

7.02/10.702 SciComm Meeting 5: Discussion and Conclusion

SciComm Agenda--Meeting 5

1. Oral presentations on Pulmonary Embolism article.
2. Sharing your good/bad illustrations.
3. PPT on writing Discussion sections.
4. Analyzing scientific arguments.
 - Ex. 1: Drawing conclusions from data.
 - Ex. 2: Analyzing the validity of scientific claims
5. Peer feedback on LTP Results
 - Respond to the person who posted his/her LTP Results AFTER yours.
 - Response should be as an attached file.

What is the Purpose of a Discussion Section?

- **Summarize findings** presented in the results section
- **Cite supporting literature.**
- **Explain discrepancies** between your findings and previous reports.
- Point out **shortcomings** of your work and define unsettled points.
- Discuss **theoretical and practical implications** of your work.
- End with a short **summary or conclusion** about the work's importance.

Questions You Will Address in a Discussion Section:

1. What did you expect to find, and why?
2. How did your results compare with those expected?
3. How might you explain any unexpected results?
4. How might you test these potential explanations?

Tips for Writing a Discussion Section

“This is the place to interpret your results against a background of existing knowledge. Explain what is new in your work, and why it matters. Discuss both the *limitations* and the *implications* of your results, and relate observations to other relevant studies. State new hypotheses when warranted, clearly labeled as such. Include recommendations, when appropriate.”

Matthews, Janice R., et al. *Successful Scientific Writing Full Canadian Binding: A Step-by-Step Guide for the Biological and Medical Sciences*. Cambridge, UK: Cambridge University, 2000. ISBN: 0521789621.

More Tips from the UW-Madison Writing Center

See: <http://www.wisc.edu/writing>

Eight Common Components of a Discussion Section

1. Background information
2. Statement of results
3. (Un)expected outcome
4. Reference to previous research
5. Explanation
6. Exemplification
7. Deduction and Hypothesis
8. Recommendation

What is the Purpose of a Conclusion?

“Besides presenting an analysis of the key results in the conclusion sections, you also give a *future perspective* on the work. In some documents that future perspective might be recommendations. In other documents that future perspective might be a nod to the direction in which your research will head. A third kind of future perspective is to mirror the scope and limitations that you presented in the beginning of the document.”

Alley, Michael. *The Craft of Scientific Writing*, 3rd ed. New York, NY: Springer, 1997. ISBN: 0387947663.

What are the Pitfalls of a Discussion/Conclusion Section?

- Including **too much information** (wordy arguments, not focused, meandering, etc.).
- **Failure to follow** arguments set up in the **introduction**.
- **Failure to** focus on the **current results**.
- **Speculating** too much or not enough.
- **Improper tense** (Discussion largely in present tense).
- **Hedging** excessively.

Excessive Hedging

“The cause of the degenerative changes is unknown but *possibly* one cause *may* be infection by a *presumed* parasite.”

Rule of thumb: One hedge word per sentence!

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Common Hedging Words

nouns	adverbs	verbs
supposition	presumably	appear
idea	probably	postulate
speculation	possibly	suggest
conjecture	apparently	seem
possibility	not unlikely	may be
inference	seemingly	speculate

Matthews, Janice R., et al. *Successful Scientific Writing Full Canadian Binding: A Step-by-Step Guide for the Biological and Medical Sciences*. Cambridge, UK: Cambridge University, 2000. ISBN: 0521789621.

Jagannath, Amita. "Colchicine addition disrupts the nuclear localization of the HeT-A Gag protein in transfected *Drosophila melanogaster* Schneider2 cells." *MIT Biology Undergraduate Journal* 4 (2001): 167-177.

Nagarajan, Srikantan, et al. "Cortical auditory signal processing in poor readers." *Proceedings of the National Academy of Sciences* 96, no. 11 (May 25, 1999): 6483-6488.

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A discussion section contains sound scientific logic.

Hierarchy of argumentative claims:

1. Facts:
2. Inferences:
3. Value Judgments:

All claims must be based on facts!

Data Set: Annual Deaths in the United States from Substance Abuse, 1988

Tobacco	346,000
Alcohol	125,000
Alcohol & Drugs	4,000
Heroin/Morphine	4,000
Cocaine	2,000
Marijuana	75

Task: Draw three conclusions from these data.

Logical arguments contain claims, evidence and assumptions.

Claims: propositions, conclusions, judgments.

“The Science of Scientific Writing” provides readers with clear guidelines to apply to their own scientific texts.

Evidence: data to support the claim.

Description of Gopen & Swan’s guidelines.

Assumptions: Logical links between evidence and the claim.

- 1) Your definition of “clarity” is shared by reader of your critique.
- 2) Writers need guidelines.
- 3) Application of guidelines is a seamless process.

Today’s Out-of-Class Assignments

Due by 5 p.m. on April 21:

- Write a critique of the LaPostelle et al. paper on pulmonary embolism, focusing on the Results section.
- Submit a revised critique of “The Science of Scientific Writing” (if you choose).
- Submit revised LTP Illustrations (if you choose).

Due by the start of class, April 28:

- Write up the Discussion/Conclusion section of your Long-Term Project.
- Read S. Michael Halloran’s “The Birth of Molecular Biology” and Watson & Crick’s “A Structure for DNA”. Students who will present on these articles will be contacted.
- Submit revised LTP Results (if you choose).