SMASH ACADEMY

Level Playing Field Institute
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2015 Evaluation Report

SUMMER MATH AND SCIENCE HONORS (SMASH) ACADEMY

2201 Broadway, Suite 101, Oakland, CA 94612 | 415-946-3030 | info@lpfi.org | www.lpfi.org

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EXECUTIVE SUMMARY

To evaluate the impact of the SMASH program in 2015, data were collected from students across all SMASH sites (UC Berkeley, Stanford, and UCLA, which included USC students). Data collection procedures included: (1) Academic assessments examining growth in mathematics, science, and computer science skills and knowledge, (2) Pre- and Post-SMASH surveys examining students' attitudes and aspirations, (3) Open-ended questions assessing students' experiences and satisfaction with SMASH, (4) Alumni surveys tracking post-secondary data of SMASH alumni, and (5) Longitudinal academic year data to analyze coursetaking and grades. A total of 602 SMASH students were served in 2015, including 225 current students and 377 alumni. Eighty students attended SMASH in Southern California, and 145 attended the Northern California sites at UC Berkeley and Stanford. The vast majority of all SMASH students were Latino (54%) and African American (34%); 49% were female, 81% were eligible for Free/Reduced Price Lunch (FRPL), and 68% were both Free/Reduced Priced Lunch and First Generation to graduate from college.

Major highlights from the 2015 evaluation include:

<u>Math, Science and Computer Science Knowledge</u>

- 83% of SMASH students demonstrated an increase in mathematics readiness from pre- to post-SMASH.
- 93% of SMASH students demonstrated an increase in science assessment scores over the course of the program.
- 88% of SMASH students demonstrated an increase in computer science assessment scores over the course of the program.
- Students gained clarity on what the field of computer science is, increasing by 34 percentage points in "understanding what computer science is" and demonstrating a statistically significant increase in their familiarity with the computer science field and computing careers.
- Students demonstrated a statistically significant increase in technology skills and knowledge from pre-to-post-SMASH.

<u>STEM Attitudes and Aspirations</u>

- Over the course of the SMASH program, students demonstrated a statistically significant increase in their attitudes toward mathematics.
- The percentage of students who indicated that they thought mathematics was "fun" versus boring increased nine percentage points, from 70% to 79%.
- Students demonstrated a significant increase in their belief in the cultural relevance of computer science from pre-to post-SMASH. Students also demonstrated a significant increase in their perceptions of computer science over the course of the program.

- At the completion of SMASH, 86% of students planned to pursue a career within the fields of science, technology, engineering, or mathematics. By comparison, estimates suggest only 49% of all 9-12th graders intend to study STEM in college.[1]
- Students showed a 17 percentage point increase in their self-reported knowledge about STEM careers (66% to 83%).

Preparation for Applying to College

- SMASH students' knowledge of and preparation for the college application process increased significantly from pre-to-post SMASH.
- The percentage of students demonstrating familiarity with college admissions increased by 20 percentage points.
- SMASH student familiarity with financial aid processes and applications increased significantly over the course of the summer program.
- The percentage of students demonstrating knowledge about how to apply for financial aid increased by 23 percentage points, and the percentage of students demonstrating knowledge about student loans and how to apply for them increased by 20 percentage points.
- Students also became more confident in their ability to obtain financial aid to finance their college education (54% to 69%).

Access to STEM Role Models and Networks of Support

- Statistically significant increases were demonstrated in students' access to networks of STEM peers and role models, as well as students' access to female STEM role models and STEM role models of color.
- There were 22 and 15 percentage point increases (respectively) in the percentage of students reporting exposure to role models of color in computer science and female computer science role models.
- The percentage of students indicating that they know students from similar backgrounds as their own who are interested in STEM increased by 10 percentage points.
- The percentage of students who knew individuals with careers in computer science increased by 19 percentage points (from 57% to 76%) from pre to post-SMASH
- Post-SMASH, 88% of students indicated they had met individuals working within STEM fields who impacted their future college and career goals, an increase from 74% pre-SMASH.
- SMASH students also reported a statistically significant increase in access to computer science support networks from pre-to-post SMASH.

Leadership, Critical Thinking, and Social Justice Orientation

[1] National Science Foundation, Science and Engineering Indicators, 2012, University of the Sciences, Survey Results:Students' Attitudes on Pursuing Sciences and Healthcare, 2012).

- A three percentage point increase was demonstrated in students' comfort in leading, planning, and decision-making within groups (81% to 84%), and a four point increase was seen in their self-reported leadership skills (77% to 81%).
- Students demonstrated small, yet non-significant, increases in their leadership skills, critical thinking skills, and social justice orientation from pre-SMASH to post-SMASH.
- Students demonstrated a significant increase in their connection to their gender identity from pre- to post-SMASH.
- Students showed an increase in their comfort level in interacting with diverse peers over the course of the program (from 75% to 80%).

Post-Secondary Outcomes

- Sixty-nine percent of SMASH alumni have been tracked. Of these, 100% graduated from high school (compared to the national average high school graduation rate of 75%)[2] and 95% are either currently enrolled in a college or university, or have completed their degree (compared with 45% of all 18-24 year-olds).[3]
- 68% of SMASH alumni are currently declared STEM majors, with the most common major reported by SMASH alumni being computer science. By comparison, only 23% of all college freshmen declare STEM majors.[4]
- 79% of alumni intended to major in STEM while in high school and 74% of those went on to declare a STEM major in Year 1; 63% of those who declared STEM majors in Year 1 persisted beyond Year 3 in STEM. By comparison, non-SMASH Latino and African-American students who enter college as STEM majors have 4-year STEM degree completion rates of just 15%, and 13%, respectively.[5]

ABOUT LPFI

The Level Playing Field Institute (LPFI) is an Oakland-based non-profit organization that is committed to eliminating the barriers faced by underrepresented people of color in science, technology, engineering and math (STEM) and fostering their untapped talent for the advancement of our nation.

To improve access, opportunity, and equity in STEM, the Level Playing Field Institute:

- Operates **STEM-focused Education Programs**
- Conducts **Research on STEM Equity and Opportunity**
- Executes **Innovative Computer Science Initiatives**

[2] National Science Foundation (NSF), Science and Engineering Indicators, 2010.
[3] U.S. Dept. of Commerce, Census Bureau, Percentage of 18-24 Year-Olds Enrolled in Colleges/Universities, 2009.
[4] U.S. Dept. of Education, Education Dashboard: Percent of Bachelor's Degrees Conferred in STEM Fields, 2009.
[5] Higher Education Research Institute, Bachelor's Degree Completion Rates among Initial STEM Majors, 2010.

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ABOUT SMASH

The Summer Math and Science Honors (SMASH) Academy, the flagship program of the Level Playing Field Institute, is a three-year, five-week summer STEM enrichment program for low-income high school students from backgrounds underrepresented in STEM fields. The SMASH program operates across three sites in Northern and Southern California. The program began in 2004 at the University of California, Berkeley and has since expanded to Stanford University (2011), University of Southern California (2012), and the University of California, Los Angeles (2012).[6] The SMASH program offers rigorous STEM coursework, engaging curriculum which intentionally integrates culturally relevant pedagogy and technology, exposure to diverse STEM role models and networks of STEM peers, and preparation for the college applications process. In addition to academic enrichment, the program provides students with the opportunity to live on campus in dorms, where they are guided through activities focusing on social development, cultural competence, social justice orientation, and college success skills. This curriculum ensures that students of color are able to discuss and examine issues of race, class, gender, and inequity, while focusing on building confidence and support networks to alleviate barriers to STEM in higher education.

OBJECTIVES OF THE SMASH IMPACT EVALUATION

(1) Examine the goals, objectives, and activities of the SMASH program and construct measures to assess impact in each critical area.
(2) Collect data from SMASH students to measure academic growth, attitudes, aspirations, and skills, and understand students' perspectives of the SMASH program.
(3) Utilize the data and findings to document outcomes and inform program growth and improvement.

METHODOLOGY

"They [SMASH staff] inspired me to try my best because I can do it. They are people of color and they succeeded."

Data Collection

The SMASH impact evaluation included five different forms of data collection: (1) Academic assessments examining growth in mathematics, science, and computer science knowledge, (2) Pre-Post-SMASH student survey examining students' attitudes and aspirations, (3) Open-ended qualitative questions to understand student experiences with the program, (4) Alumni survey tracking post-secondary data of SMASH alumni, and (5) Student demographic data and academic year data to analyze coursetaking and grades. Details about each form of data collection are included in Figure 1 (below).

Analytical Procedures

[6] The USC and UCLA SMASH sites merged in Summer 2015 onto the UCLA campus; For the purposes of this report, students are designated by the site at which they began SMASH.

All quantitative data were analyzed using SPSS statistical package. The percentages for each item were recorded (e.g., % strongly agree/agree) for both pre- and post-SMASH responses; the percentage change between pre- and post- was then calculated to determine growth or stagnation. Each item was grouped with its corresponding scale/variable and reliability analyses were conducted; for reliable scales, individual items were summed into scales. The mean of each scale (pre- and post) was then calculated, and paired-samples T-tests were run to determine if the mean values changed significantly from pre- to post- condition.[7]

All qualitative data were analyzed using qualitative data analysis software. Open-ended items were analyzed by compiling codes and sorting into numerical categories in order to produce frequency reports based on general themes.

Figure 1.

		Description	**Data Collection Procedures**
Academic Assessments	**Math**	The SMASH mathematics assessments were designed by the LPFI Curriculum Director in collaboration with SMASH Lead Instructors. They were developed in order to measure student readiness for a range of mathematics courses and to provide instructors with information about student preparedness.	SMASH students were given mathematics assessments to determine readiness for their Fall 2015 math courses and to examine impact of the SMASH math courses. Tests included Algebra II, Pre-Calculus, and Calculus, and were administered to students prior to the start of the SMASH program and again at the end of the program. Data are reported for 179 of the 225 current SMASH students who completed both the pre- and post- math assessments.
	Science	The SMASH science assessments were designed by the LPFI Curriculum Director in collaboration with SMASH Lead Instructors. They were developed in order to measure student readiness for a range of science courses and to provide instructors with information about student preparedness.	The science assessments were given to each student on the first day of SMASH and again on the last day of SMASH. Tests included Biology, Chemistry, and Physics, and data are reported for 175 of the 225 current students who completed both the pre- and post- science assessments.
	Computer Science	The SMASH computer science assessments were designed by the SMASH Computer Science Lead Instructor. The assessments were developed to measure student readiness for a range of computer science concepts and skills, and to provide instructors with information about student preparedness.	Computer science assessments were given to each student on the first day of SMASH and again on the last day of SMASH. Tests included ECS Fundamentals, CS Principles Fundamentals, and Computer Programming. Data are reported for 174 of the 225 students who completed both the pre- and post- CS assessments.

[7] Methodological note: All scales are comprised of items rated on a 5-point Likert scale, and the mean values on each scale range from 1-5 with 5 being the highest possible value. Mean values and significant pre-post changes are reported. All item percentages reported reflect the percent of students who strongly agreed and/or agreed with each item.

Pre-Post SMASH Impact Student Survey	The SMASH impact survey was designed by LPFI's research department in consultation with research literature in education and psychology. Thirty-four variables were identified as key metrics to examine SMASH impact, including attitudes towards math and science, STEM college and career aspirations, leadership skills, and access to STEM role models (see Appendix 1). Individual items were developed to measure each scale.	All students completed the pre-SMASH survey prior to the beginning of the program (the weekend they moved into the dorms) and the post-SMASH survey on the last day of the program. Data are reported for 190 of the 225 current SMASH students who completed both the pre- and post- program survey.
Qualitative Data Collection	Open-ended items were included in the pre- post- survey to examine student experience within SMASH, aspects which had the greatest/least impact on them, and satisfaction with their courses.	Data were collected on open-ended items in the pre-post SMASH survey administered at the beginning and end of the SMASH program.
SMASH Alumni Survey	An alumni survey was designed by the LPFI research department to capture updated information on the post-secondary outcomes of SMASH alumni (including college of enrollment, major, etc.).	The alumni survey was disseminated in July 2015 to all of the 377 alumni who had completed the SMASH program and graduated high school as of June 2015. Responses were received from just under three-quarters of alumni; thus, alumni data are available for 262 of the 377 alumni (69%).
Student Demographic and Academic Year Data	Demographic data includes gender, race/ethnicity, income, family educational background. Academic year data includes coursetaking, grades, and in some cases, test scores.	Demographic data were collected during the application process and each academic year (including test scores, grades, coursetaking, etc.).

SMASH ACADEMY DEMOGRAPHIC DATA

	1st Years	2nd Years	3rd Years*	Total Current Students	Total Alumni	Total Students + Alumni
University of CA, Berkeley	28	25	17	70	224	294
Stanford University	28	19	28	75	100	175
University of CA, Los Angeles	0	21	22	43	26	69
University of Southern CA**	0	19	18	37	27	64
Total Students	**56**	**84**	**85**	**225**	**377**	**602**

*Includes 12 students participating in STEM internships through the SMASH Alternative Summer program.
** The USC and UCLA SMASH sites merged in summer 2015 onto the UCLA campus; For the purposes of this report, students are designated by the site at which they began SMASH.

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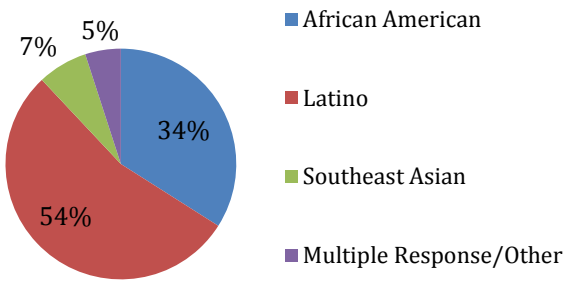
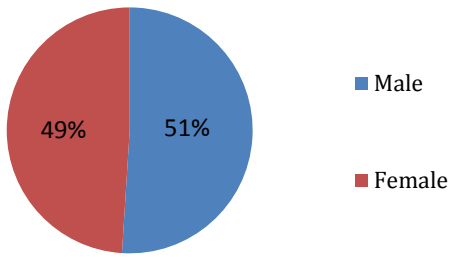
Academic Data	
Average Current Math Grade	A
Average GPA	3.5
Socioeconomic Indicators	
Free/Reduced Price Lunch Eligibility	81%
Average Household Income	$54,200
Average Household Headcount	5
First Generation College	75%
Both FRPL & First Generation	68%

Race/Ethnicity (n=225)



Gender (n=225)



SMASH EVALUATION RESULTS

Goal 1: Ensure students increase STEM knowledge, skills, and preparation for STEM studies in higher education.

Mathematics Readiness

- 83% percent of SMASH students demonstrated an increase in mathematics readiness from pre- to post-SMASH, with an average of eight or more items correct on the post exam. Two percent of students had no change from pre to post and 15% decreased in performance (Table 1).

Table 1. Overall Math Assessment Data

Overall Math Assessment Data			
	# of students	% of students	Avg. # items (+/-)
Increase (post>pre)	149	83%	+8 items
No Change (post=pre)	4	2%	0 items
Decrease (post<pre)	26	15%	-2 items
TOTAL SAMPLE (completed pre and post assessment)	179	--	+7 items

- In Pre-Calculus, 73% of students demonstrated an increase in readiness skills, and these students increased by an average of six items.

- 89% of Calculus students demonstrated an increase in readiness, with an average of eight more correct items on the post exam.

- In Algebra II, 96% of students increased in readiness from pre to post program, with an average increase of twelve items (Table 2).

Table 2. Mathematics Pre-Post Data, By Course

Mathematics Pre-Post Data, By Course				
		# of students	% of students	Avg. # items (+/-)
Algebra II (n=39)	Increase	37	96%	+12 items
	Same	1	2%	0 items
	Decrease	1	2%	-1 items
Pre-Calculus (n=66)	Increase	46	73%	+6 items
	Same	1	2%	0 items
	Decrease	19	25%	-2 items
Calculus (n=74)	Increase	66	89%	+8 items
	Same	2	2%	0 items
	Decrease	6	9%	-2 items

- Among students who demonstrated growth from pre-post, 21% increased by 3-5 items, and another 67% increased by six or more items (Figure 1).

- Among students who demonstrated no growth from pre-post, 54% decreased by 1-2 items (Figure 2).

Figure 1. Amount & Frequency of Math Item Increase

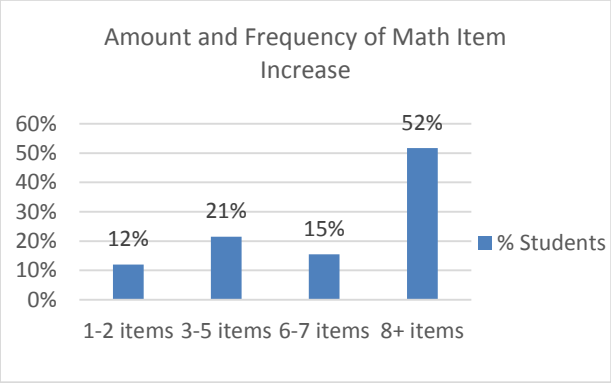
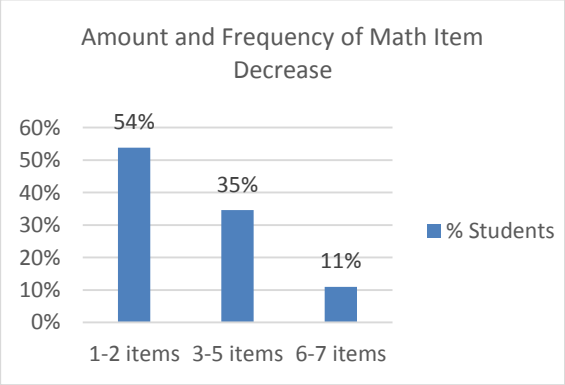


Figure 2. Amount & Frequency of Math Item Decrease



Multi-annual performance on the Math Assessment

- Noteworthy mathematics assessment performance gains were made in 2015 compared to 2014 scores (Table 3). The percentage of students whose pre/post-SMASH math assessment scores increased rose by 16 percentage points in 2015.

Table 3. Multi-annual Pre-Post Mathematics Assessment Data

Multi-annual Pre-Post Mathematics Assessment Data						
	% of students 2014	% of students 2015	% difference (+/-)	Avg. # items (+/-) 2014	Avg. # items (+/-) 2015	# difference (+/-)
Increase (post>pre)	67%	83%	16%	4	8	4
No Change (post=pre)	12%	2%	-10%	-	-	-
Decrease (post<pre)	0%	15%	15%	-2	-2	-

Science Readiness

- 93% of SMASH students demonstrated an increase in science assessment scores over the course of the program, with an average increase of eleven items. Three percent demonstrated no change, and 5% decreased in performance from pre- to post-SMASH (Table 4).

Table 4. Overall Science Assessment Data

Overall Science Assessment Data			
	# of students	% of students	Avg. # items (+/-)
Increase (post>pre)	162	93%	+11 items
No Change (post=pre)	5	3%	0
Decrease (post<pre)	8	5%	-2 items
TOTAL SAMPLE (completed pre and post assessment)	175		+10 items

- Students demonstrated strong gains in Physics, with nearly 100% of students (98%) increasing from pre-post, by an average of six items.

- 91% of students increased in performance in Chemistry, and 91% demonstrated an increase from pre-post SMASH in Biology (Table 5).

Table 5. Science Pre-Post Data, By Course

Science Pre-Post Data, By Course				
		# of students	% of students	Avg. # items (+/-)
BIOLOGY (n=53)	Increase	48	91%	+10 items
	Same	3	6%	0
	Decrease	2	3%	-1 item
CHEMISTRY (n=82)	Increase	75	91%	+14 items
	Same	1	1%	0

	Decrease	6	7%	-3 items
PHYSICS (n=40)	Increase	39	98%	+6 items
	Same	1	2%	0
	Decrease	0	0%	--

- Among students who demonstrated growth from pre-to post-SMASH, 16% increased by 3-5 items, and another 75% increased by six or more items (Figure 3).

- Among students who decreased from pre- to post-SMASH, 37% decreased slightly, by 1-2 items (Figure 4).

Figure 3. Amount & Frequency of Science Item Increase

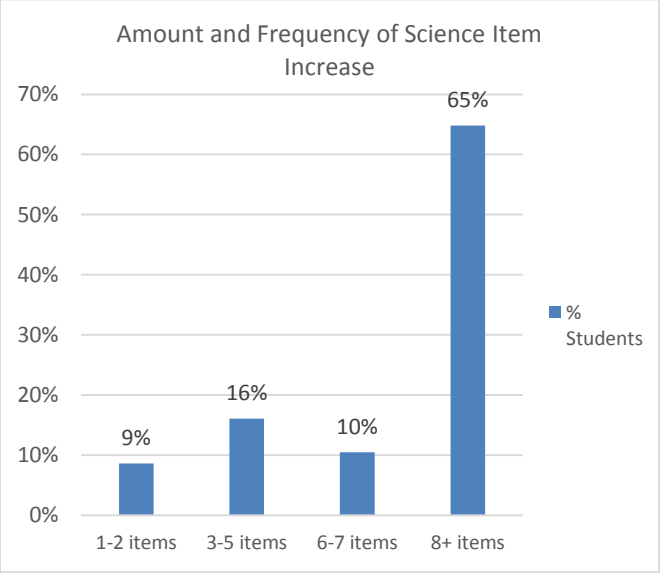
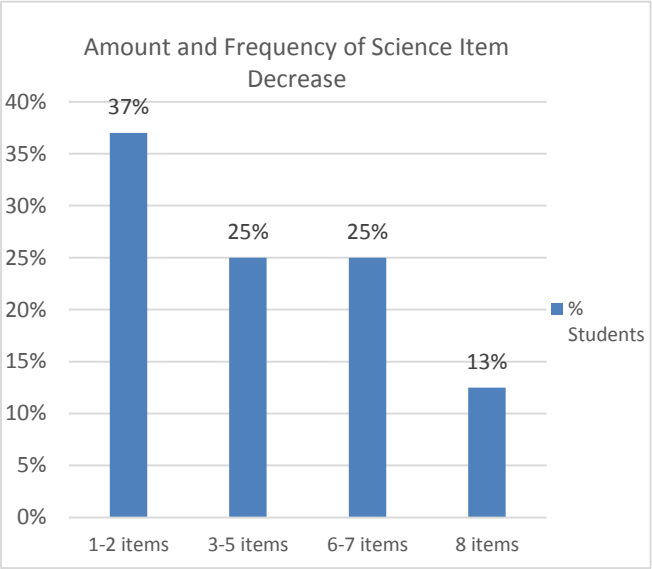


Figure 4. Amount & Frequency of Science Item Decrease



Multi-annual performance on the Science Assessment

- Striking science assessment performance gains were made in 2015 compared to 2014 scores (Table 6). The percentage of students whose pre/post-SMASH science assessment scores increased rose by 25 percentage points in 2015, from 68% to 93%.

Table 6. Multi-annual Pre-Post Science Assessment Data

Multi-annual Pre-Post Science Assessment Data						
	% of students 2014	% of students 2015	% difference (+/-)	Avg. # items (+/-) 2014	Avg. # items (+/-) 2015	# difference (+/-)
Increase (post>pre)	68%	93%	25%	3	11	8
No Change (post=pre)	8%	3%	-5%	-	-	-
Decrease (post<pre)	24%	5%	-19%	-2	-2	-

Computer Science Skills and Knowledge

- 88% of SMASH students demonstrated an increase in computer science assessment scores over the course of the program, with an average increase of six items. Six percent demonstrated no change, and 6% decreased in performance from pre- to post-SMASH (Table 7).

Table 7. Overall Computer Science Assessment Data

Overall Computer Science Assessment Data			
	# of students	% of students	Avg. # items (+/-)
Increase (post>pre)	154	88%	+6 items
No Change (post=pre)	10	6%	0
Decrease (post<pre)	10	6%	-2 items
TOTAL SAMPLE	174		+5 items

- Students demonstrated strong gains in ECS Fundamentals and Computer Programming, with 87% and 98% increasing from pre-post, respectively, by an average of five and eight items, respectively.

- 83% of students increased in performance in CS Principles Fundamentals, with an average increase of four items (Table 8).

Table 8. Computer Science Pre-Post Data, By Course

Computer Science Pre-Post Data, By Course				
		# of students	% of students	Avg. # items (+/-)
ECS FUNDAMENTALS (n=54)	Increase	47	87%	+5 items
	Same	4	7%	0
	Decrease	3	6%	-4 items
CS PRINCIPLES FUNDAMENTALS (n=69)	Increase	57	83%	+4 items
	Same	5	7%	0
	Decrease	7	10%	-2 items
COMPUTER PROGRAMMING (n=51)	Increase	50	98%	+8 items
	Same	1	2%	0
	Decrease	0	0%	--

- Among students who demonstrated growth from pre-post, 26% increased by eight or more items (Figure 5).

- Among the 10 students who decreased from pre- to post-SMASH, 73% decreased slightly, by 1-2 items (Figure 6).

Figure 5. Amount & Frequency of CS Item Increase

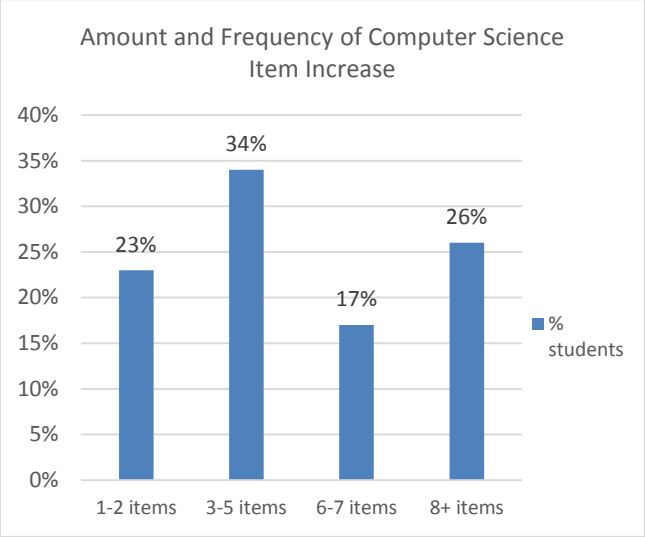
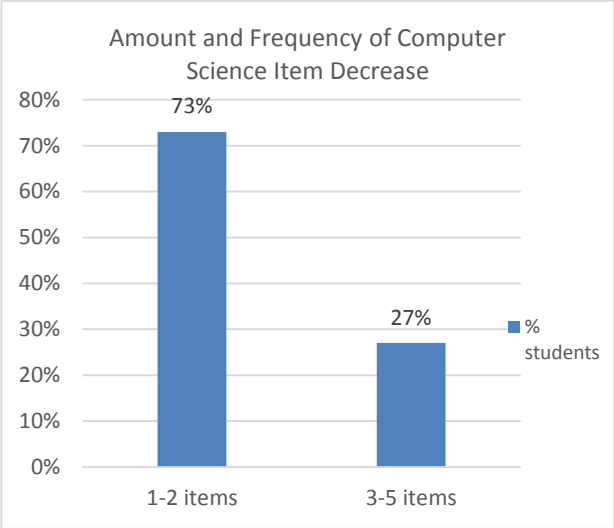


Figure 6. Amount & Frequency of CS Item Decrease



- Students also gained clarity on what the field of computer science is, increasing by 34 percentage points in "understanding what computer science is" and demonstrating a statistically significant increase in their familiarity with the computer science field and computing careers, from pre-SMASH (Mean=3.89) to post-SMASH (Mean=4.22), p<.00.

Technology Skills and Knowledge

- Students demonstrated a statistically significant increase in technology skills and knowledge from pre-SMASH (Mean= 3.59) to post-SMASH (Mean=3.88), p<.00.

- Students demonstrated a 15 percentage point increase from pre- to post-SMASH in self-rating of technology skills.

Goal 2: Ensure students gain access to role models, develop support networks, and develop positive identities necessary to pursue and succeed in STEM in higher education.

Self-Efficacy

- Students demonstrated small, yet non-statistically significant, increases in self-efficacy in mathematics (Mean diff= .02), science (Mean diff=.03), and computer science (Mean diff=.02).

- Students reported high levels of self-efficacy in math and science at both pre- and post-SMASH, and at the end of the program, 96% of students believed they are capable of doing well in science and 97% believed they are capable of doing well in math.

Belongingness in STEM

- Although the percentage of SMASH students reporting feeling like they belong in their STEM classes increased (83% to 86%), the overall belongingness scale decreased from pre- to post. Mean decreases in STEM belongingness were shown across all sites & cohorts, with the exception of 3rd year students at Stanford and 1st year students at Berkeley, who demonstrated mean increases.

Access to Role Models in STEM

- SMASH students reported a significant increase in access to role models in STEM fields from pre-post (Mean=3.85 to 4.23, p<.00).
- SMASH students also reported a significant increase in access to STEM role models from diverse racial and gender backgrounds (Mean=3.63 to 3.94, p<.00).
- The percentage of students who had personal familiarity with individuals with careers in STEM fields increased by 15 percentage points.

"Networking Nights helped me learn more about the types of jobs in the STEM fields and made me more interested in doing research and inventing new technology and digital programs."

- Post-SMASH, 88% of students indicated they had met individuals working within STEM fields who impacted their future college and career goals, an increase from 74% pre-SMASH.
- There were 12 and 10 percentage point increases (respectively) in the percentage of students reporting exposure to role models of color in STEM and female STEM role models.
- There were also 22 and 15 percentage point increases (respectively) in the percentage of students reporting exposure to role models of color in computer science and female computer science role models.
- The percentage of students who knew individuals with careers in computer science increased by 19 percentage points (from 57% to 76%) from pre to post-SMASH.
- Open-ended qualitative survey responses show that 28% of scholars in the post-program survey indicated a STEM role model they learned about during the SMASH program, such as SMASH instructors.
    - Further, five scholars' post-program role models changed to prominent social change leaders such as Ben Jealous, Thurgood Marshall, and Bernie Sanders, indicating a greater social justice orientation as a result of the intervention.
    - Thirty percent of scholars rated professionals in the speaker series, networking nights and field trips as examples of the kind of professionals they may aspire to be; fewer scholars (25%) listed SMASH residential and course staff as role models.

- Four scholars (2%) sought or obtained internships through networking nights, field trips and the speaker series; one of those four also sought an internship with an instructor, RA or RD.
- Nearly two thirds of scholars (63%) credited the residential and course staff with mentoring them, including: creating a sense of belonging/community, personal/emotional and social skill development.
- Sample responses on the influence of exposure to STEM role models is included below:
  - "Speaker series did impact my career interests because it really increases my interest in computer science…because I'm able to see that people like me can be successful in computer science."
  - "During the networking nights there were some who caught my attention because they use their knowledge to make a career for themselves."
  - "The SMASH staff helped me learn more about the college experience and also helped me find opportunities to expose myself to STEM. I also gained a lot of personal help and learned more about myself and new social skills thanks to the staff. Most of the staff was easy to talk to and I intend to stay connected with them through high school, college, and beyond."

Access to Network of STEM Peers

"A sense of community had the greatest impact on me because it has boosted my self-confidence up, made me feel loved, and gave me the knowledge that I have people who are there for me."

- Participating in the SMASH program resulted in a significant increase in students' access to networks of STEM peers (Pre-SMASH Mean=4.11, Post-SMASH Mean=4.34, p.<.00).

- Specifically, the percentage of students indicating that they know students from similar backgrounds as their own who are interested in STEM increased by 10 percentage points; The percentage of students who reported feeling part of a group of peers who support their STEM goals increased by four percentage points.

- SMASH students also reported a significant increase in access to computer science support networks from pre-SMASH (Mean=3.42) to post (Mean=3.82), p<.00.

- The percentage of students who indicated they know students from similar backgrounds as their own who are interested in computer science increased by nine percentage points. The percentage of students who reported feeling part of a community of students who are interested in computer science increased by two percentage points.

- Students' open-ended survey responses demonstrate the impact of their SMASH peers:

  - "Since my peers and I are low-income students and people of color, learning about how we grew up and how it shaped our dreams motivates me to prove myself."

- "I am still so shocked at how close all of us scholars became. We doubted that we were going to become a family in just 5 weeks, but somehow it happened. I miss my peers and how they all made me feel at home. I wish all of them went to my school."
- "I had a greater sense of belonging; like I was meant to be there."
- "I don't have many friends at school…At SMASH, it's like I don't have to try to make friends since we all give off that friendly vibe. I love my SMASH family so much and I would rather be here than at school."
- "I was able to bond with my peers in a closer way than I usually do in school with people that I've known for years."

Goal 3: Prepare students to successfully complete the college admissions process, obtain financial aid, and be accepted to attend a four-year university.

College Aspirations

- Prior to SMASH, 97% of students aspired to attend a four-year university after graduation; this percentage decreased slightly to 95% post-SMASH.

Understanding of College Application Process

- SMASH students' knowledge of and preparation for the college application process increased significantly from pre-SMASH (Mean=3.74) to post-SMASH (Mean=4.02), p. <.00.

- The percentage of students demonstrating familiarity with college admissions and preparation for performing well on college entrance exams increased by 20 percentage points and by 6 percentage points, respectively.

Familiarity with Financial Aid Application Processes

- SMASH student familiarity with financial aid processes and applications increased significantly over the course of the summer program. Students' familiarity increased from an average of 3.19 to an average of 3.68 from pre-post (Diff=.49), p.<00.

- The percentage of students demonstrating knowledge about how to apply for financial aid increased by 23 percentage points, and the percentage of students demonstrating knowledge about student loans and how to apply for them increased by 20 percentage points.

- Students also became more confident in their ability to obtain financial aid to finance their college education (54% to 69%).

Goal 4: Instill a sense of social responsibility, critical thinking, and leadership in all students.

Leadership and Critical Thinking Skills

- Students demonstrated a small, yet non-significant, increase in their leadership skills from pre-SMASH (Mean=4.03) to post-SMASH (Mean=4.11).

- A three percentage point increase was demonstrated in students' comfort in leading, planning, and decision-making within groups (81% to 84%), and a four point increase was seen in their self-reported leadership skills (77% to 81%). However, a three percentage point decrease (79% to 76%) was demonstrated in students' self-reported persuasiveness and assertiveness with their peers.

- A small, non-significant increase was seen from pre- to post-SMASH in students' self-reported critical thinking skills (Mean=4.20 to Mean=4.25).

- Nearly sixty percent of scholars (58%) cited communication and social skill development as the one skill they strengthened or developed at SMASH in the open-ended portion of the post-program survey. A few of their sample responses are included below:

    - "I developed my communication/social skills. Not only from networking nights but also from meeting new incredible people who are now my best friends. In my freshman year of high school, I didn't feel "loved" or that people didn't really care much. Then I came to SMASH and I felt like I was in my second home."
    - "I have really gotten better at presenting in front of groups. Life speaking [class] helped me a lot with this. Also, doing presentations in the core classes was such a regularly occurring thing that I got used to it. I no longer get anxious or nervous while presenting. Instead, I am confident and ready to go."
    - "One skill I developed was coming more out of my shell."

Ethnic and Gender Identity

- Students demonstrated small, yet non-significant, increases in their connection to their ethnic identity from pre- to post-SMASH (Mean diff=.07).

- Students demonstrated a significant increase in their connection to their gender identity from pre- to post-SMASH (Mean=3.33 to Mean=3.49), $p<.02$.

Cultural Competency

- Eighty percent of students rated themselves highly in cultural competence at the start of the SMASH program, and this percentage increased to 86% by the end of the program.

- Students showed a slight increase in their comfort level in interacting with diverse peers (75% to 80%).

Social Justice Orientation

- Students demonstrated a small, yet non-significant, increase in identification with social justice principles from pre-SMASH (Mean=4.26) to post-SMASH (Mean=4.34).

- The percentage of students demonstrating the desire to use STEM knowledge to solve problems within their communities decreased slightly, from 86% to 85%.

Endorsement of Racial and Gender Stereotypes

- The endorsement of both negative racial and gender stereotypes about ability in STEM fields decreased, but not significantly, from pre-SMASH to post-SMASH.

- The endorsement of negative racial stereotypes about ability in computer science showed a slight decrease, though the endorsement of negative gender stereotypes about ability in computer science neither increased nor decreased.

Goal 5: Develop and increase students' STEM interests, attitudes, and aspirations.

Attitudes towards Math and Science

"I got to learn actual coding languages!"

- SMASH students generally held highly positive attitudes towards math and science prior to the start of the program.

- Students demonstrated a significant increase in their attitudes toward mathematics from pre-SMASH (Mean=4.03) to post-SMASH (Mean=4.13), $p<.05$.

- Students' attitudes toward science decreased from pre-SMASH (Mean=4.31) to post-SMASH (Mean=4.24). All cohorts and sites demonstrated mean decreases, with the exception of UCLA 1st & 2nd year students, and 3rd year students at both Stanford and UC Berkeley, who demonstrated mean increases.

- Students' identification with mathematics neither increased nor decreased over the course of the program.

- Students' identification with science slightly decreased (Mean diff=.01), which can be attributed to decreases from the 1st and 3rd year Stanford cohorts as well as the 3rd year UC Berkeley cohort.

- The percentage of students who indicated that they thought mathematics was "fun" versus boring increased nine percentage points, from 70% to 79%.

Attitudes towards Computer Science

- Over the course of the SMASH program, students demonstrated a small, yet non-significant increase in their attitudes towards computer science (Mean=3.99 to Mean=4.06).

- The percentage of students who indicated that they "liked" computer science increased eight percentage points and the percentage of students who indicated that they thought computer science was "fun" versus boring increased 10 percentage points, from 67% to 77%.

Cultural Relevance of Computer Science

- Students demonstrated a significant increase in their belief in the cultural relevance of computer science from pre-SMASH (Mean=3.95) to post-SMASH (Mean=4.17), p<.00.

- The percentage of students who indicated that they see the examples of computer science in their everyday lives increased from 73% to 84%, and there was a 10 percentage point increase in students who indicated the belief that computer science can be an effective tool to solve community issues (71% to 81%).

"The things I learned in Computer Science class were some of the most interesting subjects I have learned."

Perceptions of Computer Science

- Students demonstrated a significant increase in their perceptions of computer science from pre-SMASH (Mean=4.15) to post-SMASH (Mean=4.30), p<.00.

- At the completion of SMASH, just 21% of students maintained that computer science involves a lot of time working alone (compared to 39% who held that belief prior to SMASH, indicating students' increased understanding of the possibilities for collaborative computer science work).

- Students demonstrated an 11 percentage point increase in the belief that computer science involves creativity (69% to 80%), and a four point increase in the belief that anyone can be an expert in computer science (90% to 94%).

STEM College and Career Aspirations

- The majority of SMASH students entered the program with the articulated desire to pursue STEM education in college (80%). This percentage increased to 87% at the completion of the program.

- At the completion of SMASH, 86% of students planned to pursue a career within the fields of science, technology, engineering, or mathematics (compared to 84% pre-SMASH).

- Students showed a 17 percentage point increase in their self-reported knowledge about STEM careers (66% to 83%).

- Open-ended survey answers demonstrate SMASH had a modest impact on scholars' STEM college and career aspirations:

    - Ten percent of scholars declared college major plans that reflected a greater STEM focus in the post-program survey than in the pre-program survey. For example, prior to SMASH, scholars reported college major plans as "something that involves math and probably some science," "business" and "I'm not sure yet." These scholars offered more specific majors in the post-program survey such as "Computer Science," Math," and "Computer Science or any STEM major," respectively.
    - Furthermore, scholars listed different STEM subjects in their post-surveys than in their pre-surveys - an indicator of their increasing awareness of STEM fields - that they would like to study in college; 14% of scholars changed STEM focus over the course of SMASH.
    - Nearly one third of scholars (30%) evinced greater STEM focus and a higher degree of specificity in their career aspirations.
    - Whereas a scholar may have indicated before SMASH that they wanted to enter the field of "science," after the intervention, 7% of scholars included computing as a possibility, e.g. "Doctor/computer programmer."
    - College and career aspirations were stable or consistent for a large portion of the scholars (58% and 42% respectively), perhaps indicating that scholars are already highly motivated to study a STEM major and enter a STEM career.

- Open-ended survey responses also reveal that the speaker series, networking nights, and field trips may increase scholars' awareness of and motivations to pursue STEM:

    - Twenty-nine percent (29%) of scholars cited greater STEM college and career aspirations as a result of exposure to STEM role models. For example, students mentioned,
        - "I like how there were professionals in the medical area."
        - "Networking nights and speaker series presentations impacted my career choices by making me more interested and widening my career choices."
        - "I feel like I understand the gist of some of the careers and that helps me see what careers are fit for me."

Computer Science Aspirations

- Students' desire to pursue computer science in college and career increased, though not significantly, from pre-SMASH (Mean=3.67) to post-SMASH (Mean=3.70).

- While only 34% of students entered SMASH intending to major in computer science in college, this percentage increased to 44% after the program.

- Thirty-four percent (34%) of scholars listed Computer Science as their favorite class at SMASH, followed by Math (23%) and Engineering Design Challenges (12%).

Level Playing Field Institute
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Goal 6: Students will enroll, persist, and graduate with degrees in STEM in higher education at rates higher than the national average.

Total SMASH Alumni Demographics

- As of June 2015, SMASH had a total of 377 alumni (students who both completed the SMASH program and graduated from high school).
- 224 students have completed the SMASH: Berkeley program, 100 students completed the SMASH: Stanford program and 53 students have completed SMASH in Southern California.

Table 9. Number of Alumni, By SMASH Site

SMASH Site	# Summers in Operation	# of Alumni*
University of CA, Berkeley	12	224
Stanford	5	100
UCLA/USC	4	53
TOTAL		**377**

SMASH Alumni Racial, Gender, and Socioeconomic Demographics

- The majority of SMASH alumni are Latino (52%) and African American (25%), with 23% comprising all other groups.
- SMASH alumni are equal in terms of gender, with 50% males and 50% females.
- Over half of the SMASH alumni are eligible for Free/Reduced Price Lunch (FRPL, 63%), will be first-generation college graduates (65%), and 49% are both FRPL and first generation.

Table 10. SMASH Alumni Demographics (Total n=377)

Race/Ethnicity	
African American /Black	25%
Chicano/Latino	52%
Mixed Race/Multiple Response	7%
Southeast Asian	12%
Other (Native American, Pac Islander)	4%
Gender	
Male	50%
Female	50%
Socioeconomic Status	
Free/Reduced Price Lunch (FRPL)	63%
First Generation College	65%
Both FRPL & First Gen*	49%

*The number of FRPL and First Gen scholars was lower 2004-2009 and has increased significantly 2009-current.

Alumni Higher Education Enrollment Data

- 100% of SMASH students graduated from high school, with 77% taking an AP STEM course during high school (Table 11).
- 68% of SMASH alumni are currently declared STEM majors, with the most common major reported by SMASH alumni being computer science.
- 79% of alumni intended to major in STEM while in high school and 74% of those went on to declare a STEM major in Year 1; 63% of those who declared STEM majors in Year 1 persisted beyond Year 3 in STEM.
- The most frequent colleges of attendance among alumni are U.C. Berkeley, U.C. Davis, U.C. Santa Cruz, University of Southern California, and Stanford University (Figure 8).

Table 11. SMASH Alumni Outcomes (High School Graduation Class 2007-2015)

High School Completion Data	Graduated from HS with Diploma	100%
	Did not graduate from HS	0%
High School A.P. Coursework	Took A.P. course during HS	89%
	Took A.P. STEM course during HS	77%
College Enrollment Status	Enrolled in undergraduate studies	79%
	Enrolled in graduate studies	4%
	Not enrolled in any college (completed Bachelor's degree)	12%
	Not enrolled in any college (on gap year/semester)	4%
	Not enrolled in college (did not complete degree)	1%
Type of College/University Currently Attending (Enrolled Undergraduates Only)	4-year college/university	94%
	2-year college	6%
College Graduation Data	Graduated with Bachelor's degree within five years (High school graduating classes of 2007- 2010)	79% (37/47)
	% of college graduates currently attending graduate school	34%
	% of college graduates working in STEM fields	64%
"Top 50" University*	% enrolled in/graduated from top 50 highest ranked university	47%
Current Declared Major (All Current Students)	STEM Major	68%
	Non-STEM Major	29%
	Undecided	3%
Current Declared Major (Freshmen Only)	STEM Major	74%
	Non-STEM Major	20%
	Undecided	6%
Persistence in STEM	Intended to Major in STEM while in HS	79%
	Intended to Major in STEM in HS and did in Year 1 of college	74%
	Declared STEM major as freshman and persisted beyond Year 1 in STEM (current sophomores)	84% (27/32)
	Declared STEM as freshman and persisted beyond Year 2 in STEM major (current juniors)	73% (19/26)
	Declared STEM as freshman and persisted beyond Year 3 in STEM major (current seniors)	63% (30/48)

**According to U.S. News and World Report university rankings.*
Note: The above include responses for only those alumni for whom there are available data. Due to the variation in denominator by question, percentages are reported within this table.

Figure 7. Alumni Majors, by Highest Frequency

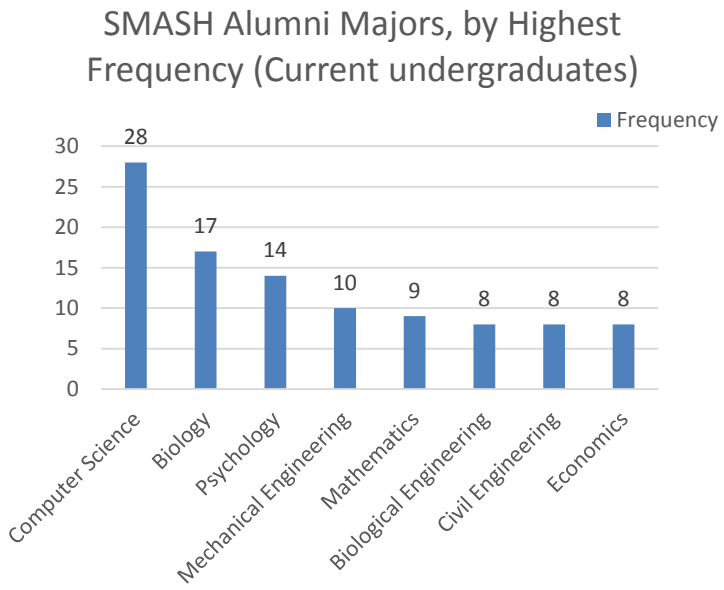

Figure 8. Colleges of Attendance, by Highest Frequency

Name of College/University	# of Students Currently Enrolled
Univ. of California, Berkeley	27
Univ. of California, Davis	14
Univ. of California, Santa Cruz	11
University of Southern California	11
Stanford University	11
San Jose State University	9
Santa Clara University	8
Univ. of California, Los Angeles	8
Univ. of California, San Diego	7
San Diego State University	5
Columbia University	4
San Francisco State University	4
Univ. of California, Irvine	4
Univ. of California, Riverside	4
Univ. of California, Santa Barbara	4
Cal State University, East Bay	4
Cal State University, Chico	3
City College San Francisco	3
Saint Mary's College of California	3
Univ. of California, Merced	3

Alumni Perceptions of SMASH Impact

- 82% of SMASH alumni indicated that their participation in SMASH increased their math skills; 84% indicated that participating in SMASH increased their science skills, and 86% indicated that their SMASH participation increased their technology skills.

- 76% believed that participating in SMASH increased their confidence in their ability to do well in math and science classes in college.

- 74% indicated that SMASH increased their interest in studying STEM in college, and 79% believed SMASH helped them feel confident when going through the college application process.

- The majority of alumni indicated that SMASH gave them a more positive view about the STEM abilities of underrepresented racial groups (89%) and women (89%).

Appendix 1. Scale Mean Differences (Pre-Post), Paired-Samples T-Test Results by Scale

SCALE	Mean (Pre)	Mean (Post)	Mean Diff (Pre-Post)	Sig. (2-tailed).
Explicit Attitudes Towards Science (α=.83)	4.31	4.24	-0.07	.12
Explicit Identification with Science (α=.81)	4.47	4.46	-0.01	.90
Explicit Attitudes Towards Math (α=.89)	4.03	4.13	0.1	.05
Explicit Identification with Math (α=.81)	4.59	4.59	0	.96
Understanding of Computer Science Field & Computing Careers (α=.76)	3.89	4.22	0.33	.00
Attitudes towards Computer Science (α=.89)	3.99	4.06	0.07	.24
Cultural Relevance of Computer Science (α=.84)	3.95	4.17	0.22	.00
Perceptions of Computer Science (α=.55)	4.15	4.3	0.15	.00
Ethnic Stigma Consciousness (α=.81)	2.94	3.07	0.13	.01
Ethnic Identity (α=.90)	4.07	4.14	0.07	.13
Gender Stigma Consciousness (α=.91)	3.3	3.41	0.11	.12
Gender Identity (α=.87)	3.33	3.49	0.16	.02
STEM College Aspirations (α=.92)	4.33	4.33	0	.96

STEM Career Aspirations (α=.87)	4.39	4.38	-0.01	.85
Computer Science Aspirations (α=.82)	3.67	3.7	0.03	.47
Racial Stereotypes in Computer Science (α=.74)	4.54	4.51	-0.03	.56
Gender Stereotypes in Computer Science (α=.72)	4.43	4.46	0	.47
Access to Role Models in STEM (α=.70)	3.85	4.23	0.38	.00
Access to Diverse STEM Role Models (α=.93)	3.63	3.94	0.31	.00
Network of STEM Peers (α=.83)	4.11	4.34	0.23	.00
Computer Science Support Networks (α=.88)	3.46	3.82	0.36	.00
Scholar Identity (α=.82)	4.85	4.77	-0.08	.04
Belongingness in STEM (α=.75)	4.18	4.11	-0.07	.15
Self-Efficacy in Math (α=.83)	4.15	4.17	0.02	.48
Self-Efficacy in Science (α=.84)	4.09	4.12	0.03	.31
Computer science self-efficacy (α=.71)	3.93	3.95	0.02	.63
Explicit Racial Stereotypes about Math and Science (α=.84)	4.58	4.55	-0.03	.61
Explicit Gender Stereotypes about Math and Science (α=.91)	4.63	4.56	-0.07	.19
Familiarity with Financial Aid (α=.87)	3.19	3.68	0.49	.00
Understanding of College Entry Requirements and the Application Process (α=.84)	3.74	4.02	0.28	.00
Basic Technology Skills (α=.83)	3.59	3.88	0.29	.00
Leadership Skills (α=.83)	4.03	4.11	0.08	.08
Critical Thinking Skills (α=.88)	4.2	4.25	0.05	.23
Social Justice Orientation (α=.79)	4.26	4.34	0.08	.17

Note: ** p<.05, indicative of significant increases from pre- to post-SMASH; All scale items were measured using a 5-point Likert scale , with the mean range for scales ranging between 1-5.

Appendix 2. Pre- and Post-SMASH Item Frequencies

VARIABLES-SPSS	SCALE RELIABILITIES (Cronbach's Alpha)	PRE-SMASH Frequency (% Strongly/ Somewhat Agree)	POST-SMASH Frequency (%Strongly/ Somewhat Agree)	PRE-POST DIFFERENCE
LikeDislikeSci	Explicit Attitudes Towards Science (α=.83)	89%	85%	-4%
SciFunBoring		84%	83%	-1%
HowImportantSci	Explicit Identification with Science (α=.81)	90%	90%	0%
CareDoingWellSci		96%	96%	0%
HowImportantStrongSci		91%	88%	-3%
SuccessSciImportantPartMe		80%	77%	-3%
MathFunBoring	Explicit Attitudes Towards Math (α=.89)	70%	79%	9%
LikeDislikeMath		81%	83%	2%
HowImportantMath	Explicit Identification with Math (α=.81)	92%	93%	1%
CareDoingWellMath		97%	96%	-1%
HowImportantStrongMath		95%	96%	1%

SuccessMathImportantPartMe		84%	87%	3%
UnderstandWhatCSIs	Understanding of Computer Science Field & Computing Careers (α=.76)	56%	90%	34%
KnowCareersCS		76%	87%	11%
LikeDislikeCS	Attitudes towards Computer Science (α=.89)	72%	80%	8%
CSFunBoring		67%	77%	10%
CSInteresting		84%	86%	2%
SeeExamplesCSEverydayLIfe	Cultural Relevance of Computer Science (α=.84)	73%	84%	11%
CSUsedSolveProblemMyCommunity		71%	81%	10%
AnyoneExpertCS	Perceptions of Computer Science (α=.55)	90%	94%	4%
CSInRealWorldInvolvesCreativity		69%	80%	11%
EthnicityInfluencesTeacherInteract	Ethnic Stigma Consciousness (α=.81)	29%	32%	3%
MostPeopleJudgeMeEthnicity		42%	44%	2%
PeopleInterpretBehaviorBasedEthnicity		44%	48%	4%
MyEthinicityAffectsInteractOtherEthnicities		23%	25%	2%
MyEthnicityAffectsFeelAboutSelf		33%	42%	9%
FeelStrongAttachmentEthnicity	Ethnic Identity (α=.90)	73%	77%	4%
ConnectedToEthnicHeritage		74%	76%	2%
ValueEthnicBackground		88%	89%	1%
EthnicityMajorPartIdentity		75%	79%	4%
GenderAffectsPeopleActTowardMe	Gender Stigma Consciousness (α=.91)	47%	54%	7%
GenderAffectsHowPeopleTreatMe		52%	59%	7%
PeopleJudgeMeBasedOnGender		36%	43%	7%
GenderInfluencesHowFeelSelf	Gender Identity (α=.87)	42%	52%	10%
GenderCentralDefiningMe		47%	56%	9%
GenderContributesSelfConfidence		54%	56%	2%
IdentityTiedGender		52%	59%	7%
PlanToMajorSTEMinCollege	STEM College Aspirations (α=.92)	80%	87%	7%
PlanToCompleteBachelorsSTEM		82%	84%	2%
InFutureImagineMyselfWorkingSTEM	STEM Career Aspirations (α=.87)	87%	89%	2%
PlanToPursueSTEMCareer		84%	86%	2%
WantContinueLearningCSSkills	Computer Science Aspirations (α=.82)	86%	84%	-2%
LikelyToMajorCS		34%	44%	10%
PlanPursueCSCareer		43%	46%	3%
AALatinosLessCapableSuccessCS (reverse coded)	Racial Stereotypes in Computer Science (α=.74)	4%	7%	3%
AsiansWhitesMoreCapableSolvingCOmputingProblems (reverse coded)		3%	5%	2%
AllRacesEquallyCapableSolvingComputingProblems		92%	93%	1%
AllRacesSameLevelAbilityCS		78%	87%	9%

MyRacialGroupExcelsCS		15%	16%	1%
WomenLessCapableSuccessCS (reverse coded)	Gender Stereotypes in Computer Science (α=.72)	3%	3%	0%
MenMoreCapableSolvingCSProblems (reverse coded)		3%	4%	1%
MenMoreLikelyExcelComputingCareers (reverse coded)		17%	16%	-1%
MenWomenEquallyCapableSolvingComputingProblems		92%	93%	1%
WomenMenSameLevelAbilityCS		82%	87%	5%
MetPeopleSTEMCareersImpactedMyCareerChoice	Access to Role Models in STEM (α=.70)	74%	88%	14%
KnowProfessionalsSTEMCareers		72%	87%	15%
RoleModelsSTEMPeopleOfColro	Access to Diverse STEM Role Models (α=.93)	65%	77%	12%
RoleModelsSTEMFemale		62%	72%	10%
KnowStudentLikeMeInterestedSTEM	Network of STEM Peers (α=.83)	81%	91%	10%
FeelPartCommunityStudentsInterestedSTEM		84%	89%	5%
HaveGroupPeersSupportMySTEMGoals		85%	89%	4%
KnowPeopleCareersCS	Computer Science Support Networks (α=.88)	57%	76%	19%
HaveRoleModelsCSPeopleOfColor		45%	67%	22%
HaveCSRoleModelsFemale		41%	56%	15%
KnowLotStudentsLikeMeInterestedCS		64%	73%	9%
FeelPartCommunityStudentsInterstedCS		71%	73%	2%
BeingSuccessfulStudentImportantPartMe	Scholar Identity (α=.82)	97%	95%	-2%
DoingWellSchoolImportantToMe		99%	95%	-4%
MathSciFeelLikeBelong	Belongingness in STEM (α=.75)	83%	86%	3%
MathSciFeelIdeasCount		80%	78%	-2%
MathSciFeelAwkward (reverse coded)		15%	14%	-1%
HowComfortableInteractingPeersDiffBackgrounds		70%	75%	5%
RateCulturalCompetenceAs		80%	86%	6%
ThinkMathSkillsAre	Self-Efficacy in Math (α=.83)	76%	77%	1%
IfTakeMathTestNowHowExpectDo		64%	62%	-2%
HowWellExpectDoMathNextYear		86%	90%	4%
CapableDoingWellMath		96%	97%	1%
ThinkSciSkillsAre	Self-Efficacy in Science (α=.84)	74%	73%	-1%
IfTakeSciTestHowExpectDo		58%	62%	4%
HowWellExpectDoSciNextYear		86%	83%	-3%
CapableDoingWellSci		97%	96%	-1%
ConfidentCanSolveProblemsUsingCompApplications	Computer science self-efficacy (α=.71)	67%	77%	10%
CapableLearningComputingConcepts		89%	88%	-1%
CapableDoingWellCS		89%	87%	-2%

CSTooHardforMe (reverse coded)		38%	23%	-15%
AALatinosLessCapableSTEMSuccess(reverse coded)	Explicit Racial Stereotypes about Math and Science (α=.84)	3%	5%	2%
AsiansWhitesBetterMathSciAbility		4%	4%	0%
AsiansWhitesSmarter		2%	3%	1%
AnyStudentSuccessfulMathSciRegardlessRace		92%	92%	0%
WomenLessCapableSTEMSuccess (reverse coded)	Explicit Gender Stereotypes about Math and Science (α=.91)	1%	4%	3%
MenBetterMathSciAbilities (reverse coded)		1%	3%	2%
MenSmarterWomen (reverse coded)		0%	3%	3%
AnyStudentSuccessfulRegardlessGender		94%	92%	-2%
AfterGraduateHSPlanAttendFourYearUniv		97%	95%	-2%
HowImportantEarnDegree		99%	98%	-1%
KnowHowApplyFinAid	Familiarity with Financial Aid (α=.87)	36%	59%	23%
KnowHowApplyLoanScholarship		48%	68%	20%
ConfidentAbilityObtainFinAid		54%	69%	15%
HowFamiliarAGReqs	Understanding of College Entry Requirements and the Application Process (α=.84)	86%	88%	2%
HowFamiliarWhatCourseSTEMMajor		74%	84%	10%
HowFamiliarWithCollegeEntryExams		83%	84%	1%
HowFamiliarHowAdmissionsCommittesSelectApps		62%	82%	20%
HowPreparedPerformWellCollegeEntranceExams		55%	61%	6%
HowConfidentAbilityWriteSuccessfulPersStatmt		68%	72%	4%
HowPreparedSuccessfullyCompleteCollegeApp		60%	72%	12%
RateWordSpreadsheetPWPTSkillsAs	Basic Technology Skills (α=.83)	55%	65%	10%
RateOverallTechSkillsAs		54%	69%	15%
FeelComfortableLeadingPlanningDecMakingPeers	Leadership Skills (α=.83)	81%	84%	3%
PersuasiveAssertiveWithPeers		79%	76%	-3%
LeadershipSkillsAre		77%	81%	4%
ConfidentAbilityEvaluateTheoriesArguments	Critical Thinking Skills (α=.88)	84%	81%	-3%
AbleExamineDiffViewpoints		90%	90%	0%
ConfidentAbilityChallengeAssumptions		87%	90%	3%
ChallengingInjusticeImportant	Social Justice Orientation (α=.79)	85%	87%	2%
PlanUseSTEMKnowledgeAddressCommunity		86%	85%	-1%