

Reading, Writing, ... and Arithmetic?

Dan Sussman

A problem-based instructional approach borrowed from math can pay dividends in an English class, too.

Don't forget to show your work!" I said. I think I may have cackled. "Every step in your calculations!"

My students were not doing math, and I'm not a math teacher. They were doing a close read of literature, and I was goading them with reminders that I had set up this English class just like one of their math classes. I was trying to be funny, yes, but my reminders were intended to be thought-provoking, too.

This experiment in approaching literature through a mathematical lens was prompted by a professional development activity I undertook with a group of four colleagues. We had decided to investigate the teacher's role in a student-centered classroom. One of our ideas was to observe one another teach, and I observed the chair of our math department.

Our math teachers had been practicing problem-based learning for several years. Their students spend most of each class period attempting to solve complex mathematical problems, both alone and collaboratively, and then explaining and discussing their solutions. The teacher observes and supports. The traditional notion that the teacher needs to demonstrate a method before students can practice it by solving problems is, for the most part, discarded.

I had been aware that this was happening in our school, but only vaguely. In truth, the main thing that had brought it to my attention was complaints from students and parents, who were worried that the approach would not be as effective as traditional methods. But as a reform-minded and progressive educator, I was instinctively sympathetic to what the math department was trying to do. I appreciated the fact that they were putting students at the center of the classroom.

Mathematical Inspiration

The math class I observed, which focused on basic trigonometric functions, was inspirational. What struck me most was the pace of the class. Fifty minutes were spent on only two or three problems. Students sat in large table groups. After greeting them, the teacher put a math problem on the board, and the kids started working on it. Many began by working silently in their notebooks and with calculators. A few immediately started talking to others at their table. The teacher wandered around the classroom, asking questions about the work shown in the kids' notebooks and responding to what he overheard from their conversations.

How, I wondered, could I include this kind of teaching in my English classroom? What would need to change in an English class to replicate this emphasis on depth over breadth? At first my thoughts were large-scale—how could we modify the English syllabus to create all this extra time? But then I turned my attention to the small-scale. What aspects of this math class could I adapt and use within a single English class period?

Reading Fiction like Fractions

At the time, I was teaching my first elective English seminar, a class on Jewish literature. I was a little more than halfway into a semester of guiding juniors and seniors through an exploration of short stories, poems, and novels written by and about Jews and exploring Jewish identity. After a brief introduction to Jewish faith and law, including some readings of the Torah and Talmud, we had worked our way up to Cynthia Ozick's Holocaust short stories "The Shawl" and "Rosa."

I decided to start my "math-based" lesson by identifying a problem in these pieces. The math class I'd observed had been problem-based, so my English lesson would be, too. I looked over the previous night's reading. Rosa, an elderly

Holocaust survivor living in Miami, is getting to know a man named Persky, a Jew also from Warsaw who got out before the war. Persky is hitting on Rosa in a laundromat. At one point, she says to him, "My Warsaw isn't your Warsaw."¹

The problem I would pose to my students, I decided, was to figure out and explain what Rosa meant by this. What is the difference between her Warsaw and his Warsaw? At the time, it seemed like a good comprehension question, neither too deep nor too shallow, that would reward close reading and perhaps lead us into a broader discussion of themes. I didn't realize what a well-suited question I had chosen.

When I introduced this lesson, I was upfront with my students that we were trying something new and math-inspired. The idea, I said, was to shake up their routine thought patterns and dig a little deeper into what they were reading. I wrote the question on the board and then gave them time to work on their own, on paper. I told my students they could consult with one another, but reminded them to "show their work." Beyond my insistence that they write something down on a piece of paper, I was purposefully vague about what showing your work might mean. I was curious to see what approaches they might take. They spent their time paging through the book, rereading, and jotting down notes, mostly quoted evidence and abbreviated explanations of what they had gleaned from each quote.

The next step was for them to present their answers. I asked for volunteers to show their work on the board and explain their answer to the class. I hoped that what they put on the board might be textual evidence presented in some graphically meaningful way, perhaps with arrows or some kind of visual hierarchy indicating the structure of their argument. But again, I left it up to them, and the first volunteer just wrote fragments of a couple quotes on the board and argued orally that "My Warsaw isn't your Warsaw" referred to the fact that Rosa had experienced Warsaw during wartime, whereas Persky hadn't. Though it was an insightful interpretation, this wasn't the right answer. It was true that the two characters had experienced Warsaw at two very different times, but in this conversation, Rosa is referring to something else.

Other students raised their hands, wanting to correct the presenter, but I insisted that they instead present a new solution at the board. What I wanted them to share was not so much the answer as the thought process that had brought them to that answer.

The next student presented the correct answer: Rosa was talking about differences in social class. As an upper-class, largely assimilated Polish Jew, Rosa knew a Warsaw that was very different from his. She imagined Persky, rightly or wrongly, as a poor Jew, and thus in her estimation he was coarse and uncultured. She had been the very opposite. But the student presenting this solution rushed things. He was right, but he had not marshalled his evidence clearly. It took several minutes of back-and-forth questioning and a close examination of the three pages surrounding the original quote to convince the entire class.

A New Way to Think Critically

Earlier I wrote that my goal was to create an English lesson with the same deep structure as the math class I observed, not just the same window dressing. I'd like to highlight the three structural qualities that I believe link the two lessons at this deeper level. I arrived at these three by considering what was unique about this English lesson compared to the way English classes are usually run. In other words, what genuine value-add was I getting from the problem-based learning math approach?

The first parallel is that, like my math colleague, I gave the students time to work on their own before sharing their answers. Such a practice is not unheard of in English classrooms, but I think the common tendency in language arts is to go almost directly from questions to answers. Seminar-style discussion is in many ways the default format for an English class, and in that kind of discussion, silence is usually brief and sometimes even awkward. The expectation is that there will be a constant give-and-take of opinions. My lesson was different. The students worked for a solid ten minutes on their answers. This kind of reflective work, I've found, can get more students engaged, better accommodate a range of student abilities and personalities, and push students toward deeper thinking, both by giving them the time they need and by acting as a reminder that literary texts are seldom simple.

The second parallel is that I forced students to present their answers, not just speak briefly from their seats. Again, this is not how seminar-style discussions usually work. The presentation format encourages students to craft an argument with evidence. In discussion, arguments tend to be attenuated and fragmented. Reasoning and evidence may get shared, but often in bits and pieces from various speakers as the discussion develops. Presentations force students to be both better listeners and more strategic thinkers.

The third commonality with the math class is that we were working with a question that had a right answer. This is rare in English classes. Most of the literary questions worth discussing and writing about are open-ended. We want to train students to recognize better and worse answers, more interesting ones and less interesting ones, more convincing ones and less convincing ones, but the strict sense of right and wrong that exists in high school math doesn't usually exist in literary interpretation. I'm generally a big fan of my content area's bias toward open-ended interpretive questions, but critical reading isn't a matter of "anything goes," and sometimes students need a reminder of that. English teachers hear crazy misreadings all the time. Right answers, if they're the text's right answers and not just the teacher's, can help ensure language arts remains a rigorous and logical discipline.

The Challenges of Literary Problem Solving

I wouldn't want to do this kind of a lesson every day. The strength of this method is the way it complements and balances other teaching methods, especially discussion. And it's not without its flaws. I got lucky with that first question. It turns out that literary questions with right answers are often too simple; most of them end up being basic comprehension questions that don't work with this method. They're just not complicated enough to count as genuine "problems." In fact, as I've worked on refining this instructional strategy, I've had occasion to worry that for our most talented students, all literary questions with right answers might be too easy. Wasn't there at least one student in my class who knew at a glance that Rosa was talking about social class? Wouldn't the whole exercise seem boring and misguided to her?

But teaching an 11th and 12th grade poetry class this past semester has given me new hope. Many great poems are perfectly suited to be treated as "problems," and they work well for a wide range of students. The problem to be solved isn't necessarily a poem's deep meaning, which shouldn't be taught with "right" answers in mind; it can simply be the surface-level meaning. Who is the speaker and what is their situation? What are they describing? What actions occur?

With much poetry, basic comprehension questions aren't so basic. And although there is room for a diversity of interpretations in a poetry classroom, even on this surface level, there is also a need to identify and discard misreadings. Most English teachers could attest that the wackiest theories we hear tend to be in poetry discussions. And it does more harm than good if the teacher simply shuts down or dismisses the wackiness. Better to let the students argue it out using evidence.

For example, there is a poem by Mark Jarman called "Descriptions of Heaven and Hell" that I've taught many times. The first stanza reads:

The wave breaks And I'm carried into it. This is hell, I know, Yet my father laughs, Chest-deep, proving I'm wrong.
We're safely rooted, Rocked on his toes.²

What is the father doing to or with the son or daughter? This is an introductory-level poetry problem, a good starting point for many classes. For some readers, it's too simple. For others, it's tricky and divisive. Many students get stuck imagining the father throwing his child into the ocean. The hyperbole of "And I'm carried into it," exposed by the later correction of "We're safely rooted," escapes them. Some students don't imagine a beach scene at all.

Scratching the Surface

As I mentioned, the first thing that struck me about problem-based learning math was the slow pace. Problem-based learning literature is no different. At best, you could finish two rounds of literary problem solving in one class period. The process is slow partly because of time set aside for individual work and presentations and the insistence on arriving at a correct answer. But another reason it's slow is that comprehending literature, reading carefully for deep understanding, is a challenging and complex process.

Of course, the problem-based learning approach can be made even more broadly applicable in English classes if used with more open-ended interpretive questions. In other words, teachers can get rid of the "right answer" requirement and still use problem solving in their lessons. They could still go at a slow pace with a focused question, give students ample reflective time to craft a response, and require them to present their responses. But I wouldn't want this to totally supplant the full "right answer" method that I adopted in my classroom. There's a shock value to the full method (and to a playful emphasis on the math parallels) that I've found extremely valuable. It's an engaging hook as well as an important corrective to common misconceptions about literary thinking.

Overall, my literary problem-based learning method only scratches the surface of what is possible when it comes to a problem-solving approach in English or language arts classes. Again and again, I've been reminded that so much of what might seem deeply traditional when it comes to studying literature, including writing assignments and class discussions, can and should be implemented in a cutting-edge way. As I've grown in my practice, my aim is to make my classes all about student-centered problem solving. The method described here is actually fairly teacher-centered compared to the full spectrum of practices I've experimented with. The point is to make my class a more intellectually rigorous and exciting place. For the most part, that means students don't need to worry about my interpretation of a work of literature. But, every once in a while, they do.

Endnotes

¹ Ozick, C. (1990). *The shawl*. New York: Vintage Books.

² Mark Jarman, excerpt from "Descriptions of Heaven and Hell" from *Bone Fires: New and Selected Poems*. Copyright © 1981, 2011 by Mark Jarman. Reprinted with the permission of The Permissions Company, Inc., on behalf of [Sarabande Books](#).

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