



# Calculus Project

## The Problem

Black, Hispanic, Indigenous People of Color and low-income students remain underrepresented in honors and advanced math classes, which are vital to college acceptance and completion. Consequently, they are least represented in science, technology, engineering and math (STEM) careers that provide high salaries and excellent benefits.

## The Solution

**The mission of The Calculus Project** is to use research-supported strategies to increase the representation and success of Black, Hispanic, Indigenous People of Color and low-income students in advanced mathematics.

## The Components

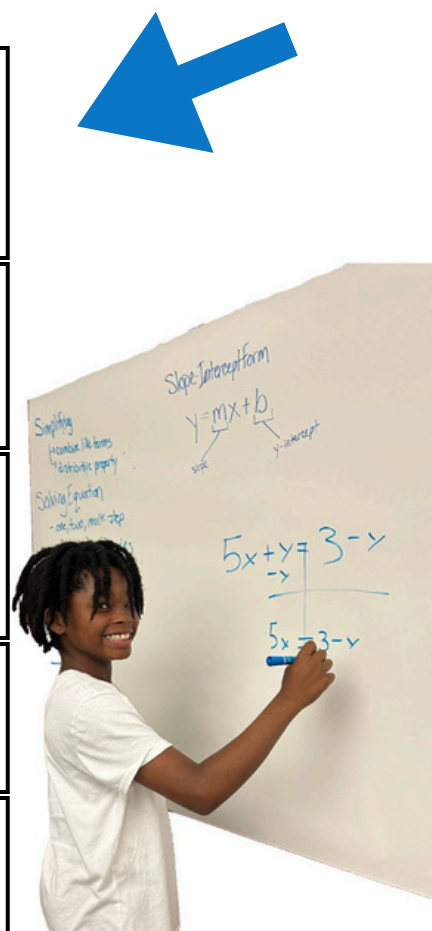
**Summer Academy:** Students (rising 7th through 12th graders) are pre-taught key math topics to accelerate their learning in preparation for their math course in the fall.

**Student Cohorts:** Students are trained to work in groups during the summer and those skills of collaboration are honed when they are placed into the same advanced math sections.

**Academic Center:** Students collaborate and work in groups to complete homework assignments, study for assessments, and complete math projects with assistance from math teachers and TCP Peer Teachers.

**Peer Teaching:** Juniors and seniors excelling in advanced math are hired during the summer to assist teachers in the classroom and tutor students.

**PRIDE Curriculum:** Students learn about the accomplishments and contributions of STEM professionals of color to develop a stronger math and science identity.





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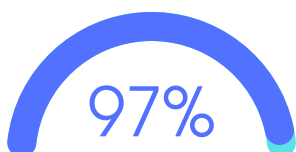
## The Calculus Project & Leadership Academy 2024

**Our theory of action** is that summer acceleration, peer team building, high expectations, and ongoing math support, leads to student success in advanced mathematics.

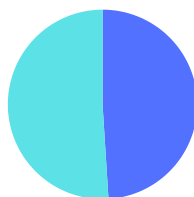
### Our Students

**215** students attended our summer program across three campuses - Emmanuel College, Boston University and UMASS Lowell in 2024 (10% growth from 2023).

**10%** growth in students from summer of 2023 - 2024. We have almost doubled in size since 2022



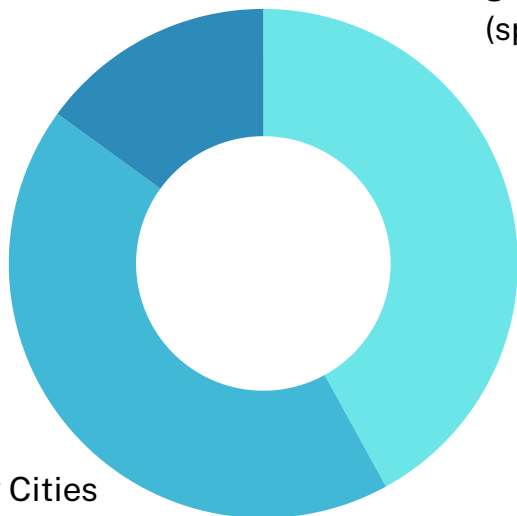
**TCP Students**  
identify as  
BIPOC\*



TCP students: 49%  
male; 51% female

\* BIPOC: Black, Indigenous, People of Color

Boston Metro  
15%



Gateway Cities  
43%

Our students live in Boston, surrounding greater Boston communities and gateway cities (specifically Everett, Lawrence and Lowell).

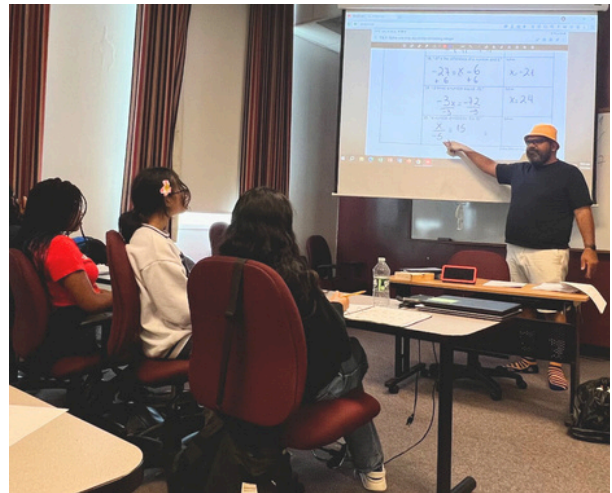
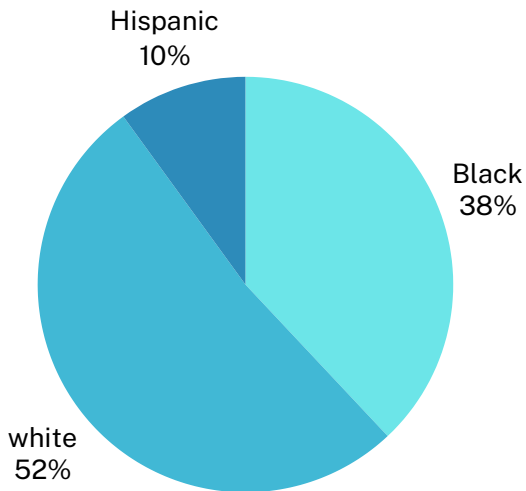
Boston  
42%





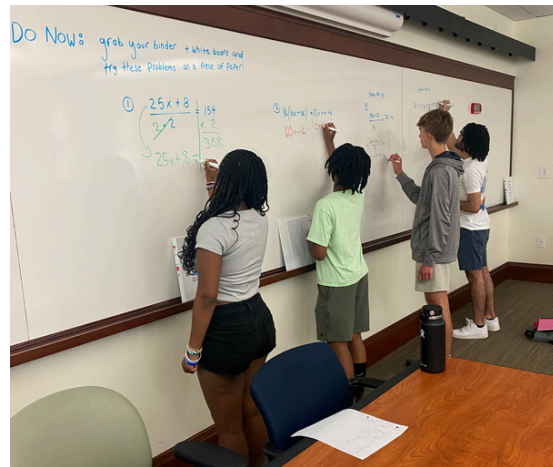
## Our Staff

We hired **22 experienced educators** from districts across Massachusetts for our programs at BU, Emmanuel and UMASS Lowell. We value diversity, and math teachers of color bring diverse perspectives that make the subject more relatable to underrepresented students and inspire them to pursue STEM fields.



## Peer Teachers

This summer we **hired 40 teenagers to become great tutors**. They completed 10 hours of training and were paid \$15/hr to teach their peers over the course of the summer. Many of these peer teachers are alumni of TCP, and they work with their peers 1:1 or in small groups. 92% of these Peer Teachers identify as Persons of Color.



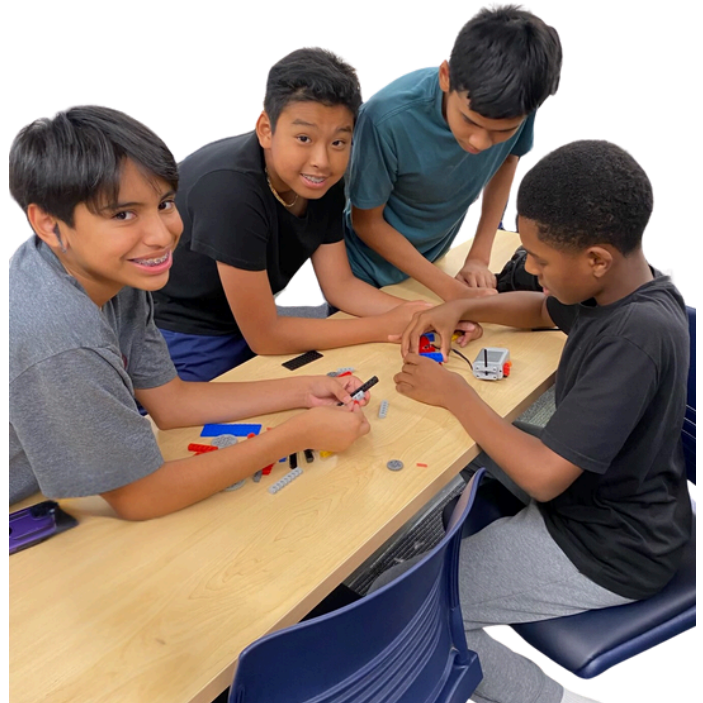


## Math Courses

- 7th Grade: Pre-Algebra
- 8th Grade: Algebra
- 9th Grade: Algebra II and Geometry
- 10th Grade: Algebra II and Trig.
- 11th Grade: Pre-Calculus
- 12th Grade: Calculus

## Sample Schedule

9:00-10:00	Instruction
10:00-10:10	Break
10:10-11:10	Math Activity
11:10-11:30	Lesson Q+A
11:30-12:30	Lunch
12:30-1:30	Personalized Adaptive Learning
1:30-2:00	Start on Homework



Students shown above are completing an engineering challenge at our UMASS Lowell campus. This is one of several project-based learning activities we provide our students, so they can hone their skills of collaboration and learn to reason through challenging problems.

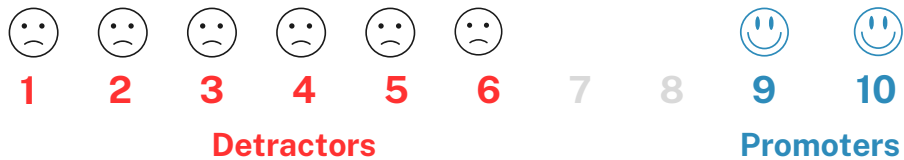


## Summer Results

### Net Promoter Score

Our goal is to build student confidence, skill and collective efficacy. One way to test this is to ask students about their experience and whether they would recommend the program to a friend on a scale of 1-10. To calculate their Net Promoter Score (NPS) we take the percent of 'promoters' and subtract the percent of 'detractors.'

$$\text{NPS} = \% \text{ Promoters} - \% \text{ Detractors}$$



The creators of the NPS metric, Bain & Company, say that although an NPS score above 0 is good, above 20 is great and above 50 is amazing. Anywhere above 80 is the top percentile.

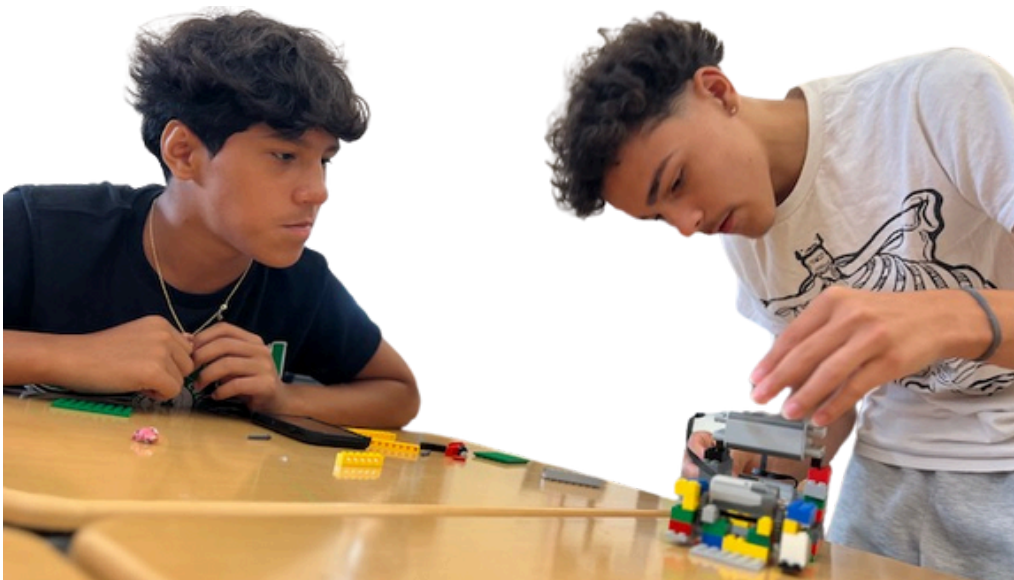
Our Net Promoter Score

**35%**

Boston

**55%**

UM Lowell





## Summer Results

### First Quarter Grades

Our goal is that at least 85% of our students will earn a “B” or higher in their first quarter math class in the fall.

**79%**

2022

**84%**

2023

**xx%**

2024

### End of Summer Survey

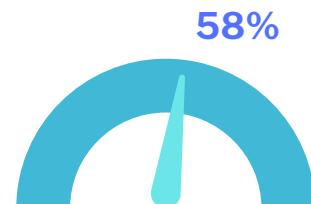
At the end of the summer we ask students to rate their agreement with the following statements. The percent of students who agreed or strongly agreed with these statements is listed below. (n=117)



"I feel a part of a TCP team that provides support for me and others."



"As a result of the summer program I feel more confident in my skills and ability to ask questions."



"As a result of the summer program I am considering a future path in science, technology, engineering or math."





## Special Initiatives

### College Access and Affordability

- **Accelerated Calculus Preparation:** One week of intensive AP Calculus prep.
- **College Application Essay Seminar:** One week of writing personal essays for college based on Common Application prompts.
- **Statistics for College Credit:** Three weeks of Statistics taught by Emmanuel College professors and supported by TCP Peer Teachers.
- **Emmanuel College Bridge Program:** One week of intensive math support to prepare incoming college first year students to retake their math placement test.

### Work Based Learning

- **BU FIRE Program:** One week of hands-on engineering projects with BU's College of Engineering and their corporate partner, Ametek.
- **Career Exploration** at Mott McDonald Engineering.

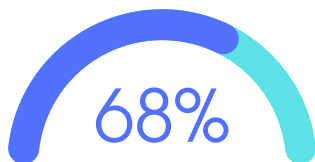
### Project Based Learning

- **Environmental Impact:** One day of environmental science learning with a TCP alumna who coordinated with Stonehill College and the National Oceanic and Atmospheric Administration (NOAA).
- **Financial Literacy:** Three weeks of financial literacy, investigating budgeting, savings, the stock market and financing, taught by our partners at Fly Institute.

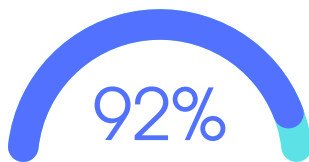
## Highlights

### Statistics for College Credit

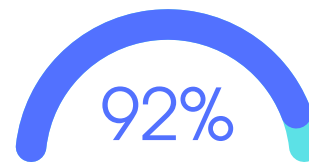
**In this pilot program, 25 TCP students** participated in a college statistics class, taught by Emmanuel College Professors in the summer of 2024. Students participated in class for three weeks with afternoon support sessions led by TCP Peer Teachers.



of TCP students earned an **A or a B** in this class.



of TCP students earned college credit



of participants identified as BIPOC



## Special Initiatives Highlights

### Emmanuel College Bridge Program

We partnered with Emmanuel College to develop their first Bridge Program to prepare 12 incoming freshmen to retake their math placement test. Prior to the one-week intensive program, none of these students passed the placement exam. Justin Desai and Dr. Adrian Mims designed the math curriculum and co-taught the class that led to the following results.



**92%** of the Bridge students passed the exam after taking the course

**The median student increased their score by 50 percentage points.** All students improved their performance and the range was between 13 and 82 percentage points.

