

◆ Undergraduate Science Publications: Informal Education in Writing and Editing

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Recent years have witnessed the emergence of a mostly new forum for disseminating and discussing scientific knowledge: student science journals and magazines. These university-affiliated publications are often written, edited, published, and managed by undergraduate students with the financial and expert help of university colleges and programs that support their goals.

The publications, which include *Issues*, the undergraduate medical journal of the University of California, Berkeley; the Texas A&M University Undergraduate Journal of Science; and the Yale Scientific Magazine, differ in format and content. However, they have a number of common results: They provide participants with experience in writing and editing, and they encourage contributors and readers to think critically about science. Those who serve on the staffs of the publications, moreover, are often richly submerged in all aspects of publication production, at times from idea to print.

Three Periodicals

The Yale Scientific Magazine, an award-winning periodical, is apparently the oldest student-run science magazine in the United States. It was first published in 1894 as the Yale Scientific Monthly. Although the Scientific's format and content have evolved over the years, its present aim is to provide young scientists with a forum for developing the art of writing and nonscientists with a taste of the research going on at Yale. It accomplishes its aim through student-written science news articles, profiles, book reviews, and opinion pieces concerning almost any science discipline.

The Scientific also offers a particularly nice Web version of its magazine (www.yale.edu/scimag), bringing the magazine to more students, faculty, and alumni while providing students with experience in producing and managing online publica-

tions. A recent piece in the Web version of the Scientific, "Do We All Have Cancer?", was an interesting and informative discussion of one Yale researcher's work on angiogenesis and its role in sustaining malignant tumors.

Most student-run magazines and journals are more-recent additions to university offerings than Yale's Scientific. *Issues*, Berkeley's undergraduate medical journal, was first published in 1993. It aims to be an undergraduate medical journal that explores current political and ethical issues of the health profession and provides a forum for debate and discussion. Whereas the Scientific offers no course credit for participa-

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tion, students who enroll in a course aimed at helping students write articles for publication in *Issues* can earn credit. Participants write and refine their articles over the length of the course as they explore the foundations of good science writing and editing. The results are a crop of well-written, well-researched articles and a group of students initiated into the writing-editing process. One recent issue offered an interesting mix of articles, including "Crash Course on Cancer: A Look at the Life of a Young Leukemia Patient" and "MEDROUNDS [Eating Disorders]", which was the fourth in a series of articles exploring the clinical diagnosis and pathology of a disease state. Readers will find *Issues* on line at www.ocf.berkeley.edu/~issues.

Some students go on to participate on the *Issues* staff, which is distinct from the writing course. For these editorial staff members, the course is only the beginning of their training in and exposure to the editorial process. A retreat, mentoring process, and collection of resources on

style and content help ensure that students undertake the manuscript review and editing process smoothly. Faculty also provide support and guidance when needed.

The Texas A&M University Undergraduate Journal of Science is a still newer addition to the ranks of student-run science publications. In contrast with the above examples, the Undergraduate Journal of Science strives to be a true peer-reviewed science journal. Its staple articles report the original research of Texas A&M undergraduate students in any science or engineering discipline; the research typically is undertaken in university laboratories under the supervision of faculty mentors. One recent article, "In Vitro and In Vivo Evaluations of the Effect of Enrofloxacin and Cephalexin on Tests for Glycosuria", illustrates the heavier tenor of the Journal's articles.

The Journal also publishes science news articles, book reviews, and occasional abstracts. Its primary goal is to provide young scientists with the opportunity to write in the style of science journals and to facilitate their learning to evaluate research methods and results critically. It also strives to expose all undergraduate students to the scientific journal, the principal medium through which the scientific community evaluates and shares its research.

Benefits and Challenges

Yu-Ming Chang, co-editor-in-chief of *Issues*, identifies a trend common to some student-run publications: "*Issues* is expanding at a tremendous rate, in terms of numbers of writers, financial support, and circulation." Although funding for student science publications is not always plentiful, growing interest in these educational adjuncts has helped them thrive.

Student science magazines and journals appear to be an excellent complement to classroom and laboratory instruction, and this partially accounts for universities' willingness to support them. The publications expose readers to new science

developments and stimulate thought and discussion of current issues in science. Moreover, authors are introduced, often for the first time, to the process of writing about science, either through journalistic writing or through the communication of original research. Finally, the student staff responsible for reviewing, editing, and publishing the magazines and journals find opportunities to develop skills in the critical evaluation of science and to obtain managerial and editorial experience.

One recurring theme encountered in discussions with these publications' editors is the ambitious nature of asking undergraduate students to undertake what is at times the daunting task of producing periodicals. As with the production of any serial publication, the logistics are complex and time-consuming and present substantial challenges to students who have never been exposed to science journalism or technical writing, editing, or publishing. Finding adequate manpower to handle all aspects of writing, review, editing, and publishing is a challenge to all.

Other challenges, which are nearly endemic in scholarly journals, are also experienced. Yu-Ming Chang articulates a situation familiar to virtually all editors and managers of these publications, whether novice or seasoned: "A challenge that we face in the editing/review process is getting the writers to revise their articles . . . in a timely fashion." What editor hasn't heard that before?!

At the same time, a nearly universal benefit is voiced by the participants: Despite the substantial work involved, there is great satisfaction in seeing the journal or magazine published. It was certainly a thrilling moment when I saw the first issue of the Undergraduate Journal of Science come off the press. Participants also agree that they learned not only about narrow scientific topics, but also about how science is done and how its fruits are evaluated and presented to the public.

My discussions with other student science-publication editors suggest that most students do not view participation as a conduit to a career as a writer or editor,

although some budding science writers are to be found among them. Most participants seem to be serious students of science who wish to learn more about their own academic disciplines.

Participants nonetheless learn that a profession of editors and writers exists. A few do indeed learn that a career in writing and editing may be for them. I, in fact, had an "Aha!" experience as editor of the Undergraduate Journal of Science. Editing and managing the publication provided me extraordinary gratification and paved the way to a fascinating professional life as an editor and writer. Perhaps others will find their way to the profession of scholarly writing and editing through student science magazines and journals. Those already in the fold can look on with approval as students make worthwhile investments of time, interest, and enthusiasm in science writing and editing a process that we know to be worthwhile and meaningful.



What's New

- Do you have a new job?
- Did you win a prize?
- Did you receive an honor?
- Did your book just get published?
- Did you receive a degree or certificate?
- Did you recently retire?

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Discipline and training in writing is probably the best training there is in reasoning.

—*WTB Beveridge*

The Art of Scientific Investigation