

## емкость is Great (Or: What I Learned at the Writing Scientists Workshop)

*Jordan Ellenberg*

This semester I did something I've been meaning to do for a long time: I ran a writers' workshop, modeled after the many many fiction workshops I attended in college and at the Writing Seminars. But this one wasn't about crafting a short story that exquisitely limned the emotional landscape of people almost exactly like me and my friends; it was for early-career scientists, and it was aimed at writing the 1000-word general-audience science article, the kind of thing I've mostly been writing since I gave up prose fiction a couple of decades ago.

And it worked! Not thanks to me so much as to the committed, insightful, extremely-willing-to-think-hard-about-craft group of eight students I had working with me, on Zoom, from around the US and in a couple of cases elsewhere.

Why did I want to do this? Because over the years a lot of young scientists have asked me how they can get into science writing and how they can combine it with a career in research. And the answer is not so much "here's an editor you can contact" or "here's what goes in a pitch letter," it's "learn to choose good words and write good sentences in much the same way fiction writers do," or, even more specifically, "learn how to do that in the context of a very particular kind of 1,000-word chunk of prose." And that's what we worked on.

I will probably do this again. It was really fun. And my real hope is that, just as Math Circles went from being a thing a few devoted Russian expats did in Cambridge and Oakland to something that every self-respecting math department runs, there will be Writing Scientists Workshops that don't involve me at all, where groups of grad students and postdocs get together and read each others' work seriously and reflectively and train themselves to be outward-facing scientists.

With that in mind, I wrote a pretty thorough account of how I ran the workshop, what we did, what things might usefully be changed, and what we spent our time talking about, here: <https://quomodocumque.files.wordpress.com/2022/06/wsw-post-workshop-summary-2022.pdf>.

I got a lot of useful feedback from the participants, but maybe my favorite was the student who sent back a

bullet-point list of all the advice about writing I'd given, filtered through her paraphrase. She's a Russophone, and one of the bullet points was "емкость is great." What is емкость? I've been asking all my Russian friends. It seems to mean something like "putting a lot of meaning into a few words." That is, indeed, what the WSW is going for, and it is, indeed, great.



Jordan Ellenberg

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## Math is Just the Beginning

*Mobashira Farooqi*

I am writing to you not as a mathematician. Rather as the National Expansion Manager for the Math Corps, a program that is all about "loving and believing in kids." Yes, we have the word "Math" in our title, and we do teach mathematics, but we are more interested in helping kids realize their greatness. If our kids grow up to be mathematicians, which they occasionally do, we cheer in excitement. If our kids also grow up to be lawyers, artists, engineers, or social workers, we are equally proud, and again cheer in excitement.

The program is about cultivating kids in an environment that is caring, supportive, and safe, and instilling in them the values we think are important in life. Our focus includes helping kids develop their own courage—the courage to be themselves, the courage to do the right things, and the courage to face their fears. We teach our kids that the road to greatness passes through constant failure—and that failure is a natural and essential part of success. We cherish each child that comes through our program as unique, beautiful, and irreplaceable—celebrating individuality and always encouraging them to be themselves.

I was first introduced to this program and its unique culture in 2005 as a shy, but curious rising 7<sup>th</sup> grader. Growing up in Detroit, I attended schools where the majority of

*Jordan Ellenberg is a professor of mathematics at the University of Wisconsin-Madison. His email address is [ellenber@math.wisc.edu](mailto:ellenber@math.wisc.edu).*

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*Mobashira Farooqi is the national expansions manager for the Math Corps. Her email address is [mfarooqi@wayne.edu](mailto:mfarooqi@wayne.edu).*

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students couldn't read well, where we walked through metal detectors every morning, and where many kids had their only meals of the day in the cafeteria. I expected my first day at Math Corps to be similar to the school environment I was used to, and things couldn't have been more different. Math Corps camps are held on college campuses, and the first day I attended the camp was my first time ever being on a college campus. I was greeted at the door by a staff member and found myself sitting alone in the breakfast room before an older student came up to me and invited me to play a game of chess with him. That was the beginning of a great summer for me, the first of six consecutive summers I spent with the program.

At Math Corps, the average student comes in with a pre-test score of around 30% on an exam that every student is required to take, which covers grade-level-appropriate content, and after six weeks of camp, leaves with a score of about 95% on the post-test. I was no different and entered the program with similar pre-test results. Nevertheless, my scores did not improve for three years since I did not have a math teacher in both 8<sup>th</sup> and 9<sup>th</sup> grades. Due to district budget cuts, when the teachers went on maternity leave in September, they were not replaced the whole school year; instead students were sent either to sit in the gym on the bleachers or to the library during that class period. Despite this hurdle and having only six weeks to learn a year's worth of math content, I tested into one of the city's only two magnet high schools and ended up in the highest math class the high school offered, passing my AP BC Calc exam, and scoring a 32 out of 36 on the math portion of the ACT. The math I learned at Math Corps over six summers was helpful in the process, especially in the initial years. However, it was the value of hard work they instilled in me, the constant encouragement I got from them, and the unceasing belief they had that I could achieve something great, that really pushed me to work hard throughout the high school.

When I went to University of Michigan–Ann Arbor for college, I decided to part ways with Math Corps to see if I could strike out on my own. As a first-generation student, and visible minority, I had my fair share of challenges to overcome. Yet I was confident that if I continued working hard and carrying the values Math Corps emphasized, I would be just fine.

Overall, my college years went very smoothly. I learned a lot of new things, made new friends, tried out lots of different things. In addition, I had a couple of jobs, and graduated in four years with a bachelor's degree in environmental science. In those four years, I only have one regret, but it taught me one of the biggest lessons that I carry with me to this day.

During first-year orientation, there was an opportunity to speak with a math professor advising potential majors. Having always enjoyed mathematics and entering college undecided as to what major I would pursue; I eagerly went

to speak to him. After a short conversation, he learned that I grew up and went to school in Detroit. Then he told me very clearly that he thought I would struggle in my math classes, and hence, advised me to pursue less rigorous coursework. Unfortunately, that conversation convinced me not to study mathematics. But it also taught me the inherent power of encouragement and good mentoring, which the math faculty member failed to provide. In addition, I realized how much a person can achieve if they have access to good mentorship, something I found during my time at Math Corps.

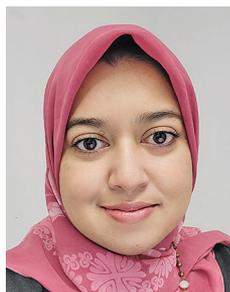
Ten years after graduating from Math Corps, I returned to my old Math Corps family to work there to help the program grow and reach communities across the country. Having worked for various other youth-centric programs in the interim, I realized that there really is no other program that puts kids first the way Math Corps does. Every decision made in the program is a result of asking the question, "What does loving and believing in kids look like in this situation?"

Another fundamental question we ask is "If you love and believe in your kids, what does that look like in terms of a homework policy?" It does not mean that you avoid giving your kids homework; instead it means you give them homework every night. If you love and believe in your kids, what does that look like in terms of the breakfast you serve the kids every morning? It means you serve them food that kids will want to eat, but that's also nutritious. That means bagels and granola bars with fruit, not pop tarts.

This year is Math Corps' 30-year anniversary in Detroit, and in this timespan, we have had over 3,000+ alumni graduate high school and go on to lead fulfilling lives while accomplishing incredible things. We have been recognized by the National Summer Learning Association as one of the best programs in the country and have received countless accolades from the National Science Foundation, the US Department of Education, and many more groups. We currently work for underserved students in Philadelphia (PA), Detroit, Dearborn, Pontiac, Ypsilanti (MI), Atlanta (GA), Cleveland, and Toledo (OH), with several more camps opening next year on college campuses around the country. As we look into the future, we hope to find that kids all over the country and the world are in loving and caring environments, where they are valued for their individuality, encouraged to dream big, treated with kindness, and where humor is seen as essential to every child's well-being. And that is the long-term goal Math Corps works toward.

After reading this whole article, if there are any take-aways, I hope it is this: our endeavor with Math Corps demonstrates that all of our kids are capable of learning when they are in the right environment. It shows that they can master a lot of math in a very short amount of time. We address issues our kids face and collectively work towards helping our kids to overcome all these barriers by giving them a happy and healthy platform to flourish.

At Math Corps, math is just the beginning. It is the foundation of our camp family, and the building blocks of what we do. But we also nurture kindness, integrity, and courage because we believe that perseverance is greater than perfection. We ask nothing less of middle and high school kids than to change the world. And while it may seem lofty, we know their inner resilience. Hence, we show them love in every way, every day. Because love is exponential. Love grows up and comes back to give love again. Love sets an example and knows that to be it, you have to see it. With love, care, and support, every kid can find their inner greatness, they just need someone to believe in them. At Math Corps, we believe in them, and you should believe in all the kids, students, and people in your life too.



Mobashira Farooqi

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## Supporting First-Year Mathematics Graduate Students

*Benjamin Braun, Uwe Nagel, and Erica Whitaker*

#### Introduction

Graduate school is a challenging time, and the first year is particularly difficult for many students. Over the past six years, faculty and graduate students in the University of Kentucky Mathematics Department (UK Math) have collaborated to develop, implement, and interconnect activities

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*Benjamin Braun is a professor of mathematics and director of graduate studies at the University of Kentucky. His email address is benjamin.braun@uky.edu.*

*Uwe Nagel is a professor of mathematics and department chair at the University of Kentucky. His email address is uwe.nagel@uky.edu.*

*Erica Whitaker is a senior lecturer of mathematics and director of service courses at the University of Kentucky. Her email address is whitaker@uky.edu.*

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and resources to support graduate students with special emphasis on supporting first-year students. When we have discussed these activities and resources at workshops and conferences, we have been surprised by the level of interest from other departments in some of these programs. So, our goal for this article is to share the structure and design of these programs along with several challenges we face in our mission to support graduate students. This article is intended as inspiration rather than prescription, since every department will have different needs and resources.

We have focused on the following three areas: (i) academic support, (ii) training and professional development in teaching, and (iii) social-emotional well-being. A critical ingredient for this work has been collaboration among faculty and graduate students. Without this collaborative spirit, this work would not have been possible! For anyone wanting to improve support for graduate students, we recommend working with a team (each of our efforts started with a small, focused team). Also, our efforts fall within a larger context of university-wide initiatives from the Graduate School, Counseling Center, the Center for Support and Intervention, the Violence Intervention and Prevention Center, the Center for Graduate and Professional Diversity Initiatives, and others. It is important to seek out and connect with existing resources at your university. For professional development in teaching, it also helped to collaborate with faculty at other institutions. We sent teams to two of the MAA CoMInDS workshops on College Teaching, and found the community, discussion, and resources there very helpful.

Another recommendation arising from our work is to formally involve graduate students in providing input on decision-making processes for the department. The Math Graduate Student Council (GSC) is the student organization officially recognized by the UK Math Rules of Procedure<sup>1</sup> as representing the graduate students. Our Rules of Procedure require that the GSC provide a statement of views for all promotion and tenure cases, that input from the GSC will be solicited regarding matters of academic policy related to graduate students, and that a representative of the GSC will be invited to faculty meetings. These practices are incredibly important for the health of our department.

Also, it can be helpful to seek external funding to initiate programs; from 2014–2021, UK Math had an NSF S-STEM award<sup>2</sup> to support our “Graduate Scholars in Mathematics” program. Several of the activities and projects described in this article started through this grant and have subsequently been incorporated into our regular graduate program structure.

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<sup>1</sup><http://www.ms.uky.edu/~chair/DeptDocs/rules-191008.pdf>

<sup>2</sup>DUE-1356253