

The Authenticity Spectrum: The Case of a Science Journalism Writing Project

A multi-school writing assignment intended to improve students' science literacy serves as the context for this author's description of the benefits of "functional authenticity" over "latent authenticity" in writing assignments.

The Common Core State Standards (CCSS) explicitly call for a wide variety of writing assignments in all subjects, with special emphasis on informational writing and argumentation (National Governors Association). In a footnote to the 6–12 writing standards, the CCSS point out that “these broad types of writing include many sub-genres” (*English* 41), yet the importance of genre is never explored. Instead, all informational and argumentative genres are treated equally; the standards implicitly suggest that students will benefit in similar ways from a well-designed assignment in any informational or argumentative genre. Through a case study reported here, I argue that this is not necessarily the case. Deliberately selecting a specific genre and teaching it authentically can result in genre-specific student learning that goes significantly beyond the written product or even the writing itself. However, to engage students in writing most effectively, we must design writing activities that exhibit not just what I call “latent authenticity,” but “functional authenticity.”

Science Journalism: A Case Study

My background is in the high school English classroom, but for the past two years I have been working as a research assistant with the NSF-funded grant “Science Literacy through Science Journalism (SciJourn),” a project in which students are taught to write like science reporters (see Polman et al., Saul et al., and <http://www.teach4scijourn.org> for

more about this project). Teachers¹ chose to participate in the program, which began with a two-week summer institute wherein teachers wrote science news articles under the guidance of a professional science journalist and editor. As they were learning science journalism, teachers were also planning how to bring the genre to their students. The purpose of this writing, particularly in science classes, was to improve the science literacy² of the students (not necessarily to improve their writing skills), and one of the most important things the teachers did in the summer institute was think about how the qualities of a well-written science news article relate to the qualities of a scientifically literate individual (see fig. 1; “Science Literacy”). Although the project did not promote a single curriculum, all teachers involved learned and used the SciJourn standards.³

These were not generic “informational writing” standards; they were genre-specific and more fine-grained than those articulated in approaches such as the 6+1 writing standards, a fact that was critical to the project. Project leaders initially identified the learning goals for the project—the qualities of a scientifically literate person—and then looked for a genre where these qualities were made manifest. The standards were developed first by asking science journalists and other scientifically literate people to think aloud as they read science news articles and then by thinking concretely about what students were having trouble doing that the scientifically literate adults did almost automatically.

Because the qualities of a scientifically literate person were closely tied to the qualities of a science

FIGURE 1. Qualities of a Scientifically Literate Person Compared to Qualities of a Science News Article

A scientifically literate person is able to . . .	A high-quality science news article . . .
. . . identify personal and civic concerns that benefit from scientific and technological understanding.	. . . has most or all of the following elements: is local, narrow, timely, and presents a unique angle.
. . . effectively search for and recognize relevant, credible information.	. . . uses information from relevant, credible sources including the Internet and interviews.
. . . digest, present, and properly attribute information from multiple, credible sources.	. . . is based on multiple, credible, attributed sources from a variety of stakeholders.
. . . contextualize technologies and discoveries, differentiating between those that are widely accepted and emergent; attending to the nature, limits, and risks of a discovery; and integrating information into broader policy and lifestyle choices.	. . . contextualizes information by telling why it is important as well as which ideas are accepted and which are preliminary.
. . . fact check both big ideas and scientific details.	. . . is factually accurate and foregrounds important information.

news article, assigning writing using the SciJournal standards was not “a stretch” for the teachers seeking to meet other complementary learning goals. Teachers involved in the project could respond to student writing by attending to this subset of professional standards, something that made this writing different from what had gone on in these classrooms before where writing assignments were school-specific and formulaic and for which teachers often responded using a generic rubric (e.g., lab reports or research papers).

Classroom Implementation Strategies

Although the project looked different in each classroom, many teachers followed a similar pattern of implementation. Science journalism was introduced to the students, often at the beginning of the semester, through a 5–10 minute Read-Aloud/Think-Aloud (RATA)⁴ protocol:

- the teacher finds an interesting science news story and projects it on the overhead for the class to see;
- the teacher reads the article, stopping to think aloud at various intervals;
- students are invited to comment or ask questions.

In addition to comments about the subject matter of the article, teachers also ask questions inspired by the SciJournal standards (see <http://www>

.teach4scijournal.org for further instructions and ideas for using a RATA with science news articles). Many science teachers conducted RATAs for several months before even introducing the student writing assignment, gradually adding more kinds of questions. English teachers often incorporated science journalism as a single unit in their course and only did science news RATAs during that unit. RATAs established a foundation for student writing even though most of the teacher’s questions and comments had nothing to do with writing. Instead, the teachers were slowly uncovering the essential and relevant qualities of the genre for the students. By listening to RATAs, students began to see that readers (and writers) of science news are skeptical, that they value corroborating information, and that they demand that science information be made clear, timely, and engaging.

Not all SciJournal science teachers asked their students to write science news articles,⁵ but for those who did, at this point students moved from listening to science news to “becoming” science journalists. By beginning with topic selection, like professional science journalists, students realized that a scientifically literate person is someone who sees unusual, entertaining, or important science stories all around. Likewise, a scientifically literate person is someone who recognizes that many consumer, personal, political, or social issues have a scientific component. Students, many of whom previously claimed to find science “boring,” became

excited about the prospect of learning more about their favorite sports or hobbies. More seriously, some students chose to report about health topics that affected themselves or a loved one; some of these topics had never been discussed openly in the family before. As they brainstormed topics, student-journalists had to carefully consider their audience,⁶ as well as the size and scope of the assignment (generally around 500 words).

Once students began gathering information, they had to work on two important skills: performing Internet research and conducting an interview. Much has been written about students' Internet research skills (e.g., Ostenson), but often these approaches are limited to encouraging students to conduct academic research and do not provide adequate context for suggested assignments. The

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resulting advice usually includes a list of dos and don'ts (don't go to Wikipedia; do go to .govs and .edus) and a generic set of guidelines for evaluating websites. But when students are acting as science journalists, Internet searching becomes different. Students who don't know much about their topic are encouraged to go to Wikipedia, not as a source to quote in the final story but as a place

to gather background information on the topic, to learn more technical terms for use in a search engine, and to find additional, more credible, sources (usually linked at the bottom of the article). Many .coms are perfectly acceptable for science journalism: if a story is about a new technology, the company's website will have to be consulted, and peer-reviewed articles on WebMD are a credible source of health information. On the other hand, a story that only includes .gov sources is not giving a complete picture, nor is a story that only cites the educational institution where research took place (even though that institution is probably an .edu). By acting like a science journalist, a student is taught to think about each source in the context of the whole article—for example, a blogger with breast cancer may add to a story about reactions to

a new treatment, although an article would never *only* include blogs as sources. This kind of thinking is much more like what we as educated adults do when we search online: we don't avoid all .coms nor do we pull out an old worksheet from the library. But students are rarely asked to practice this type of searching and thinking in schools.

Classroom assignments also rarely require students to interview adults, but learning to ask questions and listen carefully to answers is an essential part of being a science journalist (and of being an educated adult, particularly in the doctor's office). Many SciJourn teachers required that their students interview an adult; students learned to compose appropriate questions and to locate experts, which sometimes was as simple as walking down the school's hallways (interview sources included coaches, other teachers, the student's doctor, family friends, as well as experts found online).

Putting all this information into a science news article was a challenge. In a range of settings, from low-performing schools with high poverty to affluent, private schools, classroom teachers ran into similar problems: students struggled to let go of the five-paragraph essay formula; students failed to include appropriate attribution to their sources within the article; students "buried the lede" by holding the personal connection or angle to the end of the article; and students struggled to determine how much contextual information to include. For science teachers, addressing these writing issues was often new territory, but because they had been taught to focus on the SciJourn standards in their teaching and feedback, many were able to prioritize their responses. Teachers learned to consider missing attributions a major problem and many made "attribution to multiple, credible sources" the most important aspect of the assignment. In a number of science classes, students could earn passing grades even if they failed to break out of the five-paragraph essay formula, as long as the SciJourn standards were met. In general, students wrote at least two drafts, with some teachers requiring or encouraging many more. Teachers also involved the project's science editor in varying ways, with one teacher sending nearly every student article to the editor for feedback and others sending none.



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Student Reactions

The SciJour science teachers said that the science journalism project was one of the few writing assignments that made sense in their classes: the genre-specific priorities and values articulated in the SciJour standards resonated with their own goals (Kohnen). SciJour students were also affected by their experience playing the role of science journalist as we heard in our observational and interview data.⁷

Brittany, for instance, was a senior in an Environmental Science class who saw the science journalism assignment as markedly different from her other science work—for the first time, she was learning something she wanted to learn, not memorizing something from a textbook. But it wasn't just the choice of topic that Brittany found important; she also sounded like a tough reporter when she described how she managed to get an interview with a doctor after repeatedly being ignored: "You need to get mean sometimes, you know?" Like a good journalist, Brittany didn't give up when sev-

eral doctors' offices failed to answer her questions and she finally found someone who would explain a medical condition to her.

For Kim, a student in a journalism course who had never written about science before, credibility took on a new meaning. Her previous articles had been mostly about "stuff happening around school" so credible sources weren't hard to find; however, for an article on a science topic, the issue of credibility was more challenging. She explained that websites need to be scrutinized carefully for expertise and that all information needs to be corroborated by several sources "'cause you don't want some just some random stuff thrown in your article and then find out it's not real." An aspiring journalist, Kim seemed very worried about the publication's (and reporter's) reputation. In terms of career goals, Kim couldn't have been more different from her classmate Trevor, who did not see himself writing much at all after high school, and yet the two spoke in similar terms about credibility. Trevor told me, "If you're looking for something that matters make sure you go find out who's actually a credible source. You don't want to just go to some random website and try to find good information, because it could be false." For Trevor, an avid weightlifter, the "something that matter[ed]" to him was information on steroids. The experience of playing the role of a science journalist seems to have helped him think about online searching in a nuanced way; some searches "matter" in ways that others don't. Erika and Heather, whose articles were published in *SciJourney* (<http://www.scijourner.org>), seemed to see themselves as "translators" of science information, a key component of the way professional science journalists talk about their work (Blum, Knudson, and Henig; Dukes). Erika described herself as needing "to understand the material to make it possible for other people who maybe have not had as much science experience or science education to understand it too," while Heather said, "I need to explain it to other people so they can know about, as much about the topic too."

Why did the project have such an impact? In the beginning, we thought it had to do with the "authentic" experience of writing in an "authentic" genre for an "authentic" audience; however, the concept of authenticity is more complicated.

Understanding the project's success requires that we look more closely at what we mean when we say something is "authentic."

The Latent-Functional Authenticity Spectrum

When we read and talk about "authentic learning" or "authentic writing," what we mean seems, on the surface, to be obvious: authentic is *real*. But what does "real" mean? In a recent article in *English Education*, Anne Elrod Whitney discussed this issue, defining authenticity as "work that is in some way meaningful beyond the context of school" (51). In that sense, asking students to write in genres that simply *exist* outside of school could be considered "authentic" (e.g., articles about authentic writing by Kixmiller; Lindblom, "Teaching"; Parsons and Ward). When, at the end of a unit on *The Crucible*, I gave my students the option of writing a "letter to the editor" of the Salem paper, the assignment met this basic criterion of "authenticity," although, as Whitney points out, it is actually "as fake as any other" (58).

"Authentic writing" is an imprecise term that we, as writing instructors, should consider more carefully. It is not enough to consider a writing assignment or a genre to be simply "authentic" (e.g., the letter to the editor) or "inauthentic" (e.g., the five-paragraph essay). While some writing assignments, particularly those designed as preparation for standardized tests, are "inauthentic" by nearly every definition, the term "authentic" is more complicated. I have begun thinking of the concept of "authenticity" as a spectrum. On one end is "latent authenticity"; the genre may exist in the "real world," but

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this fact is not highlighted in class either in the teaching of the genre or in the grading of the assignment. Instead, student work is assessed according to teacher goals that are primarily separate from the successful real-world execution of the genre. In the "letter to the editor" example above, I wanted my students to take a position on the events of the play and support that position with quotes from

the text; I also wanted to know if they had actually *read* the play (or at least paid attention in class). Although "taking a position" is part of writing a real letter to the editor, my students could have met my goals by writing a five-paragraph essay, a diary entry, a literary analysis, or a number of other genres. We spent little class time discussing the genre of "letter to the editor," instead focusing on incorporating quotes into text and determining how much evidence and explanation was needed to make a point. Because the genre exists outside the context of school, the potential to draw on the real-world genre features was present but that potential remained latent, unrealized.


On the other end of the authenticity spectrum is "functional authenticity." Not only does the genre exist outside of school, but the use of it in the classroom draws on the genre's real-world qualities. Student writing is assessed according to teacher goals *and* genre goals; in other words, success in the genre (by external criteria) and success in the assignment are one and the same. Our classrooms are *not* the "real world" (as it is generally defined) and so our writing assignments can never possess total functional authenticity, but we can move toward that end of the spectrum when it makes sense. For SciJourn science teachers, the functional authenticity of the assignment was extremely important. Students in these classes could have written about textbook science topics as if they were "news" stories (basically the science journalism version of my "letter to the editor" assignment), but students wouldn't have had to consider the dynamic nature of the field, wade through the varying opinions that exist about contemporary science topics, or choose topics that were truly relevant and interesting. Making the assignment functionally authentic demanded that students approach the writing as reporters, not just as students proving that they read a piece of text.

As the SciJourn example makes clear, considering the authenticity spectrum requires that we think about our teaching purposes more carefully. Teachers choose to use "real world" genres in their classrooms for many reasons⁸: genres can help with student engagement; students can be pushed to think about the variety of ways of knowing and expressing knowledge that different genres represent; students can develop as writers by reading and writing in new genres. If an assignment only

has latent authenticity it may be fine for student engagement or other teacher purposes, but it does not represent “real world writing,” defined in a previous issue of this journal as writing for a specific audience and for a particular purpose (Lindblom, “Editor”; Wiggins). But “real world writing” includes a great many genres; what the notion of functional authenticity also forces us to consider is the differences between these genres—both in our instruction and in our assessment. Really *teaching* genres, and determining how to assess them, requires that we think about more than just what the genre looks like on the page (or screen), but also what the genre requires of the writer. In a thought-provoking article, Charles Bazerman offers a “view of how genre might interact with both learning and development, using a Vygotskian lens, considering genres as tools of cognition” (283). Based on Vygotsky’s position that learning precedes development, Bazerman argues that new genres are first learned—often with difficulty—and only later, with repeated use, do the genres transform a person’s way of thinking and seeing the world: “we then learn not just to talk but to learn the forms of attention and reasoning which the language points us toward. The words of the field become associated with practices and perceptions, changing our systems of operating within the world” (290).

Bazerman’s examples are drawn primarily from the college level, but the ideas are intriguing for high school teachers. By choosing certain genres, and using them in a functionally authentic way in the classroom, we can move our students toward different “forms of attention and reasoning.” Writing as science journalists demanded that Brittany, Trevor, and Kim think in certain ways about gathering information; Erika and Heather thought more carefully about audience and clarity. Had their teachers used a different genre in a functionally authentic way—blogging for younger students, for example, or writing letters to actually send to specific individuals—the students would have undoubtedly emphasized different characteristics of the writing, ones that may not have aligned as well with their teachers’ classroom goals. When functional authenticity is taken into account, different genres—and their associated “forms of attention and reasoning”—make sense for different purposes and in different disciplines.

Implications for Other Work

The SciJournal case, although described extensively, is meant only to serve as an example of what can happen when we consider functional authenticity in our assignments and our teaching. All teachers, whether or not they are part of a defined project or learning community, can start thinking about the role of various “real world” writing assignments in their classes. Designing writing assignments with functional authenticity in mind can make our classrooms into places where students experience the different roles different genres invite them to play. But for this to happen we must first come to know the genre and its values ourselves; determine standards or values that are authentic to the genre and our learning goals; and, finally, assess student learning according to those standards and values. The CCSS may require that we assign more informational writing and argumentation, but not all genres are created equal. The CCSS assert that “students must take task, purpose, and audience into careful consideration” (*English* 41). By considering functional authenticity we, as writing teachers, can do the same. 

Notes

1. The grant ran for three summers; 45 classroom teachers participated. Most (35) were high school science teachers; 4 were high school ELA/journalism teachers; the remaining teachers taught agriculture, psychology, and middle school science. Teachers came from 28 different schools, representing a diverse range of contexts.

2. The definition of science literacy is a contested one (see Roberts for a discussion of the issue); SciJournal defined “science literacy” as the skills students will need to deal with the science-related issues they are likely to face 15 years after high school graduation.

3. The SciJournal standards were developed over a period of years using an iterative process. The original version, developed in conversation with Alan Newman, Laura Pearce, Wendy Saul, Nancy Singer, and Eric Turley, was first offered in 2010. An elaborated description of the current standards can be found at <http://www.teach4scijournal.org>.

4. The CCSS warn that “reading aloud to students in the upper grades should not, however, be used as a substitute for independent reading by students; read-alouds at this level should supplement and enrich what students are able to read by themselves” (National Governors Association, “Appendix A” 27). However, our work finds that even the most accomplished students, capable of comprehending the content of science news articles independently, benefit from RATAs in terms of engagement, content knowledge, and enhanced understanding of the genre.

5. In the second and third years of the project, a portion of each teacher’s stipend was dependent on requiring students to write an article.

6. Teachers had the opportunity to submit their students' writing to the grant's science editor for possible publication in *SciJournaler*, although not all teachers chose to do so. The editor accepted approximately 10% of submissions, none without revision. Yet even teachers who did not submit work to the editor asked their students to write for a teenage audience.

7. All research described in this article was conducted under approval of the sponsoring university's Internal Review Board. Student names are pseudonyms.

8. Genre and education has been the subject of much research over the past several decades. See Bawarshi and Reiff; Dean; Fleischer and Andrew-Vaughan; Lattimer; and Romano for texts that have influenced this article.

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READWRITETHINK CONNECTION

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Interviewing family members or friends can be a valuable way for teens and preteens to learn about themselves and their families. These interviews need not be formal, but a little time spent in preparation will result in a more positive, productive experience for everyone involved as described in this Tip and How To from ReadWriteThink.org. <http://www.readwritethink.org/parent-afterschool-resources/tips-howtos/helping-teen-plan-conduct-30113.html>