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Student publications and presentations in science – Writing the abstract as a model in teaching scientific writing

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Contribution: It Works For Us, Collaboratively

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Abstracts are the most visible and widely-read communiqués regarding any scientific inquiry. Yet, most science students have difficulty in writing abstracts for publications and/or poster presentations – whether they are undergraduates or graduates. This occurs despite supposedly knowing the preferred content of any abstract as advisors dutifully list the components of an abstract, give examples, and perhaps provide published directions in abstract writing. My technique for mentoring students in writing their abstracts involves a delightfully interactive process that emphasizes direct collaboration between student and advisor based on actually demonstrating writing skills rather than merely informing students of good writing. The method is a general one that is applicable to producing any separate component of student publications and presentations, and can ultimately be used in creating an entire document or presentation. Moreover, it is a technique that may be used in *any* discipline, scientific or otherwise.

One of my pleasures as a professor is interacting with students closely as they do they do research and communicate its results. This being said, I will typically turn my students loose on their own in writing their first abstract. Once a draft exists, instead of merely editing the product

and returning it, we as student and advisor sit down together with an electronic version of the abstract and start re-writing interactively. Typically, I am at the keyboard (to the initial dismay of many of my students) and as we re-write the draft. After delineating the purpose and content of the abstract, I make comments, ask questions, ask for suggestions on exact wording, and typically write the phrases or sentences in question. On the fly, we discuss why any particular passage is deficient, how to change it, why it is important to amend it, and finally ascertain whether we improved the passage. Then it's on to the next thought until we have produced an abstract, scrutinized it for coherence, and buffed the details.

The method seems to work because I have seen constant improvement in students as their writing progresses. When one of my students wrote an abstract for his first scientific presentation, only one entire sentence and a few phrases survived the editing process. For the next abstract (another presentation with added data to present and consider), we kept most of his work, adding only some needed context as well as editing verbiage and organization. For the final abstract, only minor details were polished before submission to a journal. Of course, each student will progress at different speeds, but I have never failed to see improvement in writing using the procedure above. Initially, some of my students feel uncomfortable writing *with* their advisor, but after a few episodes it becomes normal happenstance and work progresses smoothly.

In summary: students do need to thrash around intellectually in first stage of any writing, but modeling good scientific writing is essential for students. We consider modeling behaviors as a truism concerning laboratory work and other scientific endeavors – modeling should also be standard procedure in the writing process. Sitting down as student and advisor and writing together is one of the best gifts we can give to charges, insuring clear and potent scientific

communication. By the way, did I mention that *my* advisor and mentor used this interactive method in educating and developing me as scientist?

END