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Who Me? Ideas for Faculty Who Never Expected to Be Teaching Public Health Students to Write

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> As public health educators, we cannot assume that students come to us knowing how to write clearly about complex public health topics, what a policy brief is, or what language will be most effective with Boston Mayor Marty Walsh versus the *New England Journal of Medicine*. . . . I urge my students to approach each writing assignment as an exercise in intentional or deliberate practice rather than as a demonstration of innate ability.
>
> —Jennifer Beard, Assistant Professor of Public Health, Boston University[1]

Ample evidence confirms that college graduates in general are not good writers,[2-15] and there is no reason to believe that graduates of public health programs are any different. Although most students learn the basics, only about 30% can create prose that is "precise, engaging, and coherent."[14]

The poor quality of writing among college graduates is also a concern among employers.[4,6,7,12,16] In 2006, of 350 employers, almost 90% said writing skills were "very important" for college graduates, but 25% reported that their college-graduate applicants were "deficient" in writing abilities.[5,6,17] Organizations lose an estimated $400 billion per year to problems related to poor writing[4] and another $3.1 billion annually in remedial writing instruction,[4,8] a total double the estimated $7 billion per year that schools spend on similar training.[2]

The problem of poor writing is long-standing, widespread, and serious, but it can be reduced by teaching students the principles of technical writing, spending more time reviewing their writing with them, and having them revise their writing until it meets professional standards. This article provides an overview of the concepts and techniques that public health faculty with little background in writing instruction can use to help their students improve their writing. Although much of the research has been done on high school and undergraduate students, the findings are directly applicable to graduate students and adults in the workplace.

The Problem of Poor Writing

One reason students do not write well is that, according to Boston University English Professor Michael Prince, "There is a discrepancy between the skills being emphasized in high-school English and college composition and the skills most in need in college courses and in all professions."[18] The most recent National Assessment of Education progress report, a periodic, nationally representative evaluation of students' academic abilities, estimated that the writing skills of high school seniors in 2011 were excellent in 3%, acceptable in 24%, basic in 52%, and below basic in 21% of students.[19] Sadly, these scores have not changed much since the 1970s.[11,13,20-22] In fact, poor writing is nothing new. Despite developments in writing instruction, claims of a crisis in student writing skills have been raised for more than 100 years.[23]

Poor writing has dozens of interrelated causes (Box). These causes have created 3 broad conditions that deserve particular attention. The first condition is that universities are often unfairly held responsible for deficiencies in the entire educational system. They claim, with good reason, that college freshmen are poorly prepared in secondary schools.[26] In the 2011-2012 school year, 1 in 4 freshmen had to enroll in remedial math or English courses during their first year of college.[2,26] In turn, secondary schools claim that their freshmen are poorly prepared in elementary and middle schools[10]: the proportions of eighth-graders in the National Assessment of Education's Progress Reports' writing categories of excellent, acceptable, basic, and below basic are virtually the same as the proportions among high school seniors.[20] As such, the

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Box. Causes of poor writing among college graduates

Cultural Factors

- Students have increasingly diverse socioeconomic, cultural, and native language issues that affect how writing is taught, as well as increasing the range of writing abilities in any given class.[19,24,25]
- Students come from homes where literacy is not high or not valued.[19,25-28]
- Students have learned to read on iPads and cell phones and watch television excessively.[24]
- Students do not have computers at home (and therefore tend to score more poorly on writing tests).[8,19]
- Students' writing skills are dulled by excessive texting, emailing, and posting on social media websites.[2,8,12]

Student Factors

- Students are not motivated to learn how to write or do not like to write.[8,29]
- Students lack "automaticity skills," such as keyboarding, and spelling skills.[30]
- Students do not have a basic understanding of grammar, punctuation, and spelling.[2,12,13,28,29,31]
- Students do not read enough or well enough.[2,3,7,8,27,32,33]
- Students do not write enough to develop adequate writing skills.[3,7,8,11,27,30,32,34]
- Students do not receive enough timely and critical feedback on their writing.[7,27,29,30,31]
- Students do not revise enough.[7,16,27,31,32]

Instructional Factors

- Elementary and secondary schools teach "for the test," which does not include serious writing skills.[11,33]
- Colleges admit high school graduates with deficient writing skills.[10,15,26,29,31,33-36]
- Composition courses are not using realistic or engaging assignments.[8-10,20,23]
- Students do not know the teacher's expectations.[8]
- Writing courses are focused on personal expression or popular culture and not on developing workplace writing skills.[2,22,27,30,31-33,35,37-39]
- Writing courses are taught by novice, low-paid, untenured, or adjunct faculty, many of whom may be relatively inexperienced instructors and carry heavy teaching loads.[15,22,31,39]
- Writing courses, including remedial English courses, are overenrolled.[35,36]
- Instructors outside the English department are not qualified or are unprepared to teach writing.[3,11,23,27,33,35,39]
- Instructor feedback is too general or not useful; grading is not criterion-based.[10,13,31]
- Instructors do not want to spend time teaching writing at the expense of disciplinary content.[7,16,33,34]
- Instructors do not have time or want to spend time reviewing writing assignments.[7,10,21,31,33,34,36,40,41]
- Grade inflation: universities do not want students to do poorly, which discourages high standards in writing.[29,33]
- Instructors do not want to get poor evaluations by giving challenging assignments or maintaining high standards.[33]
- Writing standards are low to nonexistent or students are not tested.[3,8,35,37]
- Universities mistakenly believe they are adequately preparing their graduates for the workplace.[3-8,16,17]

problem of poor writing clearly needs to be addressed throughout the educational system.[8,16]

The second condition is that university programs have generally not been effective in improving writing skills.[8,10,33,38,39] In a national study, 45% of students showed no real improvement in writing skills after 2 years of college, and 36% showed no improvement after 4 years of college.[28] Likewise, fewer than 50% of college seniors believed their writing improved during college.[38] Student preparation is a key factor in improving writing,[23,30,40] but few professors have the time,[10,34,40,41] training,[3,22,33] or desire[10,33,38] to teach writing. Most college assignments are unrelated to the writing students will be asked to do after college,[9,10,20,23,42,43] and students typically do not write enough to develop true expertise.[3,7,20,21,38,43,44]

The third condition is the discrepancy between what employers want from graduates and what universities believe they are providing to graduates.[3,7,16] In 2014, 96% of universities believed they were graduating competent students—that is, students capable of learning, communicating, and reasoning—but only 11% of business leaders agreed.[45] In a similar study, 80% of students considered themselves to be proficient writers, but only 42% of employers agreed.[17]

Three Traditions of Writing and How They Differ

Joseph Woodger, one of the foremost theoretical biologists of the 20th century, had it right: "Science demands great linguistic austerity and discipline, and the canons of good style in scientific writing are different from those in other kinds of literature."[46] Scientific-medical-technical writing (the terms vary) does differ from other traditions of writing (Table),[47,48] and understanding these differences is important for improving one's ability to help students improve their writing.

The first tradition, writing in the humanities (ie, academic, creative, or literary writing), is the one found most

Table. Characteristics of 3 traditions of writing[a]

Characteristic	Literary or Creative Writing	Popular Writing/Journalism	Scientific-Technical Writing
Document types	Novels, poems, essays, term papers, short stories, personal narratives, biographies, songs, plays	For newspapers and magazines: local, national, and international news stories; feature stories; editorials; columns; reviews; news releases	Scientific articles, technical reports, training materials, instruction manuals, grant proposals, letters, business communications
Purpose of writing	General: to entertain, enthrall, evoke, soothe, challenge, inform	General: to report and comment on "news," to inform, to entertain	Specific: to provide targeted information to help a specific audience accomplish a specific task
Readers	Usually general; a heterogeneous public but often differentiated by genre (eg, juvenile fiction, humor)	Usually general; a heterogeneous public but often differentiated by market sector (eg, business, fashion)	Usually more specific; more homogeneous and targeted to roles in an organization or profession
Elements used to communicate	Writers use primarily words; others may provide artwork or graphic design, with or without input from the authors	Writers use primarily words; tables, visuals, and graphic design may be contributed by others, with or without input from the authors	Writers use words, tables, graphs, and images and usually have substantial input into their content and form
Qualities of the content	Text must engage readers, usually in both content and presentation (style)	Text must engage readers, usually in both content and presentation (style)	Text must provide information needed by readers to perform their tasks
Qualities of the presentation	Writing must be engaging so readers enjoy the act of reading; the words themselves are part of the art; the writer's style is often an essential part of the text	Writing must be engaging so readers enjoy the act of reading; journalists may develop reputations; magazines and newspapers develop readerships	Writing should be so transparent that the reader is not aware of the act of reading; content is more important than a writer's expression of it
Motivation to read	Reading is optional and done for personal reasons, so the text must be interesting to keep readers engaged; sensationalism can be a value; readers self-select	Reading is optional, so the text must be interesting to increase "depth of read"; sensationalism can be a value; readers self-select	Reading is often required de facto or even assigned in the workplace, although readers often self-select; the topic is of interest; sensationalism is rarely a factor
Evaluation criteria	How well readers enjoy what they read; popularity over time of the text; literary critics evaluate the text	How well readers enjoy what they read; financial success of newspaper or magazine; journalism critics evaluate the topics covered and how well they are covered	How well readers understand, find, remember, and use information; usability testing of readers can evaluate how well the text accomplishes these goals

[a]Reprinted from Lang T. Medical writing up close and professional: establishing our identity.[48]

often in public schools around the world and is primarily concerned with writing about the human experience.[49-51] It offers enjoyment and insight and often has evocative or artistic qualities.[52] In school and sometimes even through college, writing personal-reaction essays and term papers helps students understand their experience and studies.[53] The problem is that much academic writing instruction necessitates that students write for a single reader, who has more knowledge about the topic than they do, and who has no need for the information they are providing.[42,51,54] In other words, the flow of information is backwards.[54]

A second tradition is that of popular writing, including journalism and magazine writing. Generally, popular writing for print or online newspapers, newscasts, blogs, and magazines is designed to appeal to current taste or public interest.[55] It usually involves writing about news, current events, or popular topics for a general audience. However, the primary purpose of journalism is to sell newspapers, magazines, web clicks, or airtime, albeit with (mostly) good reporting, careful analysis, or skillful storytelling. This tradition has some uses in preparing public health messages for the general public, but, again, it does not develop the same sense of audience and purpose needed to communicate in most public health documents.

A third tradition is writing in the sciences, or technical writing. Technical writing is functional writing designed to help readers act.[51,56] It has some characteristics generally not found, at least to the same degree, in literary or journalistic

writing but that are critical in science and technology. Technical writing is directed to a specific audience[51,56-60] and has a specific purpose.[56,61,62] It has a utilitarian style[51,57,58] in which the information is more important than the author's voice or expression.[60,63] It includes communicating information through tables, graphs, and images[56,60,62,63] and with slides, posters, and online texts[60] and often requires numeracy.[64] Critically, technical writing is evaluated by how well readers understand, find, remember, and use information.[60] Finally, writing that is misunderstood, misdirected, missing, or inaccurate can have substantial adverse personal, organizational, and economic consequences.[6,13,14,65]

Approaches to Writing Instruction in America

All universities have English departments, and most have writing centers where students and faculty can turn for help with writing and writing instruction. However, not all English instructors take the same approach to teaching. Consider this advice from an authority in the composition movement (see below): "I once had to advise a new [teacher's assistant] . . . that a course theme of 'refrigeration' was too narrow. . . . On the other hand, one of the course themes I've used lately for academic writing courses is Locating Self in Landscape."[41] (I have no idea what it means, either.) Thus, it pays to be selective when seeking help with writing issues.

Writing instruction in the United States has taken at least 4 major approaches. The writing-as-product approach (also called "current-traditional rhetoric") lasted from the 1800s to the 1960s. In this approach, writers were to emulate models from classic Greek and Latin literature, and great importance was attached to grammar, spelling, and syntactical correctness.[11,13,28,42] The purpose of writing instruction was to produce the text itself, generally without considering the process of writing, a specific audience, or the author's identity or circumstances. During this period, grammatical correctness became vitally important as a sign of acceptable social class,[66-68] and even today, many persons are more concerned about grammatical correctness than about other, more important aspects of writing. Grammatical correctness remains particularly important to employers in their hiring practices.[6,7,42,69]

The writing-as-process approach, which spanned the 1960s, 1970s, and 1980s, divided the writing process into stages (eg, prewriting, writing, and revision) and developed ways to help students complete each stage. The previous emphasis on grammatical correctness gave way to developing skills to make the writing process more efficient. During this period, the plain English movement began to recommend that business and legal documents be written "in a clear and coherent manner using words with common and everyday meanings."[70] Research stimulated in part by this movement identified several factors that promote or inhibit comprehension,[71-73] including the fact that readability formulas (eg, Gunning's Fog Index) do more harm than good in guiding writers.[74-76]

In the 1980s, the composition movement expanded interest in the writing process to the "composing process," or what happens in the writer's mind before writing.[47] Attention is placed on the social and political implications of writing. Conventional writing instruction came to be seen as promoting an unequal power relationship that favored a dominant cultural group at the expense of less powerful groups, such as women and persons in racial and ethnic minority groups.[37] Composition studies all but ignore traditional writing instruction to promote students' self-expression[22,28] and have even declared that students "have a right to their own language."[77]

Modern technical writing began after the Civil War, with the opening of engineering schools at land grant colleges. Technical writing textbooks often centered on preparing specific document types, especially technical reports and business letters in early editions, and adding proposals, procedure manuals, and instructional texts in later ones. After World War II, corporations realized that technical writers were better writers than engineers and also less expensive, allowing one group to create content and another to present it—an extraordinarily useful arrangement outside of academia. The field grew rapidly in the 1970s to meet the huge demand for user-friendly personal computer documentation manuals[66] and led to advances in evidence-based principles of document and information design.

All 4 approaches address the same basic issues in writing instruction; however, whereas current-traditional rhetoric emphasizes the qualities of the text, process theory emphasizes the cognitive activities of the writer, composition theory emphasizes the social context of the writer, and technical writing emphasizes the information needs of readers. The first 3 approaches are concerned primarily with writer-based texts used to develop students in school. In contrast, technical writing is about creating reader-based texts.[60] In fact, most writing done after college and in the workforce is technical writing.[42]

Key Factors of Effective Writing Programs

The universal criticism of writing instruction is that not enough time is devoted to it[9,21,28,30,31,40,78]: "Like any other craft, [writing] is learned only by doing it, over and over and over, at increasing levels of challenge, under the watchful eye of an expert."[3] The literature is also clear that learning to write well requires that students have a command of grammar and punctuation[13,31]; read a lot[2,3,7,32]; write a lot[17,27]; receive a lot of prompt, detailed, cogent feedback about their writing[7,27]; and revise a lot,[16,19,27,31] preferably under the guidance of an expert writer for prolonged periods.[3,79]

Public health writing programs should consider implementing "deliberate practice," a process identified in studies of how experts become experts.[80] Briefly, the process asserts that expert performance differs qualitatively from normal

performance, that experts have characteristics and abilities that differ qualitatively from those of nonexperts, and that the difference between experts and nonexperts is a long-term, deliberate effort to improve their performance. The process itself requires learners to be motivated and willing to improve their performance; attend to the task and exert effort to improve performance; receive immediate, informative feedback about their performance; and repeatedly perform the same or similar tasks many times during long periods.

Experts attend to different aspects of a problem than do novices. In fact, learning to become an expert in many regards requires learners to attend to the right things without being distracted by the wrong things. Learning to write is no different. Strong writers attend to different aspects of a text than do weaker writers. One way to learn what experts "attend to" is through regular, intensive, individual, or small-group mentoring for weeks or months, that is, through deliberate practice.[16,28,31,79]

Such mentoring is built around analyzing, in detail, every aspect of audience, purpose, and occasion, and every assumption, word, punctuation mark, sentence, and idea of a text, and then having students revise the text. The process is repeated until the desired quality has been achieved. Led by a mentor who guides such analyses with the Socratic method,[31,79] such training can greatly improve writing and revising/editing skills.[23,30,31] In fact, such training can help writers reduce the lengths of their texts by up to 30% without losing information while improving readability.[81] This improvement is well within the reach of most public health students. Mentors need not be writing instructors; they simply need to be familiar with the purpose and nature of the documents used in public health and willing to think critically about these documents as they challenge students to do the same.

In my experience as both student and mentor in this process, these sessions need to be intense and prolonged because their deeper purpose is to replace old habits of thinking with new ones. As such, students have to constantly be challenged to distinguish between what the text as written says, what the author probably meant to say, and, finally, what needs to be said to meet the requirements of the situation.[82]

Some Common Strategies for Teaching Writing

Although cogent feedback is one of the most important factors in improving students' writing, as Murray Sperber, emeritus professor of English, wrote, "Unfortunately, many graduates have never had anyone line-edit their work. As a result, they have serious writing problems, despite the fact that they've written a huge number of pages."[31]

The process of writing can be broken into stages, which provides a useful framework for understanding and teaching the writing process.[7,16] Each stage can involve various techniques, which can and should be taught specifically.[23,40,53]

The Planning Stage

The planning stage can be subdivided into targeting, discovering, and ordering.[60] Targeting involves identifying the purpose of the communication and the intended audience. The purpose of most technical writing is the behavior desired of readers: do you want them to fund a grant, accept research findings, or stop a given behavior? Three common purposes are to argue for fact (whether something is true), value (whether something is desirable), and policy (whether something is effective).[83]

Three useful ways to characterize an audience are with sociodemographic characteristics, by organizational or professional status (eg, those who make decisions and those who implement them), or by information needs (immediate, primary, secondary, or external audiences and audiences remote in time or space[83]). No matter what the audience, it is always useful to ask: "What do my readers want to know, need to know, already know, don't know, and think they know that isn't so?"[60]

Discovering means identifying the things, processes, concepts, relationships, places, and so on that need to be addressed in the text. The process usually involves identifying, naming, and describing persons, places, or things and often differentiating between similar concepts to avoid confusion.[60] The process also often involves identifying things or concepts to be evaluated, compared, or contrasted. Some authors first prepare tables, graphs, and images as a way of discovering what they need to say.

Ordering topics is just that: arranging them into a coherent order. Here, the most common options are ordering alphabetically, spatially (eg, near to far), chronologically, categorically, and progressively (along a continuum).[84] Because writing is ultimately linear, the goal of the ordering process is to create a standard outline indicating the hierarchy of topics and subtopics to whatever level of detail.

The Drafting Stage

Drafting is the process of getting something "down on paper." There is no single "best" way to draft. Some writers use the outline entries as headings and write from the first topic to the last; some write the easiest sections first. Others begin by summarizing the document in a sentence, which may become a title; others summarize the document in a paragraph, which may become a summary or abstract. In each case, the goal is to decide which information is the most important.

The Revising/Editing Stage

Revising—literally, "to see again"—is probably the most important stage of writing and the one that is completed least often.[27] Strong writers revise more than do weak writers.[16,27] Revision may include changing the organization of the text, adding missing information, adjusting the wording, and

cross-referencing facts and data. The text generally evolves during revision, each time hopefully becoming more focused and readable.

Reluctant or less-skilled writers tend to look for only superficial errors during revision.[16] To help, an instructor can circle grammatical errors without identifying them. Students then have to determine what error they have made, fix it, and enter the result into a logbook, which is then evaluated by the instructor.[16] Student peer review is often helpful at this stage.[85] However, the best advice I have heard about revising is to ask, over and over, what information do I want readers to have, and where in the text do I give them this information?

The Polishing Stage

Polishing is the proofreading stage in which any remaining errors or issues are fixed. Here, the content and flow of the text (which should be finalized during revision) have to be ignored so that errors in format and style can be seen and corrected. Common strategies include reading the text a few days later, reading the text backward word-by-word or aloud, and looking for a single type of error at a time.

The Publishing Stage

How to prepare a text for submittal and publication should be part of writing instruction in public health. Students should become familiar with the instructions for authors issued by journals and granting agencies and the publication style manuals common in public health (eg, the *American Medical Association Manual of Style*[86] for more medical topics and the *Style Manual of the American Psychological Association* for more social science topics[87]).

Final Thoughts

Deliberate practice is effective in teaching students how to write and reason more effectively. The approach requires motivated students and mentors experienced in public health. It is also time and labor intensive, which is probably why it is not used more extensively. But it works, and we need approaches that work to achieve the outcomes we have wanted for more than 100 years.

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