

Engaging the Disaffected: Collaborative Writing across the Curriculum Projects

NANCY ZIMMET

The connection between biology, chemistry and my life was quite surprising to me. This assignment taught me things about myself that I wasn't sure were really there.

—Tenth Grade Chemistry Student

As teachers, we were used to working alone. We visited with colleagues in the faculty lounge, talking about our students, our weekends, and the football game. But, with some exceptions, we planned our lessons at home alone. There was a university less than four miles away where we took courses, but we never worked with professors to plan assignments. Our students, too, worked individually in class and completed homework by themselves. In fact, they thought that if they did work with one another they would be cheating. ■ Our story is about twenty high school teachers and university professors collaborating

to initiate writing projects across the high school curriculum. Integral to our assignments was teaching our students how they could help one another to learn and improve their writing. Over three years of working together, we found that our collaboration brought a deeper appreciation of one another and of the work we each did. Our students also came to appreciate the diverse strengths each of them brought to the writing process.

We knew our students were not writing enough, and teachers in every discipline talked about the need for students to improve their writing. An earth science teacher wanted her students to be more specific in writing up lab activities. A chemistry teacher wanted conclusions that logically flowed from data. An English teacher wanted his students to learn that revision meant more than just correcting punctuation. An AP American history teacher wanted his students to realize when they had written an inadequate answer to an exam question, to see when they had not supported generalizations. These teachers worried, too, about students

who struggled to learn material, or who seemed bored and disengaged. Many students didn't seem to have strategies for learning and remained silent in class. We all had many questions about how best to incorporate the teaching of writing into classroom activities.

We began to talk about how to deal with our students' writing problems. Out of those talks over lunch and after school evolved a model that has begun to work for us. Although our work has spanned the disciplines from English to physical education, from algebra to United States history, we have learned the most about how to develop our program from projects in earth science and chemistry. We have developed a series of writing projects designed to be discrete units within courses. This method has allowed us to take into account the warnings of those who have already had a great deal of experience setting up writing across the curriculum programs. Anne DiPardo in *Teaching in Common: Challenges to Joint Work in Classrooms and Schools*, for example, notes that "Schools often furnish little

incentive for collaboration, offering insufficient time, resources, or rewards for doing so” (1). That has been the case for us. We have met after full days of teaching, during our short lunch periods, or sometimes on Saturdays. Our constraints have not been our lack of commitment but, rather, the limits of our energy. By developing one discrete unit after another, however, we have been able to partially compensate for the lack of time and resources. When grades are due, or we know an AP exam is coming up for our students, we don’t schedule the beginning of a new writing project.

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There are several basic principles to which all the projects adhere. We adapted composition and learning theories that stress noncompetitive learning to encourage our students to work with one another. We ask that students reexamine ideas they have about most topics, and we encourage them to question what they read in a textbook or even what they hear from us. In each project, we use a combination of formal and informal writing assignments. An informal task, such as journal writing, helps students use writing as a learning resource. The formal writing assignments—essays, memoirs, poems—are the only assignments graded.

There are similarities, too, in the working structure of each project. High school teachers initiate specific projects, depending on their concerns about the students in their classes. We set up meetings between university professors and teachers. Earth science teachers, for example, asked two geologists to meet with the entire department. During those initial meetings at the high school, professors talked about the research they were doing, and high school teachers talked about their particular interests in the field.

The high school department chair then decided she wanted to pursue a project on fossils and the geologic dating of rock layers. She and a university geologist met again several times to design a unit on fossils that began with readings, continued with a field trip for her students, and ended with reports of findings to other students and invited guests from the community. On the field trip itself, the professor talked with students at each of four stops, answering questions as students looked for Devonian period fossils. Student questions ranged from “What is this?” to “How do you know?” and “What does this mean life was like here?” Although all students kept daily journals, they chose from such final assignments as drawing fossils, describing life in a Devonian ocean, writing a story about a normal day in the life of a fossil, or keeping a diary from the point of view of a fossil.

During the fall of the second year, all the earth science teachers visited the university to meet briefly with each of the geology professors there. After these introductions, high school teachers said they felt more comfortable about calling individual professors. In addition to short phone conversations, teachers requested several one hour meetings with professors on plate tectonics, mineralogy, and hydrology.

As there is a consistent structure for our over-all organization, so are there consistent structures that we have employed in our classrooms. Students collaborate on informal and formal writing assignments through the projects in each discipline, and we build in a peer evaluation system for our teaching.

We use informal assignments to help students focus during lectures, learn how to take notes, participate in class discussions, and understand readings. When the university geologist presented a lecture to our earth science students, for example, we designed several assignments to teach them how to work with one another on taking notes and to help them be as focused as possible during the lecture.

Three days before attending the lecture, we asked students to write questions or comments about extinction, his topic for the morning. The geologist used student questions as the basis for beginning his lecture. About halfway through the period, we took five minutes for students to write another question or state some aspect of the talk they wanted elaborated. When the professor asked for comments or questions after the break, none of

the students responded. When we asked a few students to simply read what they had written on the cards, it became the basis for a lively interchange. Being able to read what they had written, instead of being asked to speak with no preparation, gave confidence to many students who tended to remain silent, even in our smaller classrooms.

At the end of the lecture, we asked students to summarize what they had heard, write one question that remained unanswered, or comment on one aspect of the lecture they had found especially interesting. We discussed some of their questions and comments in subsequent classes. These informal writing assignments helped us tailor the lecture to their interests and helped them focus on what they still wanted to learn.

After the lecture, students typed the notes they had taken and compared them to those taken by other students. Pairs of students agreed on one set of notes, typed them, and taped them to one of the classroom walls. Students moved from one set of notes to the next, making suggestions for additional information, discussing which aspects of the lecture should be highlighted and which were less important. As students justified their choices, they also made links to previous readings and came up with a few more questions.

We often use writing as a basis for discussion in our classes. We might ask students to respond in writing to the same questions we ask ourselves—why some creatures become extinct and others do not, for example. Students write their answers at home the night before class, which we usually begin by asking students to compare what they have written with one or two other students before presenting their ideas to the class as a whole. The written paragraph and small group discussion seem to give even the shyest students enough security to participate more frequently.

Even though our classes may seem to be going smoothly, we've found that we sometimes overlook much that happens. We are so involved with our students and what they are doing, or not doing, that we don't see even the most obvious. Having another teacher observe our class has helped us to see more clearly. Once a teacher pointed out that we were spending much more time with two groups of boys while almost completely ignoring a group of girls. Another observer pointed out that students in the back of the room couldn't see graphics used in a report given in the front of the room. Our fellow

teachers point out things that are so easy to change for the next time, but they are also so easy to miss without an outside observer.

If there are days we feel tired or discouraged, we need only look at our students' writing for encouragement. One of our shortest and most spontaneous projects was also one of the more inspiring. Two of us had just finished Primo Levi's *The Periodic Table*, a memoir as well as a commentary on chemical elements. Sections of the book provided the base for an informal writing assignment, which, in turn, helped students prepare for writing a formal, graded paper.

We asked students to help one another with the Levi reading through such activities as copying a short passage and writing their ideas about its meaning or composing a visual image of one aspect of the chapter. In small groups, students discussed the paragraphs they had highlighted and the myriad ways they had chosen to represent the text. They explained why they had chosen certain paragraphs or why they had illustrated the ideas in a particular way—comparing drawings, charts, or graphs. Each group presented the results of their discussion to the entire class, realizing that their choice of illustrations came as a result of their own background knowledge and ways of reading the text. One student, for example, had chosen to draw a picture of prison walls to illustrate a section of the chapter on gold in which Levi describes a term in jail. Another student had done a pictorial representation of the events leading to his arrest. Still another had given the chemistry formula for gold and discussed its place in the periodic table. By comparing illustrations, students realized that they had each emphasized different aspects of the chapter and could learn about those aspects from one another. Most interesting to us were our students' disagreements and their explanations of those disagreements. Attempting to justify their ideas, they were forced into a more careful reading of the text than they would usually have done.

Our students confirmed Kenneth Bruffee's theories of the value of collaborative learning. In "Sharing Our Toys: Cooperative Learning versus Collaborative Learning," Bruffee writes about classes structured so that students discuss issues first in small groups and then with the class as a whole:

By cultivating students' interdependence, this alternative classroom structure helps students become autonomous, articulate, and socially and intellectually mature, and it helps them learn the

substance at issue not as conclusive ‘facts’ but as the constructed result of a disciplined social process of inquiry. (17)

After two days of class discussion, we asked our students to think about Levi’s statement, “every element says something to someone (something different to each)” (225) and to write one page about an element that said something to them. We did ask them to include chemistry information about the element, but we left the form up to them so they could develop a structure that worked well for their ideas. They could choose to write a memoir, a letter, a dialogue, an essay, a poem—whatever worked best for them.

Throughout the writing and revising process, we wanted our students to see that they could help one another, just as they had with their reading and note-taking assignments. We could have written our own suggestions on their papers, but that would have meant our making the revising decisions for them and their working in isolation.

Once again, links with the university resulted in new techniques for our students. The Writing across the Curriculum Director suggested we have our students write notes to other students in class, asking for help with aspects of their papers that most concerned them. The readers who received those notes would then respond to the specific requests of writers.

Peter Elbow and Pat Belanoff, in *Sharing and Responding*, also point out the value of readers writing letters to writers:

By making it a letter—taking a fresh sheet of paper, addressing him or her by name (‘Dear—’), and speaking in your own voice—you dignify the writing and dignify yourself. It often helps you think of particularly useful things to say and helps you naturally tailor your feedback to that person. (2)

Our chemistry students used this approach by asking their readers for information on scientific concepts or for help supporting a general concept with references to specifics in their text or data collected in a lab. Then, student readers responded. We found that it was important to give time in class to do this so that we could provide guidance as our students begin a new technique.

Although we wish our students would want to improve their writing for the love of it, they have been raised on grades. We did not grade everything they did, but we held them accountable for each as-

signment. Even check marks seem to say, “This is important.” If the completion of an assignment is not recorded in the grade book in some way, students often think it doesn’t matter, so we checked off that students wrote to one another about their papers. Because we wanted to emphasize the importance of revision, we gave our students an “A” if they completed the requirements of writing first drafts, getting comments from two readers, and substantially revising their papers.

The Writing across the Curriculum

Director suggested we have our students write notes to other students in class, asking for help with aspects of their papers that most concerned them.

Their writing showed how collaboration had helped take their thinking further than it might otherwise have gone. One student took a new view of teenagers. She wrote:

Fluorine has the highest electronegativity of all of the elements. This means that, in a bond involving the element, the bonding electrons are drawn closer to the fluorine atom than to any other atom. This occurs because fluorine has fewer inner electrons than other halogens, and therefore has less shielding. As a teenager, searching for completion of the puzzle that makes us who we are, we can assume that if such a thing existed teenagers would have the highest emotional electronegativity. A teenager searches for people to share their lives with. Someone to hold their hand on the emotional roller coaster of development. The bonds of friendship that are formed as a teenager are stronger than at any other period in one’s life, because like fluorine, our “shield” is let down and friends are let into our souls. So, fluorine is a teenager: reactive, searching for something to complete itself, and dependent on what is around it.

Our students had come to a broader view of chemistry and of literature. Their working together

to make sense of Levi's writings and to help one another with first drafts made them see new possibilities for their own writing about chemistry in general and about the elements in particular. As our students have grown more accustomed to collaborative writing assignments, they have also begun to realize there is usually no one right answer to a problem. They have come to see the value of taking different points of view into account.

Our students' writing collaboration is a direct result of working together ourselves. We like talking with one another about our work, trying out new ideas, and seeing our own subjects from different perspectives. We have not attempted to rewrite entire courses but to design units within courses, so other teachers could easily use our materials in their classes. The high school-university link has been good for high school teachers, the university professors, and, we hope, our students. High school teachers keep up with the research in their fields by hearing about the work of individual professors and about new technology. In fields like earth science, we have been able to use the university technology and fossil collections. The university professors who have worked with us see reaching out to the community as part of their job. As one faculty member said, "I don't want to be locked in my office all the time being a scholar, working on things nobody cares about."

We have become committed to collaboration as a model for changing curriculum and for our stu-

dents' learning. The alternatives sometimes appear less time consuming and less complicated. We have all attended excellent workshops but then found it difficult or impossible to adapt the general theories or prescriptions to our classrooms. We plan a lesson alone, only to find problems when we implement it. Starting, instead, with the mutual concerns we have for our students has helped us to focus on them and the specific intellectual challenges they face. Collaboration reminds us of the respect we have for our students and for one another.

Note

The projects described in this article were cotaught with Tracy Suggs, Chris Livingstone, and Shawn McClements.

Works Cited

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NANCY ZIMMET teaches at Vestal Senior High School, Vestal, New York.

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