Content-Area Teachers as Teachers of Writing

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Despite movements to increase writing across the curriculum, at the high school level writing instruction is primarily the domain of the English Language Arts (ELA) teacher. However, the Common Core State Standards (CCSS) may change this. The standards, which had been adopted by 45 states as of this writing, include literacy standards for social studies/history, science, and technical subjects that specifically call on teachers in these areas to address discipline-specific reading and writing skills at the middle and high school grade levels (National Governors Association). As states move toward implementing these standards, teachers from all departments will be asked to become “teachers of writing.”

But are these teachers prepared to meet this challenge? And how can pre-service and in-service teachers in the content areas be supported to effectively incorporate writing into their classes? Drawing on work with high school science teachers, this article seeks to address these issues and offer suggestions for those working with writing teachers across the disciplines.

Relevant Literature
In their analysis of existing data, including data gathered as part of the National Assessment of Educational Progress (NAEP), Applebee and Langer found that “many students are not writing a great deal for any of their academic subjects, including English, and most are not writing at any length” (ii). They date this problem to the 1990s and the standards movement with its increased emphasis on reading and math, often at the expense of writing. While some states included questions which required written answers as part of the tests mandated by No Child Left Behind (NCLB) legislation, Applebee and Langer suggest that “these may be shifting attention away from a broad program of writing instruction toward a much narrower focus on how to best answer particular types of test questions” (ii). In their national survey of high school social studies, language arts, and science teachers, Kiuhara, Graham, and Hawkhen found that most writing assignments asked students to report information without analysis or interpretation, like Applebee and Langer, Kiuhara, Graham, and Hawkhen point out that “efforts to improve writing are virtually nonexistent in the school reform efforts in the United States” (136), particularly reforms mandated by NCLB. The lack of time spent on writing in American schools prompted The National Commission on Writing in America’s Schools and Colleges to title their 2003 report The Neglected "R." The Need for a Writing Revolution. However, although states have yet to begin standardizing testing over the Common Core State Standards, the standards may provoke change (if not a revolution); they appear to call for more complex writing tasks across the curriculum.

Yet teachers who have spent decades ignoring writing entirely or focusing only on writing test answers may not feel comfortable assigning or assessing other kinds of writing. In the field of science education, nearly 60% of teachers surveyed believed they were not prepared to teach writing (Kiuhara, Graham, and Hawkhen). These teachers, self-identified as non-experts in the field of writing instruction, may share some qualities with non-expert writers. In the 1980s several studies were undertaken to compare expert and non-expert writers; researchers concluded that novice writers tended to overlook writing problems that experts recognize (Hayes et al.) and defined revision as fixing problems at the word or sentence level (e.g. Braddock; Fairley and Witte; Sommers). Likewise, a study comparing high school science teachers’ responses to student writing in the genre of science journalism to responses by a professional journalist found that the teachers focused on grammatical and typographical errors while the professional editor looked at a wide range of content- and genre-related issues (Kohnen).

The fact that content-area teachers are unprepared to teach writing should come as no surprise. Required coursework in writing pedagogy is the exception, not the norm, for pre-service content-area teachers at most colleges of education, with some fields offering remediation in writing. Although coursework that includes writing instruction was a requirement of the English Language Arts (ELA) program at Florida State University for most of the past century, courses focused on content-specific writing. The Writing Center Journal 7.2 (1987): 21-28.


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Science Teachers and Writing

In 2008, the National Science Foundation began funding a grant entitled “Science Literacy through Science Journalism,” or SciJourn. The purpose of the project was to introduce teachers and their students to the concepts of science journalism in order to improve student science literacy (see Saul et al. and Polman et al. for more information). Teachers self-selected to participate in a summer professional development institute, modeled in part after the National Writing Project professional development institute. In the pilot professional development institute, researchers worked under the direction of an experienced science teacher and journal editor to propose, research, and write science articles intended for a teenage audience. After several rounds of development, many of the teachers’ articles were published in the grants’ newsmagazine (SciJourn and www.scijourner.org). As part of the professional development, many teachers also worked with program directors to think about how science journalism activities could be incorporated into their courses. Back in the classroom, many of their students wrote and revised science news articles, with a small percentage of these articles also appearing in the publication.

Initial Challenges. I became involved in the SciJourn project in 2009, as first a participating teacher (I was one of two ELA teachers in the pilot professional development institute) and later as a research assistant. My research involved exploring how science teachers came to incorporate writing into their classes, yet I quickly ran into a problem: I didn’t speak the same language as science teachers. I went into my work knowing that science teachers would have a technical vocabulary and a set of discipline-specific teaching concerns that I would have to learn, but I hadn’t anticipated how discipline-specific (and ELA-centric) my own language was. Even my research’s most basic word, “writing,” meant something different to me than it did to the science teachers with whom I was working. Science teachers used the word “topic” to refer to curricular concepts; I used the word to mean a narrow “topic” suitable for a news article. Many of the science teachers called science journalism “creative writing,” after puzzling over this, I concluded that “creative” was any kind of writing that grabbed my interest—and whether or not I had chosen to write about it in a lab report or a five-paragraph essay. At one point, I began keeping a list of words that we seemed to use differently. Other terms that made the list included “peer workshop,” “content,” and “revision.”

In response to these challenges, I decided to collect information from the science teachers about their experiences with writing and responding to writing prior to involvement with the grant. I began with focus groups held during a professional development workshop with twenty-two science teachers present. The focus groups addressed these questions: (1) prior to SciJourn, what experiences did you have talking about writing and responding to writing?; (2) prior to SciJourn, how did you approach assessing the writing assignments you gave? where did you get your ideas about how to assess student writing? have your ideas about responding to writing changed since you got involved with SciJourn? These sessions were audiotaped; I transcribed each and coded the transcripts, beginning with open coding followed by axial coding (Merriam). The two main categories that emerged from the transcripts were (1) types of writing teachers assigned and (2) teacher responses to that writing. Because the focus groups were short and did not offer equal opportunity for all teachers to respond, I distributed a follow-up survey with more specific questions about the frequency and kinds of writing assignments as well as questions designed to understand teachers’ feelings about these assignments.

This small data set confirmed much of the research cited earlier in this article. Although the teachers reported assigning slightly more writing than the literature suggests, most of this writing did not seem likely to provoke analysis or interpretation. The single most common assignment, given once a month or more by 20 of the 22 teachers surveyed, was “vocabulary/key terms,” where students were required to write out definitions of vocabulary words from their textbook. Other popular assignments included lab reports, answers to questions at the end of the chapter, and summaries of reading. During the focus groups, many of the teachers referenced school-wide mandates or initiatives as influencing the writing they assigned; the teachers attributed these policies to the pressures of standardized testing or school accreditation issues. As the literature suggests, the kinds of writing mandated tended to be formulaic; teachers were taught to help students create “constructed response” answers that began with a rephrasing of the question or to write five-paragraph essays in timed environments. The teachers also described these policies as temporary; they came and went with changes in administration or changes in political priorities.

The teachers’ negativity about writing extended beyond mandates or initiatives. In survey questions designed to understand teachers’ attitudes about writing and writing response, most science teachers surveyed confirmed earlier research: they had little training in how to teach and respond to student writing (see table 1). Although some did claim to feel comfortable assigning writing, most of the teachers surveyed perceived writing as means of assessing students’ knowledge of content-related ideas and decisions they would face fifteen years after high school graduation. In the focus groups, I realized that many of the science teachers were defining a “writing assignment” as any assignment that asked students to put pen to paper (or fingers to keyboard) and therefore my survey included such options as “answers to textbook questions” and “vocabulary/key terms.” The Kruttschnitt et al. survey took a similarly broad view of “writing,” while the Applewhite and Langer study only included paragraphs or longer types of assignments.

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Differentiating between two goals, “writing to learn” and “learning to write in the disciplines,” but participating science teachers were not using writing for either purpose. “Writing to improve test scores” and “writing to demonstrate factual knowledge” would be more accurate labels. The science teachers did not find this satisfactory—they described writing in their classes with words like “tedious” and “horrific”—and many signed up for the SciJourn project specifically to address this situation.

Writing and Responding in Content-Centered Ways. Perhaps the most important difference between SciJourn and other writing initiatives the science teachers had been involved with was that SciJourn was actually not a writing initiative. Instead, the grant helped science teachers think about ways to use writing to meet a different goal, improving student science literacy. In some ways, the project moved science teachers toward “writing to learn” approach; students were asked to write in the genre of science news so that they could learn the skills of a science journalist, skills like identifying relevant science topics, finding credible sources of information, and putting national events such as the personal science development institute, the science teachers first became convinced of the importance of these skills and then saw the connection between the skills and writing. However, the project also involved an authentic publication opportunity so that some teachers chose to emphasize in their classroom implementation; students who pursued publication actively were also “learning to write” in the genre of science news. As I saw it, in the SciJourn project “writing to learn” and “learning to write” became intertwined because of the specific genre in use. Learning to write like a science journalist also meant writing to learn, both about the topic and about the skills of science journalism.

This may not yet have happened if the teachers had not been supported in their efforts to teach and respond to student science news articles. Many of the science teachers were familiar with science journalism and many described themselves as avid readers of science news, none of them had looked at the genre closely prior to their work with the grant. According to the teachers, producing their own science news article was an effective part of the professional development was a key experience; in this way, the grant followed the National Writing Project’s philosophy that teachers of writing must be writers themselves. Yet, however important producing the first draft was, the teachers went on to focus on the experience. The teachers worked with a professional science journalist and completed several revisions based on authentic feedback from an expert. Their learning of the genre was pushed beyond the superficial; they had to work with the genre deeply in order to meet publication standards. As teachers moved into classroom implementation, many drew heavily on the complete process of their own experience, particularly revision, in their work with students. Once in the classroom, the teachers had several other resources to draw upon. In addition to being available for classroom support, members of the project worked on creating tools for the teachers’ classroom use. The SciJourn Standards were the most important product that grew out of this work. The authors of these standards sought to highlight the qualities of science journalism that were important to classrooms focused on student science literacy and ask that student articles: 1) are about local, narrow, focused, timely, and or unique science topics; 2) use information from relevant, credible sources; 3) are based on multiple, credible resources; 4) contextualize information; and 5) are factually accurate and foreground information (see www.teach4scijour.org and Saul et al. for elaborated descriptions of these standards). The standards do not capture every aspect of high-quality science journalism—in fact, they say little about writing and nothing about grammar—but all of the issues identified in the standards are familiar and important to science journalists. In short, the SciJourn Standards articulate an educationally-relevant subset of the authentic standards of science journalism.
3 Beyond the standards themselves, SciJourn team members developed additional standards-related resources to help the teachers apply the standards to their work with students. The standards were never designed to be handed wholesale to students; a related “student-friendly” set of standards was written that “translated” each standard into simplified questions teachers and students could pose to one another about science journalism. Questions included “who says?” to be asked after each assertion in a science news article, followed by “why should I trust them?” Laura Pearce, the grant’s classroom implementation coach developed the SAI standards (science article filtering instrument) which was designed to help teachers and students prioritize problems in science news articles; the worksheet included a section of most egregious concerns—like plagiarism or outright lies—that would result in the article needing to be completely redone, followed concerns related to the SciJourn standards. Inspired by the online tool “calibrated peer review” (http://cpr.molsci.ucla.edu/), we wrote questions based on the SciJourn standards and identified student sample articles for teachers to use to “calibrate” themselves and their students to what constituted a “high quality,” “medium quality,” and “low quality” example of student science journalism. We annotated articles that were published in our newsmagazine to illustrate what the SciJourn standards looked like in writing. Notably, we did not create rubrics based on the SciJourn standards; like Maja Wilson, we found rubrics in classroom contexts to create more concerns than they solved.

In response to this, many teachers changed their practice, some significantly. Teachers who had always found themselves “correcting” student writing—either by circling grammatical errors or by marking specific content information as right or wrong—now had guiding principles to use when approaching student work. In professional development conversations, one teacher discussed how the SAI standards helped her to stop marking grammatical errors; another said that these tools helped her reevaluate her writing instruction approach to completion before making any suggestions. One teacher provided us with all of her comments on her students’ writing; we saw her addressing a range of genre- and content-specific issues including asking for more sources of information and pushing her students to make the science in their stories more clear and explicit.

As schools work to move writing and writing instruction beyond the ELA classroom, the SciJourn project offers several lessons. First, it is important to recognize that many content-area teachers do not have significant training in writing pedagogy and, as a result, are using writing in potentially counterproductive ways. Discussions about what is actually occurring in classrooms—including conversations that clarify the most essential terms like “writing assignment”—are an important first step. After years of standardized-testing-inspired writing mandates, teachers are bound to be wary of another attempt to incorporate more writing, particularly if the approach does not take into account discipline-specific priorities for student learning. Content-area teachers are overburdened with their own curricular objectives; when they are asked to assign and respond to more “writing” in a generic way, many feel as if they have just been required to take on the ELA department’s job as well. Empowering pre-service and in-service teachers to design their own discipline-specific writing assignments can help alleviate this concern. Exposing them to new genres—using their own curricular objectives to guide their efforts—can provide teachers to design their own discipline-specific writing assignments can help alleviate this concern. Exposing them to new genres—using their own curricular objectives to guide their efforts—can provide pre-service and in-service teachers with guiding principles to use when approaching student work.

Beyond the SciJourn Project: Lessons Learned

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Angela Kohnen is Assistant Professor of English and co-director of the Ozarks Writing Project at Missouri State University. Her research focuses on writing pedagogy, teacher education, and professional development.