



Bridge to Calculus

(...and to a better world)



Raj Jesudason

Director, Bridge to Calculus
Ed. M., Harvard University

Connecting Curriculum and Communities!

- Founded on principles of **Equal Access to Quality Education** as well as a **Spiritual** sense of purpose, **Bob Case Academy: Bridge to Calculus** continues to serve as to be means to achieve quality education and opportunity for our children.
- Through an exploration of **Mathematics and Culture** we want to raise awareness about the often unacknowledged mathematics from around the world, and **Showcase** contributions of very **Cultures** from which our students come through **intentional** programming that marries **Mathematics, Music, Art & Dance**.
- We stand **Committed** to raise awareness of other cultures' assets and plights, the committed to the mission of the BtC program and its students during this trying time.
- We **Welcome** our **Alumni, Students,** and **Community** to share the goals of our program, while raising awareness of the various and rich cultures of our neighborhood. NU faculty, BtC and other BPS students, NU students as well as members of our community stand together to redefine our future world.



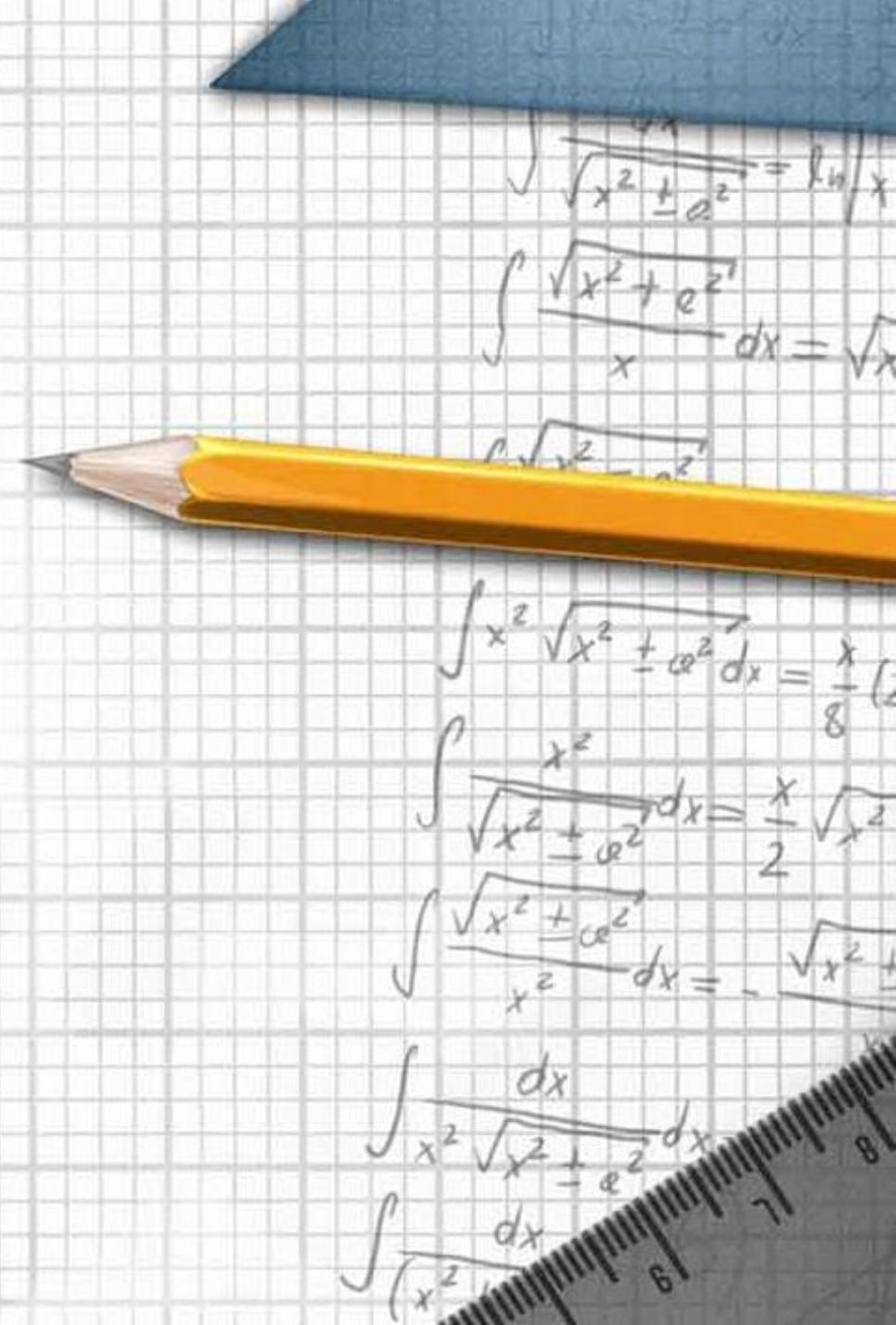
Years 2020-2021

- Teachers and students in the system have suffered major **Burnout** with the many changes in virtual and in-person instruction, families have suffered, and critical **Foundational** material has not properly been covered.
- Northeastern's math department therefore expanded the role of BtC to both cover a core summer program essential to pre-Calculus instruction, but also has offered evening homework help through "**Math Buddy**" system.
- Along with this expansion to our summer program, NU's Dept Mathematics has expanded this component over the full academic year.
- Math Department professor, Dr. Chris King along with Director, Raj Jesudason, prepared an Algebra "**Boot Camp**" to follow up on the summer program to address some of the prerequisite needs of students entering AP Calculus.
- The combination of the boot camp and the evening **Question Center** was so helpful, that we are opening it up to a select number of **Northeastern Undergrads** who are taking Calc 1 courses.



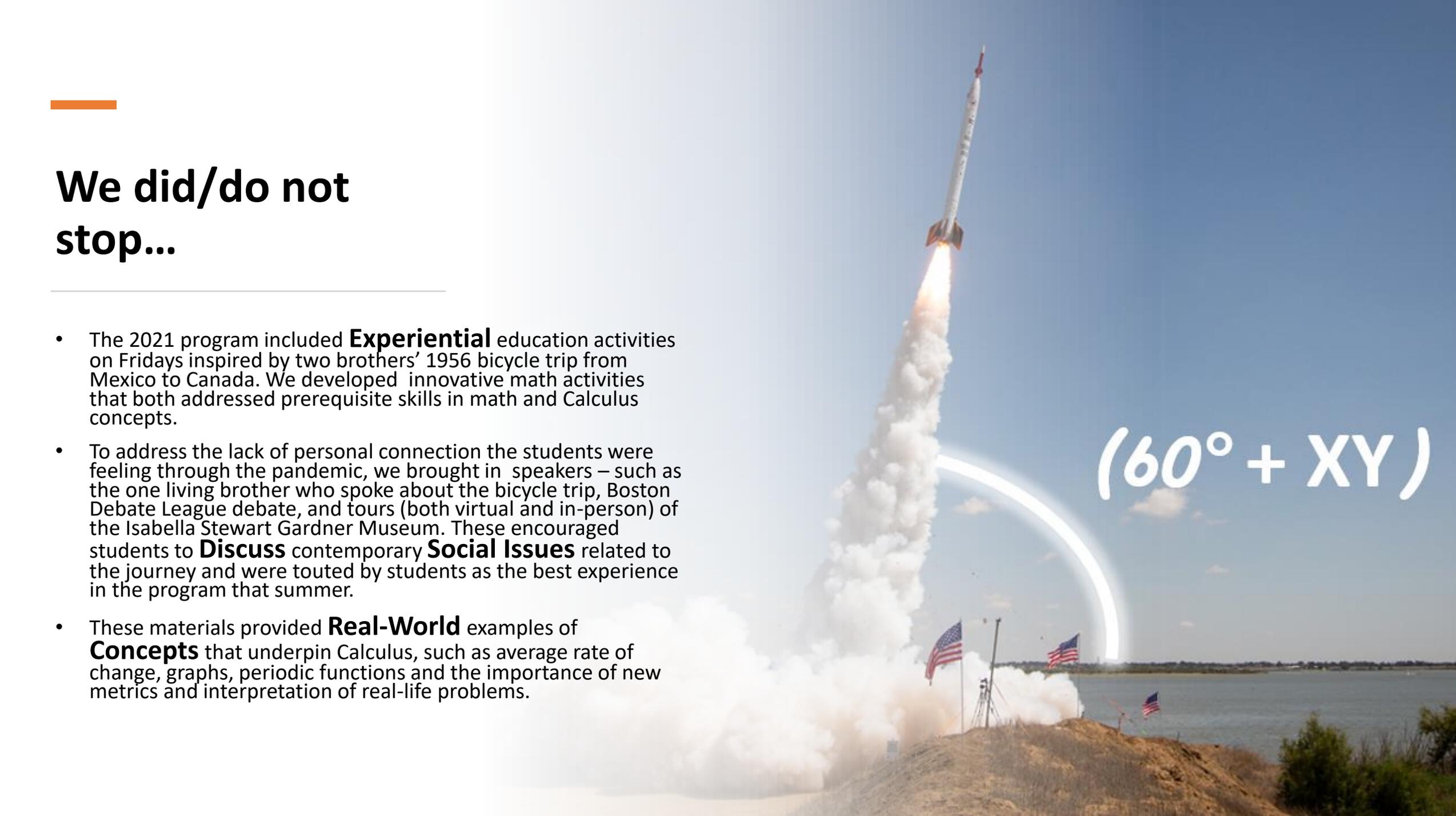
Program Overview

- Launched in 1994, the Bridge to Calculus, (BtC) is a free Summer Program that helps selected Boston Public School incoming Juniors and Seniors gain mathematical skills needed to take Calculus the following year.
- The students are identified by BtC in partnership with the Boston Public Schools (BPS). The program enrolls approximately 120 students each summer.
- The program is headed by members of the Department of Mathematics at Northeastern and has collaborated with Northeastern Admissions, the Foundation Year Program, Balfour Academy,, Center for STEM Education, College of Engineering, Khoury College of Computer Science, Service Learning, Physics Department, and Northeastern University Students in general.
- The classroom mirrors Boston's inner-city school student's population of African American, Hispanic, Asian and Southeast Asian extraction and children of new immigrants. The program employs mentors in each of this subgroups, including Native American
- Working together with teachers and administration of the Boston Public Schools, Bridge to Calculus has strengthened the BPS system and in turn offered Northeastern and other universities a stronger recruitment pool for STEM fields.

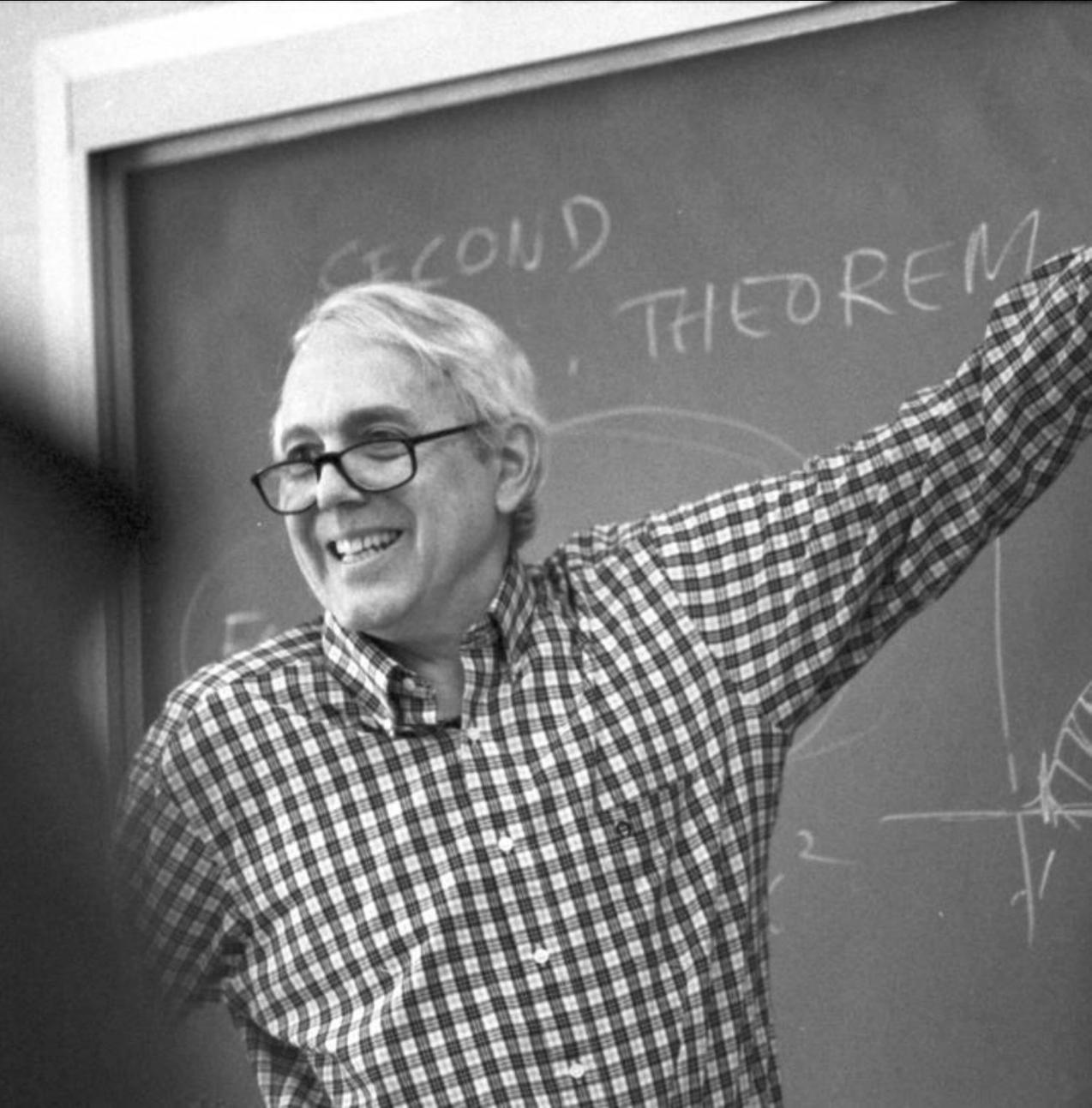


We did/do not stop...

- The 2021 program included **Experiential** education activities on Fridays inspired by two brothers' 1956 bicycle trip from Mexico to Canada. We developed innovative math activities that both addressed prerequisite skills in math and Calculus concepts.
- To address the lack of personal connection the students were feeling through the pandemic, we brought in speakers – such as the one living brother who spoke about the bicycle trip, Boston Debate League debate, and tours (both virtual and in-person) of the Isabella Stewart Gardner Museum. These encouraged students to **Discuss** contemporary **Social Issues** related to the journey and were touted by students as the best experience in the program that summer.
- These materials provided **Real-World** examples of **Concepts** that underpin Calculus, such as average rate of change, graphs, periodic functions and the importance of new metrics and interpretation of real-life problems.

A photograph of a rocket launch. The rocket is ascending vertically, leaving a large plume of white smoke and fire. In the background, a bright rainbow arches across the sky. The scene is set outdoors near a body of water, with several American flags visible on the ground. The text "(60° + XY)" is overlaid in white on the right side of the image.

$(60^\circ + XY)$



“This program fits so well with the university’s mission in the city, the centrality of math as a civil rights instrument for city kids, and our long history.” ~Bob Case