Triumphs and Struggles in a Mathematics Classroom

I first met JR two years ago in his 9th grade year when I was student teaching. He was a small kid on a skateboard, Leonardo DiCaprio's Puerto Rican doppelganger. Funny, manipulative, and bright, he was a serious troublemaker, distracted and distracting in the classroom. In his 10th grade year, he doodled through his math class, chatted with other students, smiled a lot and rarely did any math. But he had brief moments of brilliance, unpredictably spouting out articulate explanations for his mental solutions to problems. And then he got held back a grade.

I was a little bit terrified when I saw his name on my roster for 10th grade this year. Students who have been held back are often unsuccessful in their repeating years, powerfully influencing the social system of their classes with negative and disruptive attitudes. JR had been pretty difficult even when he was on track. I was worried.

To my surprise, as the school year started, JR was the delight of our entire class. He was outspoken, clever, and funny. He could be distracting, but he was often a model mathematics student: he worked hard, explained his ideas well, participated in the class discussion every day, turned in his homework, and enjoyed class. He raised the bar for intelligence, participation, and work in our classroom. His attitude and humor brought joy to the mathematics that we explored and brought out the best in me as a teacher. His presence made the classroom a better place to be.

I teach algebra and geometry now at the same small school where I first met JR. New Design High School is a holistic college prep school on the Lower East Side of Manhattan devoted to the success of students whose educations have not heretofore prepared them for college or life in general. Our students arrive at high school terrified of fractions, struggling with signed numbers, unused to homework, and sometimes having forgotten the basics of multiplication and division.

Nevertheless I work to promote discovery, inspire inquiry, and cultivate a deep understanding of the whys of the mathematics we study. I ask my students to develop independence in problem-solving by working in groups and asking each other questions before they ask me. I ask them to discuss and debate their ideas, to justify their mathematical thinking, and explain the mathematical thinking of others. I ask them to be fearless about making mistakes and trying strategies they aren't sure of. It is difficult for them; they want to know if they are right or wrong, they are uncomfortable with not knowing, they get frustrated when I don't tell them the answer right away.

But the result is that in class my students can explain not only procedurally how to solve an equation for an unknown but also why and how they are using inverse operations to do so. They can determine if three given lengths can form a triangle and also explain how the triangle inequality supports their reasoning. They challenge each other to justify their thinking when discussing a solution, they are articulate in their presentations at the board, and their leadership and confidence has created a community in which I am just one of many resources for them in a room full of teachers. My students are empowered to come up with their own ideas, and they literally applaud the ideas of others. They have a good time doing mathematics—which is why those of us who love mathematics do it in the first place.

But also, the achievement and learning I observe in my classroom does not accurately predict either the success my students have on standardized tests, or the kinds of choices they make in their lives outside of school. As the school year progressed, JR's grades fell. He missed school for court dates regarding graffiti charges, failed the first marking period, and ended up transferring to a school in New Jersey. I hope he has found a fresh start there. I hope he finds success. I hope that he brings his will and imagination to his new community. I hope he is one of those popular brilliant kids that make it cool to be good at school.

JR may still fall through the cracks. The work being done in my classroom may not yield success that can be seen in standardized testing. Perhaps my work is not enough, or perhaps the tests are assessing something different from what I am teaching. Perhaps my students' lack of strong mathematics background prior to high school simply demands more time to prepare them. Regardless, I intend to enliven mathematics for my students, inspire their leadership, cultivate their problem solving, and induct them into the community of mathematicians. Whatever JR does in his future, he has been a mathematician, excited in his moments of discovery and brave in his leadership in the classroom. I hope he finds a way to return to it.

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