Careers in Science and Technical Communication

Advising students on careers in science and technical communication.

— **Kim Kastens** —

In my role as director of Columbia University's program in Earth and Environmental Science Journalism, I encounter many students who love both science and writing, and are struggling to find a career that will allow them to combine these disparate talents and interests. This article provides practical guidance for science teachers to help such students explore careers in environmental journalism, science writing, technical writing, science illustration, and informal science education, while they are still in high school.

Provided here are descriptions of career paths, suggestions for exploratory steps, and links to sources of additional information. The common thread running through these careers is that the professional first gains an understanding of some aspect of science or technology, and then helps other people build the same understanding. [**Editor's note**: Read about and share with students other careers that combine science and communication in *The Science Teacher's* "Career of the Month" archives online at *www.nsta.org/careerofthemonth*.]

Prospective science communicators

As a science teacher, how can you spot a student who might be open to advice about careers in science and technical communication? Look for a student whose reports tend to be exceptionally clear and well-organized. You may notice that other students turn to the prospective science journalist for explanations. While the future research scientists want to dig deeper into one topic until they are experts, the future science journalist is the student who is curious about many different topics.

Even if students have access to a guidance counselor for career advice, science teachers are often better positioned to observe students' strengths firsthand and to offer ongoing advice and encouragement about science-related careers. Encouraging students to consider careers that combine language arts and science can help teachers appeal to different learning styles, motivate students who might otherwise see little future for themselves in science, and bring us closer to the National Science Teachers Association and National Science Education Standards ideal that all students participate fully in science learning (NSTA 1990; NRC 1996, p. 13). For descriptions of several science communication careers, see Figure 1 "Career Paths." [**Editor's note**: Online resources for many types of science communication careers can be found in "On the web," p. 39].

What students can do now

Teachers should encourage students to start exploring their interest in and aptitude for science or technical communication early. While still in high school, students can:

- *Take science courses.* The most versatile preparation would include a good balance between physical sciences (chemistry and physics), life sciences (biology, ecology, health), and geosciences (geology, meteorology, oceanography, astronomy).
- *Take math courses.* A solid background in math is needed to gain entrance into college science

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FIGURE 1

Career Paths.

Science, Technology, Medical, or Environmental Journalist

Journalists are typically employed by a newspaper, magazine, internet publication, radio station, or television network, or they may be independent freelance journalists who sell individual pieces to media organizations. Journalists may specialize in technology, science, the environment, or medicine; write about all four; or combine general reporting with an occasional article on a science-related topic. Journalists need to know about the economic, political, sociological, and legal implications of the topics they cover, as well as the science. An undergraduate degree in science or engineering, combined with a master's degree in journalism, would be excellent preparation for a career in science-related journalism.

Science Writer

A continuum exists between science journalists, science writers, and technical writers. In addition to working for an independent news organization, a science writer might write for an organization that creates science—such as a university, government lab, or research-intensive company—or for a nonprofit organization concerned with health care or the environment. Science writers and technical writers often work in collaboration with scientists or engineers, translating the technical language of the specialists into language and visuals that can be understood by a nonspecialist audience.

Technical Writer

Again, there is a continuum between science writers and technical writers. One way to make the distinction is that science writers are usually trying to help their readers (or viewers or listeners) understand or appreciate something, whereas technical writers are often trying to help their readers learn how to do something. Technical writers write most of the documentation, user manuals, and repair manuals for the complex technology of our society. As our society is becoming more technologically complex, technical writing is likely to be a growing career field.

Science or Technical Illustrator

For those with talent in visual arts and interest in science or nature, science or technical illustration could be a good match. Science and technical illustrators often work closely with writers to create a combination of text and graphics that conveys information more accurately than either alone. Science and technical illustrators work with traditional techniques, such as pen and ink, and modern computer-based techniques.

Informal Science Education Professionals

An informal science educator could work in a natural history museum, technology museum, science center, nature center, national park, planetarium, aquarium, zoological park, or botanical garden—anyplace where exhibits are set up to help the general public understand science, technology, or nature. Work could include designing new exhibits, leading tours or nature walks, explaining exhibits, or giving demonstrations. Informal science education professionals generally spend more time face-to-face with their audience than the other professions discussed here, so an outgoing personality is an asset.

or engineering courses, and to be able to write knowledgeably about science issues involving analysis of data.

- *Take technology courses.* Examples are computer and shop.
- *Take courses that involve a lot of writing.* This includes both fiction and nonfiction writing.
- *Take a drawing or computer graphics course.* Informational graphics are an important part of most science and technical communications.
- *Practice public speaking.* Students could take a speech course; join the debate club; or volunteer as a tour guide at a local nature center, museum, or tourist attraction.
- *Volunteer to tutor younger students in science or math.* While doing this, students should try to figure out what is being misunderstood and experiment with alternative ways to explain the same concept.
- *Volunteer to assist in the computer lab.* Students could volunteer in an after-school open-lab session for younger students. This is a chance to observe what less technically oriented students find interesting and what they find difficult.
- *Read popular books and magazines about science and technology, and the science page of a local newspaper.* While reading, students should try to spot the strategies and devices that the author has used to make complex materials accessible and interesting to a popular audience, for example: a local angle, connection to human health or safety, analogy, metaphor, humor, and conflict.
- *Visit a place where exhibits are set up for the public to learn about science and nature.* Examples are a natural history museum, science center, technology museum, aquarium, planetarium, nature center, or visitor center at a national park. When students find an exhibit that attracts visitors, they should try to figure out what insight that exhibit is trying to convey and why it is so appealing to the audience.
- *Attend a course or workshop at a museum, science center, aquarium, or nature center.* Students could talk to the course organizers not only about the topic of the workshop, but about what it is like to work at a museum, science center, aquarium, or nature center.
- *Make a website.* Any science-, technology-, or nature-oriented club that is active at school could use a website that is easily navigated, visually appealing, and informative to its intended audience.
- *Get involved in student journalism.* Any exposure to journalistic writing is helpful, but opportunities to write about science, nature, medicine, or technology are best. As is the case for professional journalists, student journalists need to find a news hook that will appeal to the intended audience (see Figure 2 for examples of news hooks).

When students write about, present, and illustrate science information, they develop a better understanding of science content in addition to stronger communication skills. Therefore, the strategies discussed here can help develop better science understanding and communication skills for *all* students, not just those considering a career in science communication.

FIGURE 2

News Hooks.
Story ideas for student science journalists.

Some science teachers work as laboratory or field assistants to scientists during the summer. Interview such a teacher about his or her summer work and cover the story for the school or a local newspaper, website, or radio show.

Write a review of new educational software that the school system has purchased. Consider how well the software fits with the target audience in the school, how well it runs on the school's hardware, and whether it fills a gap in the available suite of software.

Undertake an investigative piece about the energy usage of the school. Obtain the school's electricity, oil, and gas bills for the preceding year, and the fuel bills for the school bus fleet.

How does energy usage vary with time of year? What are the main energy hogs in the school? What has been done, so far, to conserve energy? What else could be done?

Has there been an outbreak of a contagious disease in the local community or school this year, for example: flu, head lice, or West Nile virus? Investigate how the disease spreads, what can be done to avoid getting it, and how to recover from it. Personalize the story with interviews of the school nurse, a local doctor, and those affected by the disease.

Write a profile of an alumnus who has gone on to a career in science or technology.
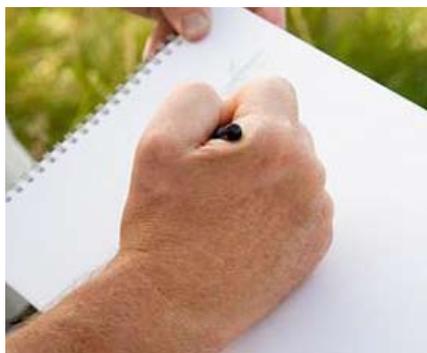
What schools and teachers can do

Individual teachers, schools, and school districts can take additional, proactive steps to signal to students that science and technical communication is a valued skill. Teachers can:

- Include in scoring rubrics an explicit category that assesses clarity in written and oral communication for science projects, lab reports, and presentations.
- Assign readings from popular science books and magazines, and have students critique them.
- Assign students to write a popular science or technology article in the style of *Discover* or *Wired* magazines. Topics at the intersection of science and society work well here, such as energy alternatives, a disease outbreak, pesticide impact, or new technology.
- Recruit students to write documentation for commonly performed tasks in the computer room or science lab, for example: how to clear a paper jam in the printer or how to prepare a piece of scientific apparatus for proper storage.

Schools and school districts can:

- Subscribe to science and technology magazines and purchase popular science books for the school library.
- Offer a course in nonfiction writing.
- Establish an award category in the science fair for best technical communication. A subscription to a science magazine makes an appropriate prize.
- Establish a science column in the school newspaper with a science teacher as co-advisor.

Bridging the gap

During the lifetime of today's students, society will face complex problems involving the environment, technology, medicine, and other aspects of science. Society's success at solving these problems will depend not only on the ability of scientists to make new discoveries, but also on the ability of specialized communicators to explain science and technology to the millions of voters, consumers, patients, taxpayers, and policymakers whose decisions affect and are affected by science and technology. Science teachers have the opportunity to help students identify and value the special combination of abilities in both science and communication that can put them in a position to bridge the gap between science and society. ■

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Reference

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National Science Teachers Association (NSTA). 1990. *Science/technology/society: A new effort for providing appropriate science for all*. Arlington, VA: NSTA Position Statement. *www.nsta.org/about/postions/sts.aspx*.

On the web

- Association of Science-Technology Centers (*www.astc.org/about/index.htm*)
- Association of Zoos and Aquariums (*www.aza.org*)
- Council for the Advancement of Science Writing (*www.casw.org*)
- Guild of Natural Science Illustrators (*www.gnsi.org*)
- IEEE Professional Communication Society (*www.ieeepcs.org*)
- ITEDO: Inside Technical Illustration (*www.itedo.com/E/1611.php*)
- National Association of Science Writers (*www.nasw.org*)
- Society of Environmental Journalists (*www.sej.org*)
- Society of Professional Journalists (*www.spj.org*)
- Society for Technical Communication (*www.stc.org*)
- Tutorials for technical illustration students (*www.khulsey.com/student.html*)