

2021-22

Rise Program REPORT



RISE STUDENT RESULTS

Of students returned to the Rise Program from a previous year

62%

62%

Of students showed an improvement in their math grade according to transcript data

According to pre-and post-surveys, students reported the following changes:

I have a good understanding of my math course materials.

>2X

31% - 79%

If I don't know how to solve a problem, I know where to go to figure it out.

~2X

31% - 59%

~4X

24% - 83%

>4X

14% - 62%

I am confident in my math ability.

I receive good grades on math/science tests/quizzes.



John Muir CAP students. Photos courtesy of College Access Plan.

JOHN MUIR RISE DROP-IN TUTORING

The Rise Program is proud to announce that we relaunched our drop-in tutoring service at John Muir High School Early College Magnet after a COVID-imposed hiatus.

Once Muir allowed visitors back on campus, we decided to revamp and pivot our services. Rise launched a partnership with College Access Plan (CAP), a Pasadena nonprofit that helps students apply for college and financial aid. With this arrangement, Rise students learned about CAP services, and CAP participants discovered Rise's academic offerings.

After spring break, we saw our largest and most consistent number of student participants. We noticed an increase in anxiety and discomfort in math and science, but Caltech tutors were ready to help.



John Muir CAP students. Photos courtesy of College Access Plan.

By the end of the school year, most students had higher grades and self-confidence. Tutors also offered practical advice on how to thrive in high school, college, and life.

We ended the school year strong and had many students, teachers, administrators, and community members ask if we planned to return. Thanks to support from the Caltech Y and donors, we will continue to have a presence at Muir for the 2022-23 school year. As usual, we will bring dedicated Caltech volunteers who are excited to cultivate young minds and empower students to excel in science, technology, engineering, and mathematics.

RISE ALUMNI HIGHLIGHTS

Head of the Class

Vladimir Lopez's problems with math began in the sixth grade. The standout soccer player was not afraid of hard work but was confused by advanced word problems that required several steps and multiple calculations. Teachers and friends would explain the concept, but nothing clicked.

Frustration soon led to indifference. Lopez stopped bringing a notebook to class. When he felt compelled to take notes, Lopez would borrow a piece of paper from a classmate, jot down whatever was written on the whiteboard, and then stuff the sheet into his backpack. The paper, worn and crumpled, offered little help when it was time to study for a test.

With support from the Rise Program, Lopez transformed into a confident and capable learner. By the time he graduated from Pasadena High School in 2021, Lopez had taken his school's most challenging calculus and statistics courses and earned a spot on the honor roll. Soon, Lopez was the student others turned to when they needed help.

"I used to look at an assignment and give up because I was just bad at it," Lopez says. "It has been a cool experience from being someone who knew the least to being one of the top students."

Today, Lopez is a biochemistry major at the University of California, Riverside, and has ambitions of becoming a pediatrician. In recognition of Lopez's hard work, the Rise Program awarded him a \$500 scholarship, which is generously underwritten by the Caltech Y Tom M. Apostol Fund for Science and Math Outreach and honors the late Caltech professor of mathematics. Lopez says his scholarship money enabled him to purchase college textbooks without incurring debt.

Lopez credits his Rise tutor, Ben Mackay (BS '20), for his turnaround. Mackay, who studied computational and applied mathematics at Caltech, was patient and explained concepts in different ways until they made sense to Lopez.

As the high schooler gained confidence, he became more interested in his school subjects and more open to advice.

When Mackay gave Lopez a notebook and suggested he take notes, Lopez listened. His tattered pieces of paper turned into color-coded notes that were neatly organized in a notebook. He immediately saw the benefits of his efforts.

"Being organized definitely helped me a lot in college but also helped me in life," Lopez says. "Instead of overreacting to a personal problem, I'd say to myself, 'Alright, relax. Try to calm down and figure this out.'"

Lopez also appreciates how the Rise Program has remained a part of this life. When the college student struggled with chemistry, Rise matched him with a new Caltech tutor, Liz Jackman, the associate director of student programs for the Caltech Y, and Mackay also routinely connect with Lopez to see how he is doing. As a first-generation college student, Lopez appreciates the additional support and encouragement.

"Ben and the Rise Program never gave up on me. It took some time for me to believe in myself and the process. Eventually, they helped me realize that, with some help, I can do really challenging work. A part of me feels like they shaped me into a new person."



Vladimir Lopez, Pasadena High School, 2021

The Value of Community

A few months into the COVID-19 pandemic, Ellis Sentoso was stressed and having nightmares nearly every night. The Pasadena City College student had lost a source of income, a campus work-study job, and was struggling in her physics course. She worried that the University of California, Berkeley would rescind its offer of admission and its merit scholarship.

Determined to better her situation, Sentoso tapped into her savings and hired private tutors. The former La Cañada resident paid \$60 an hour to connect online with people from Egypt and New Jersey, but none of them provided the academic breakthrough she needed.



Ellis Sentoso, PCC & UC Berkeley, BA 2022

“The Rise Program taught me the value of community.”

“It was a bad experience,” Sentoso says. “I was on track to either failing my class, accumulating more debt, or both. Any of those outcomes would have made me really depressed.”



With help from Rise tutors, Sentoso passed her physics course and kept her full-ride scholarship. The data science major, who couch surfed her last year at PCC to save money, is on track to earn her bachelor's degree in December. She has also accepted a job offer with Autodesk as a software engineer and hopes to become an investor in technology startups.

Sentoso, who has been financially independent since 2020, says being a Rise student has taught her some valuable lessons.

“We do not have to chase our goals by ourselves,” Sentoso says. “The Rise Program taught me the value of community.”

Sentoso was introduced to the Rise Program through PCC's Mathematics, Engineering, Science Achievement (MESA), a program designed to support low-income and first-generation college students pursuing mathematics, science, or engineering majors. Although Rise was originally conceived to support Pasadena Unified School District students, it has expanded its reach in recent years. Thanks to a \$321,000 grant from the Medtronic Foundation, the Rise Program plans to strengthen its relationship with MESA this school year.

Due to the pandemic, Sentoso worked with different tutors during her first year with Rise. Eventually, she met Rupesh

Jeyaram (BS '20), a Caltech computer science student who remained on campus after graduation to help accelerate climate science research as a Schmidt Academy Scholar. With Jeyaram, she found an expert tutor who never made her feel insecure about what she did, and did not, know.

Before the first session, I felt that I had to be serious so Caltech tutors would not think I was stupid,” Sentoso says. “Then, I met Rupesh, and he shared his experiences and made me see that I was not the only person struggling with data science and coding.”

Sentoso's relationship with Rise did not end after she graduated from PCC. Although she could call herself a Berkeley student by fall 2020, the campus was not fully open. Instead, she was living in an apartment in Monterey Park and feeling isolated from her school and classmates. Unfamiliar with the resources available to her as a Berkeley student, Jeyaram and Rise stepped in again to offer tutoring in five additional classes.

When Sentoso learned she had enough credits to participate in Berkeley's spring commencement ceremony, she invited Jeyaram but never imagined he would attend. Yet, as she walked across the commencement stage, Jeyaram was there to cheer her on.

Says Sentoso: “I just feel so lucky to encounter such amazing people.”

RISE SERVICE AWARDS



Andrew Ylitalo, Caltech, PhD 2022

The Science of Learning

Andrew Ylitalo (PhD '22) remembers how eager he was to join the Rise Program. His previous volunteer work included teaching English and serving meals at a homeless shelter, but Ylitalo was searching for an opportunity that would tap into his strengths in mathematics and science.

When he began tutoring, the chemical engineering alumnus quickly noticed that some students did not share his enthusiasm for the coursework. Instead, they wanted to talk about their lives and the latest gossip at school. There were even more distractions when tutoring moved online during the COVID-19 pandemic. One student brought his younger brother to the computer camera and wanted to discuss the many ways his sibling was annoying him.

Ylitalo, a computer vision/machine learning software engineer in the Bay Area, was prepared for these moments. He credits staff and fellow tutors from the Rise Program for giving him the tools he needed to succeed as a tutor and a mentor.

“I learned that it is unrealistic to think tutoring should only be focused on the subject matter. Neuroscience teaches us that students value trust and when they have it, they are more receptive to learning.”

“Rise invites these brilliant and amazing speakers and educators to help us,” Ylitalo says. “I learned that it is unrealistic to think tutoring should only be focused on the subject matter. Neuroscience teaches us that students value trust and when they have it, they are more receptive to learning.”

By listening to them and being a consistent presence in their academic lives, Ylitalo's students began to trust him. Then, they started thriving at school.

Ylitalo also noticed that his students began to take an interest in him. For instance, Ylitalo talked about his upcoming performance with the Caltech Jazz Band during a tutoring session. To his surprise, the student and his mother watched him and his band perform.

“I realized that it mattered to them that I was playing at that concert,” Ylitalo says. “In graduate school, research can be so forward-looking that it may take years to see the results of your work. With tutoring, the impact I make is almost immediate.”

In recognition of his nearly five years of service to Rise and his commitment to students, Ylitalo received an award in May.

“I appreciate the award, but really I am the one who is grateful,” Ylitalo says. “Rise provided me with such a fulfilling experience.”



Conor Martin, Caltech PhD Student

Focused on the Future

Aerospace graduate student Conor Martin has been helping students in the Rise Program earn better grades and gain more self-confidence, but high school students are not the only ones benefiting from the experience. Tutoring has changed Martin, too.

“Now, I understand that learning about people’s backgrounds and perspectives is key. I find out what they already know and build on that knowledge. Tutoring is a transferable skill, for sure, even if you don't go into teaching.”

“Talking about my research with people outside of my field is usually a challenge,” says Martin who studies thermal ignition and the physics of fluids at Caltech. “Now, I understand that learning about people’s backgrounds and perspectives is key. I find out what they already know and build on that knowledge. Tutoring is a transferable skill, for sure, even if you don't go into teaching.”

In May, Martin received a Rise award for his dedication, exceptional service, and five-year commitment to the program. He has tutored three students for a year or longer and has worked with seven additional students for shorter-term assignments. With commitments to research and conference presentations, being a graduate student is a full-time job, he says. Making time for Rise students, however, has never been an issue.

“It is healthy for me to have a separation between work and life,” Martin says. “I need to do other things that I enjoy, and Rise is one of them. It is always a welcome break in my week.”

Serving as a Rise tutor has also made Martin more patient, he says. He understands that aha moments, in which students suddenly comprehend the subject matter, are more the exception than the norm. Instead, he believes in consistency and has students work on additional practice problems to ensure they understand the concepts.

Martin’s guidance goes beyond homework assignments and test preparation. He checks in with students about their college plans, encourages them to take the SAT, and asks them about the majors they are considering. Questions about college are often directed back to him. Students are curious about his higher education journey and often pepper him with questions. What is it like to be an engineer? How did he decide what to study? What does it mean to earn a doctorate?

“I did not expect them to be interested in me,” Martin says. “When I was in high school, I did not think much about college or a career, and I was not interested in learning about someone else’s journey. It is impressive. Rise students are invested in their future.”

2022 COLLEGE SCHOLARSHIP RECIPIENTS

Congratulations to high school seniors, Sabrina Segura and Marie Basmajyan, who were awarded the 2022 Rise Program College Scholarship.

When Basmajyan enrolled in Rise as an eighth-grader, she was an honors student who disliked mathematics. With support from Caltech tutors, her opinion changed. She took some of Marshall Fundamental School's most challenging courses, including pre-calculus and Advanced Placement physics.

"I firmly feel that if the program had not provided me with this incredible chance, I would not be the same student I am now," says Basmajyan who plans to attend Pasadena City College.



“I recall having no idea what college I wanted to attend or what major I wanted to pursue during my first year. In my sophomore year, I set a goal for myself thanks to the Rise program and all the workshops they provided.”

"I recall having no idea what college I wanted to attend or what major I wanted to pursue during my first year. In my sophomore year, I set a goal for myself thanks to the Rise Program and all the workshops they provided."

Segura's grades also improved during her time with Rise, but she is especially grateful for her tutors'

dedication. During the pandemic they offered online academic support even as they had to adjust to remote learning themselves. Caltech students also worked around Segura's schedule as she tried to balance her course load with work, an internship, and athletics.

"I really need to thank my tutors for being there and supporting me throughout my journey," says Segura who also graduated from Marshall and will be attending Loyola Marymount University. "If it weren't for the Caltech Y Rise Program, I am not sure if I could have entirely learned compassion, patience, and selflessness, which has shaped the person I am today."

Liz Jackman, associate director of student programs at the Caltech Y, says higher grades are among the many benefits the Rise Program offers.

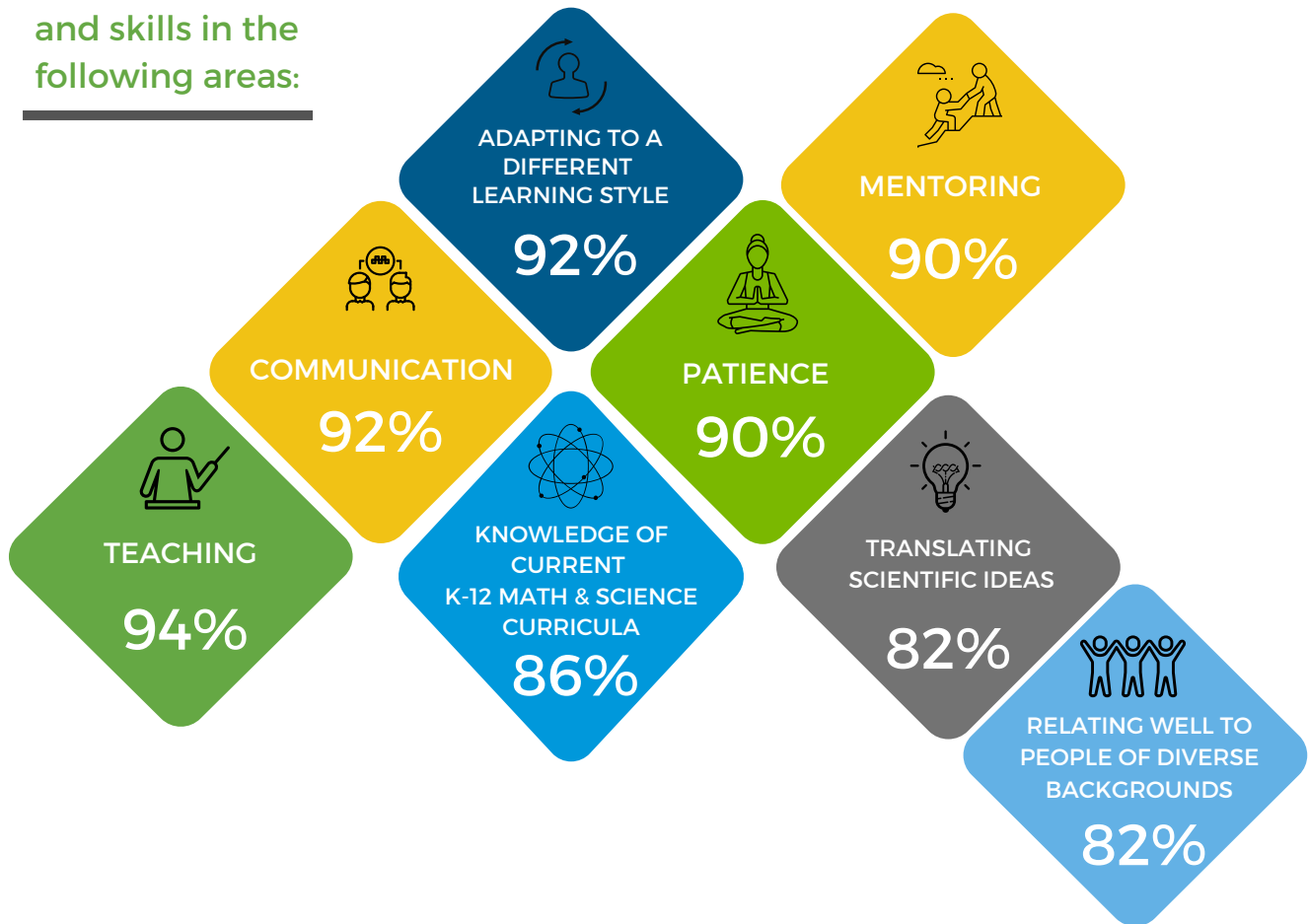
"Rise students tell us the program raises their self-confidence and provides them with new tools to study and manage their time," Jackman says. "These qualities and skills will benefit them throughout their time in college, and we look forward to learning about Marie's and Sabrina's successes in the years ahead."





TUTOR ACHIEVEMENTS

Tutors reported gains in knowledge and skills in the following areas:



100% of tutors would recommend participation in the Rise Program to other Caltech students, because it's:





RISE PROGRAM EXPANSION

The Caltech Y Rise Tutoring Program received a 2-year grant from the Medtronic Foundation as it expands equity-based science, technology, engineering, and science (STEM) partnerships to reach over 30,000 students in new locations. The Medtronic Foundation launched 10 partnerships with leading equity-based STEM organizations serving students in Southern California, Colorado, and Ireland, among them the Caltech Y Rise Tutoring Program. Partnerships will remove barriers to quality STEM education and create opportunity for economic advancement.

The partnership with the Medtronic Foundation will enable the Caltech Y to strengthen and extend its STEM pipeline. With additional support, the Caltech Y will open its summer 2022 programming to elementary school students and enhance its collection of data to better track academic performance. The Caltech Y also will enhance efforts to help current Rise students transition from high school to college by funding more scholarships

and forging a partnership with Pasadena City College.

"The Caltech Y founded the Rise Program in 2006 driven by the belief that any student could excel in STEM if given the opportunity, and we found great partners in the Pasadena community, including Caltech, PUSD, and parents, who shared that vision," said Athena Castro, the executive director of the Caltech Y. "We are grateful for the Medtronic Foundation's generosity and look forward to helping even more underrepresented students become tomorrow's engineers and scientists."

Medtronic plc is the sole funder of the Medtronic Foundation, whose focus is on improving lives for underserved populations worldwide, as well as supporting communities in which Medtronic employees live and give. For more information, please visit [medtronicfoundation.org](https://www.medtronicfoundation.org).

We are excited to partner with the Medtronic Foundation to strengthen and expand the Rise Program!



”

I think the [Rise Program] helps make Caltech students well-rounded and remove ourselves from the bubble that we exist in on campus. I also think that with the privilege of attending an institution like Caltech, it's very important to give back to our communities (either the ones we came from or the one we are in right now). Rise gives a very easy platform for helping students (either in Hameetman or online) and is accessible to all Caltech students.

- Katelyn (tutor)

”

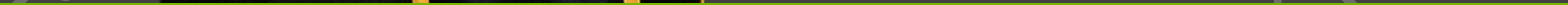
My tutor has allowed me to feel more secure with my math abilities, which has helped me significantly on tests. Not only does she help me with math, she also allows me to see her as a human and not just a scholar from Caltech.

- Bella (tutee)

”

[My tutors] genuinely helped me become a lot more confident in my ability to do things in math. Before, I had absolutely zero confidence doing my math work, and they've definitely helped me get more comfortable with it all.

- Christopher (tutee)



The Caltech Y Rise Tutoring Program is supported by the Roethke Funds, the Tom Apostol Endowment Fund for Math and Science Outreach, PUSD's African American Parent Council (AAPC), and the Caltech Employees Federal Credit Union.