

Know Your Wisconsin Mathematician

Interview with Fe Evangelista, UW-Whitewater, by Benjamin V.C. Collins



Where did you grow up?

Quezon City, Philippines.

When did you decide that you wanted to spend your life doing mathematics?

Not until after I earned my undergraduate degree. My earliest math memory was doing worksheets with exercises like $___ + 4 = 6$, and realizing that you could find the answer by subtraction. That discovery made such an impression on me that I knew very early on that whatever I do will involve mathematics. But I chose to be a chemistry major in college, because I thought that in the Philippines, a chemistry degree would give me better career options. I eventually realized that I hated laboratory work, and I only liked the theoretical side of chemistry, which is primarily mathematics and physics. So even though I graduated with a chemistry major, I decided to go with what I love, and did my master's and PhD in mathematics.

Where did you go to undergraduate school?

Ateneo University, a Jesuit university in the Philippines.

What about graduate school?

University of Minnesota for my master's degree and University of Illinois at Chicago for PhD.

What was the influence of your family on your education?

Both my parents were professionals – mom was a medical doctor, and dad was an engineer – so there was always an expectation that I would go to college. The choice of major and future career was left up to me.

Are there any teachers who had influenced you to become a mathematician?

I went to a high school for math and science – what you would perhaps call a magnet school in the U.S. – so I had excellent teachers in mathematics. In college, Dr. Jose Marasigan and Fr. Ben Nebres were dedicated educators who inspired me to consider a career in higher education. My thesis adviser, Dr. T.E.S. Raghavan, provided support and encouragement, and never doubted my abilities, even at times when I felt I was floundering in my dissertation.

How did you end up at UW-Whitewater?

My first tenure-track job was at the University of Wisconsin – Marathon in Wausau. I loved it there, but at that time, my husband was working in Madison and coming home only weekends. This was fine for a while, but became very difficult once our second child was born. Fortunately, a position opened up at UW-Whitewater, and I was hired in 1999.

What courses do you like to teach?

The Introduction to Analysis course is one of my favorites. The level of abstraction and rigor, together with writing proofs, is new for many students. I enjoy the challenge in developing material and activities that will motivate them to engage with the subject matter, and I'm learning all the time. Also, some of my best students are used to getting A's in math. This is the first course where they struggle and question their ability to be math majors. So, we have these interesting conversations about persistence and growth mindset, as well as what they would like to get out of their education. (Hint: it is not a perfect GPA.)

The Math for Elementary Teachers courses count as my favorite, because what I learned from those courses influenced how I now approach teaching any course. In the beginning, I was always astounded at what students do not know (for example, that $\frac{3}{4}$ can be thought of as $3 \times \frac{1}{4}$), but eventually, I took those instances as opportunities for me to become a better teacher. So now, when preparing for any class, I ask myself several questions: What do my students know? How can I connect what they know to the day's lesson? How can they demonstrate their understanding?

Over the years, did you find that teaching of mathematics changed?

I think that there has been a slight shift from a teacher-centered format to one that is more student-centered. I think more and more instructors are incorporating class activities together with a lecture, and experimenting with different assessment methods. Technology has impacted course delivery, with mathematics courses being offered in different formats (online or hybrid, flipped classroom), and with tools such as adaptive learning and online homework systems. Technology has also affected what mathematics is taught with some traditional topics de-emphasized because of the availability of calculators and graphical devices. There is definitely a move away from the College algebra pathway, and increased enrollment in courses such as Quantitative Reasoning and Statistics for general education and pre-professional programs.

How do you see the teaching of mathematics changing in the future?

I have some observations, but no answers. As part of the Math Initiative on our campus, we have been discussing what quantitative skills students need for life and careers. Responses from other departments point to skills that are taught in middle school, such as percents and proportional reasoning, topics that we do not think is college level mathematics. Already, the statistics pathways option to College Algebra reflects what employers and professional programs want, and mathematicians are generally not equipped to teach statistics well. We claim to develop our students' critical thinking and problem-solving skills but among non-mathematicians, even in STEM departments, there is some skepticism whether we are doing so. Some people have proposed that instead of mathematics, courses in data science and coding can provide authentic experiences in problem-solving, critical thinking and communication of quantitative results. I think these trends will impact mathematics education, but I do not know exactly how teaching will evolve.

How were you involved with the MAA over the years?

I was in the first group of Project NExT fellows and was a Project NExT mentor. I try to attend the annual MAA Wisconsin section meeting, and have given talks.

What do you think is the best part of being a mathematician?

To be able to live in the mathematical world - to be able to speak the language, and engage with beautiful, elegant, and useful ideas.

What is the worst part of teaching mathematics?

Assessment and grading. I am not satisfied with the way I assess my students and assign grades. If I want my students to demonstrate their ability to transfer their knowledge to new situations, then they need time to think, make mistakes, verify their solutions, etc., which cannot be done in a 50-minute or 75-minute class period. Also, our workload limits us to types of assessments which can be easily graded. I wonder whether I am encouraging rote memorization, and increasing student anxiety because of the time constraint. I've given some take home exams in upper level classes, but the reality is that sharing solutions (which is not allowed) is a problem.

How do you describe what you do when you are talking to somebody outside of mathematics?

I tell them about ideas that turned me on to mathematics such as infinite series and how the sum of an infinite number of numbers is not necessarily infinite, and then how it can be used to solve problems.

What of your work do you like the best? What are you most proud of?

Working with and mentoring students. As math department chair, one of my priorities was to create an environment so that our math majors feel that they are connected to the department. I would frequently chat with students in the hallways and in the tutoring center. Our dedicated faculty and staff worked tirelessly with students, mentoring students in projects and competitions, providing academic support, and advising the Student Math Association. We saw an increase in student participation, such as attending and presenting at the MAA-WI section meetings.

I am also proud of the way our department seriously thought of our contribution to the general education program and what we could do to promote student success.

What is your advice to college students and new teachers?

To new faculty -- I will pass on what Joe Gallian (UM – Duluth) said as he welcomed the first group of Project NExT fellows. He told us to “find your niche.” Find what you are interested in and think of how you will leverage that to contribute to your department. And I will add that you have to strategize on where to put your efforts and when, because you have to fulfill requirements in teaching, research, and service. Learn to say “no” to demands on your time, but also be aware that sometimes saying “yes,” might open up a whole new direction for you.

To college students -- Do not fear failure. If you don't stretch yourself, and go out of your comfort zone, you will never know your strengths and your limitations.

Who is a Wisconsin Mathematician that you would like to know? Send suggestions for the next KYWM to Ben Collins, collinbe@uwplatt.edu .
