Summer Bridge Re-imagined: Leveraging Corporate Partnerships to Meet Recruiting Goals

Dr. Sarah Miller, University of Colorado, Boulder

Sarah Miller provides vision and leadership for the recruitment, retention, and success of outstanding and diverse students, faculty, and staff to the University of Colorado Boulder's College of Engineering and Applied Science. As Associate Dean for Access, Inclusion and Student Programs, she oversees the Broadening Opportunity through Leadership and Diversity (BOLD) Center, overseeing efforts to attract and prepare students for the rigors of engineering study and careers, and to improve student performance and graduation rates. Appointed in January 2014, Miller comes to CU-Boulder from the National Science Foundation, where she worked in STEM education as a American Association for the Advancement of Science Fellow.

Sarah believes that every child deserves an excellent education. She has worked in inner-city public schools, both as a teacher and as an administrator, and in the admissions office of Amherst College, where she earned a B.A. in Chemistry. She holds a PhD from Yale University in chemical and environmental engineering, where her doctoral research produced a bio-based water purification system for removing arsenic from developing world water supplies.

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RE-IMAGINED

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to Meet Recruiting Goals

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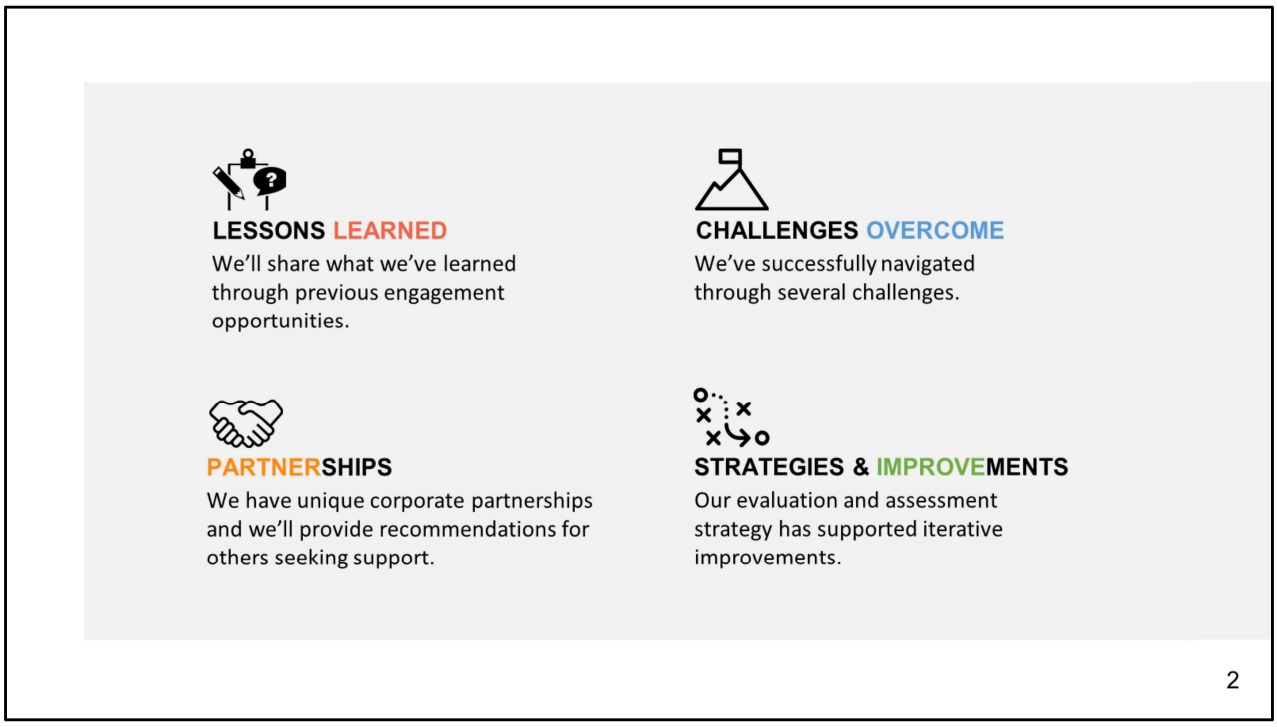
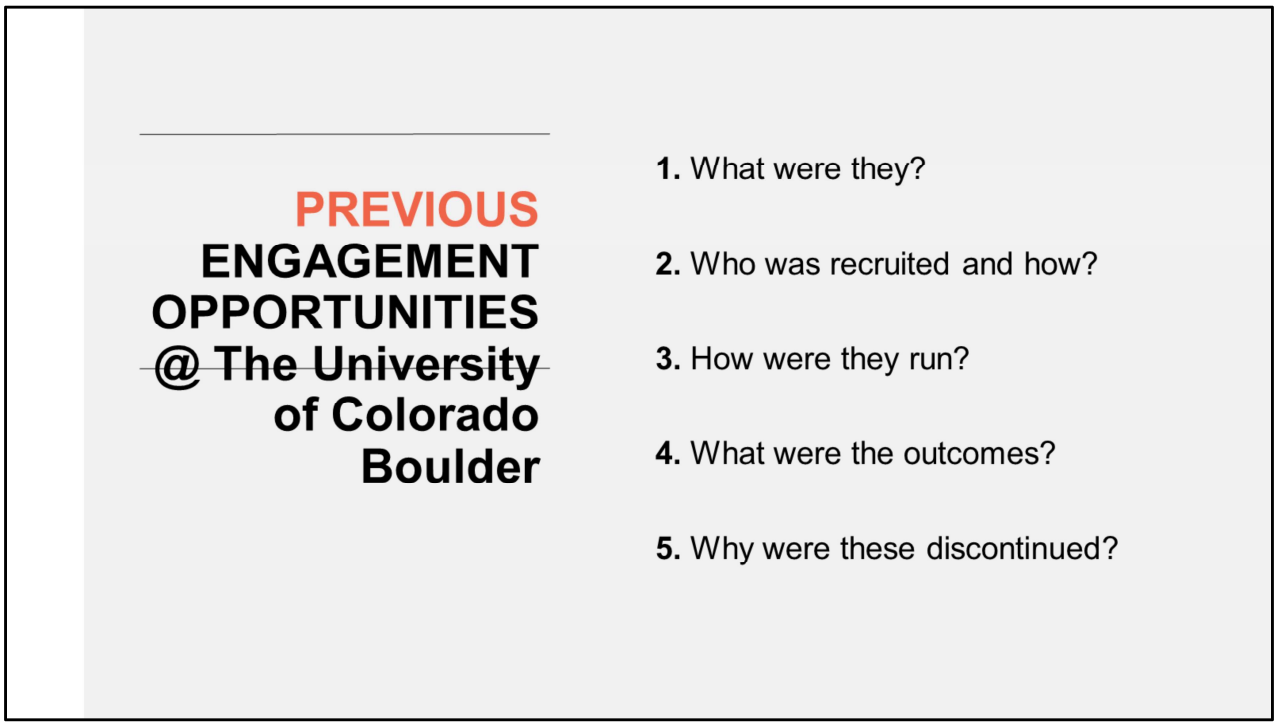


The BOLD (Broadening Opportunity through Leadership and Diversity) Center hosted the fifth cohort of the **EngiNearMe** program June 2 – 7, 2019. EngiNearMe is made possible through the generous support of Campos EPC and offers rising Colorado high school seniors a weeklong opportunity at The University of Colorado Boulder to gain exposure to engineering as a potential future academic and professional pursuit. EngiNearMe aims to provide opportunities for minoritized students in engineering and other STEM fields. Building on success from previous cohorts, the 2019 EngiNearMe cohort featured 62 students from a record 22 high schools, spanning across 9 Colorado school districts. Students that successfully completed the 2019 EngiNearMe program and join CU engineering will receive a $5,000 scholarship, which will be split over their first and second years.

In this presentation we would like to talk through some of the changes we have made over the years and share some of our learned best

practices for those looking to replicate this kind of outreach program.



We currently run several summer bridge programs for incoming, engineering students at the University of Colorado. Historically, we ran outreach programs for K-12 youth in the state of Colorado. These ranged from one week programs to six week programs, and when started the goal of these programs was to increase interest in STEM (Science, Technology, Engineering and Math). Though these programs were popular we didn't see many of these students apply to the University of Colorado when they got to that stage. When the leadership of the BOLD (Broadening Opportunity through Leadership and Diversity) Center shifted, more emphasis was placed on using these programs as a recruitment tool and they were ultimately cancelled due to not recruiting students to CU Engineering.

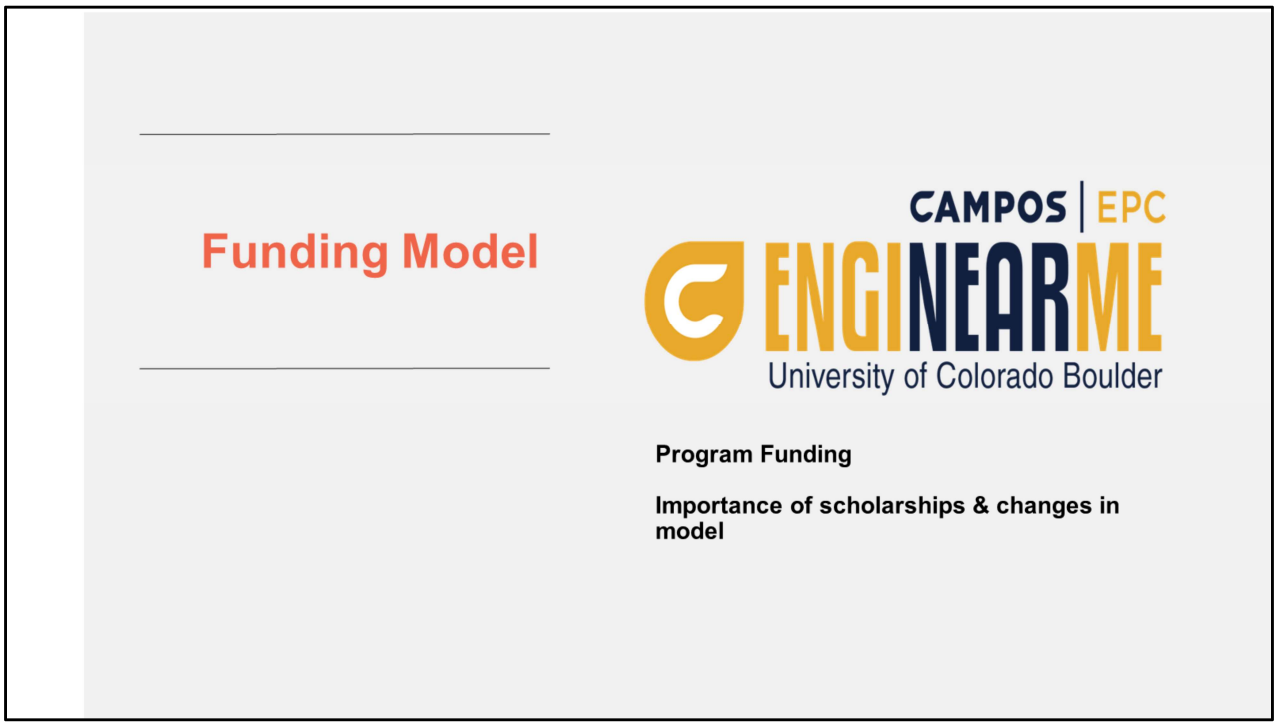
Five years ago, the diversity center within our engineering college made a deliberate shift in strategy to recruit diverse undergraduates to our college. As the flagship institution in our state, we had been hosting high school summer bridge programs for many years, with a goal to share the joys of engineering with diverse prospective students. Despite significant financial investment from our large public research institution, we saw very little return on our investment. We were able to attract diverse K-12 students to participate in our summer programming, but we rarely ever saw them matriculate in our college.

We wanted to target this program towards students who hadn't had much exposure to the engineering profession, in the summer after their Junior year of High school, to get them engaged in engineering as a profession and hopefully apply to the college in the fall of their senior year.

Our diversity center supports a board of advisors. In a conversation with

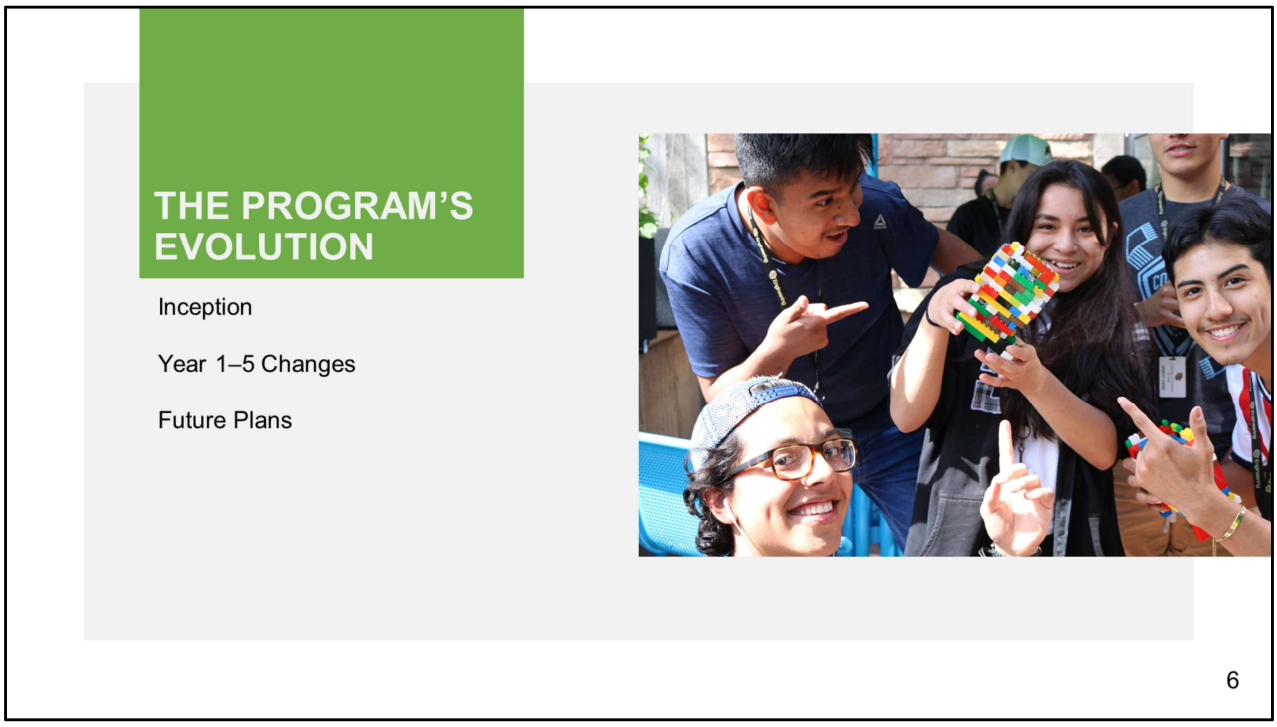
a business-minded board member in 2014, we were offered the opportunity to reinvent our K-12 summer bridge program. Our corporate partner was willing to fund a summer bridge program if we met his goal of providing engineering exposure to students who hadn't been given that opportunity. We set about to create a program that would meet broadening participation desires while also meeting our recruiting needs. Our program originally only recruited from the Denver Public Schools, where our donor graduated from. He wanted to give other students like him a chance to get involved in engineering. The recruitment for this program has since expanded to all High schools in Colorado.

This program is hosted at two different institutions in the state under different names. We have had varying levels of success working across the institutions to support the larger goals of the donor.



This program was the brainchild of a former board member who had graduated from our university. In his proposal to us he offered to cover the full cost of the program in addition to the scholarship dollars the students would be eligible for if they participated. This funding has been renewed on a yearly basis until this last year when the success of the program

convinced our donor to renew this funding for 3 years. In the last two years we were also able to increase funding from a 2500 scholarship to a 5000 scholarship split over two years.



Starting in summer of 2015, we launched the EngiNearMe summer program for rising high school seniors. This program was funded through the generosity of one corporate partner. It is a one-week, free summer program that exposes diverse students to engineering on our campus. All students who attend, who are admitted to our engineering college, and who matriculate in our college, receive a scholarship. Over the past five years, the program has grown in size, scope and impact, such that it is now a residential experience and one that students across our state are eager to apply for. We consider it a model worth sharing for two key reasons:

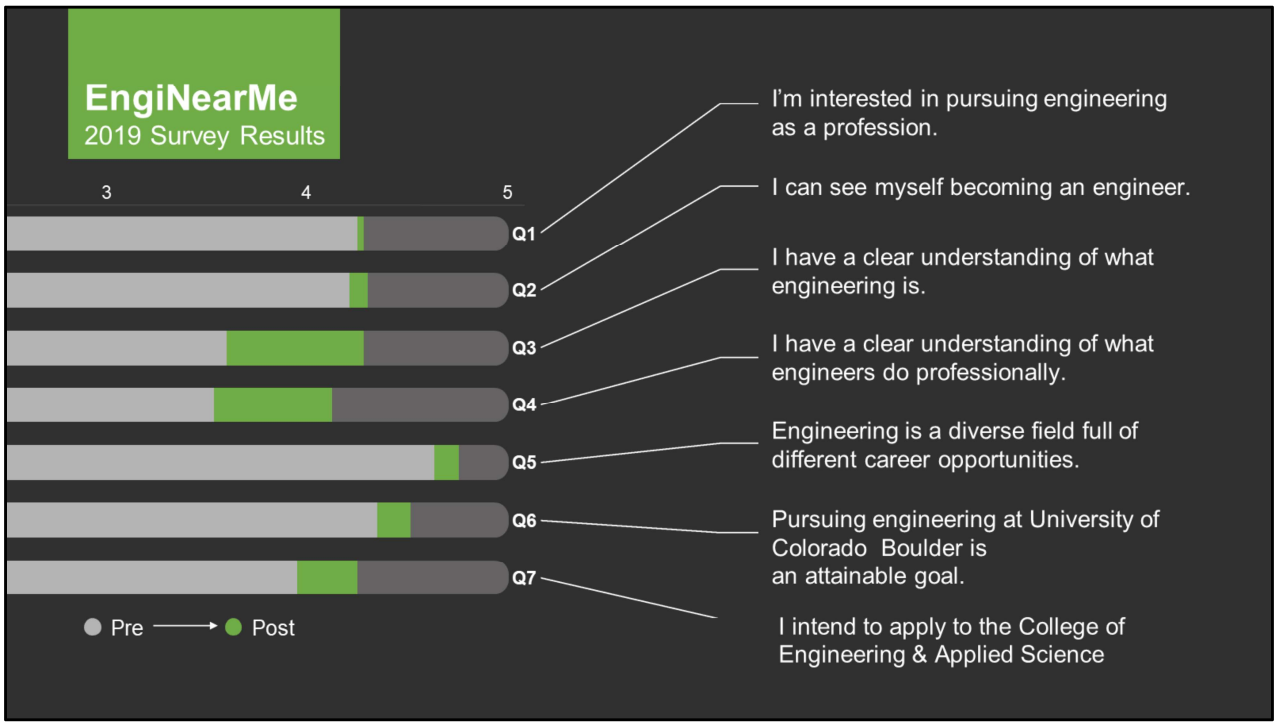
1) This is a unique university-corporate partnership. We have been able to fund this with corporate support because we found a way to address corporate priorities and our priorities simultaneously.

2) We've used intentional and thoughtful assessment and operated through a model of continuous improvement. As such, we've been able to demonstrate significant improvements in five years. We

have grown the program from 36 to 62 participants, and we've grown college matriculants from four participants to 14. We've doubled the scholarship for students, so that students now receive a total of $5,000 over their first two years in our college.

The core of the EngiNearMe curriculum features student groups collaborating to build Arduino light sculptures. This project is intended to encourage teamwork and creativity, while building on core engineering principles and concepts in a design process. Students also participate in skill-building workshops throughout the week in the ITLL (Integrated Teaching and Learning Laboratory), including laser cutting, 3D printing, and Arduino programming. In addition to the engineering curriculum, students participate in a team development course hosted by the Recreation Center, meals at Farrand Hall, and identity exploration and team-building activities hosted by the student mentors in the evening. We continuously stress the importance of teamwork in the engineering profession and how this collaboration begins in the classroom.

All of this programming is designed to build comfort with engineering concepts as well as College life in general. Many of our students are first generation students and we want the program to help them "see" themselves as students at CU.



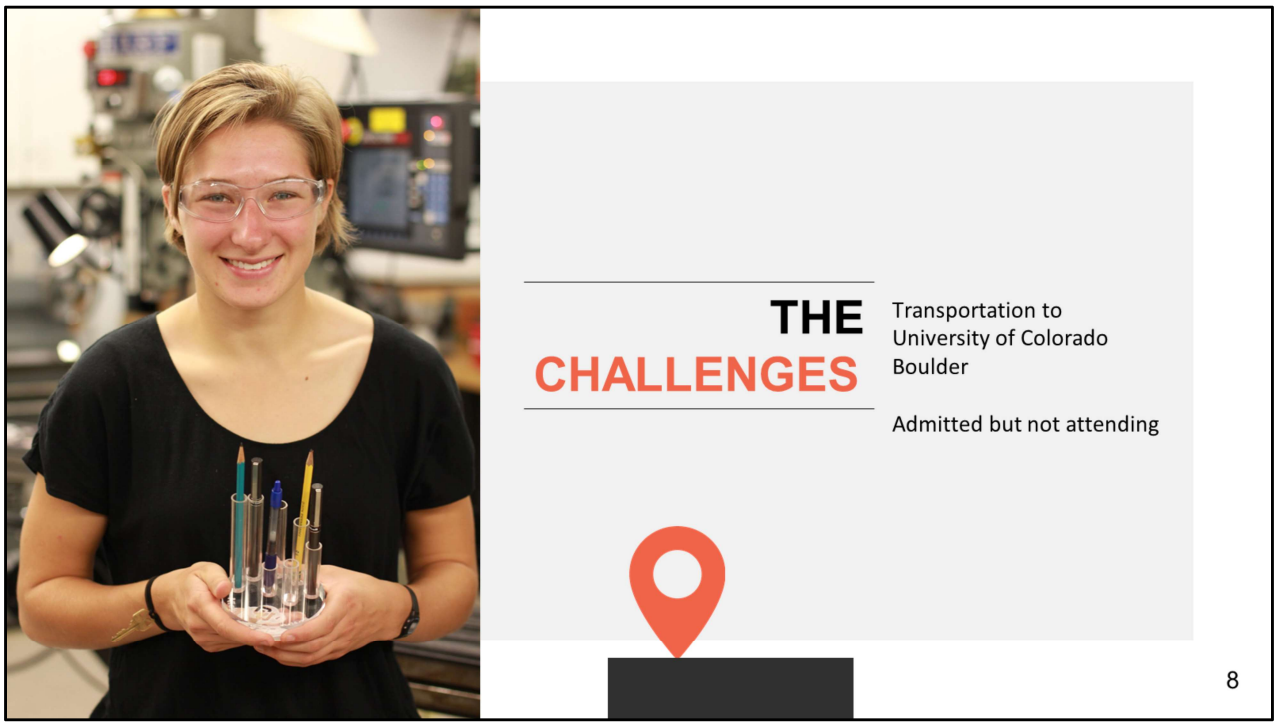
At 62 students, the 2019 EngiNearMe cohort was the largest cohort size in the program's history. EngiNearMe has grown significantly since 2015, as shown in the table below:

Participants
36 - 2015
40- 2016
51 – 2017
51 - 2018
62 - 2019
Applications Received
43 - 2015
45 - 2016
91- 2017
148 - 2018
106* - 2016

* We had interest from more students but 13 were not rising seniors so we did not consider them for the program. Our recruitment coordinator communicated this in meeting with students and screened these students out before we reviewed applications.

As shown above, we received 106 student applications in total. From our applicant pool, 65 students were accepted into the program, with 62 students participating in this year's cohort.

To understand student experiences, gauge student reactions to program enhancements, and understand student perspectives on the prospects of pursuing engineering in school and in their careers, a pre- and post-assessment was administered to all participants. The pre-assessment was taken on the first day of the program (Sunday, June 2nd). The post-assessment was administered online on the last day of the program (Friday, June 7th).



As the program has evolved from a non-residential program to a residential program we have had more luck getting productive days and blocks of time with our students. Even so, we still struggle with transportation issues. Many students are coming from the Denver metro area and have no transportation options to get to campus on their own. We are editing the start date to a weekend day this coming session to allow more families to participate in drop-off.

Though we admit many of these students to our programs we still see many of them not matriculate. We believe some of this is related to the cost of the University of Colorado Boulder as well as the reputation we still have in the community.

SUCCESS STORIES

Current Student Stories

Upcoming Graduates

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EngiNearMe is producing an increasing number of students that are enrolling in the College of Engineering and Applied Science upon their high school graduation, as shown below:

EngiNearMe Students Enrolled in The University of Colorado Boulder Engineering by Class - Directly Admitted or GoldShirt Program
Summer 2015 - 4
Summer 2016 - 6
Summer 2017 - 11
Summer 2018 - 27 Admits, 15 Matriculants

The 2018 EngiNearMe cohort produced 14 students that have enrolled directly into the College of Engineering and Applied Science for Fall 2019, the highest number in the program's history. (We lost one matriculant over the summer.) The BOLD (Broadening Opportunity through Leadership and Diversity) Center will look to enroll 25+ students

from the 2019 EngiNearMe cohort, directly into the College of Engineering and Applied Science or via the GoldShirt Program, in Fall 2020.

CONCLUSION

Future Recommendations

Targeted recruitment efforts to new Colorado school districts: Over the past two EngiNearMe cohorts, the BOLD (Broadening Opportunities through Leadership and Diversity) Center has developed strong partnerships with several schools and districts across the Denver metro area that have produced many of the students participating in the program. Moving forward, recruitment efforts need to maintain those relationships while expanding to new districts with high populations of URM students to create broader statewide representation in future cohorts.

Post-program contact: We believe we can have greater yield if we increase our contact with participants throughout their senior year. The Student Recruitment Coordinator will create a plan for ongoing outreach to the 2019 EngiNearMe participants throughout their senior year.

3. **Post-matriculation contact:** The Program Manager for Access Pathways will devise a plan to engage current College of Engineering and

Applied Science students that participated in the 2015-19 EngiNearMe cohorts to better understand the extent to which EngiNearMe prepared them for life as a College of Engineering and Applied Science student and member of the University of Colorado Boulder community. Their feedback will be used to inform plans for 2020 EngiNearMe.

4. **Change the arrival and drop off days to Sunday through Saturday:** This would allow for more families to drop off their students and attend the closing ceremony
5. **Coding Intensive:** Consider an additional few days in advance to accommodate an optional coding intensive.
6. **Fall Recruitment Event:** Consider hosting a recruitment event for 2019 participants and their families.