Undergrads Learn to Write Clearly About Science

Professional writers give science majors some valuable tips.

Writing labs at universities around the country are making it more likely that the students who emerge from university science programs will later be able to describe their scientific work clearly. The undergraduates who take these courses interact with professional science writers, which should also improve their ability to communicate about science to a lay audience.

Aaron Robison, a senior at the California Institute of Technology, says that writing a feature article on the Ebola virus gave him an entirely new perspective. "Many of the concepts have to be simplified and streamlined in order to be understandable," Robison says. He also felt it necessary to "spice things up, adding a bit of melodrama to the mix to keep it interesting."

There is no lack of melodrama in Robison's lead paragraph: "In July of 1976, a Sudanese storekeeper known simply as Yu G. became the first recorded victim of a terrifying new hemorrhagic fever that had emerged from its lair in the rain forests of central Africa. The virus that killed him eventually became known as Ebola." Robison wrote the Ebola article for a science writing lab required of all undergraduates. "The faculty here recognized the need for students to excel at writing about their work as well as at doing it," says Gillian Pierce, coordinator of the course. "It is important for scientists to be able to tell people what they do and why it is relevant."

With nearly all Caltech students majoring in science, Pierce understands that they begin the class "speaking science as their first language"—one that is largely unintelligible to the general public. As the class progresses, however, she sees students start to shed the dry, academic tone of scientific papers and become more aware of what they can and cannot expect nonscientists to know. For example, says Pierce, "We don't know the periodic table by heart."

Much of Caltech's writing course is taught one-on-one rather than in a lecture format. Pierce, who is a former editor, and her staff work with students on writing style, and a faculty adviser oversees scientific content. For the Ebola paper, Robison went right to the top; his scientific consultant was Nobel laureate and Caltech President David Baltimore.

Robison says his greatest challenge was striking the right balance between technical detail and simplicity. While one adviser—the scientist—was urging Robison to give highest priority to making things more precise, a second adviser—the writer—was encouraging him to shorten his descriptions and simplify them (though not at the expense of accuracy).

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Because "good writing is rewriting," says John Travis, who taught science journalism at the University of Arizona last year, science majors in his course at the Tucson campus spent a lot of time editing and revising. Science students often have no idea how to improve a paper, says Travis, so it is a good lesson for undergraduates to learn early that the first draft is not the final draft. In his class, students received guidance not only from him, but from classmates, who critique each other's pieces.

Travis came to Arizona on a sabbatical from *Science News*. He expected that journalism students would show the most interest in his class and was surprised to see twice as many biology majors enroll.

Amanda Jaksha, an ecology and evolutionary biology major, was one of them. "I thought John's class would be something interesting, something different," she explains. "It would get me away from boring journal writing." She was not disappointed.

One of Jaksha's first assignments—to write a news article for the public based on a paper in a scientific journal—won her a trip to the American Association for the Advancement of Science annual meeting in San Francisco in 2001. Her spirited style turned a technical anthropology piece that might have been tedious for a general audience into a reader-friendly article that evoked images of Wilma Flintstone and leopard-skin dresses. The course made Jaksha realize that she actually likes writing, which she believes will be useful in the public policy career she plans to pursue after graduating this year.

When public policy and science intersect, as in the Human Genome Project, the need for articulate scientists is pressing. The researcher has "an obligation not just to do the job, but to explain it to the public," says Bruce Lewenstein, a science journalism professor at Cornell University. "In the real world, science and technology depend on public support."

Cornell's Laurel Southard, director of the HHMI-supported program in biology research for undergraduates, describes one of the university's mechanisms for helping science students improve their writing. Each student is required to write an article about another student's research—for nonscientific readers. The best articles are published in an abstract book and submitted to the Cornell News Service for publication.

Writing for the public as part of the course was suggested to Southard by a Cornell undergraduate, Torrie Hanley. Hanley arrived at Cornell with a passion for science and a love of writing. "When I came to Cornell, I was torn," she explains. "But it turns out I didn't have to decide between the two." Hanley, now a double major in biology and English, spent two summers doing environmental research in the Cornell–HHMI program. She hopes to combine her science and writing talents as an environmental journalist.

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