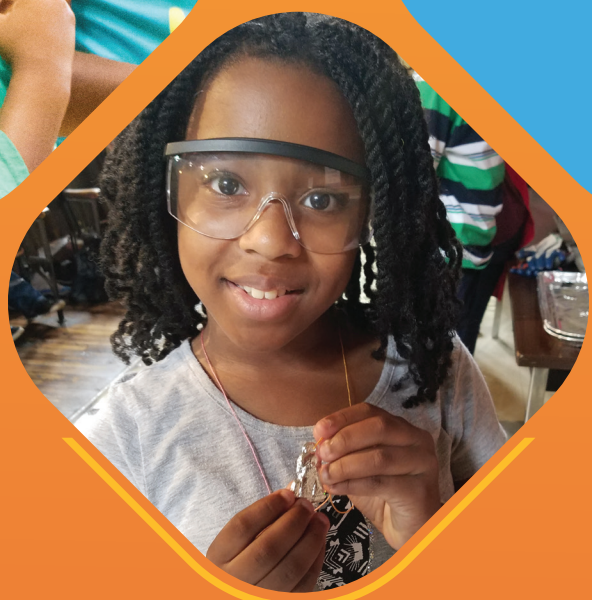
# 2022 PROGRAM REPORT

## National Society of Black Engineers

**S**UMMER
**E**NGINEERING
**E**XPERIENCE FOR
**K**IDS **(SEEK)**



NATIONAL SOCIETY OF BLACK ENGINEERS

SEEK

SUMMER ENGINEERING EXPERIENCE FOR KIDS

# 2022 PROGRAM REPORT

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## 2022 PROGRAM REPORT

# STATEMENT OF GRATITUDE: PARTNERING IN PURPOSE

Since 2007, the National Society of Black Engineers' (NSBE's) Summer Engineering Experience for Kids (SEEK) program has proudly exposed more than 30,000 students to STEM by engaging them in hands-on engineering design activities led by collegiate mentors and professional teachers. Along the way, SEEK has welcomed new partners, encountered challenges and, most importantly, continued to persevere on the road paved with "new normals."

For the past three summers, we have delivered a virtual experience. This year, we introduced the Google Classroom platform to streamline access to the program, and we revamped the Showcase Fridays to enable greater partner participation. While many summer programs returned to an in-person format this year, we were proud to serve over 3000 virtual participants, expanded our partnership with Techbridge Girls and Chevron to include Bechtel, in support of middle school aged girls, and integrated the SEEK program into the summer school curriculum of Kansas City Public Schools.

I invite you to learn more about the 2022 SEEK program and its impact and the demographics we served. As we shift to planning for the 2023 SEEK program, which will be an in-person and virtual experience, – we are excited to be back! Again, thank you for your continued support of the SEEK program. We look forward to working with you next summer.

Sincerely,
**Rochelle L. Williams, Ph.D.**
Chief Programs Officer
National Society of Black Engineers (NSBE)

# 2022 VIRTUAL SEEK PROGRAM

## PROGRAM HIGHLIGHTS

### ABOUT SEEK

The National Society of Black Engineers (NSBE) created the Summer Engineering Experience for Kids (**SEEK**) to inspire Black students with the opportunities and wonders of the STEM fields.

**SEEK** is a free, three-week summer program that offers a fun and engaging educational experience for students in grades 3–5. **SEEK** aims to provide high-quality learning opportunities to students from groups underrepresented in STEM; students who otherwise may not have robust access to STEM education.

# 2022 VIRTUAL SEEK PROGRAM

## PROGRAM HIGHLIGHTS

### COHORTS

**The 2022 SEEK Virtual program divided students into two cohorts:**

**Cohort 1** participated from June 13–July 1, 2022.

**Cohort 2** participated from July 18 – Aug. 5, 2022.*

**Cohort 2 included the SEEK/Techbridge Girls program for 6th-8th grade girls. The numbers below only reflect students in main program. SEEK/Techbridge Girls participant data can be viewed on page 9.*

### STUDENT PARTICIPANT DEMOGRAPHICS

**2,616 applications** were **submitted**

**1,776 students registered**, with representation from **42 U.S. states, Canada, Kenya, Nigeria and the United Kingdom**

**SEEK Virtual program student participants** were from many cities across the country. The **top five** cities were **Washington, D.C., Atlanta, Georgia, Minneapolis, Minnesota, Charlotte, North Carolina and Houston, Texas.**

**GENDER IDENTITY**
**829** Girls
**943** Boys
**4** Did Not Disclose

### MENTOR DATA

**Number of Mentors – 53**

- Mentors from **21 states** and **Puerto Rico** participated

**Areas of Study of Mentors**

- **Engineering – 62%**
- **Education – 7.5%**

**GENDER IDENTITY**
**30%** Man
**70%** Woman

**More than 340 hours of FlipGrid** content from Showcase Friday

**More than 1,600 points of feedback** received from sponsors for Showcase Friday

**More than 26,000** unique views of student submissions

# LEADING CHANGE

## MENTORS AS LEADERS

SEEK uses a near-peer mentor model in which students are able to see themselves in their classroom leaders to strengthen their engineering identities. Developing a strong pipeline for development of capable STEM professionals from underrepresented communities requires providing role models dedicated to the students' success. This year, 488 mentor applications were received during the submission period: Dec. 1, 2021 to June 9, 2022. To increase efficiency, a new position, Virtual Moderator, was introduced, to manage the substantial growth of SEEK students. In total, 53 mentors, majoring in either engineering or education, were selected to lead our students through this virtual experience.

## CONTINUING TO HARNESS TECHNOLOGY TO EXPAND CAPABILITIES

The 2022 SEEK Virtual program transitioned to the Google Classroom platform. Transitioning from Zoom to Google Classroom simplified our ability to assign students to classrooms and distribute communication to deliver a seamless classroom environment.

This year, we held a live, traditional parent orientation that included brief welcome remarks from sponsors. Parents had the opportunity to identify their students' classroom mentors before the program began and ask questions of the SEEK team.

Developing our leaders for the online experience required shifting how we train and prepare them. The SEEK team hosted the first Virtual Facilitator Training on June 6–9, 2022. It included virtual facilitation training led by a leading curriculum specialist to enhance our mentors' ability to make SEEK modules interactive and keep student engagement and participation high through the program.

## UPDATING THE CURRICULUM

The lack of diversity in engineering and technology has proven to lead to a design bias that negatively impacts product users with non-majority identities. To train the next generation of engineers and technologists, we introduced a module on social justice in engineering to teach SEEK participants how to identify and mitigate bias in the Engineering Design Process (EDP). Based on the EDP, students completed the following challenges throughout the course of the program:

| | |
|---|---|
| **WEEK 1** | SOCIAL JUSTICE IN STEM CHALLENGE |
| **WEEK 2** | CODING CHALLENGE |
| **WEEK 3** | INTERNATIONAL STEM RACING LEAGUE CHALLENGE |

# SPOTLIGHT ON ACCESS

A key tenet of the SEEK program is to expose underserved students to high-quality STEM curricula at no cost. In keeping with our commitment to remove barriers to access, we were able to once again provide Amazon Fire 7 tablets to all new SEEK students and mentors to enable ease in accessing the SEEK curriculum and live sessions. In addition to digital access, each student received shipped materials to participate in each week's STEM challenge. Each student received one of each of the following curriculum kits:

- HaloCode by MakeBlock
- Prototype Kit from iNSL
- mBot Robotics kit by Makeblock
- Each student participant also received an official SEEK T-shirt.

## LAB DRAWER

As a thank-you for participation, each student was given a Lab Drawer STEM kit, which taught students how to build their own model of a DNA double helix.

### ABOUT LAB DRAWER

The Lab Drawer is an Ed-Tech monthly subscription box full of cross-functional learning experiences for children aged 10–14. Inspired by the look of a chemistry lab drawer, every box includes materials and instructions for a unique STEM experiment. Each month, children have the opportunity to learn and experience the STEM disciplines through augmented reality and the arts. The Lab Drawer has everything children need to unleash their potential as world future leaders in STEAM (STEM + the arts).

# SUCCESS: POWERED BY PARTNERSHIPS

Engaging in experiences outside of the traditional learning environment provides students with additional opportunities for hands-on STEM learning, reinforces the content provided and skills learned in the previous week and exposes students and parents to new STEM programming they can utilize year-round. This year, three program partners provided hands-on sessions to students and parents.

**NORTHROP GRUMMAN**

**Northrop Grumman & Drones –** Northrop Grumman is a multinational aerospace and defense technology company. With 90,000 employees, the company solves the toughest problems in space, aeronautics, defense and cyberspace. On June 25 and July 23, 2022, Northrop Grumman engineers led the SEEK students in a hands-on activity about programming drones.

**MAKE MUSIC COUNT**

**Make Music Count –** Through the Make Music Count program, students utilized an exciting app centered on mathematics. By solving math problems, students could determine how and where to place their fingers on a keyboard to play popular songs. Students participated in these workshops on July 2 and Aug. 6, 2022.

**CLUB OF THE FUTURE**

**Club of the Future –** Founded by Blue Origin, Club for the Future is a nonprofit whose mission is to inspire future generations to pursue careers in STEM and to help invent the future of life in space. On July 23, 2022, a group of Blue Origin engineers led a workshop in which students designed and built their own rockets at home then learned what an actual space launch is like.

## GROWING THE NSBE ECOSYSTEM

NSBE Jr. Night gives NSBE staff the opportunity to promote NSBE's year-round pre-college programs as the next step in SEEK students' development. Parents and guardians learned more about our program directly from NSBE Jr. chapter advisors and alumni from across the country During this event, which was hosted twice this year with a total of 234 attendees. The event succeeded in generating considerable interest in NSBE Jr. The NSBE SEEK team sent personal communications to parents or guardians after the event, to connect them with their nearest NSBE Jr. chapter. In 2021, a virtual NSBE Jr. chapter was launched, to enable SEEK students to have access to year-round NSBE programming if they live in areas not now being served by chapters in-person.

# SUCCESS: POWERED BY PARTNERSHIPS (CONT'D)

## PUBLIC SCHOOL PARTNERSHIPS

This year, to increase the number of students with access to SEEK curricula, we partnered with individual schools and school districts to integrate SEEK into summer school programming. The pilot programs can serve as potential models to expand SEEK's footprint nationally. Students who participated in the Public School Partnerships are not included in the count on page 5. Students who participated via Public School Partnerships were not required to complete a formal registration.

- Kansas City, Kansas Public Schools – **1,561 STUDENTS**
- Warrensville Heights Elementary School (Outside of Cleveland, Ohio) – **30 STUDENTS**
- Wings Academy (Cleveland, Ohio) – **30 STUDENTS**
- Aldine Young Women's Leadership Academy (Houston, Texas) – **200 STUDENTS**

## SEEK POWERED BY: techbridge girls™

*Sponsored by:* Chevron, BECHTEL

NSBE has partnered with Techbridge Girls to expand the reach of SEEK to middle school-aged girls. SEEK powered by Techbridge Girls was designed to increase the capacity of SEEK mentors to deliver high-quality, gender- and culture-relevant STEM programming as well as increase the program's impact by strengthening STEM identity, increasing social/emotional skills, improving career awareness and deepening understanding of how STEM can create change. This partnership brings together NSBE's broad influence and history of community impact with Techbridge Girls' expertise in curriculum development and training in girl-focused STEM programming.

**The 2022 SEEK Powered by Techbridge Girls virtual program took place July 18–Aug. 5, 2022.**

- **677 applications** were submitted
- **288 students registered,** from the U.S., Canada and Kenya
- **Students of the SEEK Powered by Techbridge Girls virtual program** were recruited from Houston, Texas; New Orleans, Louisiana; the San Francisco Bay Area; and Washington, D.C.
- **Grades represented**
  - 6th – **183**
  - 7th – **81**
  - 8th – **24**
- Number of mentors = **8 women**
- Mentors' areas of study
  - Education – **12.5%**
  - Engineering – **87.5%**
- More than 330 points of feedback received from 13 sponsors for Showcase Friday

### THE CURRICULUM

SEEK Powered by Techbridge Girls enhanced the SEEK curriculum by including social emotional learning, gender expansiveness, cultural relevance and academic vigor for middle school girls. The curriculum was built on the framework of Being STEM, Doing STEM and Using STEM. This allowed students in the program to affirm their identity as girls* in STEM, learn scientific concepts in girls' own language, have hands-on experiential learning, identify social issues that can use STEM for change, and experience role models who intentionally talk proudly about their identities in STEM. The SEEK Powered by Techbridge Girls curriculum is steeped in social emotional learning, gender expansiveness and cultural relevance best practices, creating a safe space for girls to be their full selves, explore hands-on STEM and develop their ability to think critically and apply STEM to their own lives and communities.

Lessons are grounded in the following: safe space, strong sense of community and belonging, expression of creativity, meaningful participation, critical thinking and BIPOC (Black, Indigenous, People of Color) lineage.

**Based on the Engineering Design Process (EDP), students completed the following challenges:**

- **Mission 1 – Gaming Challenge:** Girls will created a video game that will allowed you them to go head-to-head with a tech villain.
- **Mission 2 – Coding Challenge:** Girls used a a HaloCode device to create a mood light that helped teens communicate their feelings.
- **Week 3 – Design Challenge:** Girls designed and built built their electric vehicles.

*cis girls, trans youth, gender non-conforming and/or non-binary youth who experience girlhood as part of their journey

## AWARENESS AND ENGAGEMENT

### SOCIAL MEDIA ENGAGEMENT

This year, our engagement strategy was centered on broadening access to SEEK through our various social media channels and updating the look and content on the SEEK landing page. From **April through June**, we saw an **increase** of **810%** in overall reach, including **695** unique post **interactions**; an **increase** of **+2,400 views** from **April 12 – June 12** on **Instagram**; and an **increase** in views of **11,900** from **April 12 – June 12** on **Twitter**. SEEK Instagram **1,684 Followers** – an **increase** of **137** - **21 posts** published - **575 interactions**

### WEBSITE ENGAGEMENT

The following table lists the cities with the largest number of residents who accessed the SEEK webpage, www.SEEK.NSBE.org, throughout the summer of 2022. SEEK's website posts were shared frequently, which increased awareness of the program's brand. Posting year-round will maintain the momentum and build anticipation for next year's program.

**Noble Prentis** – I really do LOVE the program and would absolutely recommend students to sign up for it again. I think the kids had a great experience.

**Frank Rushton** – It was engaging for the students. I would like to see more advertisement in the future so others can participate.

# ACKNOWLEDGMENTS

The swift transition to a virtual format was made possible by a team of dedicated staff with expertise in training and development, curriculum design and informal education.

**THOMAS HARRIS** – SEEK Curriculum and Resources Coordinator

**SHERNARI COUNCIL** – SEEK Recruitment and Training Coordinator

**DANIA ROACH** – NSBE Pre-College Initiative Coordinator

**WOODROW PREVARD** – Techbridge Girls Program Manager

# APPENDIX I - LIST OF ORGANIZATIONS ENGAGED AS 2022 SEEK VIRTUAL PROGRAM PARTNERS

## PRESENTING SPONSORS

1. Amazon Web Services
2. Ann Theodore Foundation
3. Cummins
4. Honeywell
5. KiwiCo
6. Northrop Grumman Foundation
7. Trane Technologies

## ANCHORING SPONSORS

1. BL Harbert International
2. Chevron
3. Ford Motor Company
4. Howmet Aerospace Foundation
5. PPG

## CHAMPION SPONSORS

1. Arconic
2. Dow Chemical
3. Duke Energy
4. General Motors
5. Joseph Drown Foundation
6. Motorola Solutions Foundation

## ADVOCATE SPONSORS

1. Bechtel
2. Boston Scientific
3. BP
4. Hattie M. Strong Foundation
5. Shell

## SUPPORTER SPONSORS

1. Aerojet Rocketdyne
2. Cal Engineering and Geology
3. Click Bond
4. Petroleum Equipment & Services Association

# APPENDIX II – 2022 SEEK VIRTUAL PROGRAM PARTICIPATION BY STATE AND GENDER IDENTITY

| STATE | BOYS | GIRLS | PREFER NOT TO ANSWER | GRAND TOTAL |
|---|---|---|---|---|
| ALABAMA | 31 | 14 | | 45 |
| ARIZONA | 1 | 2 | | 3 |
| CALIFORNIA | 69 | 3 | 1 | 140 |
| COLORADO | 9 | 10 | | 19 |
| CONNECTICUT | 4 | 1 | | 5 |
| DELAWARE | 2 | 9 | | 11 |
| DISTRICT OF COLUMBIA | 23 | 16 | | 39 |
| FLORIDA | 26 | 19 | | 45 |
| GEORGIA | 64 | 63 | | 157 |
| ILLINOIS | 31 | 31 | | 62 |
| INDIANA | 4 | 4 | | 8 |
| IOWA | 10 | 8 | | 18 |
| KANSAS | 5 | 1 | | 6 |
| KENTUCKY | 1 | | | 1 |
| LOUISIANA | 18 | 19 | | 37 |
| MARYLAND | 142 | 132 | 1 | 275 |
| MASSACHUSETTS | 3 | 4 | | 7 |
| MICHIGAN | 31 | 14 | | 45 |
| MINNESOTA | 31 | 34 | 1 | 66 |
| MISSISSIPPI | 4 | 4 | | 8 |
| MISSOURI | 8 | 11 | | 19 |
| NEVADA | 1 | 4 | | 5 |
| NEW HAMPSHIRE | 1 | 1 | | 2 |
| NEW JERSEY | 15 | 11 | | 26 |
| NEW YORK | 18 | 23 | | 41 |
| NORTH CAROLINA | 45 | 5 | | 93 |
| NORTH DAKOTA | 2 | 3 | | 5 |
| OHIO | 22 | 33 | | 55 |

## APPENDIX II – CONTINUED

| | | | | |
|---|---|---|---|---|
| OKLAHOMA | 7 | 7 | | 14 |
| OREGON | 2 | 1 | | 3 |
| PENNSYLVANIA | 14 | 20 | | 34 |
| RHODE ISLAND | 1 | 1 | | 2 |
| SOUTH CAROLINA | 28 | 20 | | 48 |
| TENNESSEE | 14 | 18 | | 32 |
| TEXAS | 158 | 227 | | 385 |
| UTAH | 6 | 4 | | 10 |
| VIRGINIA | 48 | 49 | 1 | 98 |
| WASHINGTON | 8 | 4 | | 12 |
| WISCONSIN | 1 | | | 1 |
| GRAND TOTAL | 908 | 938 | 4 | 1846 |

## APPENDIX III – 2022 SEEK VIRTUAL PROGRAM INTERNATIONAL PARTICIPATION BY COUNTRY AND GENDER IDENTITY

| COUNTRY | BOYS | GIRLS | GRAND TOTAL |
|---|---|---|---|
| CANADA | 21 | 16 | 37 |
| JAMAICA | | 1 | 1 |
| KENYA | 8 | 13 | 21 |
| NIGERIA | 6 | 1 | 7 |
| UNITED KINGDOM | | 1 | 1 |
| GRAND TOTAL | 35 | 32 | 67 |

NATIONAL SOCIETY OF BLACK ENGINEERS

SEEK

SUMMER ENGINEERING EXPERIENCE FOR KIDS

**National Society of Black Engineers (NSBE)**
**205 Daingerfield Road ◆ Alexandria, VA 22314 ◆ 703-549-2207**
**seek.nsbe.org**