Scientific writing and editing: a new role for the library*

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Traditional library instruction programs teach scientists how to find and manage information, but not how to report their research findings effectively. Since 1990, the William H. Welch Medical Library has sponsored classes on scientific writing and, since 1991, has offered a fee-based editing service for affiliates of the Johns Hopkins Medical Institutions. These programs were designed to fill an educational gap: Although formal instruction was offered to support other phases of the scientific communication process, the medical institutions had no central resource designed to help scientists develop and improve their writing skills. The establishment of such a resource at Welch has been well received by the community. Attendance at classes has grown steadily, and in 1993 a credit course on biomedical writing was added to the curriculum. The editing service, introduced in late 1991, has generated more requests for assistance than can be handled by the library’s editor. This service not only extends the library’s educational outreach but also generates a revenue stream. The Welch program in scientific writing and editing, or elements of it, could provide a model for other academic medical libraries interested in moving in this new direction.

INTRODUCTION

Since 1990, the William H. Welch Medical Library has sponsored classes on scientific writing and offered a fee-based editing service for students, faculty, and staff of the Johns Hopkins Medical Institutions (JHMI), breaking new ground in library-based educational programs and services. The writing and editing programs were designed to fill an educational gap identified by the dean of academic affairs in the School of Medicine and the director of the Welch Library. Writing, publishing, and presenting data are essential to a successful career in research, but many scientists are ill-prepared by their academic studies to perform these tasks easily and well.

Before 1990, researchers at the medical institutions who wanted help in improving their skills had no central resource to call upon for classes or editorial assistance. Hopkins has no department of scientific publications, as do other major medical centers such as the Mayo Clinic and the University of Texas M.D. Anderson Cancer Center. A few large departments at Hopkins have an editor on staff, but the services of those editors are available only to faculty in their departments.

THE JHMI ENVIRONMENT

The Welch Library is the primary source of biomedical information resources for the JHMI, which in-

cludes the School of Medicine, the School of Hygiene and Public Health, the School of Nursing, and the Johns Hopkins Hospital. Like the Welch Library, these schools conduct most of their activities on the JHMI campus in East Baltimore; however, there are also many faculty members who work primarily on the Bayview campus, located several miles away. Although some library services are available on site at Bayview, the faculty there relies on the Welch library for educational support, as do their colleagues on the JHMI campus.

As the plan to create a scientific writing program and editing service evolved, the Welch director and the dean of the medical school saw the library as the logical home for a new JHMI-wide service that would address an important component of the scientific communication process. The library’s established instruction programs were successful in teaching scientists how to find and manage information, but they were not designed to teach scientists how to report their research findings effectively—a critical step in the scientific communication process. The library therefore set its sights on filling this educational gap. Also, because researchers often seek editorial help in preparing a paper or book for publication, Welch decided to make such a service available, for a fee, to any JHMI affiliate.

PROGRAM ORGANIZATION

The library’s first step was to appoint a program coordinator. The Welch education librarians are well trained and highly competent teachers of a variety of classes devoted to developing scientists’ skills in finding and managing information. As specialists themselves, the Welch education librarians felt strongly that a specialist in scientific writing would be essential if the new program were to be successful. The merits of this approach already had been proven at Welch, where a scientist/librarian had successfully implemented educational programs for basic science faculty. Welch therefore recruited an experienced technical writer and editor with experience in publishing and a background in teaching college English to coordinate the program in scientific writing.

The coordinator works in partnership with other library staff members to plan, implement, publicize, and evaluate the program. Instructors from outside the library also participate in the planning and teaching of classes sponsored by Welch; they are recruited according to their expertise. The coordinator, who has faculty status in the division of Biomedical Information Sciences, a School of Medicine division that includes the Welch Library, also works with other faculty members to develop and teach credit courses on writing. Another responsibility of the coordinator is to provide the library’s editing service.

![Figure 1](https://example.com/image.png)

**Figure 1**

Attendance at lectures and workshops on scientific writing

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**SCIENTIFIC WRITING SERIES**

The library’s classes on scientific writing began as a series of lectures and later were expanded to include workshops. (See Appendix A for class descriptions.) The workshops were added to complement the one-hour lectures and provide an opportunity for the kind of class participation inhibited by a large lecture hall setting. Both the lectures and workshops are open to all JHMI affiliates, free of charge. Classes are taught by the Welch staff and publications professionals from other Hopkins departments, some of whom work for Welch on a contractual basis.

Because participants vary greatly in background and research interests, all of the classes on writing concentrate on general principles of effective composition and presentation. To illustrate these principles, instructors use real-life examples drawn mainly from published papers. They show students how to identify ineffective writing and how to revise it for clarity and emphasis. Likewise, classes on databases, computer software, and Internet tools all concentrate on resources and services freely available to the entire JHMI through the Welch Library. Instructors demonstrate the use of these resources from the perspective of a writer trying to find, organize, and share information electronically.

Evaluations of the series have been consistently positive, and attendance at the lectures and workshops has risen to about 1,000 per fiscal year (Figure 1). These participants come from all of the Hopkins medical institutions; most are post-doctoral fellows or graduate students. As word of the classes and their quality has spread, department chairs and program
directors have requested special sessions for their groups. For example, the entire lecture series was presented on the Bayview campus to accommodate faculty and fellows unable to attend classes on the East Baltimore campus. Selected sessions also have been taught for fellows in pediatrics and preventive medicine, for nurse managers in the hospital, and for others. These special sessions are taught at a time and place convenient for the group.

CREDIT COURSES

In 1993, Welch added a credit course to its noncredit offerings. In the summer of 1993, the director of the Graduate Training Program in Clinical Investigation invited Welch faculty members to design and teach a new class, Biomedical Writing, in the winter term. It was approved by the Academic Board as a required two-credit course for students in that master’s program in the School of Hygiene and Public Health. The first class consisted of eight physicians, all of whom had some research and publishing experience. The class met weekly for an hour and a half and concentrated on writing and revising the research paper (see Appendix B for a course description and syllabus). In class evaluations, students said the course exceeded their expectations and that even more time should be devoted to instruction in writing.

At the request of the dean for graduate students in the School of Medicine, another credit writing course was offered for the first time in the spring of 1995. The new class, Scientific Writing, is designed for basic scientists who are beginning their research careers and have little or no experience in writing research papers or proposals. The class will be offered four times per year.

FEE-BASED CLASSES

In the summer of 1994, Welch introduced an expanded program of fee-based classes, jointly sponsored by the School of Medicine and offered through the Office of Continuing Medical Education. For the first time, this program included classes on scientific writing, along with the well-established computer training, network training, and Internet training classes. The new offerings were designed to meet the need, expressed by many members of the JHMI community, for intensive, hands-on instruction. By charging a registration fee, the library is able to pay instructors and recover expenses. Many Hopkins affiliates qualify for tuition remission which covers their registration fees. Because students do not qualify for this benefit, their fee is set at only half the regular rate.

The topics taught in this fee-based program are similar to those taught in the free series of lectures and workshops on scientific writing. The fee-based classes, however, cover the topics more thoroughly, with more examples and with a greater opportunity for participants to practice applying the principles of effective scientific communication. For instance, in contrast to the hour-long lecture on writing research papers, the fee-based program offers a class on that topic that meets for two six-hour sessions. Participants in a six-hour class on writing style are encouraged to submit their own work for constructive criticism by the instructor. In addition to classroom instruction and practice in revising faulty writing, students may take advantage of a free editorial consultation.

EDITING SERVICE

Ordinarily, editorial consultation is fee-based, at Welch as elsewhere. The library’s editing service was announced in September 1991 in a letter to the community from the Welch deputy director, who described the service as another addition to the library’s complement of programs supporting scientific communication. Services include writing, editing by an “author’s editor” (an editor who works with a writer to ready a manuscript for submission to a publisher), and production management (liaison with graphic designers, printers, or publishers). Fees vary according to the project, but the typical charge for editing a ten-page research paper is $50.00.

The majority of clients requesting help with research papers and grant proposals are writers for whom English is a second language. For these clients, the editing service is also an educational experience. Many of the clients requesting production management or writing are busy senior faculty members and administrators with heavy demands on their time. While the most common request is for help in editing a research paper or a grant proposal, several book-length projects also have been submitted.

Demand for the service has been steady, and several users have become regular customers. Because editorial assistance is only one of the responsibilities of the program director, requests for service sometimes have to be referred to freelance editors working at the JHMI.

CONCLUSIONS

The demand for classes in the series on scientific writing has been so steady that they are now considered a basic service at Welch; that is, a service to which every library card holder is entitled, free of charge. Even though the library will continue to offer free lectures and workshops, the long-term goal is to expand the fee-based programs and find other creative
mechanisms for making the overall program self-supporting.

Revenues from the editing service and class registration fees are expected to cover some, if not all, of the direct and indirect costs of the scientific writing and editing program. The revenues also provide the funds needed to hire instructors on a contractual basis at a time when it is difficult to justify the need for new, full-time positions. The goal of financial self-sufficiency came closer to reality in the fall of 1994 when a fee-based class on writing grant applications, taught by a consultant, drew over 120 participants and more than paid for itself.

The Welch Library staff considers the scientific writing program successful, but there is plenty of room for development. For example, the staff would like to expand the class offerings by introducing new lectures and workshops on topics much in demand (e.g., presentation skills) and by extending the for-credit classes to other graduate programs. For its editing service to be a true JHMI-wide endeavor, the library must find a way, in spite of staffing constraints, to accommodate many more would-be users. Still, the positive response from the academic community suggests that scientific writing and editing belongs in the Welch Library's complement of programs. Such a program also may have a place in other academic medical libraries.

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APPENDIX A

Class descriptions

Lectures:

The research paper: putting together your first draft. This session provides practical suggestions on how to transform raw data into a rough draft. The instructor discusses the basic structure of the research paper, paying particular attention to titles, abstracts, and introductions.

The research paper: making it effective. This session introduces a systematic approach to improving the first draft of a scientific manuscript. The instructor emphasizes concrete ways for writers to present scientific data and ideas clearly and logically.

Managing your references. Writers can find, organize, and properly cite references—painlessly. This session offers useful tips on searching MED2000+, storing references in a personal database on a microcomputer, and creating bibliographies in the proper format for publication.

Illustrating your lectures with slides: part I. The slide design sessions help lecturers whether they are preparing their first presentation or their 100th. The first session covers five general rules for preparing slides, as well as word choice, layout, and emphasis for text slides.

Illustrating your lectures with slides: part II. This session builds on the principles introduced in Part I. The instructor gives special attention to tables, graphs, diagrams, illustrations, photographs, and slide production.

Using computer software to create presentations. This session addresses computer software used to create slides, overheads, and posters. The discussion covers the roles of word processing, desktop publishing, spreadsheets, graphic programs, and presentation software.

Internet resources for grant writers. The Internet offers grant writers many tools, including funding agency guidelines and deadlines, calls for proposals, databases of successful applicants, and even templates for forms. This session addresses available resources and how to locate them.

Workshops:

Working with journal editors and reviewers: what every author should know. What do editors want from authors and why? Who are reviewers and what are they looking for? What kind of control do authors have in the journal publication process? Two editorial insiders answer these and other questions.

Writing effective abstracts. Published abstracts are used in this one-hour workshop to illustrate the principles of writing an abstract that works. Participants analyze and improve flawed abstracts, thereby gaining a better understanding of how to present findings clearly and succinctly.

Writing clear, concise sentences. By examining samples of biomedical writing and practice in revising ineffective sentences, participants learn to identify and repair writing flaws that hinder clarity and readability.

Writing effective paragraphs. This workshop concentrates on paragraph-writing techniques for achieving logical development and coherence of ideas. The objective is to develop a systematic approach to analyzing and improving scientific writing.

APPENDIX B

Syllabus for Biomedical Writing

Course description. Biomedical Writing concentrates on the process of writing the research paper and on the effective presentation of scientific information in text, tables, and figures. It emphasizes a reader-oriented approach to writing titles, abstracts, introductions, methods, results, and discussions. Through critical analysis of examples, students learn what distinguishes good biomedical writing from bad. Through practical exercises, they learn how to organize their thoughts, produce a first draft, and revise early drafts to communicate data and ideas effectively. 2 credits. Pass/ fail.

Prerequisite. Enrollment in the Graduate Training Program in Clinical Investigation or consent of instructor.


Topics covered

Session 1
The writing process
Getting started on a research paper
Stephens and Campbell

Session 2
Writing titles
Writing the Introduction

Session 3
Writing the Materials and Methods
Writing the Results
Designing tables and figures

Session 4
Writing the Discussion
Writing abstracts

Session 5
Revising the first draft for completeness and accuracy of content
Revising for logical organization and presentation of ideas

Session 6
Revising for clarity and readability

Session 7
Preparing the final draft for submission to a journal