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AN ECOLOGICAL PERSPECTIVE ON WRITING INSTRUCTION**

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CELA RESEARCH REPORT NUMBER 13007

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Report Series 13007
<http://cela.albany.edu/nygraff/index.html>
2000

ACKNOWLEDGMENTS

To appear in a special issue of *The Elementary School Journal* concerned with children's written language. The authors are indebted to the special issues editor, as well as Robert Gundlach and another reviewer for smart and constructive comments.

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This report is based on research supported in part under the Research and Development Centers Program (award number R305A60005) as administered by OERI. However, the contents do not necessarily represent the positions or policies of the Department of Education, OERI, or the Institute on Student Achievement.

00/03-13007

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ABSTRACT

As teaching argumentative and persuasive writing returns to the classroom, so does the question of how to do so effectively. Process writing reforms over the past thirty years have sought to change the ways writing is taught from drill and practice in grammar exercises to a focus more on continuous writing and revision. Arguing from an ecological perspective on writing development, however, we show that such changes may not be enough. Based on a 9-week observation of a middle-school language arts-social studies block class, we claim that competing demands in modern classrooms can lead to environments that sabotage the teaching of argument. The students in this class, in a unit that included writing an argumentative research paper, wrote "hybrid" texts—argumentative theses followed but not always supported by lists of facts. In trying to explain these texts, we realized that the epistemology fostered by classroom talk and other activities was inimical to the complex rhetoric the teacher was trying to develop in encouraging students to write arguments.

Abundant research on children's writing development over the last 30 years has generated many new approaches to instruction we now know as "cutting edge" or "best practices" in the teaching of writing in elementary school. While often seminal, new approaches have been limited (see Greenwald, Persky, Campbell, & Mazzeo, 1999). First, they tend to focus on the writing of younger children, often having less to say about the writing of older children and young adolescents, that is, middle school or junior high school writers. In addition, they tend to treat writing as a distinct element in the curriculum, thereby missing the more general classroom context of language development, including reading instruction, language instruction, and classroom interaction more generally. This paper takes up the situation of older children writing argumentative essays and examines the value of a broad, discourse "ecology" view of these young writers' experience. More specifically, it examines the puzzling situation of an excellent teacher of writing who encountered unanticipated difficulties in helping her seventh-grade

students produce effective arguments in their written work. In spite of the best efforts of this skilled and dedicated teacher, it was a challenging and not altogether successful effort, and the fact that her students still weren't writing argument despite her up-to-date professionalism became our research problem.

We came to view the students' problems as indicative of something systemic about cutting-edge practice. We learned that it's not possible to understand the problem by focusing only on writing instruction. Rather, it is essential to examine the general culture, or ecology, of the classroom. To do this in this article, we focus our lens especially on classroom discourse and the role it plays in shaping classroom epistemology (cf. Nystrand, 1997). It is our hope that the results of this study will help even the most experienced teachers of writing think productively about their teaching. These results also suggest promising new directions for research on what might be called the ecology of discourse and learning in middle school classrooms.

When Classroom Processes Neutralize Instruction

Sally Martin's¹ multiracial classroom of 31 seventh-grade students was a veritable cornucopia of the best pedagogical innovations in writing instruction from the last thirty years. As a well-prepared, professional, and highly regarded English and language arts teacher, Martin believes that writing is best learned through practice and feedback, and she practiced what she preached: Her students continuously wrote and rewrote; she often responded to drafts, not just final copies, and revision was an expected part of every major assignment. Martin also conducted writing conferences with her students as needed, with additional support for students who either voluntarily sought extra help or whom Martin designated. And small group work was part of a rich menu of activities.

Her students wrote more than reports and themes, and she assigned tasks ranging from ungraded journals featuring self-sponsored entries to library research papers and argumentative essays. She encouraged self-reflection by assigning writer self-evaluations. Martin also used writing to enhance students' understanding of literature, assigning double-column reading journals (Berthoff, 1981) requiring students to summarize their readings on one side and develop interpretive commentaries on the other. To help her students with their library research papers,

she instructed them in procedures for conducting research and library searches, including sources from the World Wide Web. In response to recently adopted state performance standards, Martin regularly sponsored vocabulary-building exercises and competitions to prepare her students for statewide achievement tests. She ably managed a flexible workspace, regularly "annexing" facilities beyond the classroom, such as the school's well-outfitted Library and Media Center. The school provided generous support for students and teachers, and on any given day, 2-4 adults assisted Martin and her students, including a librarian and 2 special education tutors to assist with the mainstreaming of 5 designated students. She team taught her class with a social studies teacher, helping to integrate writing into social studies. In short, Martin was a well prepared, up-to-date, and efficient professional and an ardent teacher of composition.

One of Martin's goals for the unit we observed was to push her students beyond the types of report-writing they had done in earlier grades (e.g., reports on ants). She noted in our interview before the beginning of the unit that her school showed weaker results on persuasive writing in state testing than on other kinds of writing, so she wanted to teach persuasive writing in particular. Martin read a popular college textbook on writing argument, Ramage and Bean's *Writing Arguments* (1998), to prepare herself to teach this kind of writing and supplemented the book's resources with her own lectures and handouts to reach her students.

Despite Martin's goals for this unit, and her efforts to move her students beyond report writing, most of the results fell in between argument and report, as Martin explained to the students after she had read their initial outlines; and the revisions showed little improvement. Students fashioned hybrid texts featuring argumentative theses developed with "factoids," or what Alfred North Whitehead (1959) called "inert knowledge." Like the students Durst (1987) studied, they went through the cognitive strategies for analysis in think alouds, but still ended up writing reports. Carmen's paper on "African Elephants Should Not Be Killed," is a good example. Her thesis is "They [elephants] should be rescued and treated fairly," and her conclusion reads, "In over one-hundred years elephants have not been treated fairly, at all." In between, we mainly learn about elephants: "Elephants are endangered because they keep getting killed for their ivory tusks, meat, and skin," "Resources that are made out of elephants such as: ivory pool balls, jewelry, leather, table tops, shoes, belts, boots, piano keys, combs, brushes, and more," "Elephants are valuable resources in National Parks," and "Even though killing an elephant is illegal and poachers still do it, elephant researchers may need to take the elephants

into captivity, raise them for a few years and put them back into the wild to keep the population up" (see appendix for complete text).

How are we to explain curiously hybrid texts such as Carmen's? Possibly, there is the remoteness of the topic, which promotes elaboration with facts while also reducing the dialogic context for the argument. In addition, we might note the inexperience of the students in a culture where argument is more likely to suggest Jerry Springer than academic inquiry. Yet another possibility is developmental: Because argumentation was new to these seventh graders, their attempts were immature, so that even as they struck argumentative theses, they readily fell back on the familiar style of report-writing they had learned in earlier grades. Nor can we forget that, like most teachers, Martin had to negotiate sometimes conflicting demands, including a large multi-skill-level class; parent, school, district, and state expectations, and, on a day-to-day basis, time—so much to do, so many people to serve. In the final analysis, these complex negotiations configured a classroom epistemology that favored efficient recitation, recall, and a mastery of givens, inimical to vigorous discussion and argument.

When writers construct arguments and move through the iterative processes of composing texts, they transcend givens. That is, they do not just find and report knowledge piecemeal; they weave together information supported by developing understandings. Nor do well-developed arguments ever start, simply, with the author's thoughts and end, finally, with a polished text. Argumentation, especially, is an arduous and dialogic process of response to others, on the one hand, and anticipation of response, on the other. Skilled writers know how to peer over their shoulders, as it were, while pushing on with their own ideas. The writer's interlocutors hence play a key role in the ostensibly private act of writing, contributing to its development by elaborating different positions and by questioning and disagreeing with ideas the writer proposes. Yet these processes are often short-circuited when knowledge is routinely treated, as it is in many classrooms, as a given—fixed, and found in texts (Nystrand, 1997).

In the sections that follow, we demonstrate how the nature of the talk about writing, reading, and other key activities developed and sustained the epistemology of Martin's class (e.g., a vocabulary-building exercise). Her classroom was like many other teachers', only she was especially hardworking, which is why it seemed important to us to understand what was happening in it.

METHOD

Research Setting and Participants

Our study examined the production of several students' research papers in Martin's middle school language arts/social studies classroom. Applying conversation analytic methods to videotape data, triangulated by teacher interview, writing conferences, and student writing portfolio data, we sought to situate their writing projects amidst features and aspects of their particular classroom environment.

In order to study the discourse environment of the classroom as it affected writing, we conducted a 9-week microethnographic study of this multiracial seventh-grade classroom at Midwest Middle School, a school of about 700 students located in a prosperous midwestern city. Our study extended a week to either side of a thematic unit on Africa that included a major research paper. Over the course of our study, we saw that an ecological perspective would be valuable for understanding the teaching and writing in Martin's class for several reasons. The classroom structure was unusually complex, giving us the opportunity to observe the same students in several settings and in interaction with several adults, who either collaborated with or assisted Martin's work with this class of 31 students. They included Ned Philman, a social studies student teacher; Bucky Stein, a special education tutor for Jafari, Rachael, Maverick, and Star; and Sarah Green, the school librarian. Also, because instruction in social studies and language arts was combined in this class, students wrote in both subjects about related topics. Moreover, the school was set up to encourage flexibility of space, and for the research paper unit that we observed, Martin introduced students to methods of computer searches in the Library and Media Center.

For our analysis of writing portfolios, we chose 6 students whose work represented the range of argumentative writing achievement in the class. These included 1 African American girl, 2 Caucasian girls, 1 Chinese American boy, and 2 Caucasian boys. In this paper, although we present findings based on examination of the writing portfolios of all these students, due to space limitation we present close examination of only Carmen's, the African American girl.

Data Sources and Collection

Because of the complexity of our data site, we sought to triangulate data from multiple sources, providing a variety of perspectives on interactions in class and the other sites of instruction. Data sources included videotaped class sessions and writing conferences, audiotaped teacher and student interviews, class handouts and text material, and student writing portfolios.

At least one of the authors attended all classes for nine weeks. Before the first week of the study, one of the researchers visited the school and the classroom three times to observe the general layout and dynamics of the school, simply observing and taking fieldnotes.

Beginning on the first day of the Africa unit, we used two videocameras to record the class every day, starting each day a few minutes before the beginning bell and stopping just after the class ended. One camera, at the front of the room, maintained a wide-angle recording of the entire room and captured most of the students in their seats and in movement around the room. One researcher (or one of several student helpers from the class, most often Maverick or Star) kept the other camera, at the back of the room, focused closely on the teacher leading the class. When the class broke into smaller reading groups, each camera recorded one of the four groups, and the observing researcher took detailed fieldnotes at a third. In addition, one of us met with some students during lunch or after school to help them on their writing for Martin or Philman and attended study halls with students in the class. We also had informal conversations with both Martin and Philman before or after class, sometimes sharing resources on writing. One of us often took the same bus as Philman to school, which also allowed additional opportunities for informal conversations about the class.

After each class session, we collected any handouts that had been distributed, as well as copies of overheads and any student work that was to be handed back, all of which was photocopied and returned the following class day.

In addition to classroom observations, we interviewed Martin about her overall teaching goals and specific goals for the Africa unit before it began, and we interviewed her again after the completion of the unit. In this final interview, which we videorecorded, she viewed taped segments of classroom interaction and reflected aloud on what she had seen. We emphasized that the scenes were meant as reminders of what had happened in class and encouraged her to discuss other aspects of the class as well.

Data Analysis

Environmental features. To probe the environmental features and character of Martin's classroom as it affected writing, we worked with our varied data sources. We organized student writing into two kinds of portfolios, by student and by assignment. We transcribed all of the interviews and selected moments of classroom talk and writing conferences. We inferred themes from each of our data sources, including writing portfolios, classroom discourse, writing conferences, and interview data. And in order to keep our focus strongly on the relationship of writing to its context, we began with the writing portfolios, using the other data sources to corroborate and revise our interpretations.

Environmental dynamics. To probe environmental dynamics, we examined student communicative and epistemological roles set up by assignments, teacher questions and responses, and in the teachers' comments and evaluations written on student papers. We investigated communicative roles by examining the extent to which students needed to go beyond report and recitation roles to roles in open discussion, i.e., the extent to which they went beyond reporting information from textbooks to engage in opportunities to figure things out—in class, face-to-face, teacher and students together. We investigated epistemological roles by examining the extent to which students' tasks went beyond recalling "precast" knowledge to tasks in which they were dynamically involved in constructing new understandings in classroom interaction.

RESULTS

In the following sections, we look more closely at particular activities that characterize Martin's classroom, her lessons about writing, her lessons about reading, and a vocabulary-building exercise that was a frequent part of her class during this unit.

Writing

Martin's panoply of activities, settings, and use of resources clearly suggested a process-oriented writing classroom. Moreover, she carefully described and delineated aspects of the writing process to make it accessible to all of her students and to ensure that all of them could succeed in producing fairly polished drafts. However, this very care in converting the writing process into a series of procedures all students could follow resulted in a treatment of writing at odds with a process model of writing.

To make certain all students could complete their papers, Martin instructed them to write the papers in stages, following a detailed set of instructions, completing checklists, and meeting deadlines. So that all students knew how much they were expected to write and how to arrange their points, their argumentative essays were to have 3 main points identified formulaically as "blue," "green," and "red" and organized into 5-paragraph themes. Worksheets carefully targeted possible problems such as proper procedures, e.g., avoiding preposition phrases at the start of sentences, avoiding repetition, fixing comma splices and run on sentences, not using inappropriate personal pronouns, and careful proofreading. This formalist conception of writing, understood as text features and so completely at odds with the idea of writing as a recursive process unfolding in time, echoes such midcentury curricula as Warriner's (1950) *English Grammar & Composition*, itself the target of many early process critiques of formalist writing instruction, notably Emig (1971).

During the 9 weeks we observed Martin's class, she devoted at least parts of 9 days to whole-class treatments of writing, pointing out formal text features and often guiding students in the procedures, step by step, for the papers they were composing. Martin framed these lessons with the sophisticated ideas about argument she was aiming for students to develop in this fashion:

Okay. . . . We've talked argument. We're gonna now have you do some research so that you write a paper that is an argument, but I . . . wanna broaden your thinking about an argument. I don't want you to think that you necessarily have to WIN the argument in writing. Okay? Remember that . . . you have to have a topic, and your topic has to be focused. In writing, for this particular paper, you have to write an argument, meaning that you have to have some facts to support a thesis or main idea . . . a one-sentence idea that tells what your paper is about. [2/16/98]

In the lesson, Martin worked from conversational ideas about writing and argument that can lead to discussion of rhetoric and attention to audience. She used this conception to help students distinguish useful (i.e., focused, arguable) theses from those that were too general or undefined to work into successful papers. She also related spoken and written arguments by drawing on students' experiences of negotiating bedtimes with their parents:

- Martin: Have you ever had an argument with your parents about how late you can stay up? Have you argued about how late or what time you have to be home? Have you ever had an argument about that?
- Jafari: (Yeah)
- Martin: Okay. And when you have an argument with your parents, do you give them reasons why you think you should stay up late?
- ...
- Jafari: Uh 'cause I'm older
- Martin: Okay 'cause you're older. What are some other reasons?
- ...
- Jafari: Not sleepy
- Martin: What do you mean—not, Oh, you're not sleepy: "I'm not tired, I should be able to stay up when I'm not tired." What's another reason you should be able to stay up?
- Jafari: Um.
- Student: Homework?
- Martin: All right, someone's saying homework, so maybe you could say, "I have homework to do—there's a reason for me to stay up." So right there you have three reasons why you think you should stay up 'til 11. Now, can you take each of your three reasons and back 'em up with more concrete evidence? So when you say, "Mom, I'm not tired," can you give some reasons? Can you say some other things other than "I'm not tired"? Can you support your evidence, or your claims, or your assertions with reasons? This is what you're gonna have to do in writing. Okay? [2/16/98]

Here Martin continues to develop a dialogic model of argument and provides students a concrete example on which to base their thinking about their essays, an example from their own experiences. In Martin's efforts to cover points in limited class time (Heap, 1988), however, the talk fits the ubiquitous pattern of classroom recitation known as IRE (cf. Mehan, 1979): The teacher *initiates* a question ("What's another reason you should be able to stay up?"), a student

responds ("Homework?"), and the teacher *evaluates* the response ("All right, someone's saying homework, so maybe you could say, 'I have homework to do—there's a reason for me to stay up'"). In so doing, she modeled a particular heuristic for them, succinctly paraphrased as "Search for three possible reasons that might support your thesis and stop." Rather than focusing these reasons as elements for exploration and learning, this pattern elicits reasons as statements filling prepatterned slots. Nor were students encouraged by this example to find more than three reasons and choose the best. Instead, they learned to take the first three they could find. Such a plan works against writing as a process and moves it toward a process of satisfying prescribed formats and criteria. Even in this process writing oriented classroom, trying to complete this major assignment in a brief unit resulted in procedures and formulas that made it "algorithmic, or so mechanical that a computer could readily be programmed to produce it" (Emig, 1971, p. 52). In short, the emphasis on formal characteristics of the papers on that day, while unquestionably a necessary step to help her students structure and develop their papers, came to swamp the conversational/rhetorical notions of argument that Martin initially set out. One segment from the next lecture about the papers highlights this point.

I was telling you before that when you write . . . a solid paragraph, you have a main idea here, and then you support it with details, . . . and the more details you have, the stronger that topic sentence is gonna be. Right? Okay. So here's my question to you: If you have your thesis and your assertions chart filled out and you're writing an introduction, can you do this? We will use this as a paragraph. Let's take . . . all the information you have, and you're going to write a draft of your paper. In your introduction, is it possible for you to — have your table top be your thesis statement and assertions one, two, and three? Okay? So, in your introduction, your thesis sentence is either going to be your, generally, it's either the first or last sentence of a paragraph in your introduction. And, in your introduction, you're also gonna state, just state your assertions. . . . So essentially, your paper could be 5 paragraphs in length. It could be an introduction, in which you state your assertions. It could be assertion one and the details, assertion two and the details, assertion three and the details, and a wrap-up, a conclusion. . . . now if you follow that format, which I think is easy to follow. . . . [3/2/98]

Here we see Martin focusing on formal features of text primarily as a way to help students write effective paragraphs. She describes paragraph structure in terms of the order of the sentences—the "format" she asks students to "follow," even using a physical structure as a template, no doubt giving many students a concrete way to think about the structure of a

paragraph. Such a concrete model is likely to have been important to some of her students in writing these extended essays. Yet such an approach reinforces formalist ideas about text, rather than rhetorical, functionalist notions related to purpose, audience, and strategy.

For the Africa unit research paper, Martin taught outlining procedures using tree forms and specifying 3 main assertions with 4 developing statements for each, a formalist procedure closely allied with 5-paragraph themes involving an introduction, three main points, and a conclusion. While this model gave students some idea about how to proceed, students with more or less than 3 main points were simply out of luck. Before their independent work in the Library and Media Center (LMC), Martin made certain students knew how to find information by first asking the librarian to give them a lesson on conducting searches using the library's databases and then quizzing them on procedures including computer searches involving boolean logic and use of the card catalog. The side effect of the close attention to procedures that allowed students to write their papers in the time allotted was a largely formal conception of writing.

Martin's comments on student papers also invited closure rather than dialogue and worked against a rhetorically complex epistemology. She sometimes responded to content, for example responding conversationally to students' journal entries and, in more formal papers, prompting elaborations to clarify and enhance description. More typically, however, she focused on conventions of spelling and punctuation more than content. She routinely queried unclear words and statements in drafts while marking final copies for spelling, punctuation, and form. We observed ample uses of scaffolding in which Martin sought to move students towards her desired objectives by striking a balance between what her students could do (their actual developmental level) while providing support for what they were not yet able to do (potential developmental level). She sometimes suggested alternative phrasings and revisions intended to get students to think as writers of fiction, responding to a story by Cara, for example, "You could start with the action—Angela getting revenge on Amy." She also assigned writer self-evaluations with prompts concerning "what you liked and did well," selection of leads, descriptive detail, inclusion of vivid adjectives and verbs, and use of figurative language. For students she sensed to be bright and literary, she could even share features of literary theory, for example, to Cara: "You have feelings about how the author created (or failed to develop) certain parts. This is called *interaction* between reader and text." Such comments, however, were rare. More typically

she queried unclear words and statements in drafts while marking final copies for conventions of spelling, punctuation, and form.

That Martin's comments moved towards closure rather than opening dialog became apparent in the ways that students revised their Africa research papers. One student in particular, Kim, seemed to expect simply to be able to change what Martin suggested she change and have an A paper. She thought of revision as a process of pleasing Martin, of complying with Martin's directives, rather than improving her paper. That this did not have the desired effect (she received and was disappointed by an A-) suggests that Martin's idea of a good paper differed from compliance with her instructions, and that she treated revision as the process of creating new essays, to be evaluated as such. Part of the disagreement between Martin and Kim stemmed from what Kim saw as contradictory responses to her draft and the final paper. Because Kim did not hand in the draft along with the final, Martin did not have access to her original comments. The fact that she mentioned this lack of access in the interview suggests that she might have responded differently with the draft in front of her, and that compliance may very well have been a criterion for success.

Reading

In reading as well as writing lessons, the conflicting demands of teaching students with multiple skill levels, classroom management, limited time, and giving many students attention may lead to epistemologies inimical to argument. This seemed to be the case in Martin's class of 31. In order to hone their reading comprehension skills, students did a great deal of summarizing. In one assignment on African folk tales, Martin had students summarize and analyze the tales they had read, but she did not have time to respond to them or discuss them, partly because grades were due and time was short. Though students had to comprehend, summarize, and analyze to some extent in order to write these, Martin marked them simply as "submitted" and wrote no comments about them at all. Thus, these "analytic" reports served almost entirely as a bookkeeping task. For a poetry analysis worksheet, fewer than half the points were assigned for issues related to content: 20 points could be awarded for including basic information (e.g., title, author), turning in a photocopy of the poem, and using correct spelling, punctuation, and

grammar; only 15 points could be awarded for thorough answers, which were marked down for any sentence fragments.

In other reading activities, however, Martin did teach the types of thinking she wanted students to implement in their written arguments. For their novel reading groups, Martin required students to keep double-column reading logs summarizing the narratives in one column and assessing the importance of events and characters in the other. Here's how she explained this task to her students:

[T]his is what things I personally thought about the book, and you can say, "Oh, this book is awful—I don't like it, I'm bored, I can't relate to the characters." You are certainly free to say whatever you honestly feel about the book, so just make sure you kind of back it with why. Don't just say [it's not a good book]—that's not enough. . . . I wrote, "Dear whoever-I-was-talking-to, Things must have been awful, This is hard to read, Awful for that boy to have run away. What do you think he is hoping to find in the city? Is he going to meet someone?" [1/27/98]

Martin's description of this response as "things I personally thought" could encourage students to make arguments about the text. In fact, by telling them that they should "make sure [to] kind of back it up with why," she encouraged them to build arguments about their reading or their responses to the reading. However, what she modeled for the students suggests a different kind of response. Instead of presenting a claim and supporting it, she presented personal responses and questions that could lead to discussion but not reasoned debate.

Students were also asked to do similar writing in "snapshot" tests requiring them to respond to a text Martin read aloud in class. To explain the task, she showed them an example of analysis and argumentation involving making and supporting claims, and she read aloud a portion of a former students' test, explaining what made it good:

That's called inferential comprehension—it doesn't, it didn't say it in the book—okay—so she goes beyond literal comprehension, which is what the printed word means, to read like the character's mind. But she doesn't only say what the character might be feeling, she tells *why* she thinks the character is feeling that way using concrete examples from the book. . . . For you to get an A, I want you to make sure you go beyond that literal comprehension—what the words in print say—to analyze and think about what the character might be thinking and feeling and why. [1/27/98]

Here emphasizing the importance of supporting contentions with evidence, Martin highlights reading and writing strategies appropriate to argument. Yet if we look closely at the normal conduct of class, we find a very different situation. Martin said in an interview that one of her priorities was to make certain that as many students as possible had the opportunity to be heard, and as a result, student comments in class were typically brief, as one might imagine in a class of 31, as the teacher moved on, usually with a new question, to other students. While such a strategy allowed many students to speak, it easily shortchanged opportunities for argumentation. The following transcript provides an illustrative example:

- Martin: Seepho. Yesterday it didn't really say what he was feeling . . . but just based on what we read yesterday, how do you think this kid was feeling, and why do you say that? Chris?
- Chris: Neglected by his family?
- Martin: Okay. And what gives you that idea?
- Chris: Um because his father was (wasn't nice to him), or he came or his mother and his stepfather was like real mean and so he decided to leave.
- Martin: Okay. Okay, Brett? [1/27/98]

Here we see another opportunity for students to articulate argumentative thesis statements in class. Martin asks them to go beyond their reading to interpret the text for what it offers about the characters' feelings, and she asks students to justify their claims. Chris makes a claim, and Martin asks for his reason, but that's the end of it. There is no uptake; rather than beginning a discussion, Martin quickly moves on to get a new answer from Brett. Thus, while this brief exchange might have modeled the process of supporting an argumentative claim supported by a reason, the competing demand to allow many students to speak appears, in the end, to prevail.

Vocabulary-Building Exercises

Demands and materials developed outside of the classroom can also complicate teachers' attempts to teach argument. At the request of her school language-arts coordinator, Martin had recently begun regular use of a competition vocabulary-building strategy called Word Masters.

In doing so, she adopted the materials developed for that competition and therefore imported into her classroom the epistemology latent in the materials. An excerpt from class interaction from one of these activities helps us understand the fixed character of knowledge in these materials as it found its way into Martin's class.

In this exercise, Martin is using an overhead transparency copied from a workbook on vocabulary-building strategies, and the students had attempted to complete the listed analogies. Her overhead includes the workbook's answers. We begin our examination as Martin refers to the overhead, saying, "Their answer is X."

Martin: Okay, time's up. Let's see what we did. Some of these, um, I think some of you are gonna be able to explain better than I can, so let's . . . help each other out here. We did number one, right? Okay, did anyone get 'smooth' for number two?

Martin: Saw is to plane: [as cut is to

Hue: [Like I thought it was more . . .

Martin: Now that you know the answer, can somebody explain the relationship?

. . .

Martin: Now, this is one I didn't get to tell you the truth. Did anyone understand that, that can explain it better than me? I know that I have the answer, and it always helps.

When Martin says, "Now that you know the answer, can somebody explain the relationship," she highlights the epistemology of these materials: There is an opening for students to describe the relationship, but the relationship itself is printed and therefore not negotiable. There is a single correct answer to the question. Explorations of alternative relationships and persuasive arguments for alternative relationships, are not left open by such treatment. Knowledge is given; the role of the class is to uncover or recover it.

In their treatment of authoritative sources, Martin is careful to help her students understand that such sources may differ and that knowledge itself is not uncomplicated.

This is one reason why when you do your Word Masters, . . . I suggested that you do it near a friend and you use different dictionaries. . . . [I]t's good to get different dictionary definitions because it broadens your thinking of the word.
[2/4/1998]

Martin here suggests that knowledge is complex enough to require multiple perspectives and "broaden[ed] thinking." It is important to note, however, that these result from reference to different authorities and that, once the variety of definitions is memorized, the relationship among words remains fixed, not open to reasonable reinterpretation.

Classroom Discourse

We have seen above how the complex demands of a large modern classroom configure writing and reading activities that can inhibit the epistemology of argument as extended, in-depth, reasoned exchange. Given the operating epistemology of the classroom as revealed by the transcripts we have examined, it will come as no surprise that additional analysis of classroom discourse in Martin's classroom reveals the extensiveness of its monologic organization. Of the 189 teacher questions we noted, none was authentic, i.e., all were test questions with prescribed answers. In the 9 weeks we observed (in blocks of two 55-minute classes back to back), not 1 of the total 4,950 minutes was given over to discussion in any extended form (we define discussion as the free exchange of information among students and/or between at least 3 students and the teacher that lasted at least a half minute). Martin's talk was peppered with the word, okay (sometimes with rising question intonation). These okays never functioned as questions requiring responses: Martin never paused for students to answer or even nod; she went on with her speech as if they had. These okays served less as opportunities for feedback and more as commands for student attention (Heath, 1978).

Each day, Martin did make time—about 10 minutes at the start of each day—for students to recount their experiences and offer their opinions on local events and national news stories. But because of her desire to make certain every student had the opportunity to be heard and because of the limited time she could allow for such activity, Martin carefully controlled just how open her classroom could be. She controlled the topics of classroom talk, especially in terms of curriculum. She also organized occasional question-answer sessions in the Library and Media Center, inviting students to ask her about issues related to research procedures. Student questions were always authentic, but they never generated discussion. Like most language arts classes in middle school (Nystrand, 1997), the teacher talked, and the students listened.

DISCUSSION: AN ECOLOGICAL PERSPECTIVE ON INSTRUCTION AND LEARNING

Both process pedagogy and the idea of writing as argument imply changes not only in student products but also in the overall teaching practices of classrooms. A few changes in writing instruction, while important, may not have the desired results if the dominant epistemology of the classroom derails the instructional goals for writing. Looking closely at Martin's classroom shows how complicated it can be to make these changes. Recall that Martin assigned continuous writing, she responded to drafts as well as final copies, she conducted regular writing conferences, made effective use of small groups, and taught a diverse range of genres, from ungraded journals to argumentative prose. On any measures of professional awareness and commitment to the standards of process instruction, Martin surely scored in the very top percentiles. Yet her students' efforts at argumentation persistently stalled, as they fell back on mastered skills in reporting given information rather than configuring it into effective rhetorical use. We contend that an understanding of this state of affairs is available only by looking across all the modes of language activities—writing, reading, and classroom discourse—to assess the learning environment constructed by their use, which is to say, the ecosystem that the interaction of these several systems generates.

While many such school writing tasks have been examined on their own terms (i.e., writing as writing), such a narrow focus clearly fails to account for the development of writing in the context of reading, classroom discourse, and other activities taking place in the classroom. Yet school writing is typically but one part of an elaborate network of roles and activity systems in any given classroom context. Appropriately situating writing in the larger discourse environment of the classroom suggests a number of "ecological" issues. Although previous studies have documented important parallels and relations between the development of writing and reading (e.g., Lerner, 1995; Rosenblatt, 1978), most research on writing and reading has in fact tended to focus on either writing or reading, not the two in interaction. An ecological perspective on literary development has the potential, we submit, to appropriately situate writing development amidst not only reading but also classroom discourse and other activities within a given class.

Ecology works on the assumption that a given ecosystem (plant, animal, or human community) develops a unique character by accommodating stable relationships among its members in order to adapt to those forces acting on it from adjacent domains and beyond. As

they adapt, ecosystems each develop a unique character, coherence, and stability, promoting idiosyncratic activities and supporting related participant roles, which, in human societies, reinforce the participants' expectations for each other, generate a sense of community, and shape the culture of the group. An existing ecosystem conservatively exhibits inertia, tending to endure until significant change in the external environment pressures the ecosystem to adapt (leading to ecological evolution).

Classrooms differ, of course, from traditional, biological ecosystems in that they are discontinuous. While traditional ecosystems are stable entities, students and teachers come and go in classes. Despite this, participants exploit the physical and symbolic resources available to them so that we may understand classes as continuous systems. As a social unit, then, a given class of teacher and students is structured by a network of pedagogical roles and relationships and instructional activities. In any classroom, this network is sustained principally by the fact that communicative roles are reciprocal, which is to say, the role of teacher, as question-asker, for example, entails the role of student as question-answerer (Nystrand, 1997; Schegloff, 1972). Many of these resources are institutional; for example, teachers generally have the right to ask questions and expect answers and to nominate students either to answer or ask questions. As Erickson (1996) notes, these resources are valued and the source of much competition in the ongoing interaction of the classroom.

The pedagogical character of the classroom ecosystem is sustained, moreover, by the fact that participant roles in classrooms are also epistemological: The questions teachers ask, the tests they give, and the responses they make to student answers, writing, etc., all function to establish what counts as knowledge in their classrooms (Nystrand, 1997). For a fuller perspective on the ecology of literacy, see Barton (1994).

As we have seen in our look at Martin's classroom, it is the combined force of writing, reading, and classroom discourse, all working together to shape the learning environment of the classroom, that no doubt accounts for the difficulty of Martin's students with argument. An ecological perspective on instruction and learning highlights this interconnection among activities and the difficulties of changing one activity without revising most of the others as well. Clearly, effectively teaching writing as process and writing as argument requires teachers to radically and comprehensively develop sophisticated ideas about the nature and sources of knowledge and the role of language generally, not just implement a series of cutting-edge lessons

on writing. Classroom discourse has the seminal power to shape and maintain classroom epistemology. Conflicting demands on teachers' time, energy, and limited resources can also readily work against the use of the most innovative and creative teaching strategies considered on their own. It is through an ecological analysis of Martin's class related to these themes that we begin to understand how even skillful teaching that does not incorporate such changes in philosophy can yield superficial results.

In all of the activities described above, Martin and the students shared mixed messages about the nature of knowledge, language, and writing. Although Martin asked her students to write arguments that came from making their own interpretations of the materials they collected, she discussed writing merely in terms of form, and her students mainly learned argument as a matter of text elaboration, i.e., information and details, not always related to claims. Although arguments, broadly conceived, involve conversations and making knowledge, her students primarily encountered models of solitary utterances that were not taken up into an evolving discourse, and knowledge was treated as fixed, i.e., found rather than made. What our observations of Martin's class reveal is that effectively teaching rhetoric and argumentation means more than adopting innovative strategies. Instead, it means modifying one's ideas about knowledge and writing and examining all the activities of the classroom for the resources they offer students for developing rhetorical skills.

ENDNOTE

1. The teacher and her students all chose their own pseudonyms, which we use in this article.

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