

Editing Educational Material

A word from the CBE InterViews editor—Many CBE members work on research publications, but comparatively few spend even part of their time editing material that involves education. I wanted to explore how the editing differs and is the same. Barbara Reitt, a founder of the Board of Editors in the Life Sciences (BELS) and longtime freelancer, has done both types of editing. Susan Ernst works as a managing editor of scientific and teaching journals. Addeane Caelleigh is the editor-in-chief of a medical-education journal.

Q: How did you become involved in editing for educators?

Ernst: I became involved in editing our education journal when one of our senior editors (Domenic Fuccillo) left to work in India. I had been working at the American Society of Agronomy for about 4 years, editing some of the other journals and books, and was assigned one of the publications he managed, the *Journal of Agronomic Education* (now titled *Journal of Natural Resources and Life Sciences Education, JNRLSE*).

Caelleigh: The quick answer is that I became editor of a journal for education specialists—in 1988 I became the editor of the journal published by the Association of American Medical Colleges (AAMC), with a mandate to change the journal's content and format.

The longer answer is to explain what happened to the journal in its 70+ years. By the late 1980s, it was felt that the journal had become too narrowly focused on education issues and should be broadened to serve a wider range of issues important to AAMC member institutions. When founded in 1926, the journal served institutional leaders at medical schools. By the late 1940s, it had become primarily a journal for education specialists, and in 1951, it had been renamed the *Journal of Medical Education*. In 1989, the name was changed to *Academic Medicine*

as a way to signal that the reorganized journal would serve both the institutional leadership and the education specialists. Thus, the journal is a hybrid, with a third of the content devoted to educational research, most of which uses psychology and sociology methods. The rest of the journal contains essays, policy analyses, and descriptive articles.

Reitt: I was never not involved in some form of education editing. I started out on the staff of a university press, and although only some of our list was in the sciences, these were all books and therefore not at the leading edge of research. Most were destined to be used in professional and graduate-level courses. As a freelancer I have gradually narrowed my focus to the biological sciences. My clients typically are university presses, professional societies, or individual authors whose grants cover some sort of publication. The projects usually are educational publications, though in a variety of senses. If they are not reference works or actual textbooks, they might be materials designed for candidates' use in preparing for certifying tests in medical specialties, or publications intended to educate a specific audience about a particular health issue—patients, perhaps, or legislators and government policy makers. Although some of these might not seem to be “educational” publications, I think they are. Which takes me neatly into your next question. . . .

Q: How does education editing differ from research-publications editing?

Reitt: The key difference is the audience. Research publications are intended for the author's colleagues, a very precisely defined audience of peers. In contrast, an education publication on any given scientific subject might be directed toward any one of many different readerships. The 1st step, then, for the editor of educational materials is to determine precisely who the reader is going to be. In my experience, few scientist-authors think about this carefully enough; they usually write as if they were writing a standard research report for peers, which seldom

works well.

It's not just a matter of clearing out the jargon; the differences between the research report and a good educational piece involve much more than simply the choice of vocabulary. The tone, the level of detail, the amount of defining and explaining, the choice and order of the topics presented, the number and kind of illustrations and tables—these are only some of the issues the editor of an educational piece must consider. The key question is always, what does this reader need to be told?

The most interesting jobs for the editor of educational materials are those that require one to take the same scientific information and edit it for publication in 3 forms: for the nonspecialist physician, for the registered nurse, and for the patient. In fact, I've used just such an exercise as an assignment for students in advanced-writing classes. The editor of educational materials probably also has to think more about form because that material may take many more forms than standard reports.

A 3rd difference is the pace, which in books seems downright leisurely. Authors accustomed to the rigors of journal publication tend to have less respect for the deadlines in book publishing. I seem to spend an awful lot of time nagging.

Ernst: I enjoy editing *JNRLSE* because the articles are less technical than “hard-core” technical-research journals. It's a welcome break from the grind of editing our other journals such as the *Journal of Environmental Quality (JEQ)*. When editing *JEQ*, I come across lots of chemical equations, math formulas, and technical jargon dealing with pesticides, soil classification, and plant nomenclature. *JNRLSE* is much easier to read and includes articles I actually find interesting! The advantage to editing subject matter that is more understandable is that we can do more editing for clarity!

Editing an education journal differs from editing research journals in that educational articles need to be clear and easy to understand because the general audience is “the

educator" rather than specialized researchers. Educators pass on information to another generation of students. Their articles deal with methods for improving teaching. Primarily their work is concerned with teaching other teachers new techniques or new ideas. Since the audience is other teachers, we have the obligation to teach them with the same clarity as we do students. The articles in the journal should be models of good writing to ensure that teachers pass on correct information. They have a multiplier effect because 1 teacher reaches more than 1 person. Teaching a teacher carries more responsibility than teaching a single student or teaching a single researcher.

Calleigh: There is no difference in editing, because our research section is devoted to education research. This social-science research is different, of course, from bench research or clinical research, and therefore the manuscript editors must be experienced in social-science research and reporting. In my experience, these editors should not be specialists in any particular branch of the social sciences; instead, we need editors with very broad liberal arts education, so that they can bring wide background to the materials they edit.

Q: How is the editing similar to that of research publications editing?

Calleigh: As I said before, it is the same as research editing, but in the social sciences rather than in the bench sciences or clinical sciences.

Ernst: For educational articles, I still have to check for correct grammar, make sure our society requirements are met, and generally follow our inhouse style. Also, the format of the articles is basically that in our other research journals. Our publication process runs the same for all our journals.

Reitt: The similarities have mostly to do with the subject matter. If you're editing in the biological sciences, you need to know how to use the same references (like CBE's

Scientific Style and Format) and to understand the same scientific principles. The vocabulary and need for letter-perfect accuracy is the same.

Q: What kinds of problems have you encountered in this type of editing, and how have you solved them?

Reitt: The timing and deadline problem persists. I just nag, nag, nag. I do my best to explain to the scientific author unused to writing educational material the differences I gave in answer to your earlier question. Authors who aren't particularly interested in these issues ask me to rewrite for them, but some get interested and want to be more involved. For them, I find that good old show-and-tell works best. Recasting 4 or 5 pages and a sample table or two, sketching explanatory diagrams, suggesting an outline for a thorough reorganization of a chapter—these can get the point across more efficiently than lots of theoretical talk about forms and approaches for good education materials. Sample passages and pages from past projects often serve well as models.

Ernst: The main problem I have working with educators is getting in touch with them. Many times they are in class, and summer-time is also difficult. This is also a problem with scientists who work "in the field" at times. Most of the authors who contribute papers to *JNRLSE* are also researchers in agriculture, natural resources, environmental science, and life sciences. Generally, I find teachers easy to work with and very cooperative.

Calleigh: We do substantive editing of all research manuscripts. Successful editors in this work must have a scholarly and analytical cast of mind, an ability to focus on details without losing sight of the bigger context of the research, and the curiosity and persistence to follow up hunches about problems in the articles they edit.

A problem that our manuscripts editors deal with constantly is the tendency of research authors to rely far too heavily on

"reporting the numbers". The authors have often collected a bewildering mass of numerical information and statistical values, which they regurgitate in page after page, and table after table, of numbers. We work with them to select critically what to report and how to report it, how to explain and interpret for the reader the relative strengths and weaknesses of these numbers. And, finally, we assist them in bringing an appropriate perspective to the conclusions they draw.

Another problem, less common than 10 years ago, is lack of statistical training and sophistication among many who undertake social science research in medical education. It is not unusual for researchers who do not understand statistics to use computer-based statistical analysis programs to "analyze" their findings and to place too much faith in the importance of the statistical values derived from these software programs. Often, the research projects have not been designed properly before the data were collected, or the data were collected before the research question was formulated. Most of these problem research papers are weeded out during the review process—or so I devoutly hope—but fainter echoes of the problems are found in many papers that are accepted and must be dealt with by the manuscript editors.

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