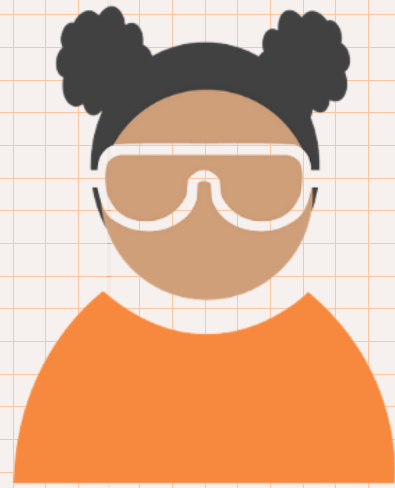


Techbridge Girls

Impact Report

2021-2022 Program Year



Our Mission

Techbridge Girls re-engineers the way Black, Indigenous, and all girls* of color from marginalized communities experience STEM by catalyzing out-of-school time (OST) STEM educators and STEM professionals to become equity educators and advocates through training and curricula that promote access, belonging, and persistence.

The STEM Equity Framework

Being STEM: Cultural relevance, social-emotional learning, and gender expansiveness create a sense of belonging in STEM spaces.

Techbridge Girls centers marginalized identities in STEM, fostering STEM belonging and building equitable classrooms where girls who are Black, Indigenous, and people of color (BIPOC) can thrive. Check-in and icebreaker activities create a classroom culture where youth's brilliance and boundless potential are front and center. All activities utilize best practices in social-emotional learning to create community, develop trust, and enable youth to show up as their authentic selves.

Doing STEM: Hands-on STEM in girls' own language supports exploration, innovation, and the development of a practice mindset.

Techbridge Girls utilizes the engineering design process (EDP) to encourage brainstorming, collaboration, and iteration as girls design and test different STEM solutions to real-world problems. The EDP is a tool to support young engineers as they embrace challenges and take risks in a STEM environment. By leading through the EDP, educators foster a supportive environment where youth combine their inherent creativity and STEM learning.

Using STEM: STEM solutions for social change positively influence girls' lives, communities, and systems.

Techbridge Girls uses story-based learning to develop critical thinking skills at the intersections of STEM and social justice. Programmatic work focuses on stories that center a BIPOC woman or gender-expansive STEM professionals' work using STEM to create a more equitable world. Girls discuss issues like racism, sexism, and other oppressions through the lens of STEM stories and applications.

Our Approach

OST educators and STEM professionals serve as STEM gatekeepers, with the power to disrupt inequitable systems and pave the way for the next generation of STEM leaders. These adults can also perpetuate inequities and provide unequal access to meaningful engagement in STEM education and careers. Techbridge Girls challenges gender, racial, and class bias in STEM education and fields by developing training, gender-responsive and culturally relevant curricula, and STEM kits that equip adults to act as equity educators and champions. These adults gain tools and strategies to support girls on the path to STEM success.

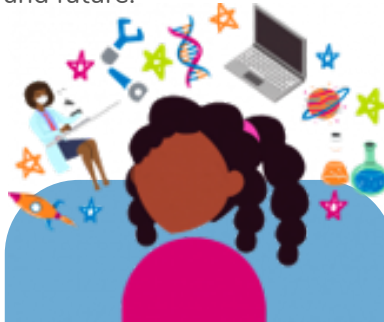
OST Programs

Techbridge Girls' gender-responsive and culturally relevant STEM curricula, program kits, and educator training equips educators to deliver quality, research-based STEM programming in their schools and communities. Our programs are fun, hands-on, open-ended, and inquiry-based. Aligned with National Generation Science Standards (NGSS), our program framework draws on girls'* interests and lived experiences and ensures they see themselves reflected in the STEM fields' past, present, and future.



Inspire

Inspire encourages girls in the 3rd to 5th grade to explore a wide range of hands-on STEM disciplines. In this program, OST educators deliver 12 ninety-minute lessons that build upon each other to inspire youth to see their endless potential to harness the power of STEM.



Ignite

Designed to spark girls' interest in their STEM journeys, this set of 8 one-hour lessons offers 3rd- to 8th-grade girls engaging STEM and social-emotional learning activities. The curriculum offers maximum flexibility and can be delivered virtually, in person, or as a hybrid program, making it the program of choice for our OST educators this year.



ChangeMakers

ChangeMakers builds middle school girls' STEM joy, excitement, belonging, and agency through culturally relevant story-based learning. In this in-person, 12-session program, OST educators center the contributions of BIPOC women who have used STEM as a tool to positively impact systems, communities, and their personal lives.

STEM Engagement Events

These one day events expose girls* to broad STEM content, careers, and role models in their local communities.

Capacity Building

We support educators, OST leaders, role models, and mentors through coaching, training, and engagement events that enhance their ability to influence and accelerate girls' STEM pathways

Who We Serve

Equipping Equity Educators

Techbridge Girls builds the capacity of OST educators so they have the tools to create spaces that challenge the stock story of STEM as for and by White men and center the history and potential of BIPOC youth. Our training and support challenges educators to take responsibility for failures in education by examining position, bias, power, and privilege in the classroom; valuing collaboration; and centering student voice to create a sense of belonging.

The Approach: We provide live and asynchronous training, curricula, an online resource library, STEM kits, and a community of peers committed to STEM equity.

OST Programs

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90 OST educators served
1,340 youth in OST programs,
workshops and events.

STEM Engagement Events

These events take place at colleges, community centers, and schools across the country. Volunteers, STEM professionals, and role models host fun, hands-on STEM workshops and community-building events.

268 STEM conference leaders
served **1,956* youth** in STEM
conferences.

Engaging Equity Champions

Techbridge Girls engages OST leaders and STEM professionals who serve as role models and mentors, encouraging them to uplift the brilliance, potential, and STEM lineage of BIPOC girls. Our training, workshops, and one-time events challenge adults in positions of power to interrogate their own biases and dismantle barriers to opportunities for BIPOC girls so they may create more expansive environments for youth to thrive in STEM fields. By positioning STEM as a path to economic promise and a prosperous career, these equity champions can empower youth to pursue their dreams.

Capacity Building

We support OST leaders, role models, and mentors through coaching, training, and engagement events that enhance their ability to influence and accelerate girls' STEM pathways.

- **449 equity champions** engaged in TBG mission
- **71 trained role models** reached at least **355 youth**

Field Notes

Our network of OST educators is providing critical services in schools and community organizations across 25 states. The 2021–2022 program year brought many successes and challenges to our network amid turbulent times in the OST field and beyond.

Instability in OST

Amid the continuing COVID-19 pandemic and the onset of the Omicron variant, shutdowns and interruptions defined the 2022 program year in OST. Educators navigated this uncertainty with grace, consistently adjusting program schedules and delivery. While most programs in the 2021–2022 program year were conducted in person, several switched to hybrid delivery as needed, allowing for isolating or quarantining youth by letting them pick up program supplies and “Zoom in” from home. Amid this uncertainty, partner sites were also understaffed due to the Great Resignation. According to the Bureau of Labor and Statistics, resignations reached an all-time high in November of 2021, with 4.5 million people voluntarily leaving positions across the country. Education was among the sectors hardest hit, leaving open positions in nonprofit and school partner sites throughout the 2021–2022 program year (Gittleman, 2022).

Youth Recruitment and Retention

Educators reported changing class rosters, smaller group sizes, and inconsistent attendance in out-of-school programs this year. Some attributed this to girls being needed at home due to schedule disruptions, often serving as primary caregivers for siblings. Research shows that girls take on more household work than boys in their peer groups, with the most significant gap among Latina and Black youth. A growing body of evidence indicates that girls in low-income families appear to be uniquely affected by this disparity, resulting in less family time and resources allocated to pursue enrichment activities (Epstein, Quinn, & González, 2022). Educators also attributed smaller group sizes to waning involvement in enrichment activities in favor of tutoring and academic support due to pandemic learning loss. Consistently, our educators reported challenges in supporting youth as they transitioned back to in-person learning environments post-COVID school shutdowns.



“I realized that it doesn’t matter how many girls are there. What matters most is that I am giving the girls that do show up (even at times when it’s just two) the optimal experience.”

– TBG educator, Washington, DC

Field Notes

Educator Wellness

When times are tough, we know educators go above and beyond to support their communities. Our network of educators was busy picking up extra responsibilities to ensure basic services could continue at their schools and centers. In addition to inspiring girls to achieve their STEM goals, they provided childcare, transportation, meal services, and



much more on a daily basis. Educators' mental and physical wellness must be a primary focus to maintain their motivation and inspiration through trying times.

Meeting the Moment: To address the uncertainty and instability of the field, Techbridge Girls built flexibility into our program training and support model. Utilizing our learning management system, we curated resources, discussions, and program support that can be accessed 24/7 on a user-friendly platform. This approach allowed educators to access what they needed to deliver programming on their own time. The platform includes recruitment resources and discussion boards that bring educators together to share challenges and discuss solutions. We also launched monthly community meetings, where educators convened around their most pressing concerns and celebrated successes as a group. We took time to name the burden on educators and uplift their commitment to wellness. While building community at our meetings, educators celebrated new workout routines, intentional sleep strategies, crafting, and all the ways in which they had prioritized their wellness during this program year.

Data Collection and Management

Throughout the COVID-19 pandemic, challenges in data collection have persisted in the education sector. In a 2021 survey by the Education Commission of the States, education agency leaders and staff cited a lack of available data related to privacy concerns as well as limited collection and reporting capacity. Respondents also indicated a greater need to improve data connections and build data dashboards and portals (Smith & Zastrow, 2022). Our experience in collecting and managing data reflects these insights. As we test and adapt our program model, we are iterating internal processes for collecting data and information about who our OST educators are serving, improve our outcome measurement strategies, and overlay the data with narrative data about girl and educator experiences in the field.

Educator Outcomes

OST educators serve as early STEM gatekeepers, with the power to maintain or disrupt inequities in STEM. BIPOC girls' educational experiences often intersect with race, gender, and class biases. Educators can deter BIPOC girls from marginalized communities from pursuing STEM without acknowledging their role in systems perpetuating inequities. BIPOC girls who attend high-poverty schools experience bias due to their race, class, and ethnicity, which keeps them from persisting in STEM careers. Research by the National Alliance of Partnerships in Equity (NAPE) identifies that unconscious beliefs and implicit bias can discourage underrepresented students from pursuing STEM classes and careers. Students from low-income communities of color disproportionately experience the science classroom as outsiders (Nasir & Vakil, 2017). These issues are compounded for girls, who receive messages that STEM is not for girls, particularly girls of color (Carlone, Johnson, & Scott, 2015). BIPOC girls bring relevant experiences to the classroom that are often not acknowledged or valued by educators in the context of STEM education. Through our STEM Equity Framework, Techbridge Girls asserts that OST educators have the opportunity to change this narrative.

TBG's STEM equity training challenges these gatekeepers to consider their position, biases, and the resulting power imbalance in the classroom. Educators are equipped with the tools and practices to foster greater STEM engagement and knowledge. **Tangible classroom strategies, a supportive community, and a comprehensive curriculum embodying cultural relevance and gender expansiveness have prepared many TBG educators to cultivate a sense of joy and belonging for BIPOC girls in STEM spaces.**

Indicators:

- **90%** gained awareness of what it means to be an equity educator.
- **90%** gained strategies to create an inclusive and safe space for students to express their gender identity.
- **90%** gained an understanding of how bias affects youth in educational settings.
- **86%** gained an understanding of culturally relevant classroom practices.
- **86%** gained an understanding of the power imbalance in the classroom related to identity and position.
- **83%** feel more confident teaching diverse STEM histories that center contributions of BIPOC professionals.
- **83%** gained strategies to overcome their own biases.
- **69%** gained awareness of how marginalized students experience bias within STEM education.

Meeting the Moment: As we iterate our training, we learn more about the demographics and lived experiences of the educators in the room. Over the last 20 years, Techbridge Girls' educators were majority White women. After analyzing the data for this year in our new Equipping Educators model, we found a majority of our OST educators identify as BIPOC. With this knowledge, the training approach will adapt so they may explore their role as equity educators through the lens of their own identities.

Self Reported racial/ethnic identities of adult evaluation participants:

47%	African American/Black
42%	White
7%	Asian/Asian American
4%	Hispanic/Latino/Latina/Latinx

Youth Outcomes

Being STEM

Trained and equipped educators delivered **cultural relevance, social-emotional learning strategies, and gender-expansive practices that developed a sense of belonging in STEM spaces for a majority of program participants.** Belonging in STEM is key to persistence in STEM endeavors, including educational and career pursuits. When girls can connect with their STEM lineage, express themselves freely, and share aspects of their identity in emotionally safe environments, they are more likely to view STEM spaces as places where they belong now and in the future.

Self reported gender and racial/ ethnic identities of youth evaluation participants:	51%	African American/Black	84%	Girl
	18%	Hispanic/Latino/Latina/Latinx	9%	Boy
	13%	White	3%	Transgender girl
	9%	Multithnic/Multiracial	1%	Gender non-conforming
	5%	Asian/Asian American	1%	Gender non-binary
	2%	Middle Eastern or North African	1%	Genderqueer
	1%	Indigenous American/Alaskan	1%	Transgender boy
	1%	Native Hawaiian/Pacific Islander		

Indicators:

- **82%** felt they could bring their whole selves to the program.
- **82%** felt valued by the educators in the program.
- **79%** felt the program was a safe place to express their gender identity.
- **77%** were comfortable sharing experiences related to race, ethnicity, and culture in the program.
- **76%** talked to family at least once a week about the program.
- **67%** talked to friends at least once a week about the program.
- **63%** felt confident sharing their thoughts and feelings in the program.

Meeting the Moment: Given the challenges faced by the OST field, it came as no surprise that youth struggled to connect and feel confident as they reintegrated to in-person learning environments. Educators requested more social-emotional learning resources, such as icebreakers, to incorporate throughout the day. Techbridge Girls facilitated discussions between educators on best practices and strategies for youth engagement through monthly community meetings. We also developed and shared new community-building and youth engagement resources in our online resource hub.



"After such a long time in virtual learning, this year our students have really struggled in reconnecting and working together. There was a lot of pushback and complaining the first few weeks, but by the end of the program, they were excited that they had gotten to work together. They really formed a great sense of community, and it was great to see them work together again." – TBG educator, Oakland, CA

Youth Outcomes

Doing STEM

Hands-on, exploratory STEM in girls' own language increased STEM knowledge, skills, and the development of a practice mindset in a majority of program participants. Techbridge Girls fosters an environment where girls engage in creative and critical thinking, work collaboratively, and focus on the process instead of on achieving one predetermined outcome. By testing and improving through the engineering design process (EDP), girls define STEM concepts from their own experiences and persist through different outcomes, building confidence and increasing their STEM knowledge.

Indicators:

- **87%** increased enjoyment of STEM activities.
- **78%** increased confidence in STEM knowledge and skills.
- **78%** are more interested in learning about STEM.
- **75%** feel more confident challenging themselves to try new things in STEM.
- **73%** feel more likely to persist when faced with challenges in STEM.
- **69%** feel more interested in learning more about STEM in future educational pursuits.
- **53%** increased understanding of the EDP.

Meeting the Moment: As we reflect on the feedback received from educators, we learned that the EDP at times was not prominently featured in some lessons as the tool for STEM exploration. As we enter another program year, we have developed new ways to ensure the EDP guides instruction. Using educator and youth feedback, we have included worksheets and visuals to keep it front and center and restructured some lessons to lean into the phases of the EDP.

Using STEM

For the majority of participants, activities that centered on STEM solutions for social change increased their perceptions of STEM as a tool that can positively affect their lives, communities, and systems. Connections to real-life situations in which BIPOC women use STEM to make the world more equitable make STEM careers and majors more tangible. Positioning STEM as an exciting and meaningful pursuit through the lived experience of BIPOC girls disrupts the pervasive story of STEM as for and by White men, increasing STEM engagement and interest.

Indicators:

- **82%** learned real-world applications of STEM.
- **85%** learned that BIPOC communities are part of STEM careers, and histories.
- **83%** learned that STEM is a tool that can make change in their communities.
- **78%** learned that STEM is a tool that can improve their lives.

OST Partner Highlights

Strong, enduring OST partnerships are critical to our model of equipping educators, supporting our bold goal of reaching 1 million girls by 2030. We continue to engage long-time partners with our curriculum and training, adapting our program offerings based on their experiences in the field. As we expand our reach to the national scale, new partnerships with schools and, increasingly, community-based organizations are driving the development of innovative program models.

John Burroughs Elementary School, Washington, DC

Our deep, lasting partnership with John Burroughs Elementary in Washington, DC enables us to realize our shared mission of exciting and educating more girls on their pathway to STEM careers. Delivered by seasoned elementary science teacher Joy Harper, TBG's Ignite curriculum sparked STEM joy and built confidence in their after-school program participants this year.



“Techbridge is an asset to DCPS after-school programs, and for our girls at JBES, it is an **AWESOME** program! The Techbridge curriculum is well-designed, capturing the interest of students and making learning fun at the same time. They also make teaching STEM fun for an educator like myself! It gives me an opportunity to work with and support girls in STEM in a small, safe setting.” – Ms. Harper, TBG educator

The National Society of Black Engineers

In 2021, we launched a unique partnership with the National Society of Black Engineers (NSBE). Funded by Chevron and powered by TBG, the NSBE SEEK program embodies our shared goal of supporting the aspirations of Black girls in engineering and technology. The 2022 summer program engaged 135 middle school girls across 19 states with a three-week virtual summer camp experience. NSBE collegiate mentors served as facilitators in the program and took part in comprehensive training, preparing them with social-emotional learning strategies and culturally relevant, gender-responsive practices. This collaboration between Chevron, NSBE, and Techbridge Girls is a model that reflects our innovative approach to re-engineering STEM education for BIPOC girls across the country.



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