MILLION GIRLS MOONSHOT

Evaluation YEAR 1 2020-21

For a million great reasons.
Reimagine.

FOR A MILLION GREAT REASONS.

Together, we are reimagining who can engineer, who can build, who can design and who can indeed make the world of the future a reality.

STEM Next Opportunity Fund collaborates with a diverse set of partners to ensure all young people have equitable access to STEM learning opportunities beyond the classroom. We know firsthand that STEM learning outside of the classroom inspires young people and prepares them for the future. That is why we are committed to eliminating the systemic barriers that bar young people–particularly girls–from the social and economic benefits that come from STEM learning and careers.

As a key part of this mission, we set an ambitious goal to engage one million girls in STEM learning through afterschool and summer programs over the next five years.

Our **Million Girls Moonshot** is urgent. Women make up half of the total U.S. college-educated workforce of 58.9 million workers, but represent much lower shares in engineering (16 percent) and in computer and mathematical sciences (27 percent). Latinx and Black women have even less representation in science and engineering occupations (approximately 2 percent each).

Out-of-school programs serve girls living in communities that can benefit the most from access to high-quality STEM learning, including communities with a high number of low-income households and areas where girls and at-promise youth have historically lacked access to quality education. The Moonshot builds upon and supports the strengths in these communities. Of students served in afterschool programs nationally, 70% of students are eligible for free or reduced priced lunch programs, and 14% are limited English language proficiency. The majority (34%) are Hispanic, 30% are White, 21% are Black, and 15% represent other races/ethnicities (Afterschool Alliance, 2021).

A year and a half ago, we empowered a robust 50 State Afterschool Network to begin the important work needed to achieve this Moonshot. Given that evaluation and careful, evidence-based practices have been hallmarks of our organization, it is only natural that we are thrilled to reflect on our inaugural year and share our progress with the community. This report is both an assessment and a celebration of what we have achieved together, and what bold steps come next.

And what an inaugural year it was. Even in the middle of a global pandemic, we reached over 160,000 girls and engaged 20,990 afterschool and summer programs. In the face of unexpected challenges, the afterschool community and its champions responded with unparalleled

innovation, creativity, problem-solving and can-do mentality. This progress is indicative of our Moonshot partners' commitment to this work.

Together, we are shifting the attitudes of young people, educators, families, and future employers. Together, we are creating opportunities for girls to achieve economic prosperity by building interest in and confidence to pursue a STEM journey. Together, we are empowering them with an engineering mindset. The values, knowledge and thinking skills associated with an engineering mindset can unlock pathways to socio-economic mobility, gender equality and sustained, national economic growth. The girl living in a small mountain town, or a crowded city apartment, a farm, or wherever she calls home can imagine herself as an engineer, a creator, an inventor, and a leader, poised to solve our world's most pressing challenges. She has a community of champions who encourage her, provide fun hands-on STEM learning, and make sure that wherever she turns, she has the opportunity to continue on her STEM journey.

In 2020-21 | Year 1
Moonshot grantees connected with

20,990 afterschool and summer programs

160,000 girls and

396,800 youth overall

The Million Girls Moonshot supported the development of new tools to assess young people's engineering mindset, which will be used at a larger scale in 2021-22

All girls have the amazing potential to change the world. It's up to us to ensure that every girl has access to the high-quality education and STEM skill building they need to tap into their potential. The commitment to the Moonshot's core transformative practice areas during the inaugural year was instrumental in building a successful foundation to empower one million girls with an engineering mindset over the five-year initiative. Together with our Moonshot partners, champions, and friends, we are poised to do even more in the coming years.

In gratitude,

Ron Ottinger
Executive Director, STEM Next

Teresa Drew
Deputy Director, STEM Next

For a million great reasons.

Reimagine.

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EXECUTIVE SUMMARY

The Million Girls Moonshot reached 160,000 girls and 20,990 afterschool and summer programs in 2020-21.

Launched in spring 2020, STEM Next Opportunity Fund's initiative (STEM Next), The Million Girls Moonshot, seeks to reimagine who can engineer, who can build, who can make. It purports to inspire and prepare the next generation of innovators by engaging 1 million more girls in science, technology, engineering, and math (STEM) learning opportunities through afterschool and summer programs over the next five years. The Million Girls Moonshot joins the movement to close the gender gap in STEM fields, especially engineering and computer science in which the gaps are greatest.

The Moonshot provided a suite of resources, technical assistance, and catalytic grant funding to all 50 of the statewide afterschool networks in order to reach expanded learning programs nationally.

Each network initiated a complementary set of tactics to support high-quality and engaging STEM learning, including raising awareness about the Moonshot's core research-based Transformative Practice Areas (see below) through outreach and communication, creating multi-sector partnerships, and providing professional development opportunities and technical assistance.

The Million Girls Moonshot reached 20,990 afterschool and summer programs in its first year.

In its first year, Moonshot grantees made substantial progress toward their goals. Moonshot grantees connected with 20,990 afterschool and summer programs that collectively reached 160,000 girls, and 396,800 youth overall. The Moonshot grantees formed partnerships with 612 new organizations from the business, government, education, and nonprofit sectors. This achievement is even more impressive in light of the COVID-19 pandemic, which required schools and community centers to cease in-person operations for much of 2020 and the first half of 2021.

Rather than promote a particular curriculum, the Moonshot focuses on four Transformative Practice Areas, research-based strategies shown to effectively engage girls and marginalized youth in science, technology, engineering, and math:

- **Engineering mindset –** activities that engage girls in developing a set of ten skills and mindsets including using math and science, iteration, persistence, teamwork and envisioning multiple solutions.
- **Inclusive and equitable STEM –** practices that encourage girls and marginalized youth to engage in STEM, including selecting topics of interest to all genders, incorporating community issues into activities, and working in cooperative groups.
- **Role models, mentors, and families –** engaging young people with STEM professionals from underrepresented backgrounds and encouraging families to participate in STEM activities together.
- **Continuous STEM learning pathways –** working across programs and organizations to assure that young people who are interested in additional STEM-related activities experience a "warm hand-off" between experiences.

STEM Next's Million Girls Moonshot supports grantees' state-level efforts by distributing monthly Asset Packages, which include a listing of professional development opportunities and research connected to the four Transformative Practice Areas, and through Booster Packs, in-depth learning communities for afterschool and summer programs and statewide afterschool networks offered by the Moonshot's implementation partners.

> ***The first year of the Million Girls Moonshot taught us to be flexible, to be adaptable and to be empathetic. Despite a world-wide pandemic, we were able to meet or make progress toward all of our identified outcomes and program goals. Additionally, our work with the MGM project has opened other doors to us including: participating in nationwide learning communities focusing on equity, diversity and inclusion and program quality; the opportunity to submit for the Booster Pack on Equity, Diversity and Inclusion; and further development of partnerships across the state.***
>
> *— Iowa Afterschool Alliance*

Building a foundation for engaging youth — progress toward the Moonshot's Theory of Action

The Million Girls Moonshot Theory of Action describes a sequence of interconnected steps:

1) Build Capacity and Raise Awareness – state networks will communicate with and engage state partners and local program leaders about transformative practices and resources, expand partnerships, expand or broker professional development, and provide technical assistance; 2) Shift Practice – local program leaders will train staff, and transform planning, marketing, and implementation so that afterschool and summer programs are engaging for youth; 3) Engage Youth – more girls will choose to participate in STEM programs that encourage an engineering mindset, they will seek additional learning experiences, and have opportunities to sustain STEM learning over time; and 4) Engineering Mindset – girls who do participate will develop an engineering mindset.

In the first year of the Moonshot, available evidence indicates that grantees made the greatest progress toward their goals related to raising awareness about the Moonshot and in shifting practice among expanded learning professionals. This aligns with the design of the initiative: afterschool networks need the capacity to meaningfully engage with afterschool and summer program leaders before initiating outreach, and staff need to build their own skills and knowledge before shifting their practice.

In support of these efforts, Moonshot grantees expanded the reach and scale of their STEM-related partnerships in 2020-21, reporting 612 new partners ranging from workforce advisory, employers, colleges and universities, and existing STEM networks. These partnerships helped the networks

raise the profile of expanded learning programs in new sectors, expand the reach of the Transformative Practice Areas to schools and youth service organizations, and begin establishing STEM learning pathways.

Engaging volunteers as role models and mentors is a vital component of the Million Girls Moonshot movement. Beginning in September 2020, the Intel Foundation engaged Intel employees and retirees in volunteering projects to support both the afterschool networks and the implementation partners. To date, nearly 200 volunteers have contributed over 1,800 hours of service to support the Million Girls Moonshot across the nation including sharing their STEM journeys, speakerships, participating in the Intel Future Skills Educator Academy, virtual competitions, and events.

> ***"To successfully implement the Million Girls Moonshot has required collaboration from many departments across our organization…We have had more regular contact with our training and professional development team and our communications team than ever before. The relationships and processes that have been created to carry out this grant will allow us to be more successful at any project we take on in the future.***
> ***— School's Out Washington***

Afterschool networks and partners embraced Engineering Mindset and Equitable STEM as priority areas of focus in Year One.

Grantees reported the greatest emphasis on Engineering Mindset and Inclusive & Equitable STEM in 2020-21, mirroring the emphasis of Moonshot-provided support. They raised awareness of Transformative Practice Areas through ongoing communications with expanded learning professionals, offering professional development through workshops and conference sessions, and hosting communities of practice.

Two Transformative Practice Areas, Engineering Mindset and Inclusive & Equitable STEM, were especially resonant with expanded learning professionals.

Two hundred fifty-eight (258) leaders of organizations that offer afterschool and summer programs shared information about their current STEM practices and connection with the Moonshot. When asked about which of the Transformative Practice Areas they weren't yet using, but wanted to know about, survey respondents were most likely to select Culturally Responsive STEM Practices (34% of responses) and Applying STEM to Community Issues (32%), core elements of Engineering Mindset.

Moonshot grantees adapted to COVID-19 in multiple ways; the cascading effects of the pandemic posed a substantial challenge to expanded learning programs.

The Moonshot launched just as schools and community centers were closing due to the health risks posed by COVID-19. Afterschool and summer programs were hit hard by the pandemic, experiencing budget and staff shortfalls, rapidly adapting activities to virtual platforms, and supporting youth and families experiencing sustained and widespread trauma.

To keep afterschool and summer program staff engaged while responding to the rapidly changing operational context, Moonshot grantees shifted their professional development offerings to virtual settings, postponed in-person events, and shared information about virtual programming and supported the well being of youth, families and staff. Concurrently, the Asset Packages and Booster Packs evolved to account for the new reality, such as by sharing tips for at-home learning opportunities for families and providing high quality STEM activities virtually.

The pandemic posed multiple challenges to grantees' capacity and awareness-building activities, noting that organizations offering afterschool and summer programs had limited capacity to engage in new initiatives during this period, that many program leaders struggled to transition to virtual and blended learning, and the networks themselves had to pivot their own offerings to account for COVID-19 related restrictions.

> ***"As a network, we are thankful that these resources, support and structure have been laid out for us. Now that we have found our footing with the pandemic, we are very excited about using Million Girls Moonshot as a jumping off point to drive STEM and Equity-based work with our community.***
> ***— Virginia Partnership for Out of School Time***

In Year 2 of the Initiative (2021-22), Moonshot grantees will build on their efforts to date to continue to expand the reach of the initiative and to deepen their infrastructure-building efforts.

The Million Girls Moonshot experienced strong success in its first year, especially in light of the challenges that COVID-19 posed for communities across the country. Grantees made particularly strong progress toward the first two components of the Theory of Action – Build Capacity and Raise Awareness and Support Shifts in Practice.

There is promising initial evidence about the initiative's ability to engage girls in STEM activities. Moonshot grantees connected with 20,990 after-school and summer programs that collectively reached 160,000 girls, and 396,800 youth overall. The Million Girls Moonshot supported the development of new tools to assess young people's engineering mindset, which will be used at a larger scale in 2021-22.

Grantees reported less focus on infrastructure-building activities in 2020-21, such as establishing STEM learning pathways and providing technical assistance to expanded learning programs. This is to be expected in the first year of such a complex initiative, particularly during a worldwide pandemic. For the Moonshot to fully mature, grantees will need to sustain these foundational efforts and focus on additional infrastructure-building

activities. This will require sustained support from the Moonshot through technical assistance and grant dollars.

Moonshot grantees reported that afterschool and summer programs had limited capacity to engage in new initiatives in 2020-21, attributable to the impacts of the COVID-19 pandemic. The expanded learning field has faced endemic issues that hamper efforts to enhance staff practice, which is unlikely to change immediately. Moonshot grantees will need to continue to find ways to engage expanded learning programs in this context in order to continue its strong progress toward the ambitious scale of the initiative.

> ***"The brightest spots feel like the interest that is sparked when we mention the Million Girls Moonshot in our conversations. The project elicits an immediate response. Even virtually, it feels like people lean in a little closer to learn more.***
> ***— Montana Afterschool Alliance***

ABOUT THE MILLION GIRLS MOONSHOT

In 2020, STEM Next Opportunity Fund, in collaboration with partners at the Intel Foundation, the Gordon and Betty Moore Foundation, the Charles Stewart Mott Foundation, Qualcomm Inc., Lockheed Martin Corporation, Panasonic Foundation, IF/THEN an Initiative of Lyda Hill Philanthropies, Samueli Foundation, and Cisco launched the Million Girls Moonshot ("the Moonshot").

The Million Girls Moonshot includes catalyst grants to the 50 State Afterschool Networks; dissemination of resources, training, and tools related to transformative programming; and professional development opportunities led by national partners. STEM Next staff members and consultants broker and coordinate these supports for the networks, so that each network can maximize the value of the Moonshot resources for their state's unique context.

The Million Girls Moonshot is a multi-year initiative that seeks to re-imagine who can engineer, who can build, who can make. It will inspire and prepare the next generation of innovators by engaging one million more girls in STEM learning opportunities through afterschool and summer programs over the next five years. The Moonshot reaches afterschool and summer programs in all 50 states.

The Moonshot is geared toward transforming STEM learning experiences in afterschool and altering the workforce trajectory for underrepresented and underserved youth by creating groundbreaking and high-quality STEM learning pathways for students of all ages. While the Initiative's goal is focused on increasing the number of girls with an engineering mindset and a STEM identity, the initiative benefits all students, improving the overall quality of all afterschool STEM opportunities and lifting up both boys and girls as they become future innovators.

The 50 State Afterschool Network is the aggregate of 50 independent networks, sharing the collective impact and innovation in supporting and expanding afterschool and summer programs nationwide. Seeking equitable outcomes for underserved children to succeed in school and future jobs, each statewide afterschool network brings together cross-sector leaders with a common vision and coordinated strategy to advance afterschool and summer learning programs.[1]

With core funding from the Charles Stewart Mott Foundation, the statewide afterschool networks foster partnerships and policies to develop, support, and expand quality programming in out-of-school. The Million Girls Moonshot offers additional financial and technical assistance resources to further amplify the strength of this longstanding set of statewide organizations.

The networks regularly support afterschool and summer programs that serve marginalized communities, including youth who identify as Black, Latinx, Indigenous, and Asian. For example, the networks work closely with their state's 21st Century Community Learning Center (21st CCLC) programs, which serve youth who identify as Latinx (39% of participants), Black (21%), Asian/Pacific Islander (4%) and Native American (3%), as well as youth from lower income families (70%).[2] The networks also work with youth-serving organizations, like the Boys and Girls Club, YMCA, and Girls Inc, all of which strive to engage youth in marginalized communities.

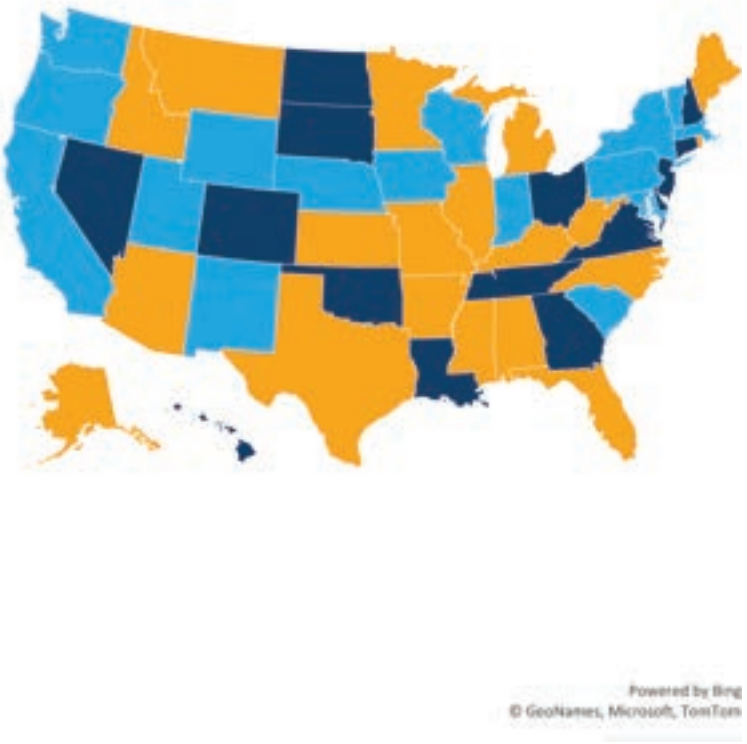
1 Charles Stewart Mott Foundation, About the 50 State Afterschool Networks. (2021)
2 Afterschool Alliance, 21st Century Community Learning Centers – Inspiring Learning. Supporting Families. Earning Results. (April 2021)

The Moonshot grants are designed to meet states where they are in their STEM system building work. State networks are eligible for funding support based on the following tiers:

Innovator grants - States with deepest capacity and existing STEM partnerships to help implement "proof point" approaches across the transformative practice areas. There is an expectation that these states will have broader reach and impact with their STEM efforts. States in this tier received $55,000 for the first year of the Moonshot.

Capacity Builder grants - States who have some STEM system work but will focus on continuing to grow their capacity around the core transformative strategies, expanding partnerships and sharing tools and resources for the field through professional development and training. States in this tier received $20,000 for the first year of the Moonshot.

Ready for Liftoff grants - States that will focus on broadening their dissemination efforts to the field, activating partnership engagement, and beginning to incorporate STEM training and professional development efforts. States in this tier received $5,000 for the first year of the Moonshot.



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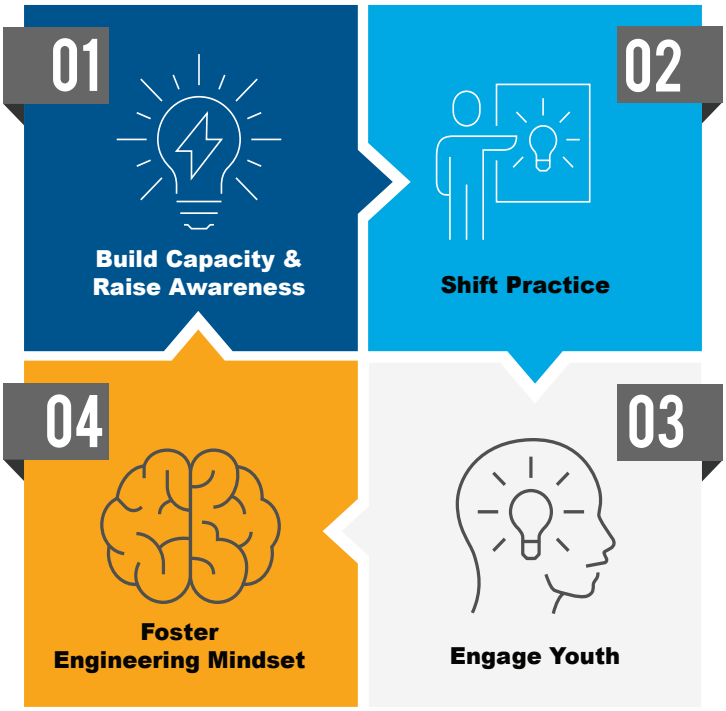
The Million Girls Moonshot Theory of Action

The Million Girls Moonshot Theory of Action describes a sequence of four interconnected steps



A key outcome of this initiative is an increased number of girls who develop an engineering mindset—a set of attitudes, knowledge and skills that empowers individuals to meet challenges in daily life and as workers and citizens. (See Appendix A.)

Four Transformative Practice Areas serve as the conceptual basis for Moonshot-led professional development and capacity building activities in 2020-2021.

- *Engineering mindset* – activities that engage girls in developing a set of ten skills and mindsets including using math and science, iteration, persistence, teamwork, and envisioning multiple solutions. (See Appendix A.)

- *Inclusive and equitable STEM* – practices that encourage girls and marginalized youth to engage in STEM, including selecting topics of interest to all genders, incorporating community issues into activities, and working in cooperative groups. (See Appendix B.)

- *Role models, mentors, and families* – engaging young people with STEM professionals from underrepresented backgrounds and encouraging families to participate in STEM activities together.

- *Continuous STEM learning pathways* – working across programs and organizations to assure that young people who are interested in additional STEM-related activities experience a “warm hand-off” between experiences.

ABOUT THE EVALUATION

STEM Next, the coordinating funder and backbone organization for the Million Girls Moonshot, has engaged teams from four organizations to evaluate the Moonshot:

1. **Public Profit**, an independent evaluation consultancy with expertise in expanded learning programs, is leading the evaluation of the Million Girls Moonshot that explores network wide progress toward the Theory of Action and highlights particularly innovative practices at the grantee and STEM program level. They are the authors of this report.

2. **Partnerships in Education and Resilience (PEAR)**, creates and fosters evidence-based innovations in social-emotional development and Science, Technology, Engineering and Math in educational settings. PEAR provides trainings and assessment tools that inform educators about program quality, youth social-emotional development, and academic engagement. PEAR's work bridges research and practice so that all young people can learn, dream, and thrive. PEAR developed two of the tools used in the case studies – the Dimensions of Success (DoS) observation tool and the Common Instrument Suite (CIS). The PEAR team conducted a case study of a Million Girls Moonshot-affiliated program in spring 2021.

3. **University of California, Irvine (UCI)** – With funding from the Gordon and Betty Moore Foundation, a research team at UCI will pilot and test transition/handoff strategies with five networks. The goal is to understand the strategies that work best and what is needed to support them. At the end of the project, the Moonshot will support scaling the best strategies throughout the networks and beyond. The five state networks were selected June 1, 2021 and the study will take place between 9/1/2021 and 8/31/2022.

4. **Dr. Christine Cunningham, Pennsylvania State University (Penn State)** – Professor of Practice in Education and Engineering at Pennsylvania State University, has provided the intellectual framework that underpins the essential goal of the Million Girls Moonshot—to

develop the values, attitudes, and thinking skills collectively referred to as an engineering mindset. Formerly Vice President of Research at the Museum of Science, Boston, Dr. Cunningham's research and development efforts have aimed to make engineering and scienc more relevant and accessible, especially for populations underrepresented and underserved in engineering and science. Working closely with Dr. Cunningham is independent researcher Dr. Cathy Lachapelle, co-developer of the Performance Assessment of Design Skills (PADS), which is being used in the Million Girls Moonshot as one indicator of engineering mindset.

Research questions

This findings report includes data from grantee progress reports, a national survey of afterschool and summer programs, records maintained by the Million Girls Moonshot program staff, and case studies of innovative STEM programs. (See Appendix C.)

This report is organized according to five guiding questions, which are aligned with the Million Girl Moonshot Theory of Action:

1. To what extent does the Million Girls Moonshot enhance the capacity of statewide afterschool networks to promote high quality STEM practice in expanded learning spaces that align with the Transformative Practice Areas?
Build Capacity and Raise Awareness in the Theory of Action

2. To what extent do more out-of-school time professionals have access to training, curricula, and other supports through the Moonshot that enhance their ability to provide high quality STEM experiences in expanded learning settings that align with the Transformative Practice Areas?
Shift Practice in the Theory of Action

3. To what extent are expanded learning programs affiliated with the statewide afterschool networks offering STEM activities that align with the Transformative Practice Areas?
Shift Practice in the Theory of Action

4. Are more girls developing an engineering mindset through their involvement in Moonshot-affiliated expanded learning programs?
Engage Youth and Engineering Mindset in the Theory of Action

5. Does available evidence support the Million Girls Moonshot Theory of Action? What changes, if any, might improve the initiative's ability to reach its goal of cultivating one million girls with an engineering mindset?

Structure of this report

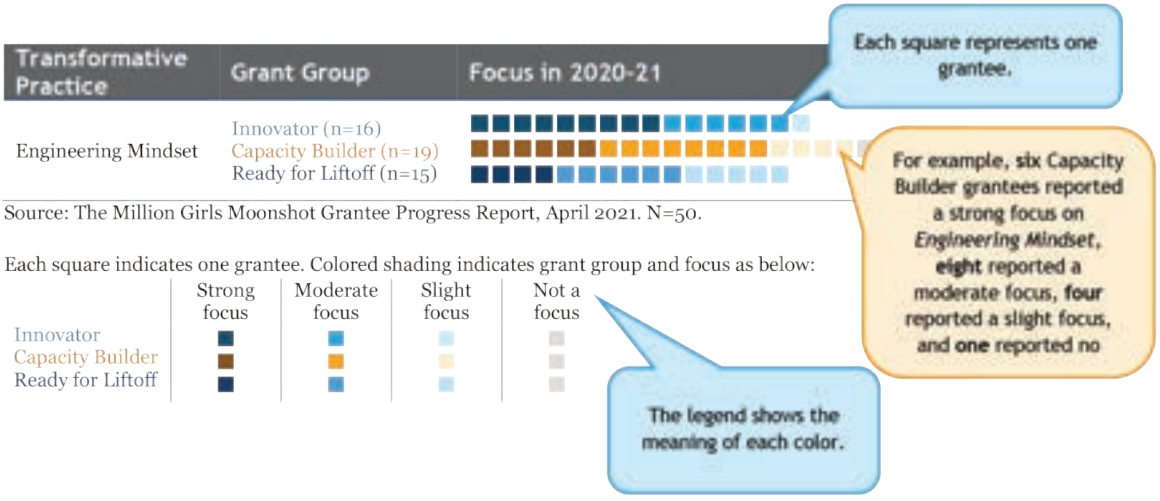
The first-year evaluation report is organized around the Moonshot's Theory of Action and contains five sections:

- An introduction, which features a summary of the Moonshot's activities in the 2020-21 initiative cycle;
- Three body sections, which align to the core components of the Theory of Action, including Building Capacity and Raising Awareness, Supporting Shifts in Practice, and Engaging More Youth as they Build an Engineering Mindset;
- And a conclusion, which discusses the extent to which the Moonshot has accomplished the aims set forth in the Theory of Action in its first year.

Throughout the report, formatting is used to draw reader attention to specific elements. Images of the Theory of Action are used to demonstrate the connection between the section's content and the associated step of the Theory of Action. A rocket icon and yellow background signify a Practice Spotlight, which shares highlights from Moonshot grantees and exemplar programs. A blue background indicates an in-depth exploration of a particular Moonshot component, including Booster Packs and select Transformative Practice Areas.

How to read tables in this report

Many of the tables in this report use one colored square to represent the response from an individual Moonshot grantee, 50 in all. The color indicates the grant group, whether Innovator, Capacity Builder, or Ready for Liftoff. The saturation of the color indicates either the degree of focus or amount of progress reported by the network. Darker colors indicate a greater emphasis, lighter colors a lesser emphasis. A legend appears below each table.



THE MILLION GIRLS MOONSHOT ACTIVITIES IN 2020-21

In its inaugural year, the Million Girls Moonshot made catalytic grants to afterschool networks in 50 states, held ongoing peer learning exchange meetings for grantees, offered a suite of webinars and reports on Moonshot-related topics, and Booster Packs, opportunities for networks and expanded learning programs to dive deeper into transformative programming.

Moonshot grantees estimate that they reached 20,990 afterschool and summer programs in the first year, and that those programs served approximately 160,000 girls.

Catalytic Grants

Each statewide afterschool network received a catalytic grant to support Moonshot-related activities, including communications and outreach,

training, and technical assistance, building partnerships, engaging volunteers and role models, and creating STEM pathways.

In the 2020-21 program year, the Moonshot granted $1.27 million to 50 statewide afterschool networks.

Table 1. In 2020-21, the Moonshot granted $1.27 million to 50 organizations.

Grant Tier	Size of Grant	Number of Grants	Total Investment 2020-21
Innovator	$55,000	15	$825,000
Capacity Builder	$20,000	18	$360,000
Ready for Liftoff	$5,000	17	$85,000
			$1,270,000

Source: The Million Girls Moonshot Grantee List, N=50.

Peer Learning Exchange

By leveraging the 50 State Afterschool Network, the Million Girls Moonshot activates the network effect. The well-established infrastructure of the networks allows for a rich peer-learning exchange to occur. Led by STEM Next, the Moonshot team provides ongoing support to the networks to promote cross-organizational learning and advising. STEM Next coordinates quarterly calls for networks to meet in smaller groups to share resources and help one another to troubleshoot emerging challenges and offers periodic webinars tailored to the unique needs of Moonshot grantees. The annual capacity building STEM institute provides an opportunity for grantees to share their innovative practices with funders, policymakers, and other networks, and learn about emerging topics in the STEM field.

Asset Packages

Each month, the Million Girls Moonshot shares an Asset Package with the networks that includes recent research on expanded learning education, STEM programming and activities, links to upcoming webinars, and

communications resources. In the 2020-21 initiative cycle, Asset Packages focused on the central components of the Moonshot, including promoting engineering mindsets, equity and inclusion, cultural responsiveness, and role models and mentors.

Networks reported sharing the Asset Packages in a variety of ways, including incorporating the material into state-level communications, inviting afterschool and summer programs to attend Moonshot-affiliated professional development opportunities, and sharing recordings of webinars from Moonshot partners. Networks were most likely to share by including a link to the Asset Packages in a newsletter or through social media. The Asset Packages from September to December on Engineering Mindset Support were the most widely shared.

Webinars

STEM Next coordinated a series of webinars for the Moonshot community aligned with central themes of the initiative, including engineering mindset,

equity and inclusion in afterschool, role models, and STEM pathways. Webinars were offered by implementation partners including the National Girls Collaborative Project, Technovation, PEAR, Dr. Christine Cunningham, and Shannon McManus at Penn State. See the full list: https://stemnext.org/mgmwebinars/

In attending the live webinars, the Moonshot grantees were encouraged to share recordings of the webinars with afterschool and summer programs in their state, such as by incorporating them into virtual conferences or using them as an onboarding tool for new STEM stakeholders.

Booster Packs

Beginning in early 2021, STEM Next launched a series of Booster Packs, which offer direct support for Moonshot grantees and the afterschool and summer programs in their states. Led by the Moonshot's implementation partners, Booster Packs are a medium-term capacity engagement for networks and programs, offered over a series of four to six months.

Three of the Booster Packs offered in early 2021 were implementation-oriented, focused on building the capacity of afterschool and summer programs to offer a specific set of STEM-related activities.

Engineering Mindsets with Techbridge Girls@Home

Techbridge Girls enables girls from low-income communities to navigate the many roadblocks and inequitable systems that prevent them from persisting and excelling in STEM. They equip educators to create more access for girls to high-quality STEM enrichment experiences. Techbridge Girls@Home consists of 8, one-hour lessons for youth in 4th-8th grade

on topics such as designing a device to slow the fall of an object or using salt to connect a circuit.

The Techbridge Girls@Home Booster Pack Program provided afterschool and summer site educators with a two-hour virtual training on the curriculum and additional one-on-one implementation support though monthly "office hours" with Techbridge Girls trainers. Those who participated also received STEM kits for youth that align to the curriculum. In spring 2021, representatives from 20 afterschool and summer programs across six states participated.

Engineering Mindsets with Televisa Foundation and TC LiFT

TC LiFT is a computer science and coding program for Latina middle school students that seeks to expose and promote Latina technology professionals as role models and to encourage interest in math and science during the critical middle school years. The curriculum consists of 25, one-hour lessons for youth in grades 6th-8th on topics including computer science, coding, and empowerment in STEM.

Moonshot grantees recruited sites in their state to participate in this Booster Pack. Site educators attended 2, two-hour virtual trainings on TC LiFT curriculum and received additional support through "office hours" with TC LiFT trainers. In spring 2021, representatives from six afterschool and summer programs across three states participated in this Booster Pack.

Engineering Mindsets with Technovation

Technovation empowers girls and families to identify community problems and create technology and engineering solutions that develop their leadership and creative problem-solving skills. The curriculum in

this Booster Pack is for 12-weeks, 2-3 hours per week in an afterschool setting, and completed in mixed-gender teams. The curriculum includes ideation and coding and entrepreneurship topics.

Participating networks and programs were trained on Technovation's approach, online resources, and tools to implement Technovation Girls in their community. Participants were supported by staff to identify and match with industry mentors to support participating youth teams. In Spring of 2021, representatives from six programs in two states participated.

The Million Girls Moonshot launched in spring 2020, just as the COVID-19 pandemic triggered health and safety-related closures for schools and community centers throughout the United States.

These restrictions had cascading impacts on the Moonshot grantees and the afterschool and summer programs they support. Most common disruptions included rapid shifts to virtual programming for youth, ongoing and widespread trauma for children and families, especially in marginalized communities, and uncertainty caused by potential budget shortfalls for schools and governments across the country.

Moonshot grantees shifted their offerings to account for these impacts, transitioning professional development opportunities to virtual settings, postponing initiatives that require in-person engagement, and adjusting their capacity-building supports to align with the emerging needs of expanded learning professionals.

Amid these challenges, Moonshot grantees achieved substantial reach and scale in 2020-21, connecting with tens of thousands of expanded learning STEM providers and hundreds of thousands of young people.

Three of the Booster Packs offered in early 2021 were oriented toward capacity building at a systems level, engaging Moonshot grantees and their stakeholders.

Family Engagement Community of Practice with Linda Kekelis featuring Technovation

Dr. Linda Kekelis is an advisor for STEM Next Opportunity Fund with a lifelong passion for ensuring that all youth, particularly girls and underrepresented youth, have access to opportunities in STEM. Dr. Kekelis, the founder and former executive director of Techbridge Girls, advises STEM organizations on empowering families and shares research and resources with them.

Participating network teams, made up of one network staff member and one partner or provider, attended five, 1-hour community of practice sessions to review research and promising approaches for family engagement and develop an action plan for their network. Teams then recruited families to participate in a virtual, two-part Technovation training that helps families support their children in engineering and STEM at home. Network teams also had a coaching call with Dr. Kekelis to further develop deeper family engagement across network partners with equity and access as priorities. In spring 2021, representatives from 26 afterschool and summer programs across nine states participated.

STEM Transitions and Handoffs with Jobs for the Future (JFF)

JFF is a national nonprofit that drives transformation in the American workforce and education systems. JFF works to identify solutions that work and partners with state and community leaders to drive transformation in state, regional, and local education and workforce development systems. Possible Futures, a JFF career exploration program for students in grades 6-10, helps prepare young people to make meaningful decisions about their future careers and develop the skills that will help them achieve their goals.

Networks formed teams to participate in this Booster Pack, comprised of representatives from state- and regional- workforce development organizations and out-of-school time providers. Participating networks received five, 2-hour training sessions to introduce them to the conceptual and technical aspects of Possible Futures (PF), as well as critical implementation strategies when using a train-the-trainer model. Teams then received support from JFF to develop a strategic plan to integrate the PF curriculum into the core architecture of their programming. Leads at each site received one-on-one coaching sessions to help them lead the Possible Futures work. This Booster Pack also included three Professional Learning Community conversations, which served as an informal venue for peer-to-peer learning. In spring 2021, representatives from 20 afterschool and summer programs across five states participated.

BOOSTER PACKS IN DEPTH:

Engaging STEM Programs and Enhancing Grantee Capacity[3]

Afterschool and summer programs that participated in the Booster Packs offered enthusiastic reviews of their experience, describing the ways in which they were able to enhance the quality of the STEM offerings available to young people:

> Yes, we have had an AMAZING time with our Techbridge Girls program. I have girls in grades 3-5, and from the first day we met they have been engaged and inquisitive. It was really fun for ME just to hand out their boxes and their t-shirts and see their eyes widen with excitement. I REALLY appreciate how comprehensive the supplies are, and the way lessons are ready to go without hours and hours of prep. The lessons also easily allow for extensions, and it is just so accessible for my students to understand and do… It's just beyond thrilling to see the kids so actively engaged and happy to be working on something that challenges them. They have had more than one failure and frustration, but they just keep going and that is another fantastic part of it all...to see them developing grit and determination. *(New Mexico)*

> [The Booster Packs] give programs the ability to focus on transformative practices. In Woonsocket, with the Televisa and TC LiFT Booster, we have begun introducing the peer mentor model, in addition to the transformative practices and engineering mindset, already embedded in the curriculum…TC LiFT exposes youth to career opportunities they may not have otherwise had the space to explore. We really appreciate the curriculum's accessibility, making it available to youth as young as the fourth-grade level. *(Rhode Island)*

Grantees deepened their own content-area expertise, which they in turn applied to their work with afterschool and summer programs:

> From this process, the network has gained experience in a community of practice model that we can use in our other professional development efforts. Further, we have gained knowledge about using an equity lens in STEM family engagement, and we have learned about how to foster experimentation with families so that they can learn STEM together and not fear making mistakes. *(Illinois)*

3 Information in this section is drawn from grantee reports submitted to STEM Next.

MOST participated in the JFF Booster Pack Opportunity, which we found to be incredibly well aligned with the work we are doing with our new College and Career Readiness toolkit and the training of our College and Career Readiness Ambassadors who will be providing training on the toolkit to afterschool and summer programs this coming year. We plan to incorporate the JFF resources into this broader training and capacity-building effort that will begin this summer with a specific emphasis on the Career Foundations Curriculum. *(Maryland)*

Moonshot grantees were able to deepen their relationships with partners in the afterschool and workforce communities, and to expand the reach of Moonshot-related resources.

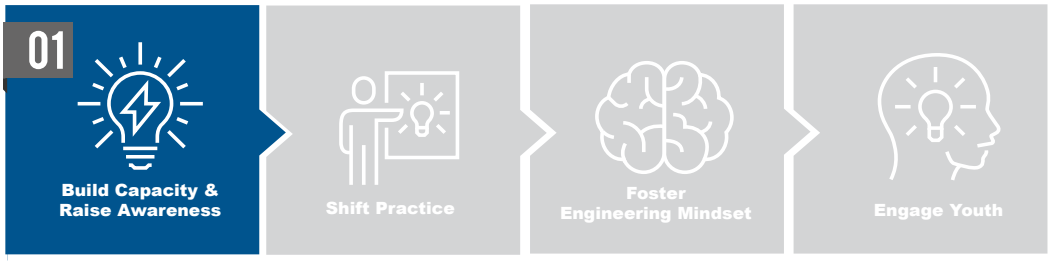
Our team [for the family engagement Booster Pack] is comprised of the president of the Nebraska Chapter of Women in Manufacturing and afterschool directors from the Malone Center and North Platte Kids Klub. One immediate result from our participation is the hosting of a weekend outdoor learning opportunity at the Malone Center for their youth and parents to come and participate in a series of activities to engage them in environmental learning and STEM. *(Nebraska)*

[The Family Engagement Community of Practice] has provided increased partnership with our West Virginia team consisting of the West Virginia Statewide Afterschool Network (WVSAN) Lead, 21st CCLC State Coordinator, World Vision KidREACH 21st CCLC Family Engagement Coordinator, and the Senior Program Manager of the EdVenture Group. As a result of the work and rich discussion of the COP, our WV team designed our 2021-22 [Moonshot] grant to create a Family Engagement COP opportunity for WV programs. Mini-grants will be given to participating programs, and the WVSAN has been able to leverage funding from the West Virginia Department of Education and possible funding from the West Virginia Department of Health and Human Resources to support the effort. *(West Virginia)*

[In the JFF Booster Pack,] the North Carolina Network and the Dream Center of Randolph County were able to collaborate with JFF to discuss ways that programs in North Carolina could implement the Possible Futures curriculum and additional resources to enhance the curriculum…NC Network has planned to offer professional development and content to support the Possible Futures curriculum and its implementation into out-of-school time programs across the state. *(North Carolina)*

BUILDING NETWORK CAPACITY AND RAISING AWARENESS

Evidence for progress toward the first component of the Theory of Action



Million Girls Moonshot grantees are central to the initiative, leading efforts to engage expanded learning professionals and support them as they shift

their practice. To thrive, grantees must build sufficient capacity to design and launch state-specific Moonshot-related efforts.

In the first year of the initiative, nearly all grantees reported emphasizing *Engineering Mindset and Inclusive & Equitable STEM* in their Moonshot-related efforts, which ranged from offering newsletters, emphasizing STEM in statewide conferences, and encouraging local programs to participate in Booster Packs. This reflects the emphasis of the Moonshot as a whole in this period, which focused on these Transformative Practice Areas in 2020-21.

All grantees reported "Substantial progress" in outreach and communication, reaching a larger number of afterschool and summer programs and building a stronger social media presence. Similarly, nearly all grantees reported progress in forming and strengthening partnerships, reporting 612 new partners in 2020-21.

In 2020-21, nearly every Moonshot grantee reported progress toward their professional development goals; just three states reported "Not yet" starting on this aspect of their Moonshot-related work. Fewer reported progress toward their technical assistance-related goals in the 2020-21 cycle than toward other grant goals, though 33 of 50 noted "Substantial" or "In progress" status for this area of their work.

Grantee reports indicated that the networks focused on building the infrastructure to reach and engage afterschool and summer programs – particularly around *Engineering Mindset and Inclusive & Equitable STEM*.

Transformative Practice Areas

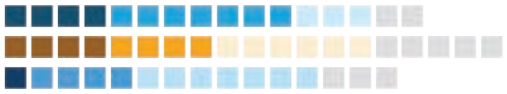
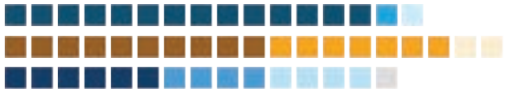
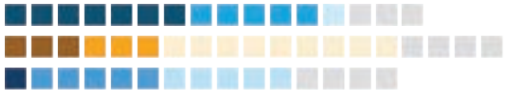
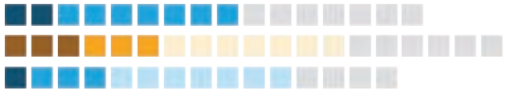
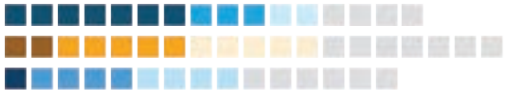
Moonshot grantees reported on the degree to which they emphasized the Transformative Practice Areas in their communications, professional

development, partnerships, and technical assistance. *Engineering Mindset and Inclusive & Equitable STEM* were emphasized by nearly every Moonshot grantee in the 2020-21 cycle, reflecting central foci of the initiative. The two subcomponents of *Engineering Mindset — Youth Voice & Reflection and Applying STEM to Community Issues* — were named as a "Strong" or "Moderate" focus for most Moonshot grantees. Similarly, many grantees reported focusing on *Girl Friendly Programs, Topics, & Marketing, a subcomponent of Inclusive and Equitable STEM*.

Moonshot grantees reported greater variation in their emphasis on two of the Transformative Practice Areas: *Role Models*, *Mentors and Families*, and *Continuous STEM Learning Pathways*. For each of these, a larger proportion of Innovator states reported a "Strong" or "Moderate" focus on these practices than the Capacity Builder or Ready for Liftoff states. This may be linked to the networks' stage of development; Innovator states generally have focused on STEM activities for a longer period than Capacity Builder and Ready for Liftoff states, and therefore were able to focus on a larger number of Transformative Practice Areas at one time.

Role Models, Mentors and Families is one area in which the networks received support at an initiative-wide level. Beginning in September 2020, The Intel Foundation engaged Intel employees and retirees in volunteering projects to support both the afterschool networks and the implementation partners. To date, nearly 200 volunteers have contributed over 1,800 hours of service to support the Million Girls Moonshot across the nation including sharing their STEM journeys, speakerships, participating in the Intel Future Skills Educator Academy, virtual competitions, and events.

Table 2. Engineering Mindset and Inclusive & Equitable STEM are strong foci of most networks.

Transformative Practice	Grant Group	Focus in 2020-21
Engineering Mindset	Innovator (n=16) Capacity Builder (n=19) Ready for Liftoff (n=15)	
Youth Voice & Reflection	Innovator Capacity Builder Ready for Liftoff	
Applying STEM to Community Issues	Innovator Capacity Builder Ready for Liftoff	
Inclusive & Equitable STEM	Innovator Capacity Builder Ready for Liftoff	
Girl-Friendly Programs, Topics & Marketing	Innovator Capacity Builder Ready for Liftoff	
Role Models, Mentors and Families	Innovator Capacity Builder Ready for Liftoff	
Engagement with Families	Innovator Capacity Builder Ready for Liftoff	
Continuous STEM Learning Pathways	Innovator Capacity Builder Ready for Liftoff	

Source: The Million Girls Moonshot Grantee Progress Report, April 2021. N=50.
Italics indicate subcomponents of a Transformative Practice Area.
Innovator: CA, IN, IA, MD, MA, NE, NM, NY, OR, PA, SC, UT, VT, WA, WS, WY
Capacity Builder: AL, AK, AZ, AR, FL, ID, IL, KS, KT, ME, MI, MN, MS, MO, MT, NC, RI, TX, WV
Ready for Liftoff: CO, CT, DE, GA, HI, LA, NV, NH, NJ, ND, OH, OK, SD, TN, VA

Each square indicates one grantee. Colored shading indicates grant group and focus as below:

	Strong focus	Moderate focus	Slight focus	Not a focus
Innovator				
Capacity Builder				
Ready for Liftoff				

PRACTICE SPOTLIGHT – TRANSFORMATIVE PRACTICE AREAS[4]

A Curated Set of Engineering Mindset Activities: North Carolina

The North Carolina Center for Afterschool Programs (NC CAP), a Capacity Builder state, curated a set of hands-on STEM lessons for afterschool and summer programs that help young people to develop an engineering mindset: Makey Makey Design Challenge, Cosmetic Science, and Oil Toil. Each engages youth in addressing real-world issues and offers opportunities to apply their knowledge of science, technology, engineering and math.

- In the Makey Makey Design Challenges, youth use the Makey Makey Invention Kit to code various objects and items. Initially, they learn about simple circuits and ways the Makey Makey Invention Kits can be used to solve real-world problems. Once they identify a problem they want to solve, youth can use the Makey Makey to design a prototype. Youth then market their product in a "Shark Tank" simulation, where a panel determines if they would invest in the prototype.

- Cosmetic Science asks youth to create their own cosmetic products, specifically bath bombs and body scrubs. Youth also learn about the career pathway of a cosmetic scientist and how their work contributes to society.

- Oil Toil evaluates the impact of an oil spill on the environment and asks youth to create an object to clean up an oil spill. Youth test their prototypes in a simulated environment that has had an oil spill. Their goal is to save as much of the wildlife and clean up as much of the oil as possible.

4 Information each of the Practice Spotlights are drawn from grantee reports submitted to STEM Next.

Connecting STEM Programs to the FabFems Initiative: Ohio

The Ohio Afterschool Network (OAN), a Ready for Liftoff state, promotes the FabFems website to out-of-school time professionals through their website and communication with programs. FabFems, a project of the National Girls Collaborative, has a database of female mentors in the science, technology, engineering, and mathematics professions. To date, there are 20 female mentors in Ohio in FabFems, opening the door for closer connections between women in STEM and girls who are interested in STEM fields.

Virtual Family Engagement in STEM: Utah

The Utah Afterschool Network (UAN), an Innovator State, used creative approaches to help families enjoy STEM activities from home.

- STEM Family Kits include engineering related activities for families, with instructions in English and Spanish, with all the materials families need to complete the activities. The Kits have been so well received that the Afterschool Network will continue to offer them statewide.

- Online family STEM nights start a week ahead of time with an online “GooseChase” scavenger hunt for families to find and share items in the community that represent STEM concepts. At the end of the week, families join an online STEM activity that aligns with the themes from the scavenger hunt.

TRANSFORMATIVE PRACTICE AREA IN DEPTH:

Equitable and Inclusive STEM

The explicit focus on equitable and inclusive STEM practices is one of the hallmarks of the Million Girls Moonshot. The *Equity and Inclusion Framework*, developed by the National Girls Collaborative, encourages the expanded learning field to broaden participation, use youth-centric design principles, and to use culturally responsive practices to support young people's skill development. (See Appendix B.)

As noted earlier, many of the Moonshot Asset Packages focused on different dimensions of equitable and inclusive practice, and nearly all grantees reported that they emphasized this Transformative Practice Area in their Moonshot-related work. Common tactics included incorporating equity and inclusion into professional development offerings, distributing supplies to programs and to families, and forming advisory boards focused on equitable and inclusive practices in STEM.

Infusing Equity and Inclusion Organization-Wide: Illinois

Illinois Afterschool for Children and Teens Now (ACT Now) Coalition, a Capacity Builder state, incorporated its values of equity and inclusion throughout its Million Girls Moonshot-related activities. ACT Now selected STEM programs as partners with an eye toward assuring that they engaged underserved communities including girls, youth of color, and youth in communities with limited resources. To address resource barriers, ACT Now provided STEM kits to its partner programs with all the supplies needed to conduct hands-on STEM activities. Further, ACT Now's STEM professional development emphasized the need for equity in STEM, inclusive practices, and helping youth to find STEM identities.

Promising Practices for Girls in Out-of-School Time: New Mexico

The New Mexico Out-of-School Time Network (NMOST), an Innovator state, launched an OST STEM Gender Equity Coalition focused on inspiring, engaging and retaining girls and under-represented youth in STEM through OST. The Coalition is comprised of 15 members representing education, research, museums, national science labs, and youth-serving organizations working with girls and STEM across the state.

In 2020-21, the Coalition developed and disseminated New Mexico's first ever *Promising Practice Guidelines for Engaging Girls in STEM through OST*. The *Promising Practices* were developed through extensive national research, focus groups with young women in New Mexico, analysis of applications from the Network's Young Women in STEM scholarships, and input from expert members of the Coalition.

The *Promising Practices* include a focus on equity and inclusion, fostering an engineering mindset, empowering girls, and engaging families, mentors, and role models. NMOST and Coalition partners disseminated the *Promising Practices* guide through websites, social media, newsletters, and events. NMOST introduced the *Promising Practices* at the Fall into Place 2020 Conference and reached more than 600 participants.

Seeking Youth Feedback: Vermont

Vermont Afterschool, Inc., an Innovator State, launched Linking Engineering to Life (LEL) in 2020, a hands-on engineering curriculum for 5-8th graders. As part of LEL, Vermont Afterschool developed a retrospective survey for youth participants that explores their sense of connectedness and belonging, diversity and inclusion, and content relevance.

Mobile STEM Centers for Rural Communities: South Dakota

The South Dakota Afterschool Network (SDAN), a Ready for Liftoff state, launched mobile Think Make Create (TMC) Labs to increase young people's access to STEM activities throughout the state. TMC Labs, developed by the Beyond School Bells (BSB) Nebraska network, are a low-cost entry point to help youth of all ages in afterschool and summer programs throughout South Dakota become problem-solvers and makers. In the 6' x 14' traveling trailer, kids engage in tinkering and hands-on learning that is designed to promote critical thinking, creativity, and independence. Each trailer is filled with high-quality, hands-on STEM activities that can occur either inside or outside using the provided tables and canopies.

Beginning in fall 2020, the trailers were strategically placed in the eastern and western areas of the state, in areas of high need and low access to STEM resources. The TMC trailer has been extremely popular and will be in several parts of the state throughout summer and fall 2021.

Several Moonshot grantees purchased TMC Labs to increase access to STEM activities, including Idaho, Nebraska, Utah, and Wyoming.

TRANSFORMATIVE PRACTICE AREA IN DEPTH:

Continuous STEM Learning Pathways

The Million Girls Moonshot seeks to catalyze opportunities for girls and marginalized youth to engage in high quality STEM activities over time and in multiple settings, enabling young people to continue to explore their interests and to cultivate an engineering mindset. Creating strong connections between the expanded learning field, educators, and employers is central to this vision.

In 2020-21, Moonshot grantees collaborated with educational and workforce leaders in their state to promote stronger STEM learning pathways, connected youth with STEM opportunities during key transitions, and joined the Possible Futures, Possible Selves Booster Pack offered by JFF.

Connections with Statewide Workforce Development: Idaho

The Director of the Idaho Out-of-School Network (ION), a Capacity Builder state, was appointed to the Idaho Workforce Development Council and participates in the state's planning and collaborations to help increase statewide learning pathways for youth. This work has gained a great deal of attention in Idaho and representing the out-of-school perspective and opportunities is a great way to ensure that out-of-school time professionals are at the table as the council moves forward.

Middle School STEM Transitions:

Nebraska Beyond School Bells in Nebraska, an Innovator state, is partnering with the Malone Center, Lincoln's longest serving African American Community Center, to pilot a middle school transition program in summer 2021. This pilot offers African American youth affiliated with the Malone Center a six-week experience at the Career Academy and the Malone Center to explore how STEM learning experiences can be expanded in high school. Beyond School Bells will incorporate lessons learned from this summer's experience into future activities in supporting Transitions and K-12 pathways.

Connecting Workforce Systems with Afterschool: Oregon

Oregon Afterschool & Summer for Kids (OregonASK) Network, an Innovator state, promotes afterschool and summer learning among multiple workforce stakeholders across

the state. In fall 2020, OregonASK partnered with Clackamas Workforce Partnership to convene regional conversations about youth-to-work systems. OregonASK produced a report that offered recommendations for improved youth-to-work systems, which prompted state-level policy work that includes two bills in the Oregon legislature. One bill sought to increase youth employment funds and accessibility, and one that would facilitate continuous accountability and efficiency in the workforce development system. In addition, OregonASK has continued its partnerships with other regional workforce boards, both at the policy level to support increased funding for summer youth employment and connecting their work with all the network's STEM career-connected summer and expanded learning opportunities.

Outreach and Communication

Moonshot grantees set goals for outreach and communication that included increasing the number of afterschool and summer programs receiving information about STEM and the Million Girls Moonshot, seeking press opportunities, developing stronger relationships with local news outlets, and leveraging social media to publicize STEM opportunities to youth and their families.

Grantees reported strong progress toward their communications goals, with every state reporting "Substantial progress" or "In progress" toward reaching their Outreach and Communication related goals. This reflects the Theory of Action for the initiative, in which outreach and communication play an essential role in the early stages of the Moonshot. Several Moonshot grantees purchased TMC Labs to increase access to STEM activities, including Idaho, Nebraska, Utah, and Wyoming.

Table 3. All grantees report making "Substantial progress" or being "In progress" towards their Outreach and Communication goals.

Source: The Million Girls Moonshot Grantee Progress Report, April 2021. N=50. Data represent grantee self-reported progress to date.

Each square indicates one grantee. Colored shading indicates grant group and progress as below:

	Substantial progress	In progress	Not yet started	Substantial revision
Innovator				
Capacity Builder				
Ready for Liftoff				

PRACTICE SPOTLIGHT – OUTREACH AND COMMUNICATIONS

Million Girls Moonshot Monday: Virginia

The Virginia Partnership for OST (VPOST), a Ready for Liftoff state, launched a weekly email newsletter, "Million Girls Moonshot Monday," which features resources and opportunities from the Moonshot. This regular communication has helped to build interest and awareness among afterschool professionals statewide, which in turn has made it easier for VPOST to engage in discussions about future partnership opportunities.

Expanding Reach and Tailoring Communications: Mississippi

The Mississippi Statewide Afterschool Network, a Capacity Builder state, has steadily expanded its reach among the state's out-of-school time programs. The network held an event on accessing COVID-19 relief funds that drew a large set of previously unengaged youth programs, helping to expand their mailing list by 267 new entries since 2020. This expanded list has supported the network's mapping project, which seeks to identify afterschool and summer programs statewide. These afterschool and summer programs will receive tailored communications from the network in the future, including Moonshot-related resources for out of school time programs; to date, more than 200 have participated.

MD Moonshot – a STEM Program Finder: Maryland

The Maryland Out of School Time Network (MOST), an Innovator state, has recently launched www.mdmoonshot.org, a web platform designed to make sure that more young people have opportunities to find their first or their next STEM learning opportunity. The platform was identified by afterschool stakeholders as a top priority for MOST prior to the COVID-19 outbreak. Now that in-person activities are resuming, the relaunch is a timely way to reconnect youth and build awareness of STEM learning opportunities in the state.

Partnerships

Nearly every Moonshot grantee reported progress toward their partnership goals in 2020-21; Innovator and Capacity Builder states were somewhat more likely to report "Substantial progress" toward their state-level partnership goal, and all of the Ready for Liftoff states indicated that they had made at least some progress.

Table 4. Most grantees reported being "In progress" towards partnership goals.

Grant Group	Progress to Date
Innovator (n=16)	
Capacity Builder (n=19)	
Ready for Liftoff (n=15)	

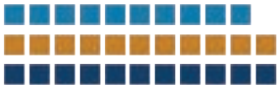
Source: The Million Girls Moonshot Grantee Progress Report, April 2021. N=50. Data represent grantee self-reported progress to date.

Each square indicates one grantee. Colored shading indicates grant group and progress as below:

	Substantial progress	In progress	Not yet started	Substantial revision
Innovator				
Capacity Builder				
Ready for Liftoff				

Collectively, Moonshot grantees reported 612 new partnerships in 2020-21 with organizations across multiple sectors, including STEM employers and workforce-focused entities, K-12 education systems, post-secondary educational institutions, and gender-specific groups.

Table 5. Partnerships with employers, workforce, and K-12 education systems were most common.

Types of Partnerships	Grant Group	Indicated as a type of partnership
Employers/Workforce	Innovator (n=16) Capacity Builder (n=19) Ready for Liftoff (n=15)	
K-12 Education	Innovator Capacity Builder Ready for Liftoff	
Other	Innovator Capacity Builder Ready for Liftoff	
Post-secondary Education	Innovator Capacity Builder Ready for Liftoff	
Gender-specific Groups	Innovator Capacity Builder Ready for Liftoff	
Museums and Libraries	Innovator Capacity Builder Ready for Liftoff	

Source: The Million Girls Moonshot Grantee Progress Report, April 2021. N=50.
Each square represents one grantee that reported having at least one partnership of this type in 2020-21.
Data were obtained by categorizing grantees' open-ended description of partnership-related

Overall, these results reflect strong progress toward the initiative's Theory of Action, in which partnerships across multiple sectors expand the reach of the Moonshot and enrich the opportunities that are available to afterschool and summer programs and to young people.

PRACTICE SPOTLIGHT – PARTNERSHIPS

Career-Focused Partnership: North Dakota

The North Dakota Afterschool Network, a Ready for Liftoff state, has attracted new partners as part of its involvement in the Moonshot, including the National Center for Autonomous Technologies (NCAT). With a focus on bringing STEM-learning and preparing students for future STEM careers, NCAT and the Network are collaborating around increasing knowledge and opportunities for afterschool and summer learning programs to start a STEM-club, including working with drones, robots, and more.

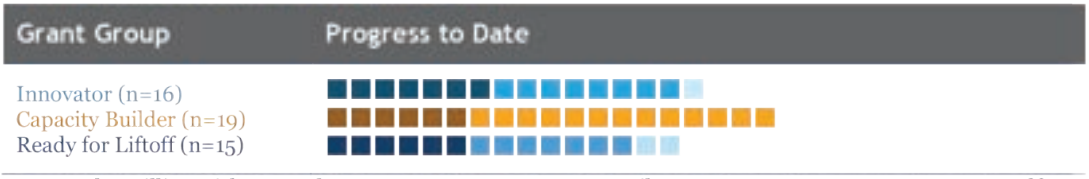
Connecting with State and Regional STEM networks: Michigan

The Michigan After-School Partnership (MASP), a Capacity Builder state, is forging relationships with existing STEM networks to enhance the reach of its Moonshot-related work. MASP is working with the MiSTEM Network, a state-level commission within the Labor and Economic Opportunity department, to connect the Moonshot with the 16 regional hubs of the MiSTEM Network. With this connection, the MiSTEM Network will be able to join and extend the STEM professional development opportunities MASP offers. In partnership with the Detroit Zoological Society, MASP is supporting the launch of Leap into Science, a hands-on science initiative for kids ages 3-10 and their families. MASP will incorporate Leap into Science into its ongoing community of practice around STEM Family Engagement and will share Leap into Science with the Michigan out-of-school time field.

Professional Development

Professional development is core to the Moonshot Theory of Action. Enhancing the knowledge, skill, and confidence of STEM program staff can lead to changes in their practice, which in turn increases young people's access to opportunities to build an engineering mindset. In the 2020-21 cycle, nearly every Moonshot grantee reported progress toward their professional development goals; just three states reported "Not yet started" on this aspect of their Moonshot-related work.

Table 6. Most states report making "Substantial progress" or being "In progress" towards professional development goals.



Source: The Million Girls Moonshot Grantee Progress Report, April 2021. N=50. Data represent grantee self-reported progress to date.

Each square indicates one grantee. Colored shading indicates grant group and progress as below:

	Substantial progress	In progress	Not yet started	Substantial revision
Innovator				
Capacity Builder				
Ready for Liftoff				

PRACTICE SPOTLIGHT – PROFESSIONAL DEVELOPMENT

Partnering to Offer Continuing Education Credits: Louisiana

The Louisiana Center for Afterschool Learning (LACAL), a Ready for Liftoff state, partnered with Louisiana Tech University to offer continuing education units to professionals who attended three STEM-related sessions at the Louisiana Virtual Afterschool Conference. LACAL will continue to work with Louisiana Tech University to offer additional STEM sessions with continuing education unit (CEU) credits for afterschool professionals.

Infusing Engineering Design Thinking into Professional Development: Pennsylvania

The Pennsylvania Afterschool/Youth Development Network (PSAYDN), an Innovator state, has incorporated Engineering Design Thinking principles into its professional development opportunities, including a STEAM Academy for STEM professionals statewide. Engineering Design Thinking is a design methodology that provides a solutions-based approach, in which youth identify and address a real-life problem, which improves engagement and learning. The five stages of Design Thinking according to Makerspaces in First-Year Engineering Education are: 1) Ask - What are the problems? What are the constraints? 2) Imagine - Brainstorm ideas; Choose the best one. 3) Plan - Draw a diagram; Gather needed materials. 4) Create - Follow the plan; Test it out. 5) Improve - What can work better? These steps can be repeated as the solution is iterated and improved.

Promoting STEM in Afterschool at National Conferences: Utah

The Utah Afterschool Network (UAN), an Innovator state, shares its expertise in STEM at national conferences for youth-serving organizations, expanding the reach of Moonshot-related concepts with like-minded professionals. The network presented a session on incorporating STEM into service-learning programs at the National Service-Learning Association Conference and will offer three workshops at the Computer Science Teachers Association (CSTA) Conference: Coding Playground, Innovation Stations, and Engineer Everything.

Technical Assistance

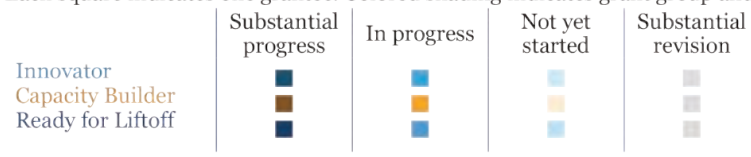
Fewer Moonshot grantees reported progress toward their technical assistance-related goals in the 2020-21 cycle, though 33 of 50 noted "Substantial progress" or "In progress" status for this area of their work. This finding aligns with the design of the initiative, since technical assistance most often is based on other professional development offerings, such as conferences and workshops. Moreover, Moonshot grantees reported that afterschool and summer programs had limited capacity to engage in additional initiatives during this pandemic period, as described in greater detail later in this report. This limited capacity may have also affected networks' progress toward their technical assistance-related goals.

Table 7. Fewer grantees reported making "Substantial progress" or being "in progress" on technical assistance goals, compared to other grant goals.

Grant Group	Progress to Date
Innovator (n=16)	
Capacity Builder (n=19)	
Ready for Liftoff (n=15)	

Source: The Million Girls Moonshot Grantee Progress Report, April 2021. N=50. Data represent grantee self-reported progress to date.

Each square indicates one grantee. Colored shading indicates grant group and progress as below:



PRACTICE SPOTLIGHT – TECHNICAL ASSISTANCE

Small Group Coaching: Georgia

The Georgia Statewide Afterschool Network (GSAN), a Ready for Liftoff State, launched Small Group Coaching (SGC) in January 2021. The STEAM-focused coaching group includes eight afterschool programs, who receive coaching from a STEAM professional from Georgia Institute of Technology. The coach shares information from the Family Engagement Booster Pack with members of the SGC.

STEM Program Quality Improvement Initiative: Alaska

The Alaska Afterschool Network (AAN), a Capacity Builder state, hosted a quality-focused community of practice for seven programs across the state organized around the *Assess, Plan, Do* model of continuous improvement. Each program received a mini-grant to support staff time and materials costs, and staff members were trained to use the PEAR Dimensions of Success (DoS) observation tool. For the *Assess* stage, participants shared videos of their STEM programs with AAN, whose staff completed an initial DoS assessment. AAN staff would then reach out to provide feedback and coaching sessions based on the results to fulfill the *Plan* stage, after implementing shifts to their practice, participants shared another video of their STEM activity to AAN for another DoS-based rating.

STEM Justice in Afterschool: Minnesota

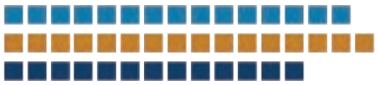
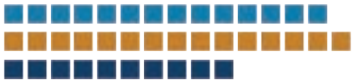
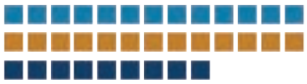
Ignite Afterschool, a Capacity Builder state, hosted a STEM Justice in Afterschool cohort in early 2021 in collaboration with the Kitty Andersen Youth Science Center (KAYSC). Five participating afterschool programs received two coaching sessions with staff from the Kitty Andersen Youth Science Center in spring, which will culminate in a STEM Justice program improvement action plan for each program. Through the coaching session, KAYSC staff were able to give targeted and program-specific guidance to each of the cohort participants. KAYSC followed each coaching session with additional resources via email, including the STEM Justice Toolkit and STEM Justice Hack Guide, which outlines small steps programs can take to promote more just practices on the way to implementing the full STEM Justice framework.

Challenges to Capacity Building to Raise Awareness

When asked about the primary challenges to their Moonshot-related activities in the first year of the initiative, nearly all Moonshot grantees reported that afterschool and summer programs had limited capacity to engage in new initiatives, a finding likely connected to the second most common challenge – making the transition to virtual and blended learning models during the COVID-19 pandemic.

Nearly all Moonshot grantees reported that their own transition to virtual professional development and technical assistance models was a substantial challenge, as well. A smaller number – particularly among Ready for Liftoff grantees – noted reduced capacity for their organization during this period as a substantial challenge.

Table 8. Many grantees identified limited capacity among afterschool and summer programs as their primary challenge in 2020-21.

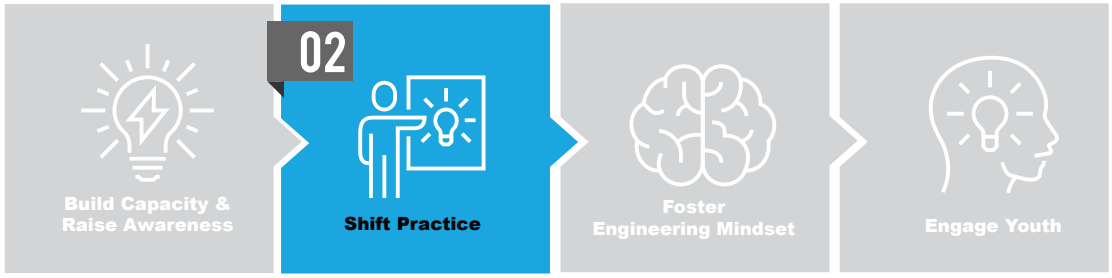
Challenges to Building Capacity	Grant Group	Indicated as a Challenge
Limited partner capacity to engage in new initiatives	Innovator (n=16) Capacity Builder (n=19) Ready for Liftoff (n=15)	
Programs switching to virtual and blended learning models	Innovator Capacity Builder Ready for Liftoff	
Transitioning to virtual professional development and technical assistance models to account for COVID-19 related restrictions	Innovator Capacity Builder Ready for Liftoff	
Reduced capacity for our Statewide Afterschool Network	Innovator Capacity Builder Ready for Liftoff	

Source: The Million Girls Moonshot Grantee Progress Report, April 2021. N=50.
Each square indicates one grantee.

Grantees responded to these challenges in multiple ways. The majority found opportunities to transition events planned for in-person to a virtual setting, while others opted to postpone some activities to 2021-22 and focus on emergent needs related to the pandemic. A few grantees proceeded with in-person activities by partnering with STEM organizations serving essential workers, such as military personnel.

SUPPORTING SHIFTS IN PRACTICE

Evidence for progress toward the second component of the Theory of Action



Expanding Access to Training, Curricula, and Other Supports

Grantee reports for 2020-21 indicate that expanded learning professionals in 20,990 programs participated in a Moonshot related training opportunity, including STEM workshop sessions at statewide conferences, webinars offered by the Million Girls Moonshot, and workshop series on STEM topics offered by grantees.

Thirty-seven Moonshot grantees reported 61 goals related to increasing access to training among afterschool and summer professionals.[1]

Common types of training-related goals included increasing the number or reach of professional development activities, updating network websites to reflect STEM resources and training opportunities, and developing STEM-specific newsletters.

Grantees have achieved success or are in progress on 51 of the 61 training-related goals. Seven grantees substantially revised their training-related goals, primarily due to challenges related to the COVID-19 pandemic.

Figure 2. Most grantees reported progress towards their goals around expanding access to training, curricula, and other supports.

Source: The Million Girls Moonshot Grantee Progress Report, April 2021. N=50. Data were obtained by qualitatively coding grantees' open-ended descriptions of goals, outcomes, and progress to date.

As noted above, Moonshot grantees reported sharing resources from the monthly Asset Packages with expanded learning providers. Materials from the Asset Packages were frequently shared via networks' social media or newsletters – about 8 in 10 Moonshot grantees used this method. About 1 in 3 grantees reported that they invited program leaders and facilitators to attend a webinar or apply to a Moonshot related opportunity, such as Booster Packs. The series on Engineering Mindsets, offered between

5 Some networks had more than one goal related to expanding access to training, which is why there are more goals than Moonshot grantees.

September and December 2020, was shared by nearly every Moonshot grantee.

In spring 2021, Public Profit conducted a baseline survey of leaders of expanded learning programs nationally to document the frequency of STEM activities. Survey respondents indicated that 44% of programs engaged in one or more Moonshot-related training opportunities, such as attending a training on STEM offered by their Statewide Afterschool Network, a STEM round table, or a virtual training on STEM topics offered by the Million Girls Moonshot. About 7 in 10 (71%) survey respondents reported that they used one or more Moonshot assets in 2020-21, such as visiting the Moonshot website, attending a STEM-focused training, or implementing curriculum offered by a Moonshot partner.

Survey respondents reported that the Moonshot-related materials helped introduce their staff to new STEM-related topics, helped them improve the quality of their STEM activities, and expanded the STEM topics their activities addressed.

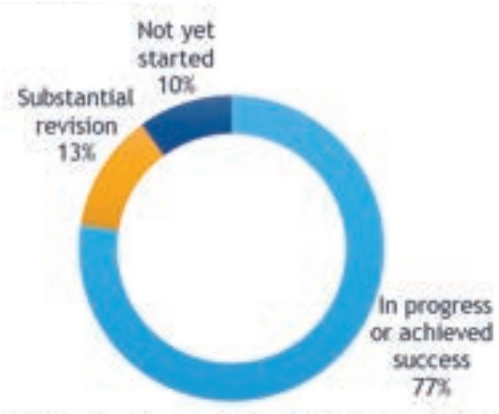
SUPPORTING PRACTICE SHIFTS AMONG AFTERSCHOOL AND SUMMER PROGRAMS

Twenty-eight Moonshot grantees reported 42 specific goals around supporting practice shifts among afterschool and summer programs. Goals included collecting data on the number of programs currently offering STEM opportunities for youth, actively increasing opportunities for youth to engage in STEM learning and creating lesson plans and

other curricular supports focused on engineering mindset for program providers.

Grantees have achieved success or are in progress on 31 of these goals focused on STEM practice shifts. Grantees substantially revised five of these goals, mainly due to challenges related to the COVID-19 pandemic. Four goals related to STEM practice shifts remain to be started.[2]

Figure 3. About 80% of grantees reported progress towards their goals related to supporting STEM practice shifts.



Source: The Million Girls Moonshot Grantee Progress Report, April 2021. N=50. Data were obtained by qualitatively coding grantees' open-ended descriptions of goals, outcomes, and progress to date.

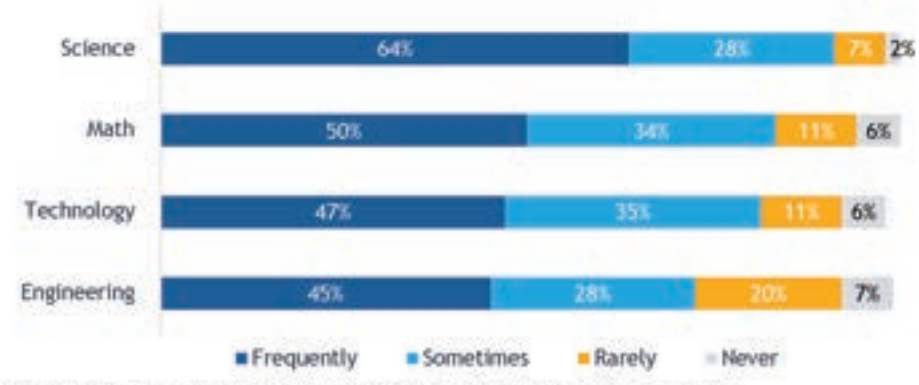
Self-reported activity data from 258 afterschool and summer programs indicate that 99% offer STEM activities either "Often" or "Sometimes." In summer 2020, over one-third of programs (38%) offered STEM enrichment for 4-6 hours a week, while 37% offered 1-2 hours, compared to one-quarter (26%) that offered less than one hour of STEM enrichment per week. In the 2020-21 school year, about one-third (32%) offered STEM enrichment 4-6 hours per week, while just over half (54%) offered 1-2 hours; only 15% offered less than one hour per week.

Survey respondents also indicated the frequency with which they offered science, technology, engineering, and math activities. Survey responses

2 Two goals related to practice shifts did not have a progress update reported.

indicate that programs are more likely to incorporate science activities into their lessons than other STEM concepts.

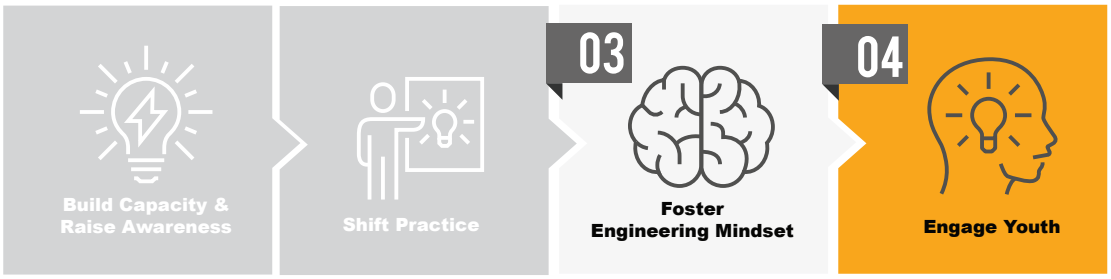
Figure 4. Afterschool and summer programs were most likely to incorporate science activities into their lessons.



Source: National Afterschool STEM Program Survey, Spring 2021. N = 258.

ENGAGING MORE YOUTH AS THEY BUILD AN ENGINEERING MINDSET

Evidence for progress toward the third and fourth components of the Theory of Action



Grantee reports from 2020-21 indicate that approximately 160,000 girls in 20,990 programs were connected to the Moonshot in some way, about 40% of the estimated 396,800 youth in Moonshot-connected afterschool

and summer programs. This estimate is based on the aggregated number of programs and their estimated enrollment, so should be considered an approximation rather than a precise figure.

While detailed demographics about participating youth is not available at this time, the statewide afterschool networks work closely with afterschool and summer programs that serve marginalized communities.

Most youth connected to the Moonshot were enrolled in summer or afterschool programming where leaders and instructors received Moonshot resources through professional development opportunities, Booster Packs, Asset Packages, mini-grants, or communications outreach. Other youth affiliated with the Moonshot attended STEM-focused events and activities hosted by Moonshot grantees.

As noted earlier, promoting an *Engineering Mindset* was a common focus for Moonshot grantees, who incorporated this concept into their professional development offerings, social media and newsletters, and curation of STEM curricula. For example, in West Virginia, STEM Ambassadors trained by OregonASK provided a variety of hands-on STEM activities to youth that engaged an *Engineering Mindset*. The Florida Afterschool Network partnered with youth STEM clubs at U.S. military bases to implement engineering mindset-building activities in computer programming, chemistry, ecology, and physical science.

Other examples illustrate how Moonshot grantees supported activities that help youth to *Apply STEM to Community Issues*, one of the dimensions of *Engineering Mindset*. Project Invent, a program in Utah, challenged teams of youth leaders to design a technological solution to a community issue, which resulted in a novel solution to improve stoplights for people with red-green color blindness. In Nebraska, youth and families participated in a statewide Tree-A-Thon, taking part in a three-day and eight-week

curriculum to learn how to care for trees, their global and community impact, and then plant them across Nebraska.

Respondents to the national survey of afterschool and summer programs were asked about their familiarity with a variety of practices that are aligned with the Transformative Practice Areas. Because "engineering mindset" is a new concept in the expanded learning field, we asked programs to report on the practices that support the development of an *Engineering Mindset* in the program survey, including *Youth Voice & Reflection and Applying STEM to Community Issues*.

About 8 in 10 of the responding afterschool and summer programs reported regular use of practices that support *Youth Voice & Reflection* and incorporate *Mentors & Role Models* into their programs. There is strong interest in learning more about multiple dimensions of the Transformative Practice Areas, particularly *Applying STEM to Community Issues* and *Culturally Responsive STEM Practices*.

Table 9. Afterschool and summer programs report regular use of practices to support Youth Voice & Reflection and Mentors & Role Models.

Transformative Practice	Frequently	Sometimes	Not Yet, Interested	Not Yet, Not Interested
Youth Voice & Reflection	46%	41%	13%	0%
Mentors & Role Models	33%	37%	27%	3%
Girl-Friendly Programs, Topics & Marketing	31%	40%	28%	1%
STEM Learning Pathways	27%	44%	25%	3%
Applying STEM to Community Issues	26%	40%	32%	2%
Culturally Responsive STEM Practices	26%	37%	34%	3%
Engagement with Families	21%	47%	27%	4%

Source: National Afterschool STEM Program Survey, Spring 2021. N = 258.

Case Studies

Case studies offer additional insights into the ways that young people in Moonshot-affiliated programs are building an engineering mindset. Two innovative STEM offerings – Linking Engineering to Life and LearningWorks – are featured in the inaugural set of Million Girls Moonshot case studies conducted by Partnerships in Education and Resilience and the Maine Mathematics and Science Alliance. Both groups offered hands-on learning opportunities for young people to engage in engineering-related activities as part of their afterschool program.

These case studies incorporate observational data using PEAR's Dimensions of Success tool, students' reflections on their skills and mindsets through a tailored version of the Common Instrument Suite, and a measure of participants' engineering mindsets using the Performance Assessment of Design Skills (PADS) developed by Penn State. (See the Assessment in Depth discussion below for more information.)

The featured STEM offerings illustrate the ways in which afterschool programs can support girls and marginalized youth in building an engineering mindset in inclusive environments:

- The hands-on tasks were based on addressing a community need, such as building a shelter in a snowy location or designing a safety feature for a car.
- Staff members emphasized the role of creativity and imagination during the offering, encouraging youth participants to explore different ways to complete a task. There was no "one right way" to complete the task.
- Staff members encouraged youth to see the offering through the lens of engineering, such as by referring to participants as "engineers" or describing hands-on tasks as "engineering challenges."

- Young people are introduced to female role models in the STEM field, including engineering students in a local university and professionals in the community.

Youth responded to these intentional program elements by demonstrating their ability to creatively problem-solve, contributing ideas to discussions, identifying as scientific thinkers and engineers, and taking on leadership responsibilities when working in teams.

These high-quality experiences are the outcome of a great deal of careful thought and planning. Linking Engineering to Life and LearningWorks are intentionally designed to engage and welcome girls and underrepresented youth through the choice of activities, group structure, and robust training for staff, including several opportunities from the Million Girls Moonshot.

Both programs received generally positive ratings on the Dimensions of Success observation tool, particularly in the areas of Organization, Materials, and Engagement with STEM.

Initial feedback from youth participants at Linking Engineering to Life, via the Common Instrument Suite and PADS, indicates that they are cultivating a strong identity as STEM-savvy learners (i.e., a STEM identity), and are building key engineering mindsets.

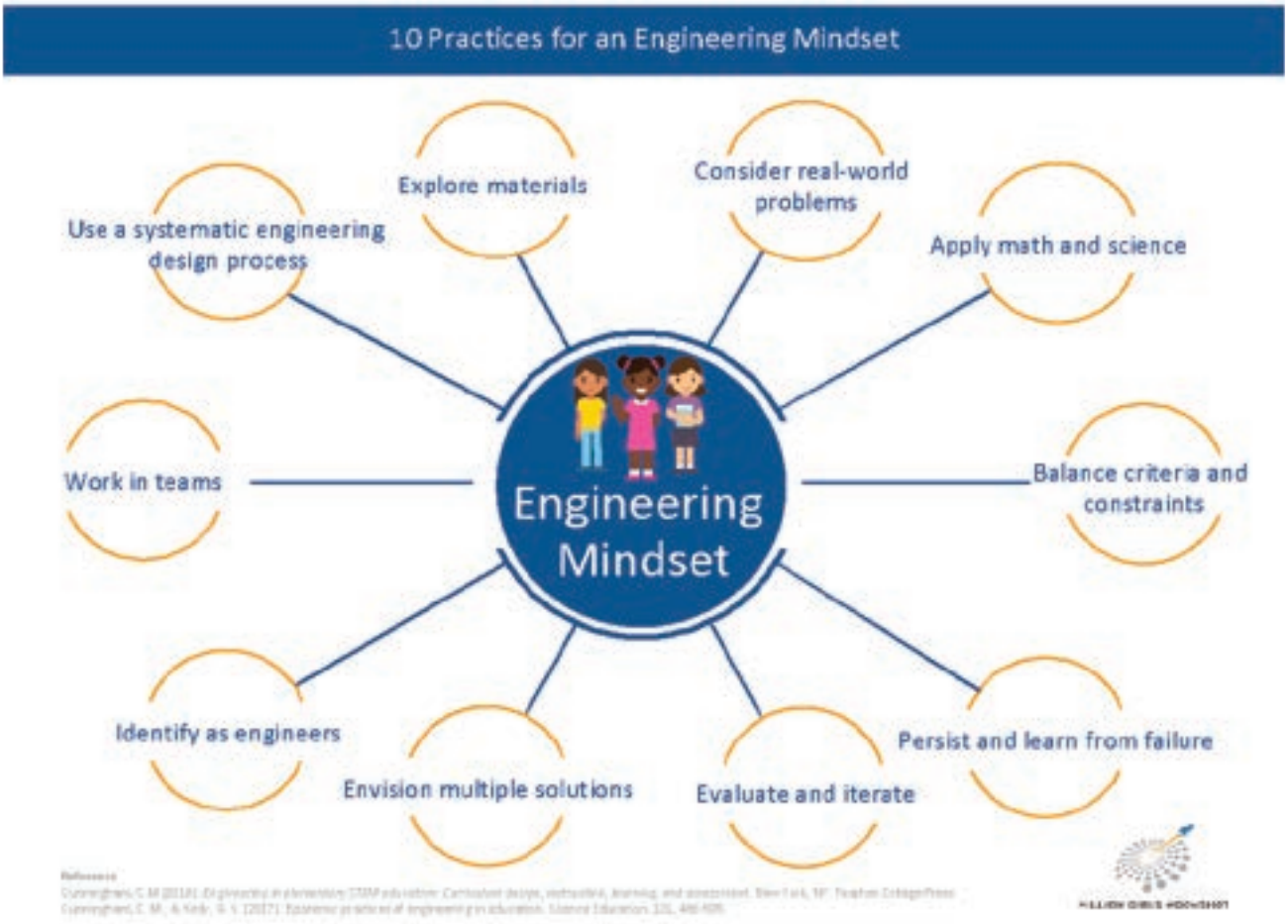
In 2022, the evaluation team will coordinate with STEM Next's Million Girls Moonshot team and its grantees to gather information from a much larger set of afterschool and summer programs that are affiliated with the Moonshot, using the Dimensions of Success, Common Instrument Suite, and Performance Assessment of Design Skills.

ASSESSMENT IN DEPTH

Dimensions of Success, Common Instrument Suite, and Performance Assessment of Design Skills

The Million Girls Moonshot is grounded in the novel construct of engineering mindset, which comprises ten essential skills, attitudes, and practices, including working in teams to address real-world engineering problems, applying math and science principles, envisioning solutions, and using a systematic engineering design process.

Figure 5. Ten Practices for an Engineering Mindset



In partnership with PEAR and Dr. Christine Cunningham, the Million Girls Moonshot commissioned research-backed adaptations to three existing assessment tools to measure aspects of engineering mindset, including the extent to which STEM activities in afterschool and summer provide a high-quality experience for youth, and the skills and mindsets that participating youth develop as a result.

Assessing Practice Shifts in Expanded Learning

Dimensions of Success (DoS) Observational Tool

The Dimensions of Success framework was developed by PEAR to define 12 key dimensions of quality afterschool and summer STEM programming across four domains: Features of the Learning Environment, Activity Engagement, STEM Knowledge and Practices, and Youth Development in STEM. The DoS observational tool is a validated instrument that operationalizes this framework and can be employed by certified observers to reliably assess the quality of STEM learning environments.

Observers watch youth participate in a STEM activity in real-time, produce field notes, and assign scores to each dimension using a four-level rubric. The DoS tool can be implemented by external evaluators, as in the Moonshot case studies, by internal program staff for continuous quality improvement, or leveraged as a planning tool to design high-quality STEM activities.

The DoS Engineering Booster is a Moonshot-specific accompaniment to the observational tool. The Engineering Booster evaluates whether seven key engineering design practices—define a problem, brainstorm possible solutions and evaluate, design, build the solution, test, redesign, and communicate findings—were present in the observed activity, and how

authentically those components were enacted by giving youth meaningful opportunity to engage with the engineering problem as professionals would.

Measuring Youth Skill-Building and Engineering Mindset

Common Instrument Suite – Student (CIS-S)

The Common Instrument Suite-Student (CIS-S) is a youth self-report survey developed by PEAR to better understand how out-of-school time STEM programming impacts students' perceptions and attitudes towards STEM. PEAR has administered CIS-S nearly 130,000 times and demonstrated that it is both reliable and valid for assessing youth's attitude towards STEM. The Moonshot's custom engineering version of CIS shifts the focus from STEM more broadly to engineering specifically and measures domains such as engineering engagement (*interest and excitement in participating in engineering activities*), engineering career knowledge (*knowledge of engineering careers and the steps to attain them*), and engineering identity (*understanding of oneself as an "engineering person"*). Additionally, clusters of CIS-S Engineering items have been mapped to several engineering mindset practices, including persisting and learning from failure, working effectively in teams, and identifying as engineers.

Performance Assessment of Design Skills (PADS)

The Performance Assessment of Design Skills (PADS) is a scenario-based, individual-level assessment of youth's ability and comfort applying engineering skills and mindset. Commissioned by the Moonshot as an update to Lachapelle and Cunningham's Elementary Engineering

Performance Assessment, PADS is appropriate for a range of upper elementary and middle school age youth.

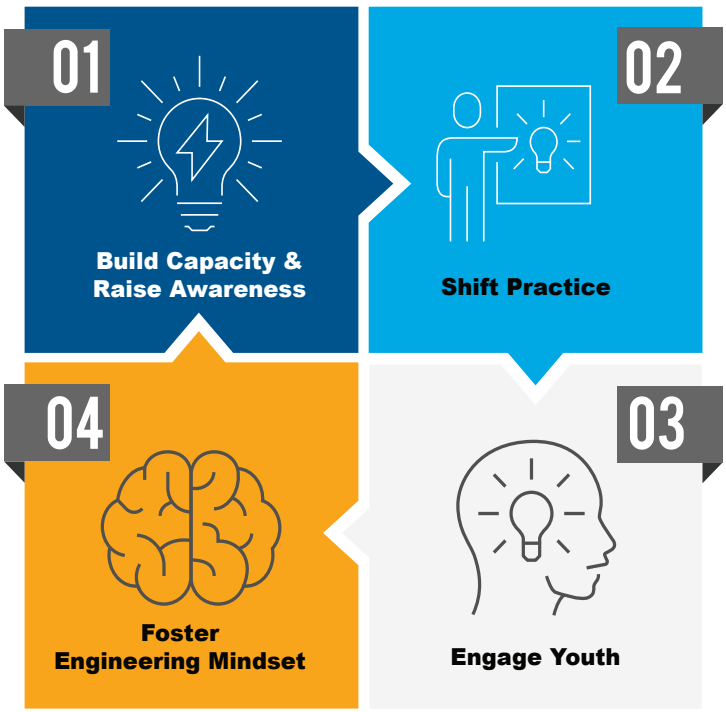
Youth are presented with an engineering problem ("*Dr. Fox is an animal doctor. She is having trouble getting large animals up onto her table so she can examine them.*") and asked to describe how they would approach the problem, develop an array of potential solutions, and display critical thinking. PADS is accessed via computer and takes participating youth less than an hour to complete. Youth's responses are coded using a common scoring rubric that rates their use of engineering skills and mindsets.

PROGRESS TOWARD THE THEORY OF ACTION

The Million Girls Moonshot Theory of Action describes a sequence of interconnected steps:

1) Build Capacity and Raise Awareness – state networks will communicate with and engage state partners and local program leaders about transformative practices and resources, expand partnerships, expand or broker professional development, and provide technical assistance; 2) Shift Practice – local program leaders will train staff, and transform planning, marketing, and

The Million Girls Moonshot Theory of Action The Million Girls Moonshot Theory of Action describes a sequence of four interconnected steps



implementation so that afterschool and summer programs are engaging for youth; 3) Engage Youth – more girls will choose to participate in STEM programs that encourage an engineering mindset, they will seek additional learning experiences, and have opportunities to sustain STEM learning over time; and 4) Engineering Mindset – girls who do participate will develop an engineering mindset.

The Million Girls Moonshot experienced strong success in its first year, particularly in light of the challenges that the COVID-19 pandemic posed for communities across the country. Existing evidence is particularly supportive of the first two components of the Theory of Action, with promising initial indications of progress toward the latter two.

Build Capacity and Raise Awareness

Networks have incorporated multiple elements of the Moonshot into their communications, professional development, and technical assistance efforts, emphasizing particularly *Engineering Mindset and Inclusive & Equitable STEM*.

Networks are building partnerships based on the Moonshot across multiple sectors, including K-12, higher education, employers, and workforce development organizations. In just one year, the 50 State Afterschool Networks have partnered with 600+ additional organizations.

Support Shifts in Practice

Nearly 21,000 afterschool and summer programs had some type of connection with the Million Girls Moonshot in 2020-21, according to grantee reports.

Feedback from expanded learning professionals who engaged with the Moonshot indicated a strong interest in STEM programming in general, and a particular interest in the Transformative Practice Areas.

Through the ongoing community of practice for grantees, Booster Packs, Asset Packages, and case studies, the Moonshot is building a strong basis of

knowledge of the range of ways expanded learning educators can implement the Transformative Practice Areas.

Engage Youth and Promote an Engineering Mindset

Grantee reports indicate that more than 160,000 girls participated in the afterschool and summer programs connected with the Moonshot in some way. Given the multiple setbacks associated with the COVID-19 pandemic in 2020-21, this number is likely to expand in future years.

Initial reports from programs participating in Booster Packs and the initial case studies indicate that youth are cultivating an engineering mindset while involved in expanded learning opportunities.

In the next annual Moonshot cycle, we foresee three challenges for the initiative:

Afterschool and Summer Programs' Capacity to Engage with the Moonshot

Moonshot grantees reported that afterschool and summer programs had limited capacity to engage in new initiatives in 2020-21, attributable to the impacts of the COVID-19 pandemic. The expanded learning field has faced endemic issues that have hampered efforts to enhance staff practice, including high rates of staff turnover and limited investment in professional development. While afterschool and summer programs are likely to have more capacity as pandemic restrictions are lifted, they will continue to grapple with the staffing and quality issues that preceded the COVID-19 pandemic.

The American Rescue Plan makes substantial funding available for expanded learning programs through state and local educational agencies, which will be available for the next few school years.[1] These additional resources could have a positive impact on afterschool and summer programs' capacity to recruit, retain, and train staff, who in turn can create a high-quality learning environment for youth. Decisions about how to spend these funds are localized

1 For example, see this article by the Afterschool Alliance:

and occasionally politicized, and the benefit of these funds for expanded learning programs will vary substantially as a result.

Moonshot grantees' Ability to Deepen their Infrastructure Building Practice

Available evidence indicates Moonshot grantees made strong initial progress toward foundational tasks in the Theory of Action, including offering trainings and sharing STEM curricula with expanded learning programs. They reported less focus on infrastructure-building activities, such as establishing STEM learning pathways and providing technical assistance to expanded learning programs. This is to be expected in the first year of such a complex initiative, particularly during a pandemic. For the Moonshot to fully mature, grantees will need to sustain these foundational efforts and focus on additional infrastructure-building activities in the future.

These STEM-focused infrastructure building activities will be new for some networks, particularly those that have had less emphasis on STEM programming in the past or that have traditionally focused on directly supporting expanded learning programs. They will likely need support from the Moonshot and more advanced afterschool networks in other states to succeed in this next phase.

Layering the infrastructure building activities onto the existing Moonshot-related work will require additional time from Moonshot grantees. Yet the relatively modest size of the Moonshot grant, particularly for Ready for Liftoff states, will require some grantees to choose between sustaining what they've already created and engaging in additional infrastructure-building work, which can be time intensive and yield less certain outcomes than other, more familiar activities.

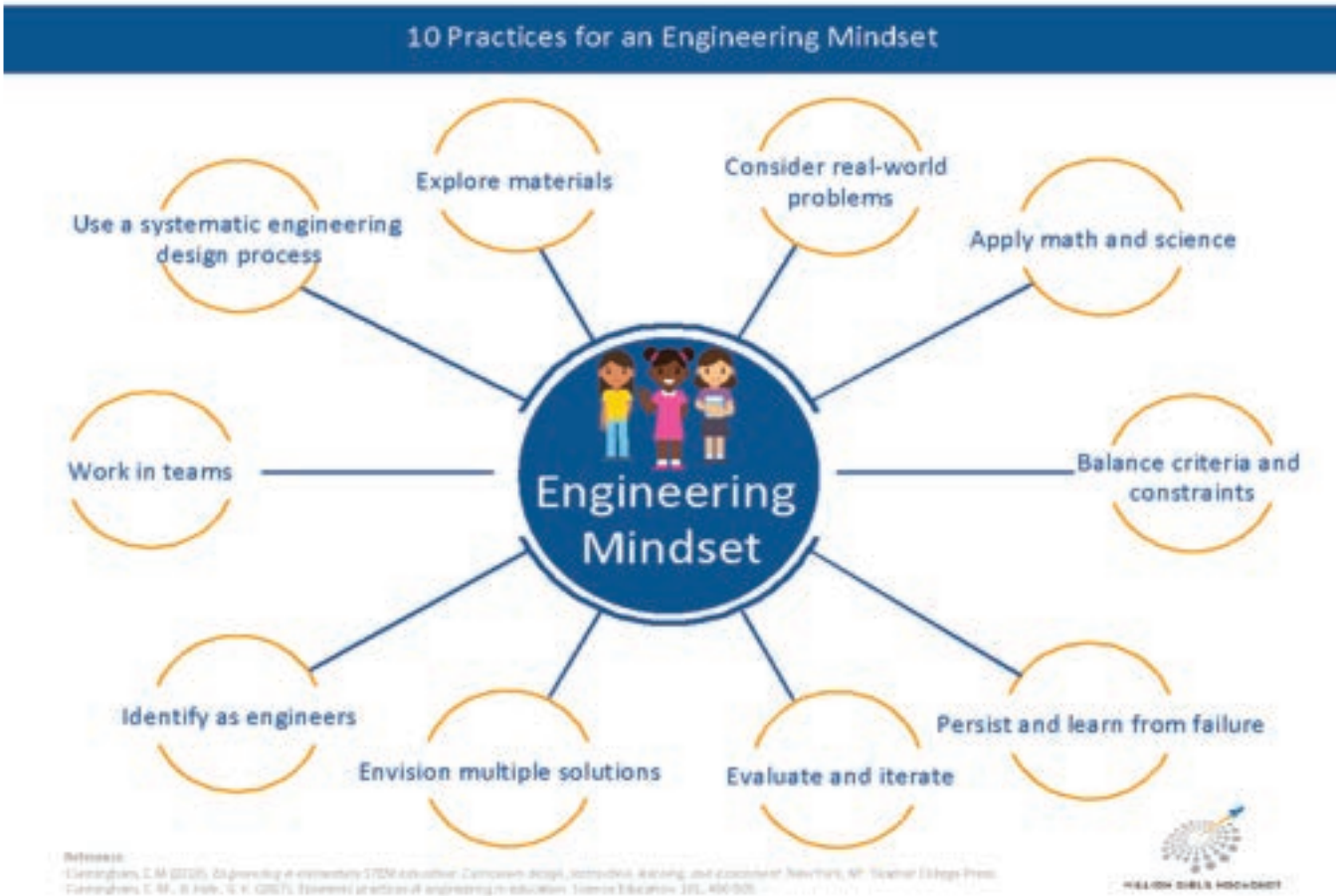
Limited accountability for practice change among expanded learning professionals

One of the strengths of the Moonshot is its decentralized design, giving a great deal of autonomy to grantees to tailor the initiative principles to their local

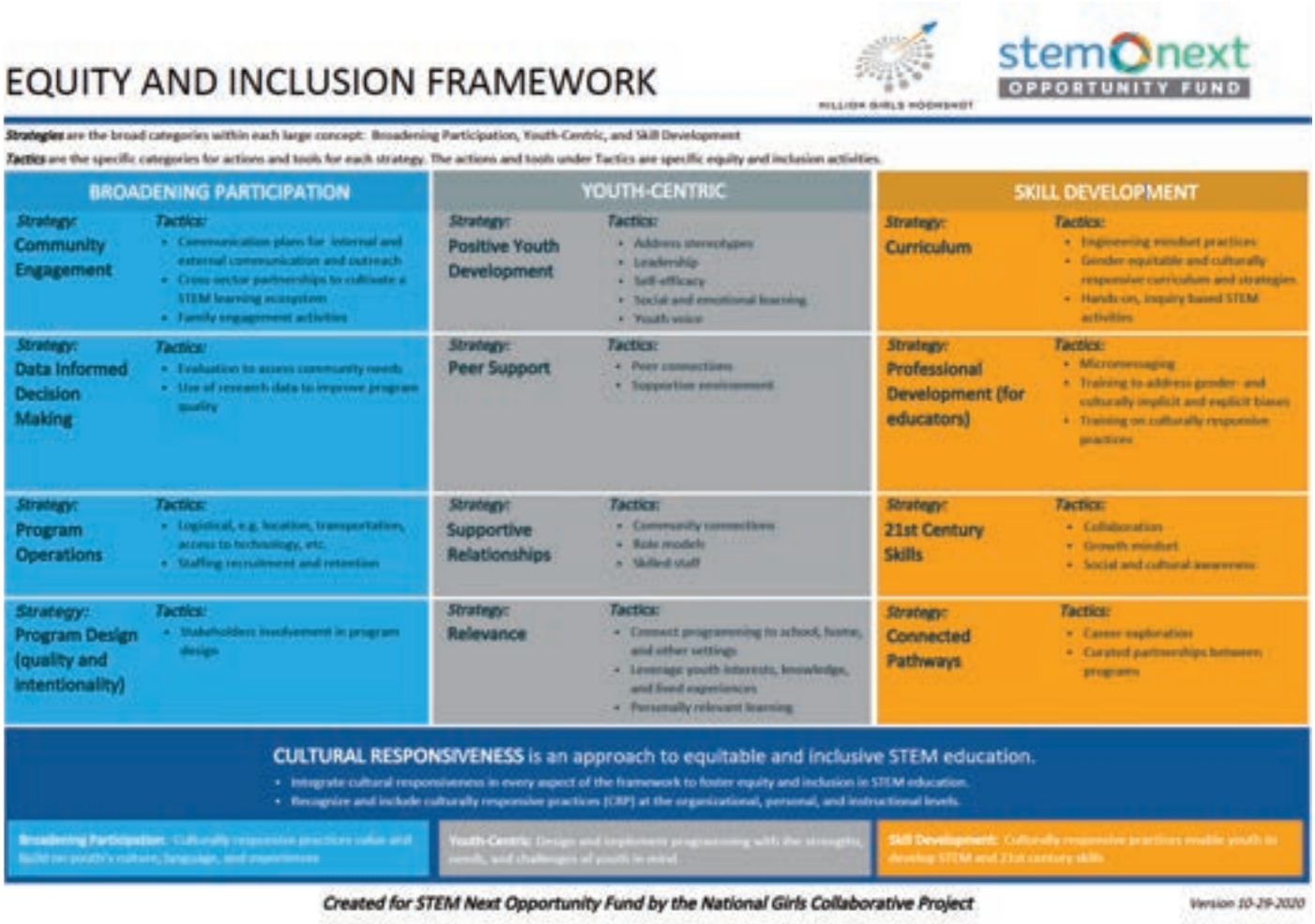
assets and context. On the other hand, the decentralized approach makes it challenging to accurately predict the reach of the initiative, particularly when it comes to substantive shifts in program practice, and to subsequent youth experiences and skill building. The second year of the initiative evaluation will attempt to address some of these issues to continue to refine our shared understanding of the reach of the Moonshot.

Building the capacity of the statewide afterschool networks to create the conditions in which more girls and marginalized youth build an engineering mindset has the promise to achieve substantial scale and sustainability. Yet the investment in the networks itself is one step removed from the expanded learning professionals who work with youth at the local level. These professionals have no formal accountability to the Moonshot to change their practice. Moonshot grantees will need to continue to find ways to engage expanded learning professionals in this context for the initiative to reach its ambitious goals.

APPENDIX A: ENGINEERING MINDSET



APPENDIX B: EQUITABLE AND INCLUSIVE STEM ENGINEERING MINDSET



EQUITY AND INCLUSION FRAMEWORK

Strategies are the broad categories within each large concept: Broadening Participation, Youth-Centric, and Skill Development

Tactics are the specific categories for actions and tools for each strategy. The actions and tools under Tactics are specific equity and inclusion activities.

BROADENING PARTICIPATION		YOUTH-CENTRIC		SKILL DEVELOPMENT	
Strategy: Community Engagement	*Tactics:* • Communication plans for internal and external communication and outreach • Cross-sector partnerships to cultivate a STEM learning ecosystem • Family engagement activities	*Strategy:* Positive Youth Development	*Tactics:* • Address stereotypes • Leadership • Self-efficacy • Social and emotional learning • Youth voice	*Strategy:* Curriculum	*Tactics:* • Engineering mindset practices • Gender-equitable and culturally responsive curriculum and strategies • Hands-on, inquiry based STEM activities
Strategy: Data Informed Decision Making	*Tactics:* • Evaluation to assess community needs • Use of research data to improve program quality	*Strategy:* Peer Support	*Tactics:* • Peer connections • Supportive environment	*Strategy:* Professional Development (for educators)	*Tactics:* • Micromessaging • Training to address gender- and culturally implicit and explicit biases • Training on culturally responsive practices
Strategy: Program Operations	*Tactics:* • Logistical, e.g. location, transportation, access to technology, etc. • Staffing recruitment and retention	*Strategy:* Supportive Relationships	*Tactics:* • Community connections • Role models • Skilled staff	*Strategy:* 21st Century Skills	*Tactics:* • Collaboration • Growth mindset • Social and cultural awareness
Strategy: Program Design (quality and intentionality)	*Tactics:* • Stakeholders involvement in program design	*Strategy:* Relevance	*Tactics:* • Connect programming to school, home, and other settings • Leverage youth interests, knowledge, and lived experiences • Personally relevant learning	*Strategy:* Connected Pathways	*Tactics:* • Career exploration • Curated partnerships between programs

CULTURAL RESPONSIVENESS is an approach to equitable and inclusive STEM education.

- Integrate cultural responsiveness in every aspect of the framework to foster equity and inclusion in STEM education.
- Recognize and include culturally responsive practices (CRP) at the organizational, personal, and instructional levels.

Broadening Participation: Culturally responsive practices value and build on youth's culture, language, and experiences

Youth-Centric: Design and implement programming with the strengths, needs, and challenges of youth in mind

Skill Development: Culturally responsive practices enable youth to develop STEM and 21st century skills

Created for STEM Next Opportunity Fund by the National Girls Collaborative Project

Version 10-29-2020

APPENDIX C: DATA SOURCES

Grantee Progress Reports
Submitted by each of the 50 grantees of the Million Girls Moonshot in April 2021 as part of their required reporting to STEM Next. The grantee progress reports asked for information about the reach of Moonshot-related activities, the content area focus of their work, and challenges they encountered. Grantees who received their initial round of funding in spring 2020 reported on their activities for the 12-month period between March 2020 – March 2021. Those that received funding in fall 2020 reported on the seven-month period between September 2020-March 2021.

Afterschool and Summer STEM Program Surveys
Submitted by 260 afterschool and summer programs in the United States between February 25 and April 30, 2021. The survey asked afterschool and summer programs to report on their current STEM-related offerings, their awareness of the Million Girls Moonshot, and interest in receiving further support from the Moonshot. Programs were invited to complete a survey via outreach from the Moonshot grantees, the Afterschool Alliance, and STEM Next.

Programmatic Records
The staff members who coordinate the Million Girls Moonshot learning community keep detailed records of which grantees attend particular meetings, statistics on web site visits and resource downloads, and programs' participation in Booster Pack sessions.

Case Studies
As of summer 2021, two case studies have been completed under the auspices of the Million Girls Moonshot evaluation, each featuring an innovative afterschool and summer program. Case studies were completed by the Maine Mathematics and Science Alliance and Partnerships in Education and Resilience.

Case studies include data from interviews with staff members, observations of program offerings using the Dimensions of Success tool, and youth survey.

Semi-structured interview with the staff member leading the observed sessions and with the site-level supervisor or director.

Structured observation of STEM activities using Dimensions of Success (DoS). A member of the case study team will observe multiple STEM activities in real time and will use the DoS to rate what they see. The DoS was developed especially for afterschool STEM activities and includes rating sections for Features of the Learning Environment, Activity Engagement, STEM Knowledge & Practice, and Youth Development in STEM.

Engineering task – Participants in the observed STEM activity will complete the Performance Assessment of Design Skills (PADS) after the observed activities conclude. The case study team will share more information about how to implement this activity and will work with the activity leader to plan when and how to share it with youth.

Youth surveys – Using the Common Instrument Suite - Engineering (CIS-S), participants in the observed STEM activity will complete a brief self-report survey about their attitudes and self-concept, and how they have changed as a result of the recent engineering activities.

APPENDIX D: EVALUATION QUESTIONS & DATA SOURCES

Evaluation Question	Grantee Bi-Annual Report	Annual Program Practices Survey	Moonshot Programmatic Documents	Case Studies
To what extent does the Million Girls Moonshot enhance the capacity of statewide afterschool networks to promote high quality STEM practice in expanded learning spaces that are culturally responsive and aligned with the four transformative practice areas?	X		X	X
To what extent do more out-of-school time professionals have access to training, curricula, and other supports through the Moonshot that enhance their ability to provide high quality STEM experiences in expanded learning settings that culturally responsive and aligned with the four transformative practice areas?	X	X		X
To what extent are expanded learning programs affiliated with the statewide afterschool networks offering STEM activities that are culturally responsive and aligned with the four transformative practices areas?	X	X		X
Are more girls developing an engineering mindset through their involvement in Moonshot-affiliated expanded learning programs?		x		X
Does available evidence support the Million Girls Moonshot Theory of Action? What changes, if any, might improve the initiative's ability to reach its goal of cultivating one million girls with an engineering mindset?	X	X	X	X

X Primary data source x Supportive data source

APPENDIX E: BOOSTER PACK NETWORK ENGAGEMENT AND NUMBER OF AFTERSCHOOL SUMMER PROGRAMS

Booster Pack	Participating Sites by State		
	Innovator	Capacity Builder	Ready for Liftoff
Engineering Mindsets with Techbridge Girls@Home	New Mexico (3) Massachusetts (1) Utah (6)	Montana (1)	Colorado (8) Nevada (1)
Engineering Mindsets with Technovation		Arkansas (2)	Nevada (4)
Engineering Mindsets with Televisa Foundation and TC LiFT		Minnesota (1) Rhode Island (2)	Nevada (3)
Family Engagement Community of Practice with Linda Kekelis featuring Technovation	Pennsylvania (3) Nebraska (5)	Alabama (2) Illinois (2) Rhode Island (4) West Virginia (4) Michigan (2)	Georgia (3) New Hampshire (1)
STEM Transitions and Handoffs with Jobs for the Future (JFF)	Oregon (4) Pennsylvania (8) Vermont (3) Maryland (2)	North Carolina (3)	

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The 50 State Afterschool Networks
Organizations in all 50 states dedicated to expanding access to high quality afterschool and summer opportunities for all youth.
Photos courtesy of the 50 State Afterschool Network

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Public Profit, an independent evaluation consultancy with expertise in expanded learning programs, is leading the evaluation of the Million Girls Moonshot that explores network wide progress toward the Theory of Action and highlights particularly innovative practices at the grantee and STEM program level. They are the authors of this report.