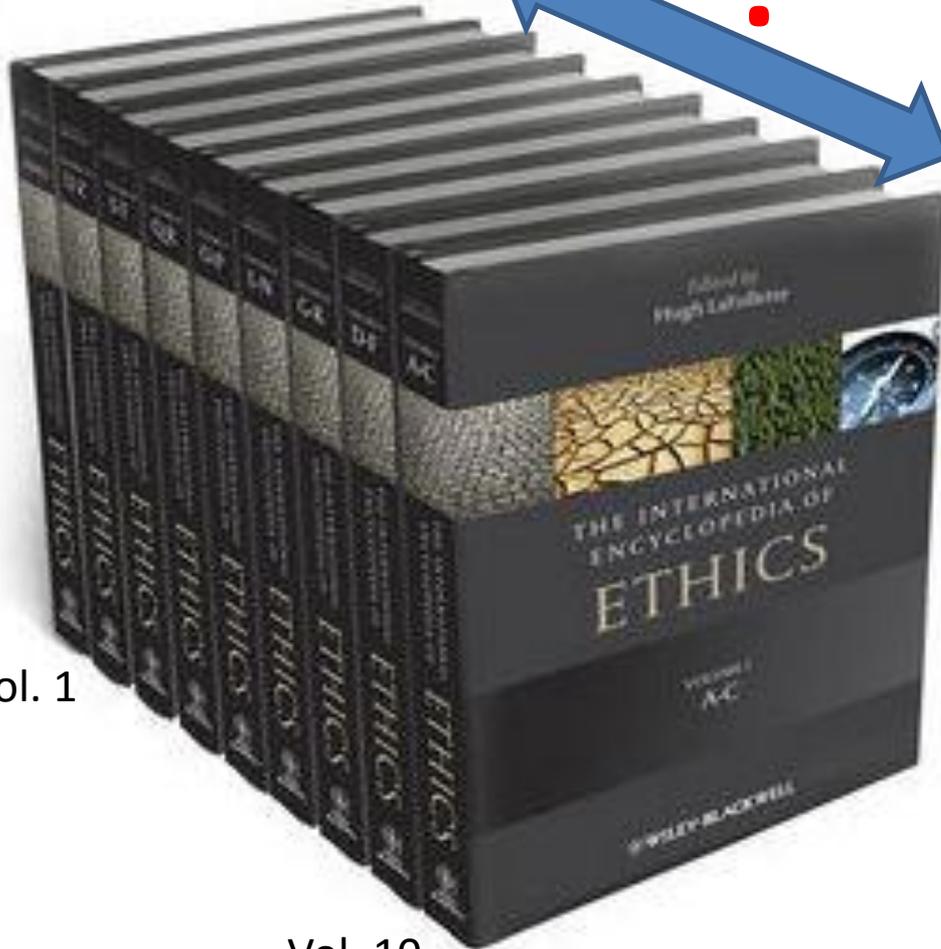


Books are put in order from the left to the right.
The first page of vol. 1 is on the extreme right of vol. 1!
The last page of vol. 10 is on the extreme left of vol. 10!

First volume = one cover = 0.5 cm
2nd-9th volume = $8 \times 11 \text{ cm} = 88 \text{ cm}$
Last volume = one cover = 0.5 cm
Total = 89 cm

Vol. 1

Vol. 10



What did we learn from the bookworm?



1. We need a clear research question from the start.
2. We need some previous knowledge of the system (book order, page numbering) we are studying.
3. We have to pay attention. Science comes often with a surprising result.

Conclusions

- Improve your language skills by daily exercise.
- Read, read, read.
- Buy your own dictionary and manual of style.
- Practice: Schedule daily one hour for writing.
- Do not be perfectionist if you start writing (you will have to edit and rewrite everything several times).
- Talk with colleagues about problems of writing and publication.
- Be a perfectionist when submitting your paper.



Workshop:
Strategies to improve your scientific writing
-
Estrategias para mejorar su redacción científica
auspiciado por Springer Nature

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