



THE CALCULUS PROJECT

The Calculus Project works to accelerate mathematics learning for students furthest from opportunity, beginning in middle school, in order to give them access to higher-level mathematics courses in high school and college.

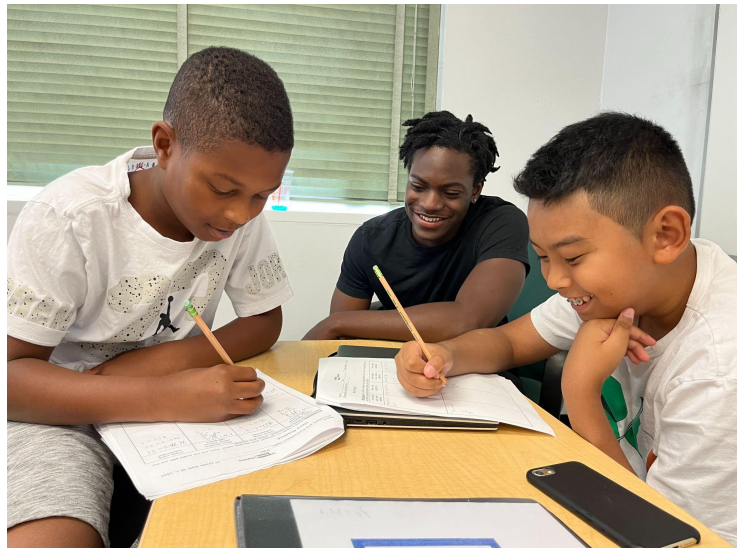
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OVERVIEW

The Calculus Project (TCP) is a grassroots-style initiative aimed at dramatically increasing the number of students of color and students from low-income backgrounds who complete Advanced Placement (AP) Calculus in high school. Its mission is rooted in the belief that if students that are furthest from opportunity have the skills and resources to access advanced mathematics it will decrease their need to take remedial mathematics courses upon entering college. This, in turn, will increase the likelihood of their graduating from college, open doors to STEM professions that would otherwise be hard to enter, and positively impact their future earnings.

TCP achieves its mission by disrupting widespread tracking practices and identifying Black and/or Hispanic students from low-income households to participate in higher-level mathematics learning acceleration beginning in the summer after 7th grade. During their work with students, TCP staff pre-teach upcoming topics and support students to excel in their mathematics coursework. The program is run in a cohort-style model that supports social and emotional learning (SEL) and peer teaching. Families, students, and their teachers are all involved in an ongoing manner to remain engaged with the students' math learning.



TCP has served more than 10,000 students since 2009, with the majority enrolling in AP-level mathematics courses by their senior year of high school. [▶The Calculus Project](#)

What Makes This Model Innovative?



High Expectations with Unlimited Opportunities

TCP accelerates learning by pre-teaching math content to students over the summer. TCP then continues to support students throughout the year to ensure they are successful in their math coursework and on track to enroll in AP math courses in high school.



Affirmation of Self & Others

Alongside the math content, students also learn about the accomplishments of STEM professionals of color. TCP uses these experiences to support students in developing their own confidence and mathematical identity.



Connection & Community

Students develop strong connections with peers through a cohort model. TCP intentionally involves families and teachers in its work to build a network of support across all stakeholders in student success.

DESIGN

Goals

TCP aims to increase the number of students furthest from opportunity—often Black, Hispanic, and from low-income families—that take and excel in AP mathematics courses. By doing this, it hopes to positively influence students' college success and likelihood of graduating with access to STEM-related professions.

Math Knowledge

Students gain math knowledge and skills that will support their ability to make connections across math courses and gain access to understanding and success in higher-level mathematics courses.

Affirmed Math Identity

Students develop a strong sense of their own mathematical self-efficacy and gain the confidence to engage with rigorous math concepts and content.

Strong Relationships

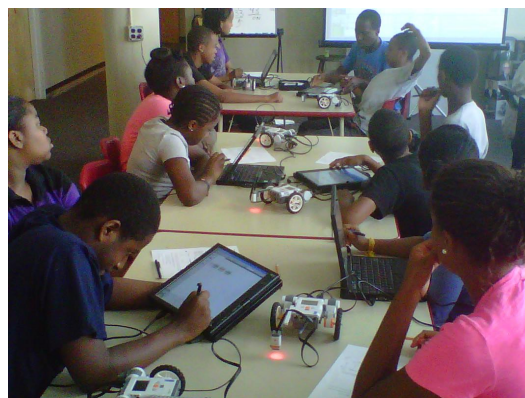
Students build deep relationships with adults and peers, creating the necessary conditions for them to return year after year and to engage in peer teaching and learning.

Experience

Students enrolled in TCP experience a comprehensive suite of supports beginning the summer after their 7th grade year until they graduate from high school. They are grouped into designated clusters to drive collaboration and create a sense of belonging. In these clusters, they engage in a summer learning acceleration experience, called the “Summer Academy,” and get tutoring throughout the school year through the “Academic Center.” Alongside the math content learning, they also engage with the Pride Curriculum, which teaches them about STEM professionals of color and their accomplishments. Finally, students in their junior and senior year are able to earn income through being peer teachers in the Summer Academy or the Academic Center.

Summer Academy

Rising 8th through 12th graders attend TCP’s Summer Academy. While there, students are pre-taught content that they will learn in the upcoming school year as a learning acceleration strategy. In this setting, students also learn how to collaborate with peers and set up high-capacity, collaborative study groups on their own to support them in their school settings once the school year begins.



In addition to their academic support, students also receive lessons from the Pride Curriculum developed by TCP. In these lessons, students learn about the accomplishments of STEM professionals of color. These learning experiences reinforce students' self-efficacy, beliefs of high achievement, and sense of belonging, helping them to build a positive math identity.

The Summer Academy is available to students each year beginning the summer after 7th grade through graduation from high school. Students must commit to attending at least three of the Summer Academy sessions over the course of their engagement with TCP. [📄 Sample Summer Academy Schedule](#)

Clustering

When students in TCP return to their schools after the Summer Academy, they are grouped together in their math courses to drive continued collaboration and a sense of belonging. TCP has found that intentionally grouping a critical mass of 30–50% of students that share similar identities helps create a safe learning space where students are comfortable learning and making mistakes and are more likely to engage in discourse with their peers. These clusters keep students engaged in the work and allow them the space to support each other in continuing to hone the collaborative study skills learned over the summer. Additionally, the teachers assigned to these clusters have engaged in TCP training and development and are more equipped to support students in their math work based on this additional training.

Academic Center (Tutoring)

Students in TCP have access to in-person tutoring support after school through an Academic Center at their own school over the course of the school year. Students opt in for support and can determine the frequency of the tutoring based on how they are doing in their math courses.

Tutors in the Academic Center are either peer teachers that have experienced TCP support themselves or core math content teachers at the school that are involved in TCP professional development.

This wraparound support throughout the school year helps to ensure the content that was pre-taught in the summer is effectively applied to students' coursework during the school year. It is also a space to continue building student-teacher relationships that will sustain the work over the years.



Peer Teaching

Juniors and seniors that have progressed successfully through TCP components are invited to apply to be peer teachers in the Academic Centers at their respective schools. Peer teaching involves supporting younger students as they navigate the program and serving as a mentor and champion along their math journey.

Students selected to serve as peer teachers undergo significant training by TCP staff to help them understand best practices for teaching peers and give them strategies for working with students as a "learning ally." Their training also covers culturally responsive teaching practices, understanding growth mindset from a research perspective, and different teaching strategies like directive and nondirective teaching. Additionally, peer teachers engage in scenario-based learning where they are given the opportunity to role-play and practice what they have learned.

Supporting Structures

Schools and districts interested in implementing TCP need significant capacity as they are required to own the implementation of all program components, with TCP staff serving as a resource. TCP has found that those with the capacity to implement all components of the model, as opposed to picking some, are best suited to see success related to the goals and outcomes identified.

The Calculus Project can be implemented with any core math program.

Districts can implement TCP regardless of what mathematics curriculum they are using for their core math classes. TCP provides support for teachers to adapt and refine any curriculum to best meet the needs of TCP students. In their first summer, teachers will use their curricular materials to create pre-teaching materials for the first nine weeks of school. These lessons will serve as the math curriculum for TCP Summer Academy.



CURRICULUM, INSTRUCTION, & ASSESSMENT

TCP provides Pride Curriculum materials to be implemented in the Summer Academy. [Pride Curriculum – Lesson 1](#) The purpose of the curriculum is to help students develop a stronger math and science identity. It includes teacher-led lessons as well as bringing in guest speakers that mirror students' racial identities.

TCP supports schools in using ALEKS, a web-based math platform that uses artificial intelligence to assess student mastery of math standards and measure growth. [ALEKS Website](#) TCP also works closely with districts to utilize the assessments already in place to disaggregate TCP student growth from other students in the district.



SCHOOL COMMUNITY & CULTURE

Districts that serve historically under-resourced communities are best suited to implement TCP.

TCP aims to create systems that support students of color and students from low-income backgrounds to access higher-level mathematics. For this reason, schools that implement TCP should serve a significant population of students from historically under-resourced communities, to align with the model's mission and design.



ADULT ROLES, HIRING, & LEARNING

Schools must identify staff to lead implementation and have committed teachers who will participate in initial and ongoing training from TCP.

District and school-based staff are primarily responsible for the implementation of the model, with TCP staff serving as a resource and thought partner. Typically, the district serves as the funder and provides the

resources for schools to implement the program. School teams are typically responsible for implementation of the day-to-day components of the program. When districts begin implementing TCP, they need to identify a Calculus Project Coordinator (CPC) to lead the implementation of the model. The CPC does not necessarily need to be a math leader but should be a respected or aspiring leader. The CPC and others supporting the implementation meet with TCP staff bi-monthly to receive support and guidance around setting up sustainable systems, analyzing assessment data, making adjustments to the curriculum, and planning for ongoing professional development (PD) for teachers as well as family engagement opportunities.

Additionally, schools need to identify teachers that are highly motivated to implement the model. These teachers help develop the summer math curriculum, implement wraparound supports during the school year, and staff the after-school Academic Center and the Summer Academy. TCP staff deliver training for math teachers working in partner schools 1–3 times each year; however, training is more frequent in the first 3 years of a new partner school. Training is arranged to best accommodate schedules within the district; it could occur on PD days or require schools to give teachers additional release time for development. TCP staff support teachers to rethink systems, structures, and behaviors that suppress the achievement of students of color. TCP also supports teachers in adjusting and refining their own curriculum to best serve all students. Additionally, TCP staff offer training and support around the implementation of the Pride Curriculum that TCP provides.

Schools will need to prioritize clustering students in their math courses during the school year and will be in charge of creating Summer Academy and Academic Center schedules.



**SCHEDULE & USE OF
TIME**

Schools need to create schedules that allow students enrolled in TCP to take their core math courses in clusters with other students enrolled in TCP.

Additionally, schools and districts are in charge of creating schedules for their Summer Academy that allow time for math content learning, collaboration on math tasks, and student engagement in the Pride Curriculum.

Finally, schools need to identify days and times when they can host the Academic Center for students to get peer- or teacher-led tutoring outside of their core math content courses.



FAMILY & COMMUNITY PARTNERSHIPS

Family engagement and partnership is critical to successfully implementing TCP.

Schools and districts implementing TCP must establish a Parent Advisory Council. The Parent Advisory Council is composed of parents of TCP students, school administrators, and student representatives. This committee meets regularly to learn how to best support their students and TCP as a whole in the district and in the school. These ongoing touchpoints provide families with updates and learning opportunities to ensure wraparound support and engagement from all stakeholders in a student's education.



SPACE & FACILITIES

Implementation of TCP requires space for the Summer Academy and the Academic Center.

TCP has summer programming for all students beginning with rising 8th graders. Schools will need to consider where they can house this summer programming. Typically students are grouped by grade level for the Summer Academy in groups that don't exceed 25 students. Multiple sections per grade need to be created if there are more than 25 students in a particular grade. Each section will need its own dedicated space for the Summer Academy.

Additionally, schools will need to identify space for the Academic Center, where after-school tutoring occurs throughout the year on a regular and ongoing basis. Typically 1–2 classrooms are sufficient for this programming, but space should be based on the typical turnout for tutoring in each school.



BUDGET & OPERATIONS

Implementation of TCP requires an investment from schools and/or districts to initially train teachers and provide ongoing guidance and support.

Implementation of this model is a multi-year endeavor with varying investments across the years, depending on the level of support from TCP staff. Initially, TCP provides more support in Years 1–3 when the program is developing and when there is more onsite support needed for getting components off the ground. Support in Year 4 and beyond is a reflection of the monthly planning and support sessions, a needs assessment, and continued collaboration on professional learning for teachers.

TCP provides support for the initial recruitment of students into the program and guidance to schools and districts for ongoing recruitment efforts.



COMMUNICATIONS

At the start of a partnership, TCP staff play a heavy role in the recruitment of students and families into the program. They provide students and families with material explaining the program and support the school in connecting these potential students and families with TCP alumni that have been successful in navigating the program. TCP also provides a calendar to support schools in planning their outreach to new students. [Timeline for Implementation](#) Often, TCP leadership is directly involved in outreach to families, answering questions and supporting them in better understanding what they are committing to and what the outcomes will be.

TCP provides an initial needs assessment and ongoing support sessions to help schools achieve excellence in program implementation.

An initial site visit from TCP is designed to focus on areas that will need to be present to support TCP programs and students. Visitors from TCP will collaboratively review curriculum and instruction in service of offering recommendations for improvement.



**CONTINUOUS
IMPROVEMENT**

Following this visit, TCP provides bi-monthly planning and support sessions for the TCP coordinator at each site to support with data analysis, program setup, curriculum support, program review, Summer Academy setup, and more. Additionally, TCP staff visit the schools monthly to focus on giving feedback around implementation and supporting curriculum both in the classroom and in Academic Center tutoring sessions. Finally, TCP offers professional learning for teachers on topics such as curriculum, assessment, culturally responsive practices in mathematics, or other specifically tailored topics that support the development of teaching and learning within a school.

TCP also aims to respond to student feedback as it supports district and school implementation. Students are given a pre- and post-survey during the Summer Academy to gauge their likelihood of promoting TCP to peers. They are given this survey a third time after completing their first 9 weeks of school. TCP supports schools in analyzing and responding to this data.

IMPLEMENTATION

Supports Offered

[The Calculus Project](#) offers partnership to support implementation, but requires that the district and school ultimately own the implementation of the program.

Partnership

Cost Associated



TCP offers a variety of services to support implementation based on the needs of the school and district:

- Bi-monthly planning and support
- Needs assessment site visits
- Professional learning
- Monthly onsite school support
- Monthly support for family engagement
- Onsite summer program support.

[Express Interest](#)

Reach

10

Districts

10,000+

Students

84%

Students of
Color

35%

Students
Eligible for FRL

Impact

TCP increases enrollment in AP math courses. [The Calculus Project Results](#)

- In the three districts in Massachusetts that were founding partners of TCP, the number of Black and Hispanic students enrolled in AP math coursework has more than doubled since 2009.
- Currently the majority of TCP students, around 70%, enroll in AP-level math coursework by their senior year of high school.

TCP supports student outcomes in math courses taken back at their school. [The Calculus Project Results](#)

- Following their Summer Academy in 2022, 79% of TCP students earned an A or B in their first semester of math.
- Less than 1% of students failed their fall math coursework following participation in the Summer Academy.

Students have also shared positive feedback related to their experiences and have attributed success in math to their ongoing support from TCP. [▶ Student Testimonials](#)

- “It was almost a foregone conclusion by the time I got to senior year that I was actually going to take AP Calculus because of all the preparation I’d been doing through the Calculus Project since 7th grade” – Calvin Thompson, TCP Alumni
- “The Calculus Project played a really big role [in my success], because I was able to get support in the summer and afterschool... knowing that there would be other students from the calculus project in my class made it a lot easier for me to be in the class” – Tahira Saalik, TCP Alumni

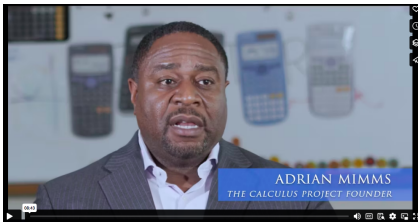
Contact

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RESOURCES



[The Calculus Project Overview Video](#)

This video overview of TCP highlights the current program model and features the founder, Adrian Mims.


**The Calculus Project
Summer Leadership Academy**

The Calculus Project Summer Leadership Academy is designed to provide students with skills, tools and habits to earn success in their math trajectory through high school. The 75 hour summer program is designed to teach students the content of the first semester of their upcoming fall math class, while sharpening skills. The program explicitly addresses social and emotional pillars of belonging, agency and resilience through the Intra Curriculum. Students follow a schedule similar to the one below.

	Mon	Tues	Wed	Thurs	Fri
9:00	AM Circle	AM Circle	AM Circle	AM Circle	AM Circle
9:20	Math Instr (9:20-10:20)	Math Instr (9:20-10:20)	Math Instr (9:20-10:20)	Math Instr (9:20-10:20)	Math Instr (9:20-10:20)
9:40					
10:00	Break	Break	Break	Break	Break
10:20					
10:40	Math Instr (10:40-11:30)	Math Instr (10:40-11:30)	Math Instr (10:40-11:30)	Math Instr (10:40-11:30)	Math Instr (10:40-11:30)
11:00					
11:20					
11:40	LUNCH (11:30-12:30)	LUNCH (11:30-12:30)	LUNCH (11:30-12:30)	LUNCH (11:30-12:30)	LUNCH (11:30-12:30)
12:00					
12:20					
12:40	PM Circle	PM Circle		PM Circle	
1:00	Math Project (12:40-2:00)	Math Project (12:40-2:00)	Pride Part I (12:30-2:00)	Math Project (12:40-2:00)	Pride Part II (12:30-2:00)
1:20					
1:40					
2:00	Dismissal	Dismissal	Dismissal	Dismissal	Dismissal

[TCP Sample Summer Academy Schedule](#)

This sample schedule shows how a school or district might organize its Summer Academy.

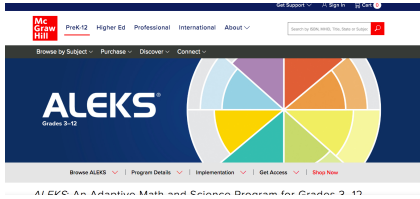


Hidden Figures Movie Part I

Teacher Lesson Notes	Student Version
<p>Lesson Length: 85-105 minutes</p> <p>Ignite/Intro: 5 minutes</p> <p>Film Viewing: 65 minutes</p> <p>Activity 1: 10 minutes</p> <p>Activity 2: 10 minutes</p> <p>Synthesis: 5 minutes</p> <p>Ignite: (5 minutes)</p> <p>Suggested Instructions:</p> <p>Turn to Hidden Figures Movie Part I of your Pride Workbook, and read this description of a person. Spend 5 minutes imagining what they look like and then drawing or writing a description of their physical appearance (whatever comes to</p>	<p>Read this description of a person:</p> <ul style="list-style-type: none"> - author of 28 research publications - as good at doing complex math as a computer - recipient of Presidential Medal of Freedom for their contributions to science - permanent employee at NASA - trusted by astronauts to keep them safe in space <p>Imagine what this person looks like and what their life is like outside of work. Write a description or draw a picture of this person. Think about their traits and characteristics, both of what they might look like and what other parts of their life are like. Where do they live? Who are their friends? What is hard or challenging for them, and what is easy?</p>

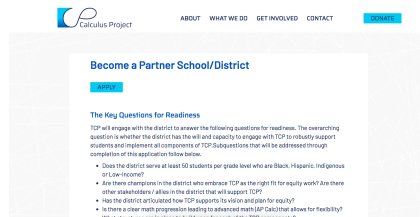
[TCP Pride Curriculum Sample Lesson](#)

This is a sample lesson from the Pride Curriculum TCP provides to partners.



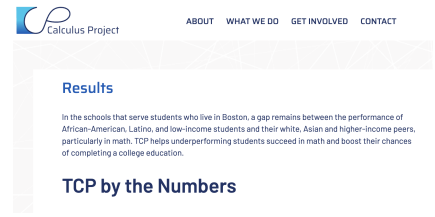
[ALEKS Website](#)

TCP utilizes ALEKS assessment tools to track progress and growth.



[TCP Timeline for Implementation](#)

This calendar identifies a general timeline for implementation of the model at the district level.



[The Calculus Project Results](#)

The Calculus Project's website highlights the results of their model.



[TCP Student Testimonials](#)

Students share why they joined and stuck with TCP and what their post-secondary plans are now.