Evidence-Based Scientific Writing

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As they try to make writing more effective, many science editors draw on a mix of convention and intuition. However, a research base also exists. In the plenary session "Evidence-Based Scientific Writing", Ginny Redish, who has long applied research findings to the design of documents, presented principles from this research. Illustrating her points with vivid examples, she drew on findings from linguistics, rhetoric, cognitive psychology, graphic design, and other fields.

Understanding Writers and Readers

Redish emphasized that communication is not just "pouring information into people's heads". Both writers and readers bring meaning to a piece of writing. In doing so, they are influenced by various factors, including their knowledge, their goals, the social context, and conventions of discourse.

In the workplace, Redish noted, people rarely read documents from beginning to end. Rather, they skim and they skip around. "Take the word reader out of your vocabulary", she quipped, "and put in the word user."

The rest of her remarks focused on 10 suggestions for communicating effectively with users of writing.

Organizing to Show the Structure

1. Make connections with a relevant title. Remember to title pieces of writing. And use titles that are informative and are related to people's knowledge. Doing so attracts readers and helps them assimilate and remember the material presented.

2. Use abstracts with subheadings. Having standardized subheadings in abstracts helps readers to "chunk" information and thus recall it. It also helps writers remember what to include.

3. Consider using more subheadings in the body. Using subheadings within sections of a scientific paper can facilitate understanding. It also aids users in searching for information.

Writing So Readers "Get It" Quickly

4. Provide context before new information. Let readers know what you are talking about before presenting new information. In other words, follow the "given-new principle".

5. Take advantage of parallelism. Readers have a "penchant for patterns". Capitalize on it by using the same written structure for analogous pieces of information.

6. Get to the verb quickly. Information presented between the subject and the verb tends to be forgotten. Therefore, supply the verb soon after the subject.

7. Write in "scenarios". People tend to think in terms of who does what to whom. Thus, to aid understanding, include human actors, use largely active voice, and favor action verbs.

Presenting Data Graphically —Accurately and Effectively

8. Give numbers in ways that readers understand best. For example, try not to exceed two significant digits. And, as stated by Tom Lang, avoid roman numerals—"except for cranial nerves, clotting factors, and world wars".

9. Use given-new in tables. Readers of English normally scan tables from left to right. Therefore, put what they already know on the left and new information on the right.

10. Consider how your readers are likely to interpret graphs. For example, begin the y axis at zero. Otherwise, readers might perceive effects as being larger than they are.

Much of what Redish said concurred with convention and editorial intuition. But her presentation offered much additional perspective. For readers who wish to explore the literature on which her remarks were based, the bibliography she distributed is provided below.

Suggested Readings

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Journal Poster Session

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