

## Broadening Perspectives

As a student, I always enjoyed math class: discovering patterns, solving puzzles, finding a strategy that lets me know I am right. Other subject areas frustrated me, because I felt like I couldn't use my brain to be "right", because either I felt it was only memorizing facts, or there was some mysterious creative talent that I was unable to access. As I have become a teacher, I have realized that these are exactly the views many others have of math class. In Jo Boaler's What's Math Got to Do With It?, she shares how students and professors each describe what math is. The students say that math is about "numbers" and "lots of rules," while the mathematicians call it "the study of patterns" and "a set of connected ideas." This difference in perspectives results from a disconnect between "school mathematics" and true mathematics, where traditional teaching methods present an image of mathematics as a set of isolated rules and procedures. Hence, my future goals revolve around shifting perspectives of mathematics so that it is accessible to all students, meaningful through its applications to social justice, and grounded in authentic problem-solving. Through these goals, I aspire to shift and expand perspectives of what it means to be doing mathematics and what it looks like in a math classroom.

### 1. No Such Thing as a "Math Person"

A common perspective is that a student is either born a "math person" or they have no hope of mastering the subject. Kids learn this message from a young age, passed on to them from parents, neighbors a few years ahead in school, and even teachers (especially those who struggled in math class themselves). Instead, the message that we need to be passing along to students is the idea that mistakes are valuable and actually help our brains to form new connections and grow! Making this shift occur for my students is going to involve being carefully aware of how I am speaking to students, how students are speaking to each other, and the beliefs about math that students bring with them into my classroom. Another factor which I hope to influence is how parents speak to their children about math; never would someone say "I'm not a reading person," yet we hear the same about math at home, on television, and in the media. A tool I recently discovered that I would like to implement as a beginning-of-year culture builder is Jo Boaler's Massive Open Online Course (MOOC), "How to Learn Math," for both students and parents to complete together.

### 2. Using Math for Social Justice

Seventh-grade students are the middle child of middle school -- they have matured out of their elementary mindset, but have not yet decided who they are or who they want to be. In this life stage, students see their daily struggles personified in the inequality of the world, and firmly object to injustice on any scale. This quality is exemplified in my DC middle school students, who are constantly enveloped in political discourse and generally fully devoted to the tenets of liberalism. Our goal in doing mathematics is to create the appropriate strategy to attempt to answer these interesting and meaningful questions, not to use a given procedure within an

inauthentic context (as seen in many textbooks' "real world problems"). Math helps us to understand the injustice that is close to the hearts of the seventh grade student, and to better understand our world in the hopes of changing it for the better. Throughout my two years of teaching, I have begun developing my own resources to integrate into our curriculum, but two resources which I will continue to use are Radical Math and Mathalicious.

### 3. Authentic Problem-Solving

My perspective on "application" math tasks traces back to the idea of "authenticity" of problems; does the problem exist because it is a real dilemma to which math can be applied, or was the problem borne into existence solely for the purpose of creating an "application" for a specific skill with a specific solution path in mind? In other words, which came first: the problem or the solution? Students have a keen sense for such "manufactured" applications; if there is no clear authentic application, they begin to ask what value the math has to them in their real lives. What I have realized in my teaching experiences is that for math to feel meaningful, it needs to feel like a tool, rather than a burden. This actually does not necessarily require the problems to be "real world" or to have social justice applications, if the problem is simply interesting to solve. I want to use resources like Illustrative Math and Youcubed's Week of Inspirational Math to identify problem-solving tasks that I can incorporate into the pre-existing curriculum.