Summer Engineering Experience for Kids
Overview

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

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

- 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
FOR AFRICAN AMERICANS, THE CURRENT PICTURE LOOKS WORSE

African Americans in Engineering

<table>
<thead>
<tr>
<th>Category</th>
<th>2014 Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Faculty</td>
<td>2.5%</td>
</tr>
<tr>
<td>Engineering Workforce</td>
<td>3.6%</td>
</tr>
<tr>
<td>Engineering Bachelor's Degrees</td>
<td>3.8%</td>
</tr>
<tr>
<td>Total Undergraduate Enrollment</td>
<td>9.6%</td>
</tr>
<tr>
<td>U.S. College-Aged Population (18-24 Year Olds)</td>
<td>15.9%</td>
</tr>
<tr>
<td>U.S. Population</td>
<td>13.2%</td>
</tr>
</tbody>
</table>

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

Total 2000 population:

Age 8

4th grade math proficiency

8th grade math proficiency

Completing Calculus in HS

Freshmen engineering enrollment

Engineering Completion

658,070

125,033 (19%)

85,549 (13%)

36,194 (5.5%)

7,011 (1.1%)

3,501 Graduates

184,260 (28%)

144,775 (22%)

72,388 (11%)

17,110 (2.6%)

10,095 (59%) Graduates
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
Summer Engineering Experience for Kids (SEEK)

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

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

<table>
<thead>
<tr>
<th>Example Program Schedule</th>
</tr>
</thead>
</table>
| **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 Curriculum + Parents x Mentors = WINNING FORMULA
We Help Students

See Themselves as Engineers
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

* Targeted 2017 SEEK expansion sites are contingent upon committed funding
<table>
<thead>
<tr>
<th>Area of Budget</th>
<th>Description</th>
<th>Unit Cost</th>
<th># units</th>
<th>Total Budget Expenses</th>
<th>% Allocation (budget based)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operational costs [detail]</strong></td>
<td>SEEK WHQ Staff Salaries and Benefits</td>
<td>$41,201</td>
<td>300</td>
<td>$300,216</td>
<td>13.72%</td>
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<tr>
<td></td>
<td>SEEK WHQ Staff Travel and Support</td>
<td>$32,098</td>
<td>1</td>
<td>$32,098</td>
<td>14.59%</td>
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<tr>
<td></td>
<td>NSBE WHQ Staff Travel and Support</td>
<td>$6,603</td>
<td>1</td>
<td>$6,603</td>
<td>3.00%</td>
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<tr>
<td></td>
<td>Total NSBE SEEK Staff Allowance</td>
<td>$2,500</td>
<td>1</td>
<td>$2,500</td>
<td>1.14%</td>
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<tr>
<td><strong>Mentor Costs</strong></td>
<td>SEEK Stipend - Mentor</td>
<td>$2,200</td>
<td>32</td>
<td>$70,400</td>
<td>23.45%</td>
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<tr>
<td></td>
<td>SEEK Stipend - Lead Mentor</td>
<td>$2,400</td>
<td>15</td>
<td>$36,000</td>
<td>11.99%</td>
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<td></td>
<td>SEEK Stipend - Operations Coordinator</td>
<td>$2,700</td>
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<td></td>
<td>SEEK Stipend - Assistant Site Director</td>
<td>$3,000</td>
<td>1</td>
<td>$3,000</td>
<td>1.00%</td>
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<tr>
<td></td>
<td>SEEK Stipend - Site Director</td>
<td>$3,500</td>
<td>1</td>
<td>$3,500</td>
<td>1.17%</td>
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<tr>
<td></td>
<td>Travel Stipend - Site leads</td>
<td>$500</td>
<td>3</td>
<td>$1,500</td>
<td>0.50%</td>
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<tr>
<td></td>
<td>Housing - (30 days - 25 double bed room)</td>
<td>$45</td>
<td>28</td>
<td>$37,800</td>
<td>12.59%</td>
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<tr>
<td></td>
<td>Mentor Training &amp; PO (5 lunches; 1 dinner)</td>
<td>$90</td>
<td>50</td>
<td>$4,500</td>
<td>1.50%</td>
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<tr>
<td></td>
<td>K-12 Classroom Management Training</td>
<td>$3,500</td>
<td>1</td>
<td>$3,500</td>
<td>1.17%</td>
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<td></td>
<td>Daily Shuttle Service for Mentors (22 days)</td>
<td>$15,000</td>
<td>1</td>
<td>$15,000</td>
<td>5.00%</td>
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<td></td>
<td>Mentor Team Building Activities</td>
<td>$1,500</td>
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<td>$1,500</td>
<td>0.50%</td>
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<td><strong>Evaluation &amp; Assessment</strong></td>
<td>Evaluation and Assessment</td>
<td>$10,714</td>
<td>1</td>
<td>$10,714</td>
<td>3.57%</td>
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<tr>
<td><strong>Projects and Miscellaneous</strong></td>
<td>Curriculum Purchases and Support</td>
<td>$27,940</td>
<td>1</td>
<td>$27,940</td>
<td>9.31%</td>
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<td>Curriculum/Program Consultant</td>
<td>$5,000</td>
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<td></td>
<td>Curriculum and Camp Related Printing</td>
<td>$1,500</td>
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<td>$1,500</td>
<td>0.50%</td>
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<tr>
<td></td>
<td>Student &amp; Mentor Apparel (375 + 50)</td>
<td>$5</td>
<td>425</td>
<td>$2,125</td>
<td>0.71%</td>
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<tr>
<td></td>
<td>Shipping and Handling</td>
<td>$1,000</td>
<td>1</td>
<td>$1,000</td>
<td>0.33%</td>
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<td>Awards</td>
<td>$750</td>
<td>1</td>
<td>$750</td>
<td>0.25%</td>
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<td>Background Checks</td>
<td>$32.00</td>
<td>50</td>
<td>$1,600</td>
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<td><strong>Sub-Total</strong></td>
<td></td>
<td></td>
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<td>$271,230</td>
<td>90%</td>
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<td>SEEK Year-long Engagement (NSBE Jr.)</td>
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<td>$10,000</td>
<td>1</td>
<td>$10,000</td>
<td>3.33%</td>
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<tr>
<td>NSBE WHQ Administrative Overhead</td>
<td></td>
<td>$18,988</td>
<td>1</td>
<td>$18,988</td>
<td>6.32%</td>
</tr>
<tr>
<td><strong>Total Expense</strong></td>
<td></td>
<td></td>
<td></td>
<td>$300,216</td>
<td>100%</td>
</tr>
</tbody>
</table>
Support Levels

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

SEEK AMBASSADOR $150,000
SEEK SUSTAINER $300,000
SEEK NATIONAL SPONSOR $500,000
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!
Email: kcroom@nsbe.org
Phone: 571-351-0476
Website: www.nsbe.org/seek/overview

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