

# Written & Oral Presentation: Tips for better writing

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- **write with conviction**, passion, and verve



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- **Creative expression, humor, puns, engaging titles:** Is it OK to be funny, at the risk of sounding “unprofessional”? (I suggest it is but only sparingly).

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- ③ **avoid** weighing down their sentences with extraneous words and phrases, or “**clutter.**”

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Can you rewrite this to be more active and lively?
- By contrast, consider this active and vibrant sentence:  
“Insects suck, chew, parasitize, bore, store, and even cultivate their foods to a highly sophisticated degree of specialization.”

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- **Passive and indirect:** Verification of the optimality of  $y$  was achieved by checking that the Hessian matrix was positive definite.  
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Examples:
- “**Passive constructions can be employed by stylish writers**” places passive constructions front and center, whereas an actively worded phrase such as “Stylish writers employ passive constructions” would have put more weight on the author’s role.
- “An ingenious proof of this conjecture was constructed by C. L. Ever”, emphasizes the ingenuity of the proof instead of the author.

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- Example: “*The knowledge that criminalization of marijuana use can lead to a wide variety of other social ills, including an increased risk of addiction to more dangerous and expensive drugs such as heroine and cocaine, has not prevented lawmakers...*”

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- Question: “Some *who* have seen this *what*? Isn’t it the author’s job, not ours, to make the sentence’s meaning clear?”
- Why should we have to work so hard to figure out what this sentence is trying to say?
- Even worse: “There are a number of studies that show that *this* is a bad idea because *it*...”

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- For example, in the sentence “**The woman threw the lamp through the window and broke it,**” *what* did the woman break, the lamp or the window?
- **Avoid** using **that** more than once in a single sentence, except in a parallel construction or for stylistic effect. Don’t write stuff like:  
“**Sentences that rely on subordinate clauses that in turn contain other clauses that introduce new ideas that distract from the main argument that the author is trying to make...**”

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- If you're not sure whether to use which or that, see whether your sentence looks right with commas around the relevant clause. Generally, **replace which by that** whenever it sounds right to do so (avoid the “wicked which”)

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- Hyphernate compound adjectives before a noun:  
This is an ill—posed problem but This problem is ill posed.



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“I invited the professors, Aleks and Miranda.” vs  
“I invited the professors, Aleks, and Miranda.”
- If items in a list contain commas, use a semi-colon to avoid ambiguity:  
“The test collection includes matrices with known inverses or known eigenvalues; ill-conditioned or rank deficient matrices; and symmetric, positive definite, orthogonal, defective, involutory, and totally positive matrices.”

# Clarity and emphasis

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- A long paragraph that is hard to break may be indicative of convoluted thinking. A mix of different paragraph lengths is best. The best writers occasionally slip in one—sentence paragraphs.
- Generally, it is best to **use the least abstract, most specific word possible**. In order of increasing specificity:  
result-theorem-inequality; optimum-minimum-global minimum



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- In the summary of work in the Conclusions use past tense.

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“A great deal can be accomplished with arguments that fall short of being formal proofs.”

- Guide the reader through the proof with phrases like:
  - The aim/ idea is to ...
  - Our first goal is to show that ...
  - Now for the harder part ...
  - The trick of the proof is to find ...
  - ... is the key relation.



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  - Our first goal is to show that ...
  - Now for the harder part ...
  - The trick of the proof is to find ...
  - ... is the key relation.
- Keep the reader pacing with phrases like:
  - First, we establish that
  - Our task is now to
  - Our problem reduces to
  - It remains to show that
  - We are now in a position to
  - Finally, we have to show that

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- Avoid **ambiguity in slashed fractions**:  
 Write  $x^2/12 f'(x)$  as  $x^2 / (12f'(x))$  or  $x^2 f'(x)/12$ .

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- Break long equations over **multiple lines** at binary operations, put the operation on the next line, and align the parallel operations among lines:

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- Remember to be careful not to add **extra paragraph breaks** (empty lines) **around displayed equations** in LaTeX:  
use comment lines for spacing around displayed equations.

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- Avoid starting a sentence with a mathematical expression, particularly if a previous sentence ended with one:  
“ $A$  is an ill-conditioned matrix”  $\Rightarrow$  “The matrix  $A$  is ill-conditioned”

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- Lists should be punctuated properly with `\cdots` or `\dots` with **symmetric operators or commas**:

$$x_1 + x_2 + \cdots + x_n, \quad x_1 > x_2 > \cdots > x_n, \quad x_1, x_2, \dots, x_n$$