

Reflections of TIME

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TIME 2000 Newsletter

Meet Christine Franklin, ASA's Statistical Ambassador!

By: T. Dayaram (T-23)

TIME 2000 welcomes Christine Franklin as the keynote speaker of the 20th annual TIME 2000 *Celebrating Mathematics Teaching* event on November 3, 2023. As the K-12 Statistical Ambassador for the American Statistical Association (ASA) and a Senior Lecturer Emerita at the University of Georgia, Christine has written numerous policy and research documents and has spearheaded a movement that advocates for statistics education for all grade levels. I had the opportunity to talk with Christine about all of the unexpected twists and turns that led to the path she's on now, and how she plans to equip all students with the power of data literacy.

Q: What made you fall in love with the field of statistics?

When I was an undergraduate in college, statistics was not really a field that you heard much about. I was actually a political science major when I was in school and my goal was to attend law school when I graduated. But, I was taking a lot of math courses because math has always been an interest of mine and I ended up getting a double major in political science and mathematics. It was actually through my political science courses that I started seeing the importance of data as it was used in social sciences. Then, within my math major, they started offering a few statistics

courses – maybe one or two – that undergraduates could take. That was the first time I really started thinking about statistics as a field of study. I then was offered the opportunity to attend graduate school in this area of statistics and so, I often say I made one of the riskiest decisions of my life: I turned down the opportunity to go to law school to instead go to graduate school and study statistics. At the time, very few people even knew what statistics was so I got a lot of looks! But it was the best decision I ever made. Statistics was relatively unknown, and it was known mostly within academic circles. So, it took a little bit of explaining as to what was my interest. My initial goal as an undergrad was to try to combine statistics with policy administration within my political science degree, but that changed once I got into graduate school. I actually became a teaching assistant when I was in graduate school and then I started to realize that I really do love teaching.

Q: What flipped that switch for you?

I just enjoyed working with the students. I was teaching the elementary statistics course which was a new type of course for most students. I found it a real challenge to try to convince students that this was going to be important for their future. It was very difficult to do but I discovered that I really enjoyed preparing for class, trying to think of ways to motivate an interest in the field and then, as I say, the rest is history. Opportunities came along for me to continue teaching after I finished my degree program and

that was where I stayed.

Q: You are known for being a huge baseball fan! What team do you root for? Did your love of baseball influence your love for statistics or was it the other way around?

I root for the Atlanta Braves. I grew up in North Carolina so it was a big deal that we had our own baseball team in the South. It was baseball that inspired my love of statistics. When I was young, I was one of those kids who would memorize the stats on my favorite players' baseball cards. When I was about 12 years old, I started keeping a scorebook for my brother's Little League baseball team. That was when I started scoring games. At the time, I did not recognize statistics as a field of study, I just sort of recognized that, "Hey, it's numbers with sports!" I have a drawer full of score books and I score most every baseball game that I can. I still do it by hand-writing. I do not use an iPad [laughs]. I have always said that the beauty of scoring baseball games is that you are creating memories, and that you could always go back to your score book and relive the entire baseball game.

Q: What changes have you seen within the field of statistics?

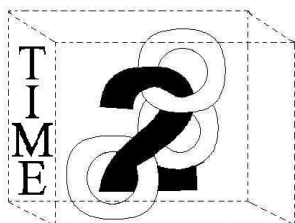
When I started as an undergraduate, what I remember most is that statistics was more about computations – taking a set of numbers or a data set and creating a graph of those numbers, or computing statistics to get to a point where you could run a test. We tended to work with just small data sets and it also tended to be mostly numeric data. We did not work with a lot



Christine Franklin

of categorical data. There was not a lot of technology involved. As far as technology was concerned, basic calculators were starting to be used. As I moved on and started teaching, technology was starting to develop. Calculators got a bit fancier, they got to where they could do more than basic functions so we could rely on technology a little bit more and start to teach our classes more from a conceptual standpoint. We could start bringing in the context more than before. As time went on, technology continued to develop and statistical software began to develop. We were able to teach a class now where we were not spending all our time computing things by hand. We could spend more time on talking about how to design studies and how to collect data. Now, it is a totally different world. With the advances in technology, with the massive amounts of data we have, we no longer use small data sets. We use big data sets, and messy data that we are not collecting ourselves. We use available data that have been generated by the public (including you

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Meet Christine Franklin *(continued from page 1)*

and me) with all of our devices and our personal computers.

What I worry about is that people are going to forget about the reasoning and sense-making skills that go with working with data. Data no longer consist of just numbers and categories. They consist of photos, sounds and images. We are now working with nontraditional data. How do we make sense of that? As facial recognition is used, there are new classification problems. Are people able to ask the right questions about the data that are being used? What ethics are involved with how data are used? We have gone from working with very small data sets and emphasizing how to use mathematics to analyze them to now working with these massive, big, messy data sets.

Q: Even though statistical data are ever present in our society today, some schools and institutions do not consider data analysis to be a fundamental skill, resulting in its absence in certain curricula. What are your thoughts on that?

I strongly believe that being data literate is fundamental to our school curriculum just as reading, writing, and arithmetic are. It is a

part of our world and the success of our students depends upon making it an integral part of the curriculum. We can deny that it should be included at the school level but once our students graduate they are going to need it for the workforce regardless of what profession they enter. They need it to make sound decisions about themselves. They need it to make decisions about finances. I think it is starting to happen. Fortunately, there are now several states now that are revising their mathematics standards. The reason a lot of this finally happened is because business leaders, leaders from post secondary institutions and universities, and community leaders are telling the state departments of education that we need students who have more knowledge of statistics. What has to happen is a change of culture. School cultures can be difficult to shift. It often takes influence from outside forces to start change.

Q: What advice do you have for those who are interested in becoming statistics teachers?

Embrace it! Take as many statistics courses as you can! But, also realize that statistics is

just not an entity on its own, and that it is very important to learn about other areas of study, as well. Statistics is an integral part of other fields. For so long, we wondered, where to put statistics at the school level. Which curriculum or standards should be used? Should it be in the sciences? Should it be part of social studies? Should it be part of mathematics? It ended up landing in mathematics – which is OK with me – but we must realize that you cannot say it is only in mathematics. Science teachers need to have a basic understanding of statistics, as do social studies teachers, health teachers, etcetera. Every subject area needs to include statistics in the curriculum. John Tukey said, “The beauty of being the statistician is that you get to play in everybody’s backyard.”

To learn more about Christine and her work, visit www.amstat.org/education/asa-k-12-statistical-ambassador



Bayside to Ukraine and Beyond: The World-Wide Reach of Larisa Bukalov

By: Ariana Verbanac (T-24)

Ms. Larisa Bukalov is a high school mathematics teacher who has been teaching for over 20 years, since the fall of 1998. She is currently teaching at Bayside High School, where she not only teaches but works to instill a love of mathematics in students. When asked to write this article about Ms. Bukalov, I thought back to the time when I was a student in her classroom. I attended Bayside High School and was a member of the math team run by Ms. Bukalov. She was the first person to recommend the TIME 2000 program to me. What was clear then, and what is clear now, is that she is dedicated to the education of her students, going above what is required of her as a math teacher. Running the Bayside High School math team then was one step, and since then, her step has reached across the world.



Larisa Bukalov

Larisa Bukalov always knew she wanted to be a mathematics teacher. Growing up with her grandfather who was an educator, she was always in schools. Whether it was being taken to a lecture or to a teacher-training session at the teacher college where he taught, she was always

exposed to this career path and followed it, even as she would eventually move from Ukraine to New York. She started attending Lehman College as her English was not strong and the college had one of the best ESL programs in CUNY. There, she learned about the math education program at Queens College (QC) and transferred schools.

While a student at QC, she gave birth to one of her four children. So, while taking care of a newborn, she looked for an easier math class to handle the workload of raising a family while pursuing a career. This led her to take Math 385W. She and her husband looked at the name of the course, *High School Math from an Advanced Standpoint*, and thought that she would be able to handle the workload. On the first day of the course, the professor, Dr. Alice Artzt, asked serious questions and put two sets of problems on the board. Ms. Bukalov was worried she misunderstood a question because it seemed easy. Dr. Artzt sat beside her and told her that she got it right, but then asked how she solved the problem. Why did she choose a certain method and what made her think about going that route? Unable to answer the question, Ms. Bukalov started to get stressed. She recalls debating teaching strategies with Dr. Artzt throughout the course and is glad that they are now good

friends. In the Methods course, Ms. Bukalov met Naomi Weinman who was assisting Dr. Artzt and is now the administrator of TIME 2000. Ms. Bukalov recalls how she would prepare lesson plans and Ms. Weinman would read them and make her revise them 15 times. While this was frustrating, it resulted in better lessons. [Note: Mrs. Weinman claims the number of revisions never exceeded single digits.] After graduating from QC, Ms. Bukalov started teaching mathematics at Bayside High School just as the TIME 2000 program was starting at QC. When Dr. Artzt told Ms. Bukalov’s class about the new program, she recalls that the students were both excited (because they knew it would be great) and jealous (because it had not been available to them). Since that time, Ms. Bukalov has been a great friend and supporter of the program.

As a teacher, Ms. Bukalov teaches a wide array of math classes at Bayside, from Algebra to Calculus, as well as the Math Team that runs school mornings. She has served as cooperating teacher to at least 18 mathematics student teachers from QC. She has presented workshops at TIME 2000 seminars and conferences. She has co-written two books with colleague Bobson Wong, *The Math Teacher’s Toolbox: Hundreds of Practical Ideas to Support Your Students* and *Practical Algebra: A Self-Teaching Guide* as re-

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Voices from the Field: Movina Seepersaud (T-19)

Professors and alumni of the TIME 2000 program, including Dr. Artzt, consistently emphasize the significant impact that teachers have on their students' lives. Personally, the influence of my AP Calculus teacher in high school was the driving force behind my decision to join TIME 2000 and become a teacher. My goal was to be a teacher who could make a difference, even if it was only for one student at a time. Little did I know, my experience with my students would profoundly change my life, particularly in my first year of teaching.

I am thrilled to announce that I recently received the Edyth May Sliffe Award from the Mathematical Association of America (MAA) in 2022. This annual award recognizes middle and high school mathematics teachers who have done outstanding work to motivate students in mathematics by participating in the MAA American Mathematics Competitions (AMC). The award honors Edyth May Sliffe, a dedicated middle school mathematics teacher from California who played a vital role in promoting the AMC in her region. As a first-year teacher at the East-West School of International Studies, I received this honorable recognition for introducing the AMC to my students. What makes this award truly special is that it was a recommendation letter from one of my former students, Fiona Yang, and my mentor, QC's Dr. Mara Markinson, that ultimately led to this acknowledgment. It is a proud moment for me as it demonstrates the impact and reach of my teaching. Fiona

has since graduated and is now studying mathematics at Stony Brook University.

In August, I had the incredible opportunity to attend the annual MAA MathFest conference held in Tampa, Florida. Participating in MAA MathFest was an absolute thrill as it brought together various mathematicians, teachers, researchers, and students from around the world. The conference was filled with a diverse array of lectures, panel discussions, and workshops that allowed me to delve into unfamiliar areas of mathematics and expand my knowledge. There were so many incredible mathematical displays that amazed me, especially the *Polyplane* exhibit produced by Alex Kontorovich and Glen Whitney. This exhibit was unique because all of the shapes in *Polyplane* are polyhedra, with a specific number of faces, edges, and vertices. Each one is positioned in such a way that its distance from the right side of the exhibit is its number of faces, its distance into the exhibit is its number of edges, and its height is its number of vertices. All of the different polyhedra, except one, lie on a single plane within the space, which is a manifestation of the Euler Polyhedron Formula. Walking through the exhibit and observing it from different angles allowed for a unique and surreal experience, blending my passion for mathematics and art.

Attending the MAA MathFest also provided numerous opportunities for networking and connecting with fellow mathematicians and researchers. The reception dinner allowed

me to meet and engage in enlightening conversations with the other Sliffe award recipients. These discussions focused on strategies and tools to enhance the AMC experience for our students. Interacting with educators also provided valuable insights into classroom practices, fostering a collaborative approach to making math more engaging and accessible for students. Overall, MAA MathFest was an extraordinary experience that enriched my mathematical knowledge, inspired me, and enabled me to form connections with other incredible mathematicians and educators. I will undoubtedly reflect on this experience for years to come. As a mathematics teacher, receiving such recognition and acknowledgment from a professional association like the MAA is truly gratifying. I feel incredibly honored that one of my students and my mentor recommended me for this award, and I am so excited to continue the tradition of the AMC at East-West!



Movina Seepersaud

Larisa Bukalov (continued from page 2)

sources for teachers and students, respectively. Ms. Bukalov also teaches math education students at Touro College.

Having grown up in what is now called Ukraine, Ms. Bukalov is greatly affected by current events there. The news about the Russian invasion in 2022 motivated her to look for ways to work with Ukrainian students and teachers to help get the country not only back to where they were before the pandemic and the war, but to start working towards meeting the European standards for education. First, through the Mathematical Association of America (MAA) and in collaboration with Tutoring Without Borders, she developed ways for students in Ukraine to participate in the American Mathematics Competitions (AMC) she offers the Bayside High School students. Through her work, she was able to translate the competition materials. She worked with Ukrainian students, as well as teachers, to identify the skill level of students and to determine how to support them. Ms. Bukalov mentioned how some students in Ukraine are behind their peers due to the war. The deficiencies ranged from younger students not knowing their times table to older ones struggling with writing proofs. To help

overcome this, she put time into several projects. Ms. Bukalov taught Ukrainian teachers how to use and create lessons in Desmos. This would allow them to teach students in person or remotely, while also seeing students work in real time. She also contacted Desmos to rework Desmos Classroom to be accessible to those in the Ukraine. She is part of a team translating learning activities and other features on the site. She has held workshops on a variety of teaching methods, discovery learning, inclusion in the classroom, differentiation, amongst other teaching strategies that are taught in TIME 2000 classes. This work is being expanded upon as she now works with UNICEF and teachers from across the globe to help other math educators persevere through difficult circumstances in order to prevent further learning loss and, instead, see learning recovery.

For much of the work she has done, she was presented with Math for America's *Muller Award for Professional Influence in Education* in June, 2023. She said that she knew it might be coming when Ms. Weinman would ask her random questions such as, "What year did you graduate?" and, "How many

student teachers have you supervised?" the month prior. The phone call from Math for America came during her Pre-calculus class. When she heard the news, she broke down in tears of joy in front of her students, with one student asking what was wrong. Because of the support she provides to her students and educators here and in Ukraine and the resources she has created for world-wide use, the award is well deserved.

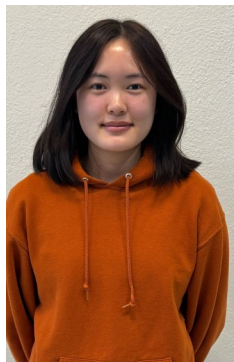
For those who are planning to become teachers and are now in the shoes she was once in, Ms. Bukalov would like to share this: "Do this job if you like kids. If you don't like kids, stay away. You will meet all types of students, some of whom will be challenging, but you need to be there for all of them." She has shown, through everything she has done at Bayside and across the globe, that she cares deeply about the kids, and is a prime example of how one teacher can make a difference.

Visit www.amcua.org to learn about American Math Competitions in Ukraine and how to get involved.



Summer of Fun: Math Camp!

Three members of the TIME 2000 community participated in interesting mathematics programs this summer. Both Jie Yi Chen Weng (T-24) and Jevaughn Leon (T-23) worked at the Manhattan location of Bridge to Enter Advanced Mathematics (BEAM), a mathematics summer camp designed to bring mathematics opportunities to underserved students. Tobi Dayaram (T-23) worked as a mathematics teacher in a consortium school through the *Teaching Experiences for Undergraduates* program to teach a mathematics summer school remedial course. Keep reading to learn what they enjoyed about these programs!



I worked at BEAM as a counselor, and it was an enjoyable and memorable experience! My role at BEAM involved being a travel counselor in which I had to travel with students every day from the meeting point to the school and vice versa to make sure students were safe. This gave me the chance to get to know the students better. Once in school, my duties were being a teacher assistant for interesting mathematics classes, assisting and leading fun activities and tournaments, and supervising students to ensure they were engaged and having fun while learning mathematics.

Working at BEAM exceeded my expectations. At first, I thought I would be only helping teachers and students during lessons, but it was more about building a community, facing obstacles, and making and enjoying moments together. This summer, I changed my mindset about teaching only high school students as I witnessed the energy, humor, and curiosity of middle school students. I am now undecided about which group of students I want to teach in the future, but I am totally fine with either option, middle school or high school. I am grateful for the valuable skills and experiences I gained during this time, and I will carry them on throughout my teaching career.

—Jie Yi Chen Weng, T-24

I was a returning counselor for BEAM and I had another enjoyable experience. As a second-year counselor, I was more involved with the education of the students in their classes and with assisting the faculty members with lessons. I was also able to really connect with and help the students with their mathematical discoveries.

My ability to help students as a student teacher was improved through my experiences at BEAM. I learned how to help students engage with their work, build and encourage their natural curiosity to understand math, and take one area of content and transform it into easy-to-understand bits of information for a variety of students. I encourage anyone who is interested in becoming a math teacher to consider BEAM as a great place to start.

—Jevaughn Leon, T-23



Interested in joining TIME 2000?

For more information, visit

TIME2000.qc.cuny.edu



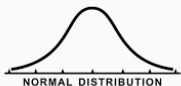
I was a summer school teacher at a consortium school through Barnard College's and American Museum of Natural History's *Teaching Experiences for Undergraduates* program. With a team of co-teachers, I created lessons and taught math to high school students for three hours, four times a week, for three weeks. Consortium schools do not require Regents testing, so we were given the freedom to design a curriculum. As a teacher in the program, I took courses in educational pedagogy and psychology throughout the program, and attended field trips — some for students and some just for the teachers! In addition, I got to work with TIME 2000 alumna Dwaina Sookhoo (T-12) as she was my supervisor who gave incredible tips and feedback to help me become a better teacher.

Participating in this program after taking Math 385W in the spring allowed me to put what I learned into practice. I got to share my ideas with math education majors from other colleges to create fun, exploratory lessons for our students so that they could appreciate mathematics more. This job reminded me of why I wanted to become a teacher in the first place. I also felt more at ease as I transitioned into Initial Clinical Experiences earlier this semester, as I had the opportunity to get more comfortable in front of a class full of students and facilitate discussions. This program also gave my coworkers and me the opportunity to attend this year's regional National Council of Teachers of Mathematics conference — free of charge! The opportunities, relationships, and experiences this job gave me are invaluable, and I'm so fortunate that I was able to find a program like this.


— Tobi Dayaram, T-23

1. What key won't open any door?
2. What kind of music did the pilgrims like?
3. What is a scarecrow's favorite fruit?
4. What do you get when you divide the circumference of a pumpkin by its diameter?
5. Where should you go if you are cold on Thanksgiving?
6. What do math teachers do on Thanksgiving?


Fall Fun Corner



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Happy Thanksgiving!

Answers:

1. A tur-key
2. Plymouth rock
3. Strawberries
4. Pumpkin Pi!
5. To the corner, where it is always 90 degrees
6. Count their blessings

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