2013 College Prep Program Report

Mission

To support and encourage underserved students who have the desire and academic potential to excel in college, but who lack the mentoring and resources necessary to succeed.

Executive Summary

The College Prep Program at APL (CPP) exists to help the underserved students in our community who have the potential, but not the opportunity, to be successful. Our goal is to support these students and to level the playing field, which we accomplish through intensive mentoring and encouragement, especially by young Science, Technology, Engineering and Math (STEM) professionals.

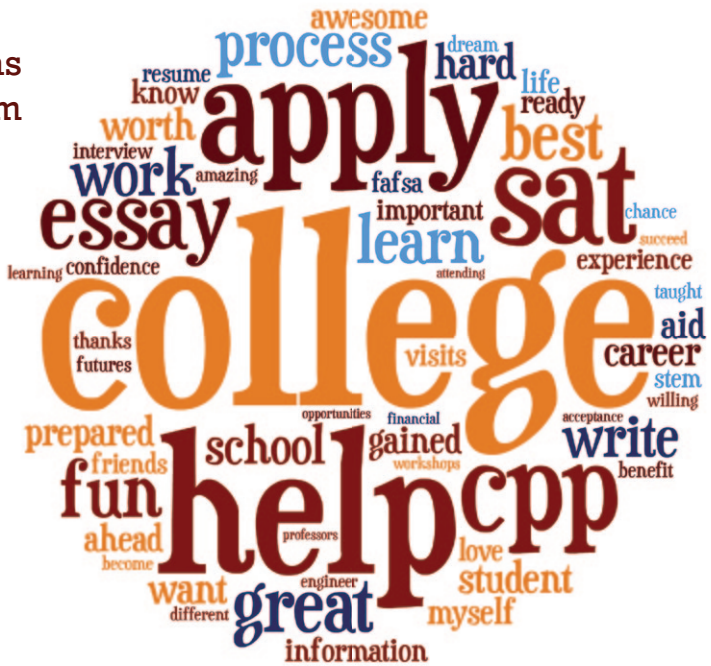
CPP was founded in 2009 by Will and Karla Gray Roncal in collaboration with the Johns Hopkins University Applied Physics Laboratory and Maryland MESA. We partner with the APL STEM Program Office, which provides our operating budget, including the technology, classroom space, transportation and materials that are instrumental to student success.

Students are selected for the summer program by competitive application from the Baltimore-Washington area. Participants receive over 120 hours of in-person instruction and activities, and commit to 2 hours of homework each night. Each student is required to create a comprehensive student portfolio by the end of the program.

CPP is an all-volunteer organization: in 2013, over 90 volunteers donated over 4500 hours to support the students. This year Liem Huynh, a long-time volunteer, formally became our Assistant Program Director and continued to lead technology initiatives.

During our free summer program, we cover a wide-range of topics, including filling out applications, finding financial aid, creating a list of target schools, giving back, mock interviews, SAT preparation and on-site college visits. We work with our students to expand possibilities and to provide tools to apply to college, graduate from college, attend graduate school and begin successful careers.

Over the past five program sessions, CPP has grown from a small pilot into a robust program providing an integrated curriculum for 20-25 students each summer, plus support and mentoring for all program alumni. In 2013 we graduated 24 new students, bringing our cumulative total to 100 student alumni.



100% of our program graduates are on track to earning their 4-year degrees.

More information can be found on our website: collegeprepprogram.org.

The CPP Model

The College Prep Program was founded to fill a need in our community not addressed by other programs. The CPP model is different:

- ***Volunteer Powered***: All CPP leaders and coaches are volunteers, which allows us to create a dynamic, passionate team to interact with and support our students!
- ***STEM Focused***: We welcome all students, but focus on Science, Technology, Engineering and Math (STEM) enrichment activities to grow future leaders in these fields. Most of our volunteers are STEM professionals, so they can speak authentically about their experiences and overcoming barriers in these careers.
- ***Requires Commitment***: All enrolled students and their parents sign a contract to participate in program activities and to do two hours of homework per night. To graduate, students must successfully complete a rigorous curriculum, culminating in a 50 page portfolio with their key college application materials.
- ***Free:*** CPP is offered to students at no charge, except for a $50 fee, which is deposited into our student support fund. The fee is waived for low-income students or others indicating an inability to pay.
- ***Data-Driven***: As engineers and scientists, we rigorously develop and evaluate teaching methods each year through qualitative and quantitative metrics.
- ***Breaks Barriers***: We closely mentor each student. Through this individualized attention, we answer thousands of questions and help students overcome their obstacles.
- ***Raises the Bar***: We work with students to show them what is possible, and help them identify new opportunities (such as graduate school).
- ***Supports the Community:*** We model service and help our students to develop concrete plans to give back to their communities.
- ***Supports our Alumni***: CPP is not just a summer program. We stay in touch with each of our students and provide the support to help solve college challenges and persist through college graduation.

Program Need

Unfortunately, many high-potential students face barriers and are denied equal opportunities to achieve their dreams. These barriers take many forms, such as acute financial need, immigrating from another country, navigating the higher education system as a first-generation college student, inaccurate knowledge, or a lack of professional role models,. These students do not have the resources to afford expensive college prep courses or private tutors.

We are here to help our students overcome these obstacles, level the playing field and provide the tools to help them define and achieve their dreams. We work to strengthen the community and to nuture talented engineers and scientists who will lead future discoveries and champion new ideas.

The need is acute! Underserved students face especially sobering statistics:

- 9% of high school students from the lowest income quartile graduate from a 4-year college.[1]
- 38% of high school students below the US median income enter a 4-year college.[1]
- Less than 60% of all students entering a 4-year college graduate.[2]
- Black and Hispanic students - 30% of the US population - earned 5.4% of Science/ Engineering PhDs.[3]
- Only 4% of underrepresented students are engineering eligible (academically prepared in math and science) when entering college.[4]
- The US public school counselor to student ratio (K-12) is 457:1.[5]

[1] Baily and Dynarski, 2011. Data from National Longitudinal Survey of Youth, 1979 and 1997.
[2] US Department of Education, The Condition of Education: Indicator 21, 2010 Post-Secondary Graduation Rates, retrieved from http://nces.ed.gov/programs/coe/2010/section3/indicator21.asp.
[3] Derived from the National Science Foundation Division of Science Resource Statistics, retrieved from http://www.nsf.gov/statistics/nsf10300/content.cfm?pub_id=3786&id=2.
[4] NACME 2008 Research Report: Confronting the New American Dilemma, Underrepresented Minorities in Engineering: A Data-Driven Approach
[5] US Department of Education, Common Core of Data, National Institute for Educational Statistics - Public Elementary and Secondary School Student Enrollment and Staff, School Year 2008-2009.

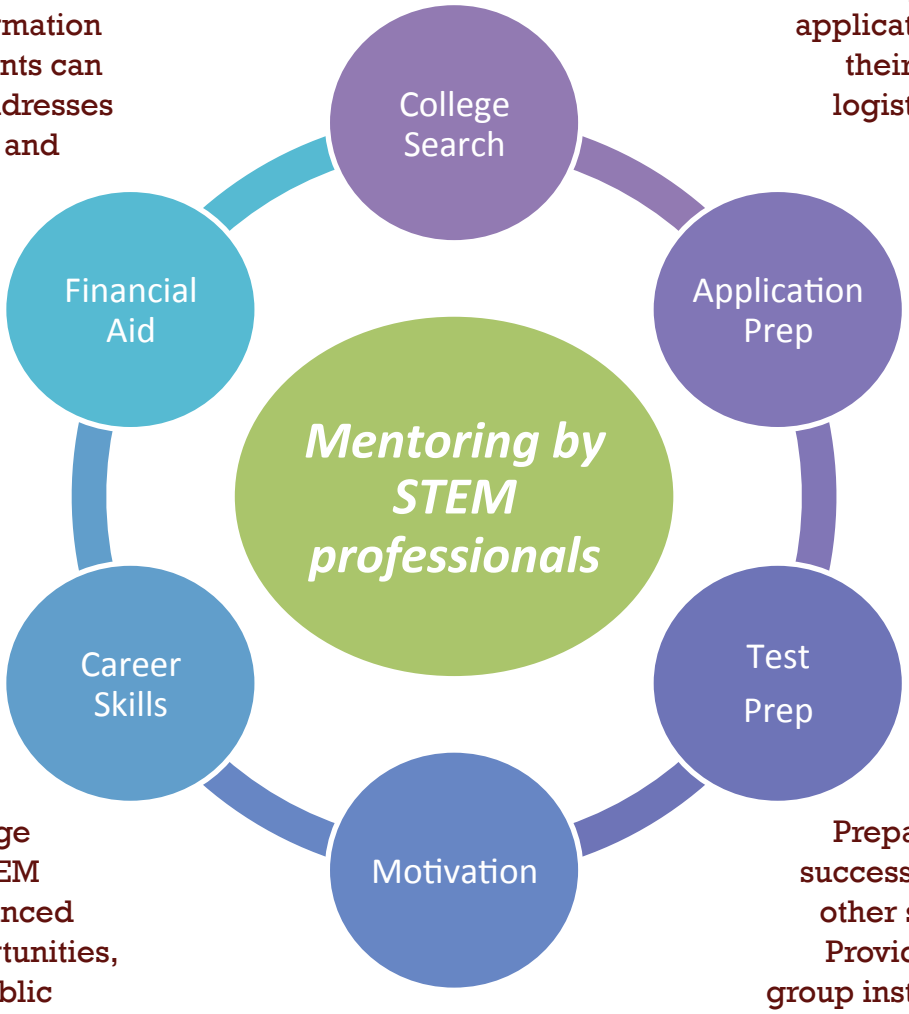
Curriculum

The curriculum for CPP is constantly evolving and is designed to guide students through the college application process and toward college graduation. Our topics are conceptually divided into the six modules described below.

Helps students to identify their Dream, Reach, Match and Safety schools, and to consider important aspects of choosing a school.

Guides students through the financial aid process and provides information to ensure all students can afford college. Addresses individual student and family concerns.

Teaches students to write a competitive, polished application, emphasizing their standout factors, logistics and planning.



Provides knowledge about possible STEM career paths, advanced educational opportunities, resume review, public speaking, professionalism tips and interviewing skills.

Prepares students to be successful on the SAT and other standardized tests. Provides rigorous, small group instruction, strategies and guided practice.

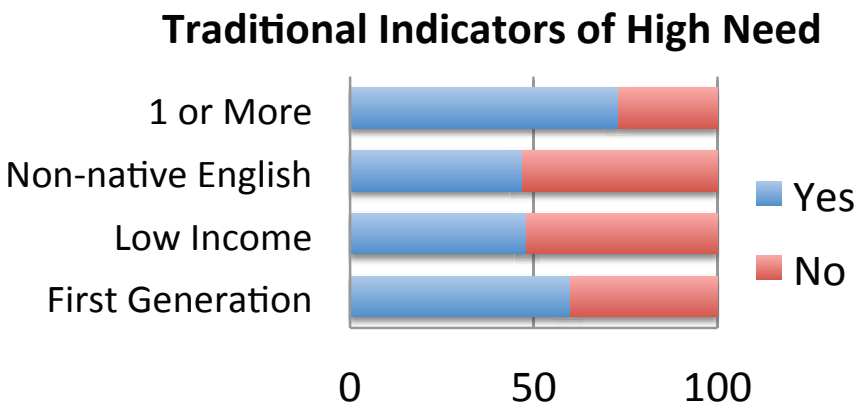
Provides encouragement, individualized mentoring, testimonials and guidance in overcoming barriers.

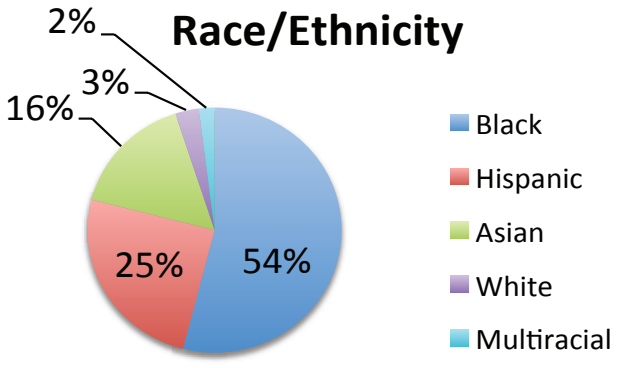
Our Students

CPP recruits students from throughout the Baltimore-Washington Region via our website, area high school counselors, after school programs, CPP alumni and partner organizations. All area high school students (rising 10th-12th graders) are eligible to participate. Admission is by competitive application: we accept 20-25 students who have demonstrated strong academic potential and need extra help preparing for college.

We recruit students with high need, commitment and demonstrated academic potential from throughout the DC-Baltimore area. Although we evaluate students based on their academic records, we don't limit recruitment only to those who are already academic 'superstars.' Our average incoming GPA is approximately 3.4/4.0 and students typically score around a 950 on the SAT pretest (Math + Critical Reading).

To date, we have enrolled a diverse population of students from 38 high schools: 75% of our students meet traditional indicators of high need, and 95% of our students are underrepresented in STEM. This summer we celebrated our 100th program participant.





One or More: Students meeting at least one of the following categories
First Generation: Students who are the first generation in their family to attend a 4-year college in the United States
Low Income: Students eligible for Free-Reduced Lunch
Non-native English: Students whose native language is a language other than English (self-reported)

Volunteer Staff

Program Directors:	Karla Gray Roncal William Gray Roncal		
Assistant Director:	Liem Huynh		
Program Coordinators:	Angelica Lily	Dean Kleissas	Maria Roncal
Mentor Leads:	Shaun Chemplavil Dean Kleissas	Liem Huynh Emily Stoll	
Mentors:	Jacqueline Akinpelu Laurel Boraz Nathaniel Butler Rickey Caldwell King Carmichael Rob Cheaney David Darling	Madonna Dougherty Lauren Duffey Hani Ebeid Danielle Fisher Judith French Esta Glazer Gordon Hill	Lauren Kennell Jose Molina Joseph Perrino Kathleen Perrino Cynthia Utterback Radha Venkat Joshua Wolfe
SAT Coach Leads:	Tammy Kolarik	Mary Ann Saunders	Ashok Sivakumar
SAT Coaches:	Laurel Boraz Ella Cameron Hani Ebeid	Judith French Lauren Kennell Zach Merceruio	Matt Shanaman Radha Venkat Saurabh Vyas
Guest Speakers:	Dawnielle Farrar Bobby Kasthuri Ashley Llorens	Tanya McMillian Toni McMillian Alfredo Quiñones	CPP Alumni
Classroom Volunteers:	Thomas Byrd Claudia Garcia	Danielle Hilliard Mapi Roncal	Miguel Roncal Ralph Semmel
College Volunteers:	Mei Adams Funmi Adetunji Hareen Aparakakankanange Sohha Ariannejad	Meg Bentley Karen Borgsmiller Kip Conlon Crystal Diaz Marysol Encarnacion	Cindy Greenwood Violet Haya Colleen Hickson Disa Mhembere Alisa Mousavi
Essay/Resume Reviewers:	John Bogovic Liz Cangialosi Dwight Carr Vick Chellappa Raiza Cortes Camille Daniel Terry Farquhar Blair Fleet	Deane Gray Emily Hebeler Brianna Hemeyer-Taylor Erik Johnson Jeff Kinney Michael Kleinberger Denise Lafluer Mary Luongo	Maria Roncal Kathy Ruben Dominique Taylor India Waddell Monica Waters Kyle Weber Elizabeth Whyms
CPP Website Design:	Philip Hilliard		

CPP is run entirely by volunteers from JHU/APL and the community. In 2013, over 90 volunteers donated a total of over 4500 hours.

Sponsorship

The College Prep Program is a partnership with the Johns Hopkins University APL STEM office and Maryland MESA. In 2013, the STEM Office funded all program expenses, which enabled a number of initiatives and activities detailed elsewhere in this report. They made it possible for us to visit many universities, including our first trip to New York City and New Jersey to visit Columbia University, New York University and Princeton. The STEM office provided classroom computers and a printing/scanning station, and donated graphing calculators to qualifying students. All of our books, materials, transportation and food are covered through this partnership.

Finally, APL has hosted 10 CPP Alumni in ASPIRE high school or college internships.

Special Thanks to the following APL Staff members, including the STEM PMO and Maryland MESA:
Dwight Carr, Colleen D'Agrosa,Denise Lewis, Paula Shelton, Jason Johnson, Mary Cumor, Heather Gilberry, Karen Greene, Tracy Gauthier and the APL Library staff, and the APL transportation team.

2013 Program and Activities

In 2013, 24 students graduated CPP. We developed new promotional materials, and strengthened our volunteer team through recruitment and training. We revised our student workbook and other program content, and increased our capacity to support both our current summer students and our growing network of program alumni. To support our graduates, we offered workshops about the SAT, financial aid and college applications, and answered innumerable questions via email, text and video chat. In 2013, we were able to begin offering application fee waivers to our students.

We expanded the mentoring component of CPP, giving each student access to dedicated coaches to guide them through the application process. We continued to hold parent workshops and participated in outreach events to educate our community about CPP-related topics.

We visited 10 colleges, including our first trip to New York City! Students were able to experience Columbia University, Princeton University, Johns Hopkins University, American University, UM-Baltimore County, New York University, George Washington University, Morgan State University, Georgetown University and UM-College Park.

CPP students worked hard, including creating a final portfolio of about 50 pages. In total, they submitted over 1800 documents containing approximately 6000 pages of content, all of which were reviewed by a coach.

We had a lot of fun, too! Students received tips on public speaking, created skits about college success, served on a mock admissions committee, participated in practice interviews and asked questions to program alumni. We heard from motivational speakers, and experienced interesting activities such as an interactive eye-tracker demonstration, a wind tunnel visit, a DNA extraction experience and a cutting-edge neuroscience talk.

ASPIRE Internship

10 CPP alumni have participated in a hands-on internship at the JHU Applied Physics Laboratory, contributing solutions to real-world technical challenges: Marie (2011-Present), Carlos (2011), Jumoke (2012), Anthony (2013-Present), Wendy (2013-2014), Amy (2013-2014), Ujjwal (2013-2014), Aaron (2013-2014), Tolulope (Spring 2014), Abraham (Spring 2014)

Technology

In 2013 we made significant improvements to our technology infrastructure, which allowed us to better support and monitor student progress, and to access digital resources and application tools in real time.

We built a custom web-based gradebook, enabling students to download, complete and electronically upload assignments. This facilitated a digital review and grading process through which students could monitor their progress and coaches could provide assignment feedback. We also developed the capability to do essay-resume reviewing year round for all alumni; so far, 500 revisions have been completed by 45 volunteers. Finally, we developed internal and external websites for the College Prep Program.

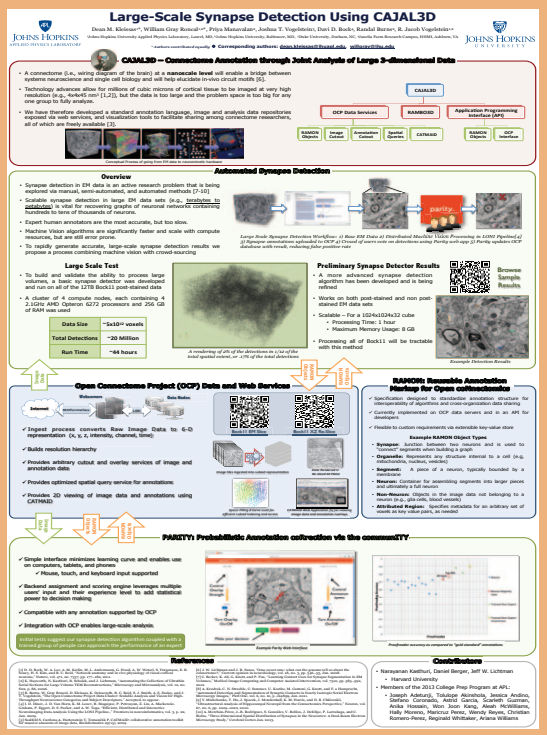
Many of our students did not have access to technology at home, so we provided loaner computers, tablets, internet hotspots and scanning and printing services. We also gave students graphing calculators if they could not purchase one.

These technology enhancements were instrumental in helping students overcome barriers, participate effectively in CPP and develop the skills to succeed in a 21st century college environment.

Neuroscience Activity

CPP2013 students met a leading neuroscientist and had the opportunity to contribute to ground-breaking research.[6] The project goal was to find synapses in a large volume of neural tissue.

Students helped to test Parity, a novel web application used to proofread the synapses found by a computer. In 2014 high school students across the state will use Parity to participate in a Maryland Business Roundtable and APL STEM challenge.



[6] DM Kleissas, W Gray Roncal, et. al, "Large-Scale Synapse Detection Using CAJAL3D," Neuroinformatics, August 2013.

Contributors

- Narayanan Kasthuri, Daniel Berger, Jeff W. Lichtman
  - Harvard University
- Members of the 2013 College Prep Program at APL:
  - Joseph Adetunji, Tolulope Akinshola, Jessica Andino, Stefano Coronado, Astrid Garcia, Scarleth Guzman, Anika Hossain, Won Joon Kang, Aleah McWilliams, Hally Moreno, Maricruz Perez, Wendy Reyes, Christian Romero-Perez, Reginald Whittaker, Ariana Williams

CPP2013 Metrics and Longitudinal Results

Overall CPP Rating:

10/10

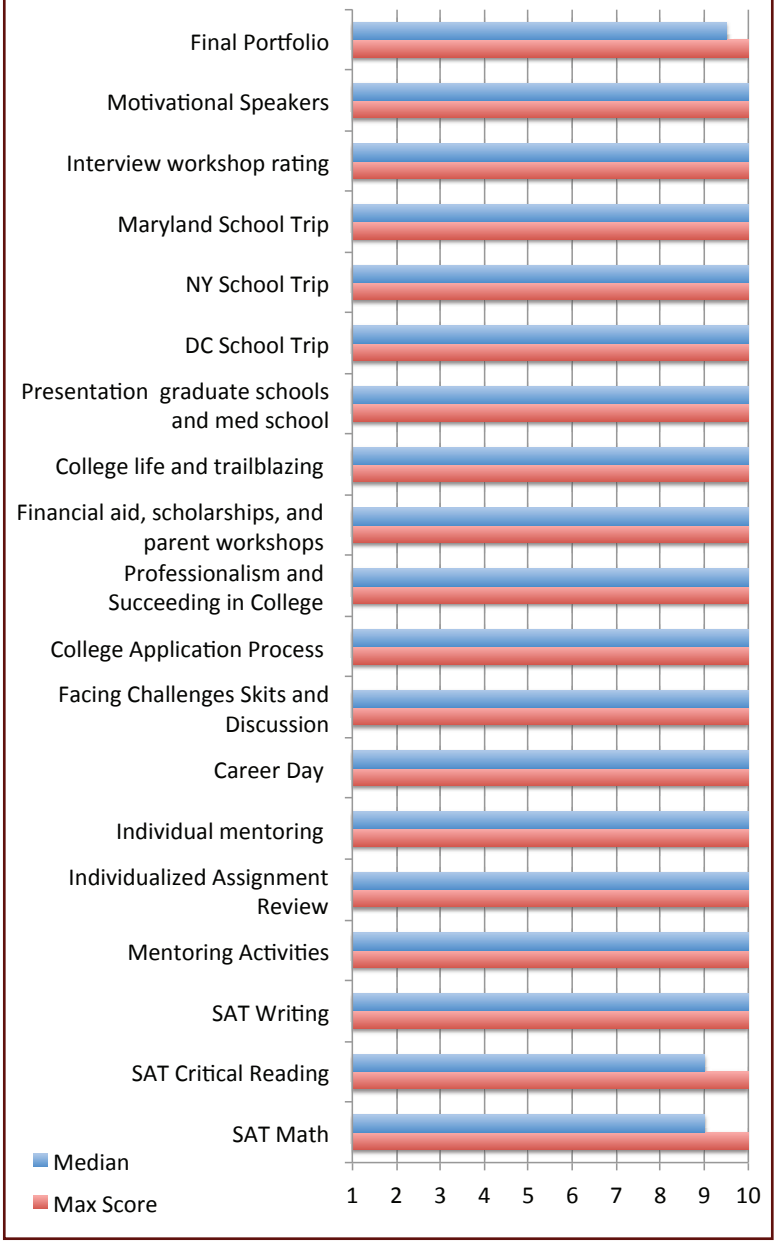
The College Prep Program follows a data-driven approach. We collect detailed quantitative and qualitative measures from students each summer, and track their progress through high school and college. Overall, program results were very strong, as shown below.

24/25 students graduated CPP2013
18 Exceptional Achievement Certificates

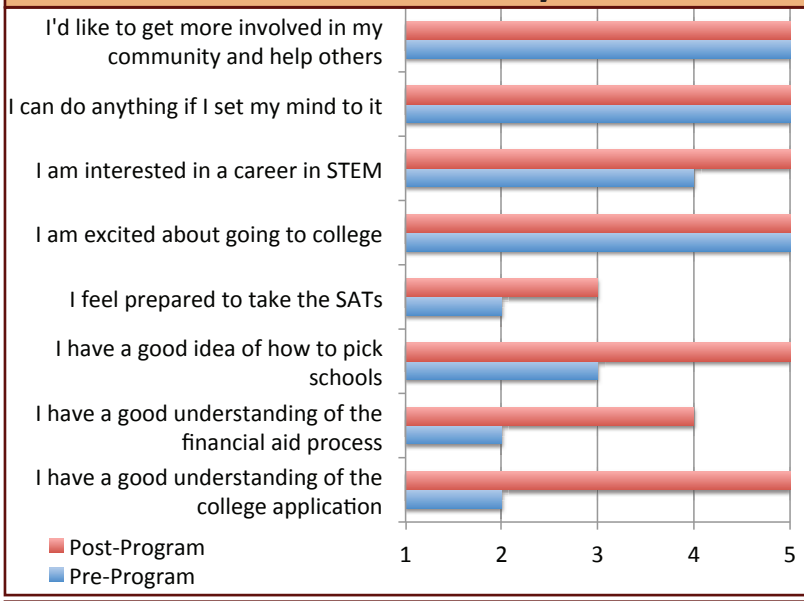
Rigorous College Readiness Test:
29% Average Improvement

2013 DRMS Top Student Award: Maricruz Perez • Jessica Andino • Wendy Reyes

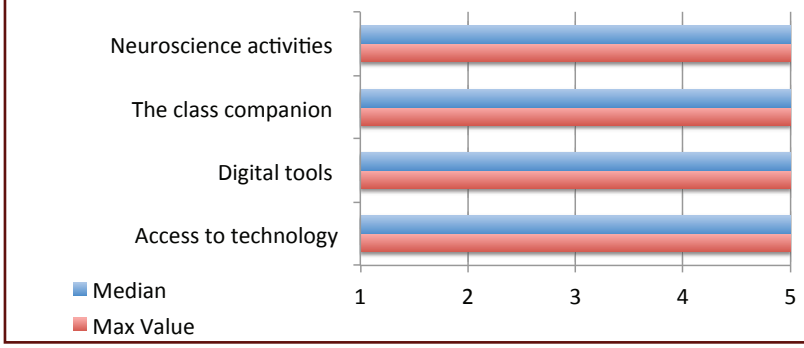
Student Ratings of CPP2013 Components



CPP Class Survey



Did these New Initiatives Make CPP Better?



First CPP College Graduates: Xiao Xin and Antoinette, both members of the first CPP class, earned their degrees in less than four years.

N = 24, unless noted; median values are reported for each metric.
College Readiness test given at beginning and end of the program.
Survey scale [1 to N]: 1 = most negative, N = most positive

We are actively in contact with **96%** of our graduates. Based on a Fall 2013 survey of these program graduates (2009-2013):

91% are pursuing or planning to pursue a STEM degree.
87% plan to pursue a graduate or doctoral degree.
100% of CPP students are on track to complete a Bachelor's degree.
3.3 Median GPA for CPP college students.
100% agree that CPP helped them prepare for their college applications.

Student Testimonials

This is the best decision I ever made.
-Rachel, CPP2012

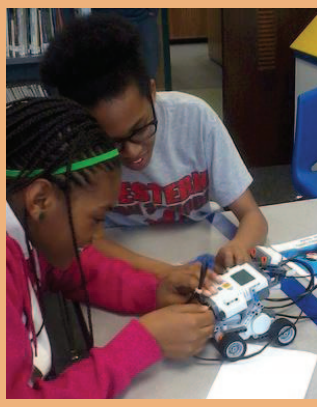
Attending College Prep has been one of the greatest opportunities ever presented to me.
-Travis, CPP2011

It will propel you into the college application process, and will help you find the best fit for you.
-Marysol, CPP2010

I wasn't planning to attend college at all until I went to this program.
-Cynthia, CPP2009

Giving Back

Sydney, a CPP alumni and MESA student at Western High School, won the Outreach Award at the CPP2012 closing ceremony for her idea to start a middle school robotics club. She is passionate about giving back and helping others. We awarded her a LEGO MINDSTORMS NXT kit, and she partnered with her local middle school to realize her vision. She has helped students gain early experience to technology while completing challenging projects.



Control groups are hard to identify, but we have shown dramatic results relative to the 9% graduation rate for a typical low-income student. We are on track to substantially exceed the graduation rate achieved by students from advantaged backgrounds.

College Attendance Sample: Coppin State • Frostburg • Guilford • Johns Hopkins • Loyola (MD) • Miami (OH) • Michigan State • Morehouse • North Carolina A&T • Penn State • Princeton • Purdue • Salisbury • Spelman • St. Mary's • Stevenson • Temple • Towson • Tuskegee • Alabama at Birmingham • UMB • UMBC • UMCP • Scranton

Metrics Explanation and Notes:

- CPP Graduate: Students who complete CPP by meeting assignment, attendance and final portfolio requirements.
- CPP Participant: Students who participate in the activities of the CPP program and earn a certificate at graduation of participant or higher (excludes those students who dropped out mid-program).
- The statistics above are derived from self-reported student data, and only include students who responded.
- On-track students are defined as those students who are in a 4-year college, or who are in high school or a 2-year college who plan to transition to a 4-year college. Our oldest CPP graduates are seniors in college in 2013-2014.

The Students of CPP2013

Future Plans

During the upcoming year, CPP volunteers plan to continue mentoring our 100 program alumni and to look for new opportunities to partner with community groups, universities and other organizations.

In the Spring, we will reach out to members of our community to recruit talented students for the next College Prep class.

Focus Areas:

Develop CPP leadership team and train volunteer coaches
Deepen our support for students and program alumni
Publicize CPP and partner with area organizations
Further develop our SAT and college prep activities
Enhance our technology capabilities
Continue to gather metrics and celebrate student success

Astrid
Engineer/Doctor

Tolu
Pediatric Surgeon

Scarleth
Lawyer/Teacher

Won Joon
Computer Engineer

Chris
Biologist

Ariana
Nurse

Dipo
Pharmacist

Jessica
Economist

When you want something, all the universe conspires

Christian
Engineer

Wendy
Biomedical Engineer

Aaron
Financial Advisor

Aleah
Computer Scientist

Paige
Bio-engineer

Stefano
Computer Scientist

Ujjwal
Engineer/Doctor

Justin
Engineer

Hally
Economist

Femi
Computer Scientist

Maricruz
Lawyer

Bunmi
Architect

Abraham
Biologist/Engineer

Anika
Pediatrician

Amy
Biomedical Engineer

Reggie
Writer

IN HELPING YOU TO ACHIEVE IT. ~PAULO COELLO

College Prep Program at APL

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Founded 2009