



Summer Engineering Experience for Kids Overview

Executive Director, *Karl W. Reid, Ed.D.*



NATIONAL SOCIETY OF BLACK ENGINEERS

SEEK
summer engineering experience for kids

The National Society of Black Engineers



NSBE Mission

To increase the number of culturally responsible Black engineers who excel academically, succeed professionally, and positively impact the community

- Established in 1975
- One of the **largest** student-governed societies based in the US
- 31,000+ Worldwide members, **~16,000** Active (Pre-Collegiate, Collegiate, and Professionals)
- **480+** Chapters represented within NSBE
- Fosters academic excellence, professional and leadership development



US DEMAND FOR ENGINEERS IS INCREASING

18% STEM JOB GROWTH 2012—2018

Source: Bureau of Labor Statistics

COMPUTING

71%



TRADITIONAL ENGINEERING

16%



PHYSICAL SCIENCES

7%



LIFE SCIENCES

4%



MATH

2%



STEM jobs are projected to grow at a rate that is **30% higher** than the overall workforce (PCAST 2012)

ENGINEERS ARE NEEDED TO SOLVE BIG PROBLEMS



NAE GRAND CHALLENGES FOR ENGINEERING

NATIONAL ACADEMY OF ENGINEERING



Advance Personalized Learning



Enhance Virtual Reality



Engineer Better Medicines



Restore and Improve Urban Infrastructure



Provide Access to Clean Water



Manage the Nitrogen Cycle



Develop Carbon Sequestration Methods



Prevent Nuclear Terror



Make Solar Energy Economical



Reverse Engineer the Brain



Advance Health Informatics



Secure Cyberspace



Provide Energy from Fusion

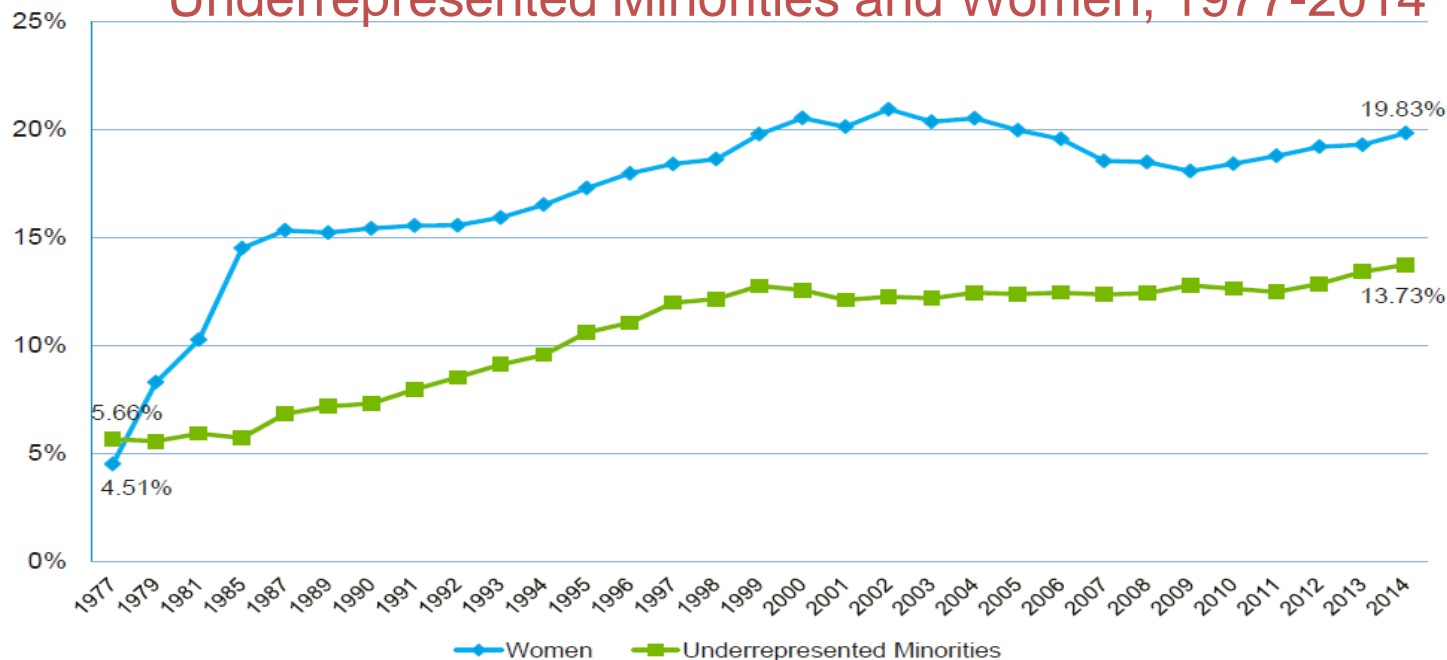


Engineer the Tools of Scientific Discovery



AND YET WE ARE NOT MAKING SIGNIFICANT PROGRESS TOWARD DIVERSITY IN ENGINEERING

Percent of Engineering Bachelor's Degrees Earned by Underrepresented Minorities and Women, 1977-2014

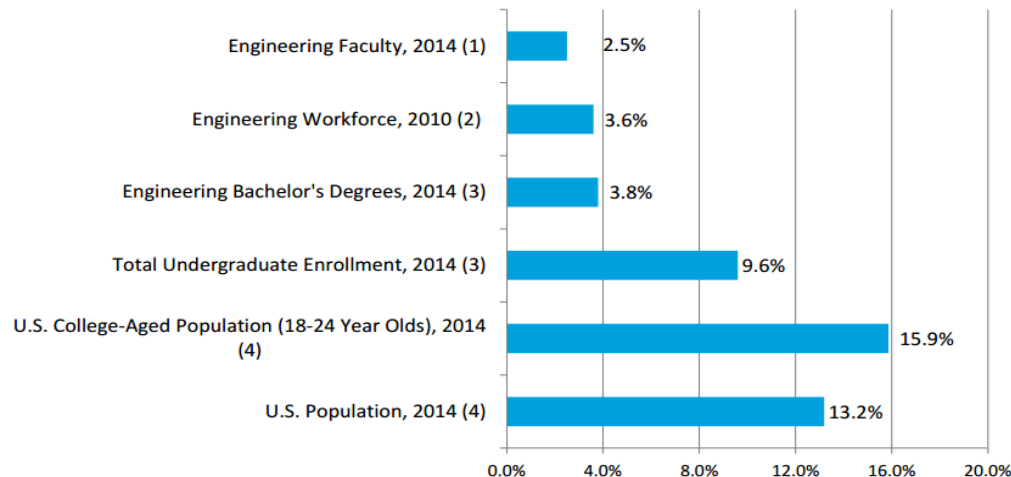


National Science Foundation, National Center for Science and Engineering Statistics, IPEDS Completions Survey by Race, 1977-2014, Integrated Science and Engineering Resources Data System (WebCASPAR) (<https://webcaspar.nsf.gov>) [04/18/16].



FOR AFRICAN AMERICANS, THE CURRENT PICTURE LOOKS WORSE

African Americans in Engineering



Sources: 1) American Society for Engineering Education, 2015. Engineering by the Numbers, 2014. 2) Finamore, J., Foley, D.J., Lan, F., Milan, L.M., Proudfoot, S.L., Rivers, E.B., & Selfa, L. (2013). Employment and Educational Characteristics of Scientists and Engineers. National Center for Science and Engineering Statistics, NSF 13-311. 3) National Science Foundation, National Center for Science and Engineering Statistics, IPEDS Completions Survey by Race, 1977-2014, Integrated Science and Engineering Resources Data System (WebCASPAR) (<https://webcaspar.nsf.gov>) [04/18/16]. 4) NACME analysis of population projections from U.S. Census.

NSBE Vision 2025

Graduate 10,000
black engineers annually

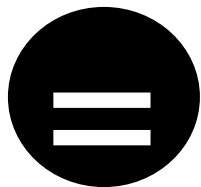
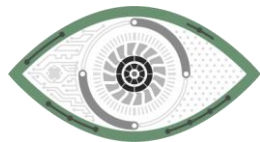


NSBE: OUR VISION FOR THE FUTURE

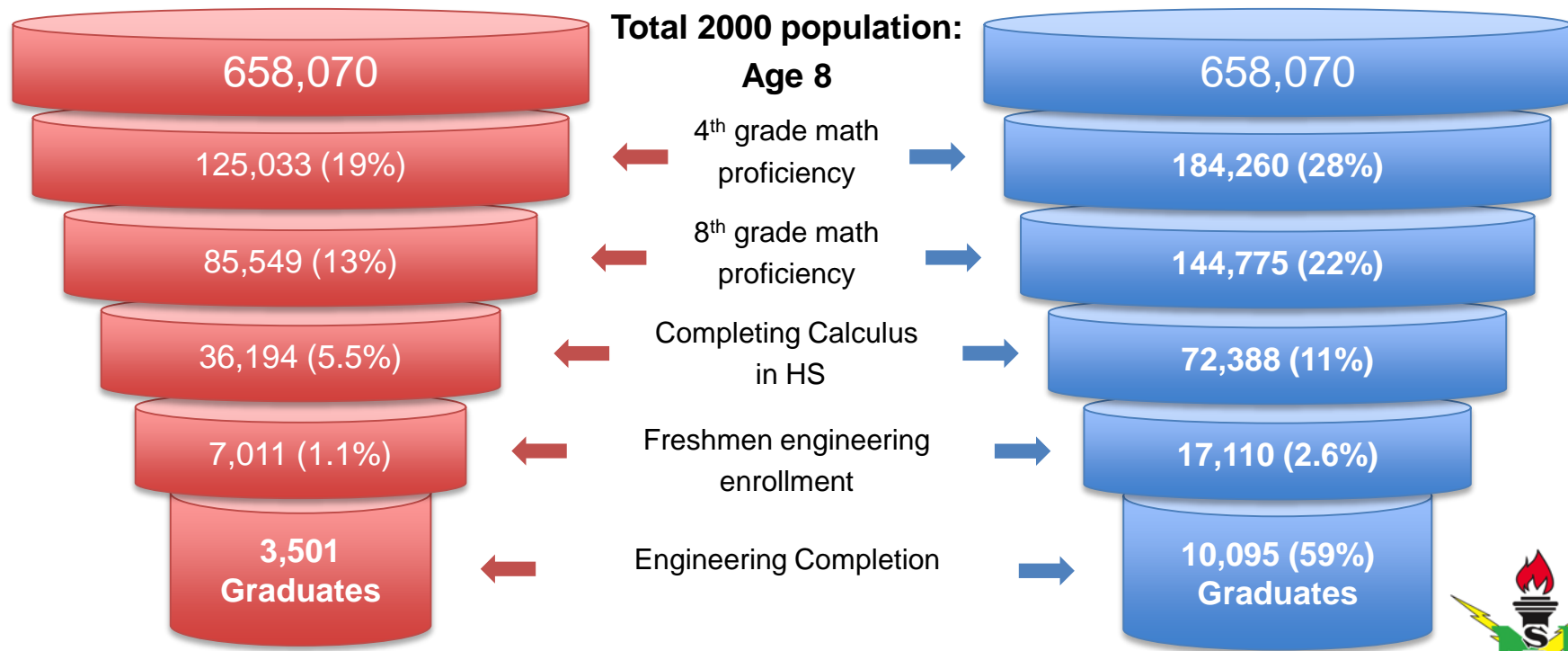


We envision a world in which:

- Engineering is **a mainstream word** in homes and communities of color
- All black students **can envision themselves** as engineers
- Blacks **exceed parity** in entering engineering fields, earning degrees and succeeding professionally



CURRENT METRICS FOR AFRICAN AMERICANS VS. NSBE GOALS



National Society of Black Engineers Pre-college Programs

Trina Fletcher, Director

- Served as a classroom mentor and Site Director at 5 SEEK Programs prior to current role
 - Ph.D. dissertation is a quantitative and qualitative mixed-method study of SEEK
 - 2-time NSBE Chapter President during undergrad
 - Manager for \$2.1M National Science Foundation ITEST grant awarded to NSBE for scale-up of SEEK
-
- **Day to day roles include:**
 - NSBE Jr. and SEEK Program Management & Development
 - SEEK Continuous Process Improvement, Operations and Logistics Management
 - Program Evaluation and Assessment
 - Program Site Leadership Development and Training



**Ph.D. Candidate,
Engineering Education,
Purdue University
College of Engineering**



THE GEORGE WASHINGTON UNIVERSITY
SCHOOL OF ENGINEERING
AND APPLIED SCIENCE



UNIVERSITY OF
ARKANSAS
COLLEGE OF
ENGINEERING

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Summer Engineering Experience for Kids (SEEK)



A three-week engineering immersion program exposing students in under-represented communities to STEM education

IMPACTED

18,000+

3rd-8th graders have participated in SEEK camps since 2007

2,800+

Collegiate mentors employed by SEEK since 2007

20,000+

Parents involved and engaged

**Since 2007

Year-Long STEM Engagement



SEEK

- Engineering exposure
- STEM competitions
- Black mentors

NSBE Jr. (3rd - 12th Grade)

- Scholarships
- NSBE Conferences
- National STEM competitions
- Mentoring & resources



NSBE's SEEK Curriculum

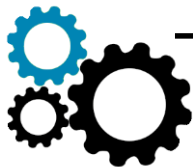
Example Program Schedule

Week 1	Hydrogen Fuel Cell Student teams learn to power a vehicle using chemistry and electricity.
Week 2	Gravity Cruiser Student teams design and construct a vehicle that is powered by gravity.
Week 3	Glider Student teams explore the relationship between force and motion and the effects of weight and lift on a glider

- Each week students learn different engineering principles
- Students utilize those engineering principles in team based competitions fostering collaborative learning
- Innovative interactive curriculum keeps students engaged



SEEK Participant Benefits



Acquire Engineering Principles



Leadership Development and Teamwork Skills



Receive Instruction from Minority Engineering Majors



Increase Proficiency in Math and Science



Grow interest in engineering career



SEEK Impact is Evident

Data based from 2015

Higher Science Scores

11%

Increased Interest in STEM

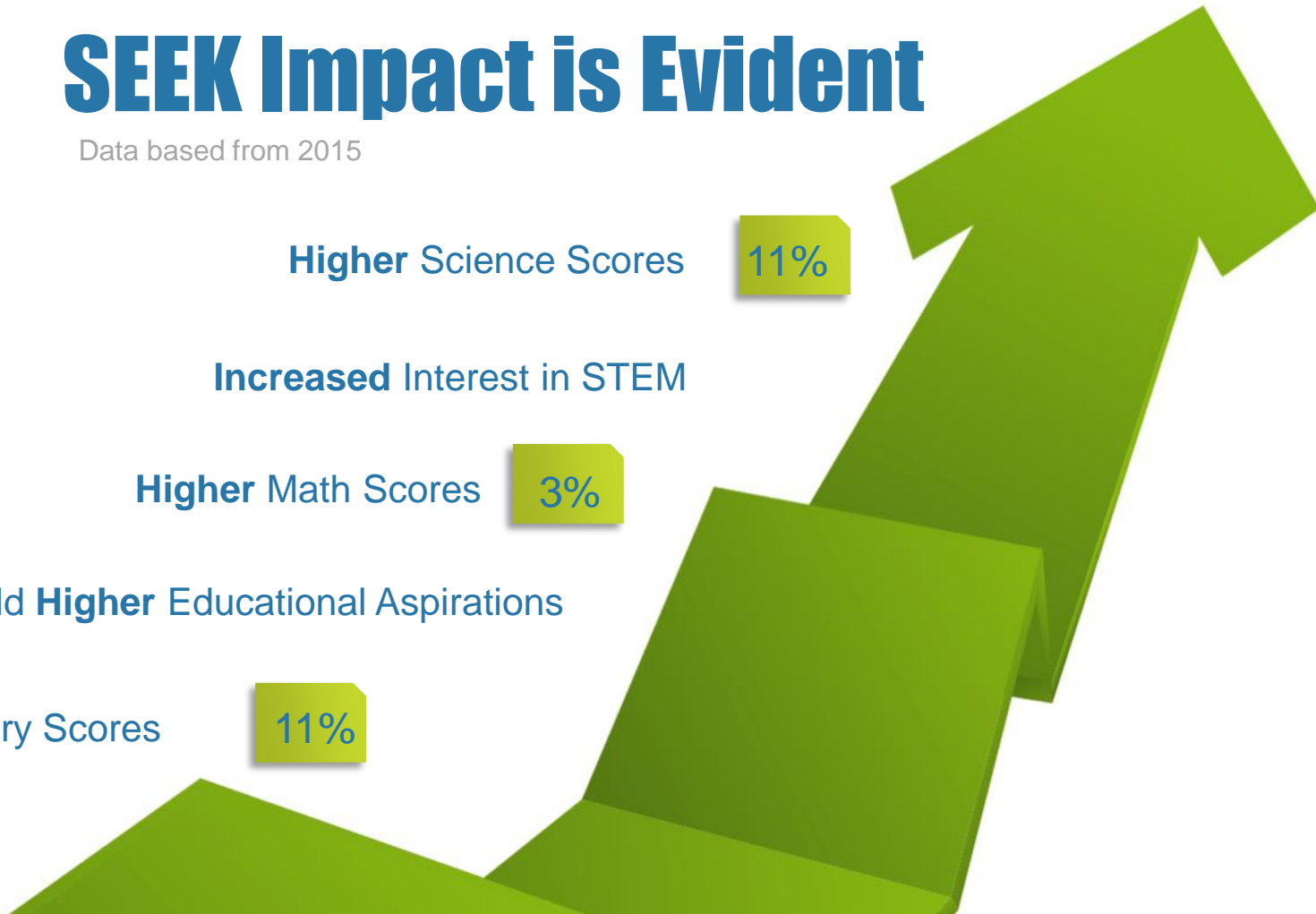
Higher Math Scores

3%

Hold Higher Educational Aspirations

Higher Vocabulary Scores

11%



SEEK Has the Winning Formula



SEEK
summer engineering experience for kids

**SEEK
Curriculum**

+



Parents

X



Mentors

=



**WINNING
FORMULA**

We Help Students

**See Themselves
as Engineers**





SEEK VIDEO 2016



NATIONAL SOCIETY OF BLACK ENGINEERS

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2017 SEEK Sites



Targeted & Current Cities

Atlanta, GA – (1) All Girls
 Baltimore, MD*
 Baton Rouge, LA*
 Birmingham, AL
 Brockton, MA*
 Brooklyn, NY*
 Chicago, IL
 Cleveland, OH*
 Detroit, MI
 Flint, MI*
 Houston, TX – 2 sites
 Jackson, MS – All Girls
 Kansas City, MO*
 Lancaster (Dallas), TX
 Los Angeles, CA
 Memphis, TN*
 Montgomery, AL*
 New Orleans, LA
 Norfolk, VA*
 Oakland, CA*
 Philadelphia, PA
 Pittsburg, PA*
 Richmond, VA*
 Sacramento, CA*
 Saginaw, MI*
 Savannah, GA*
 Washington, DC – 2 sites

National Society of Black Engineers 2016-17 SEEK BUDGET					
Program Location	TBD				
# of Student Participants (max)	300				
# of Mentors/Site Leaders	50				
Area of Budget	Description	Unit Cost	# units	Total Budget Expenses	% Allocation (budget based)
		\$300,216		\$ 300,216.41	
Operational costs (detail)				\$41,201	13.72%
	SEEK WHQ Staff Salaries and Benefits			\$32,098	14.59%
	SEEK WHQ Staff Travel and Support/Training			\$6,603	3.00%
	NSBE WHQ Staff Travel and Support			\$2,500	1.14%
	Total NSBE SEEK Staff Allowance			\$41,201	18.73%
Mentor Costs				\$179,400	59.76%
	SEEK Stipend - Mentor	\$2,200	32	\$70,400	23.45%
	SEEK Stipend - Lead Mentor	\$2,400	15	\$36,000	11.99%
	SEEK Stipend - Operations Coordinator	\$2,700	1	\$2,700	0.90%
	SEEK Stipend - Assistant Site Director	\$3,000	1	\$3,000	1.00%
	SEEK Stipend - Site Director	\$3,500	1	\$3,500	1.17%
	Travel Stipend - Site leads	\$500	3	\$1,500	0.50%
	Housing - (30 days - 25 double bed rooms)	\$45	28	\$37,800	12.59%
	Mentor Training & PO (5 lunches; 1 dinner)	\$90	50	\$4,500	1.50%
	K-12 Classroom Management Training	\$3,500	1	\$3,500	1.17%
	Daily Shuttle Service for Mentors (22 day)	\$15,000	1	\$15,000	5.00%
	Mentor Team Building Activities	\$1,500	1	\$1,500	0.50%
Evaluation & Assessment				\$10,714	3.57%
	Evaluation and Assessment	\$10,714	1	\$10,714	3.57%
Projects and Miscellaneous				\$39,915	13.30%
	Curriculum Purchases and Support	\$27,940	1	\$27,940	9.31%
	Curriculum/Program Consultant	\$5,000	1	\$5,000	1.67%
	Curriculum and Camp Related Printing	\$1,500	1	\$1,500	0.50%
	Student & Mentor Apparel (375 + 50)	\$5	425	\$2,125	0.71%
	Shipping and Handling	\$1,000	1	\$1,000	0.33%
	Awards	\$750	1	\$750	0.25%
	Background Checks	\$32.00	50	\$1,600	0.53%
Sub-Total				\$271,230	90%
	SEEK Year-long Engagement (NSBE Jr.)			\$10,000	3.33%
	NSBE WHQ Administrative Overhead			\$18,986	6.32%
Total Expense				\$300,216	100%



Support Levels

SEEK AMBASSADOR
\$150,000

SEEK SUSTAINER
\$300,000

SEEK NATIONAL SPONSOR
\$500,000

SEEK Supporter \$50,000
SEEK Champion \$75,000



Corporate Employee Engagement



- Company-hosted events
- Competition Fridays

- Access to NSBE Talent
- Professional Development

- Company-hosted field trips
- Speaking engagements



Get Involved!



- Become a sponsor
- Houston Leadership Council
- Corporate Champion
- Strategic Partner

Help Inspire Future Engineers!



SEEK Sponsors



RESPONSIBLE BY NATURE®



S. D. BECHTEL, JR. FOUNDATION
STEPHEN BECHTEL FUND



NORTHROP GRUMMAN



COMMUNITY COLLEGE OF DENVER





Q & A

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