

MILLION GIRLS MOONSHOT



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EVALUATION REPORT 2021 - 2022



FOREWORD

ENGAGING MILLIONS OF GIRLS IN STEM

Since its launch in 2020, the Million Girls Moonshot has been on a soaring trajectory. As a signature initiative of STEM Next Opportunity Fund, the Moonshot directly supports our mission to ensure that millions of underserved young people have access to high-quality STEM learning experiences to help them thrive in STEM and beyond.

With the Moonshot, STEM Next and our partners are testing a new approach to addressing the big disparities in the STEM workforce. Today, while women make up half of workers with postsecondary degrees in the U.S., they compose just 35% of STEM workers. Black, Latina, and Indigenous women combined represent less than 10%. And of women in STEM professions, only 15% are in engineering – even less for women of color, with only 2% who identify as Latina and 3% who identify as Black. By 2029, the U.S. needs to fill 10.7 million STEM jobs, which on average pay more than double the median wage. The gap in gender equity in STEM means women miss out monetarily, and the U.S. economically, as diverse workers financially outperform those who are non-diverse. To address this critical issue, STEM Next recognizes that not enough is being done early and often enough for girls to build the interest, identity and skills required to persist to STEM careers, especially in underrepresented communities.

The Moonshot leans into afterschool and summer programs with their rich, creative environments, known to be effective at inspiring and preparing youth to pursue their STEM journeys. And outside the classroom is where youth spend 80% of their time. Out-of-school time (OST) also represents a prime opportunity to tackle learning equity challenges.

The Million Girls Moonshot has a single, laser-focused goal -

to cultivate one million more girls with an engineering mindset by 2025.

To achieve this, we start by raising awareness in the OST field for the best practices in engaging more girls in STEM. Then, we provide training, tools and resources for providers to embed and execute those practices. In doing so, Moonshot eliminates large barriers that contribute to the STEM gender gap. For example, research shows that instructors ask boys more higher-order thinking questions—like how/why, while girls are asked simple yes/no questions. When a notetaker is needed in an activity, more often than not, a girl is assigned to this role rather than a boy. These small experiences matter and add up, creating structural barriers for girls in STEM. Through Moonshot's STEM Access framework, program leaders receive training and tools needed to create rich, culturally relevant STEM learning environments that intentionally lift up girls, their participation, skill development, and ideas.



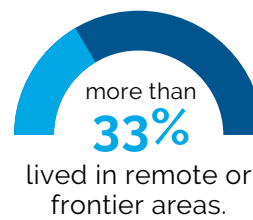
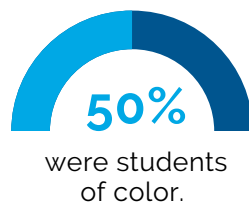
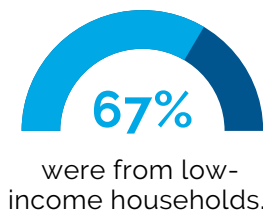
The Moonshot does not create new programs, because this is not where the need exists in the STEM learning landscape. Rather, Moonshot leverages the existing infrastructure of the 50 State Afterschool Network – with reach to 100,000+ local programs and 8 million youth – to help more programs use what we know works best to engage girls in STEM. OST programs across the country are providing millions of young people with enrichment opportunities. The Moonshot helps them do more STEM, better. And STEM Next makes this happen through collective action – coalescing over 15 national partnerships, leveraging resources across industry sectors and putting them into the hands of those who have been historically underrepresented in STEM.

So, how are we doing so far? We are on a soaring trajectory!

Moonshot's goal is to cultivate one million more girls with an engineering mindset by 2025. As we enter the last half of the Moonshot,

1.4 million girls and a total of 2.75 million youth have been reached.

Of youth served,



You might ask, how did we get here so fast, especially when the world was upside down in a global pandemic. We can learn from and attribute our success to two critical factors. First, the Moonshot leverages existing infrastructure that lets us expand exponentially, quickly and efficiently. Our message—more STEM to innovate in the face of challenges—was timely, relevant and compelling. And this message has staying power. As we look to the lasting impacts of pandemic learning interruptions in Math or the evolution of AI, it's more critical now than ever that we support young people in gaining the skills needed to succeed in our ever changing world.

Secondly, we have just the right mix of ingredients in our recipe. Meaning, the Moonshot doesn't just provide free curriculum, and relevant training and technical assistance to informal educators, it also aggregates and distributes resources in terms of funding, volunteer power and partnerships to support implementation. By investing in the people doing the work, we elevate their practice, show that we believe in their abilities, and that we value and prioritize the difference they are making for young people. This is especially important in historically marginalized communities. Our deepest appreciation goes out to our philanthropic and corporate partners who share in the Moonshot's vision and are making it a reality across the country, including: Amazon Fire TV; Aramco Americas; Arconic Foundation; Boeing; C. S. Mott Foundation; Frito Lay Variety Packs; Gordon & Betty Moore Foundation; Hopper-Dean Family Foundation; Illumina; Intel Foundation; Lockheed Martin; Lyda Hill Philanthropies; Micron Technologies; OTIS; Panasonic Foundation; Qualcomm, Inc.; Ralph C. Wilson, Jr Foundation; Rambus; Samueli Foundation; and Takeda Pharmaceutical.

While our reach numbers tell an amazing story of the Moonshot's rapid scale, **our work is far from finished!**

In a survey of 300 girls,

70%

said they felt more engaged with STEM because of their Moonshot experience. Half of them were more likely to think of themselves as "a person who does STEM."

Beyond creating access and exposure to STEM learning, the Moonshot aims to cultivate an engineering mindset in young people. Why an engineering mindset? An engineering mindset refers to the values, attitudes, and thinking skills associated with engineering. Engineers solve problems using systematic, iterative processes. Engineers shape the world we live in using existing and new technologies. The clean water, electric toothbrushes, traffic patterns, smart phones, stain-resistant materials, and electric vehicles we use have all been developed by engineers.

Though the products of engineering are diverse, engineers approach their work using a common set of engineering practices. High-quality engineering experiences that engage youth in these practices help them develop and strengthen an engineering mindset. While many STEM programs focus on a specific component or discipline of STEM like coding for computer science or robotics, the Moonshot is preparing America's students with an engineering mindset—attitudes, knowledge and skills transferable across disciplines and supporting youth success not only in STEM, but in life.

We're just starting to see the impact of the Moonshot work on cultivating engineering mindsets. But simply reaching millions of youth is not enough. Deeper and sustained STEM experiences are required to shift practices, eliminate barriers, and support youth persistence in STEM. We know it is possible. To date, we've **supported over 2,500 programs, serving 80,000 girls, with intensive offerings like communities of practice and ongoing technical assistance that focus on developing engineering mindsets.** In year 2, we sampled youth participants using the PEAR Common Instrument Suite -validated student surveys that measure a variety of STEM-related attitudes and 21st Century Skills. More than half of youth who completed the survey reported positive change across key STEM learning indicators indicative of an engineering mindset including STEM engagement, identity, career knowledge, career interest, critical thinking, and perseverance. We also gathered input from about 300 youth in Moonshot-connected afterschool and summer programs, which showed that 7 in 10 agreed their afterschool program helped them to feel more engaged with STEM, and half said they were more likely to think of themselves as a "person who does STEM." These early indicators are linked to longer-term outcomes like majoring in a STEM field in college or pursuing a STEM-related career.

In the second half of the Moonshot, we are aiming to increase data collection efforts demonstrating deeper youth, educator, and program outcomes.

To date, the Moonshot has reached

65,000 afterschool and summer programs, and 170,000 educators.



Powerful Boosters: Changing the national narrative and activating families

The Moonshot brings to the forefront critical “Boosters” that accelerate and support lifelong persistence in STEM.

The Moonshot is working to change the narrative around who belongs in STEM by amplifying the voices of girls and women in STEM. In 2022 STEM Next recruited the inaugural Moonshot Flight Crew - a cadre of remarkable youth leaders who are amplifying youth voices in the national conversation around STEM equity as we work toward a future where every young girl can imagine themselves as a future engineer, builder or inventor. The Flight Crew has grown from 16 girls in 2022 to 44 girls from 38 states in 2023. From the White House to Jeopardy! and everywhere in between, the Flight Crew have served as powerful peer ambassadors in STEM, representing the next generation of diverse, prepared talent.

Activating those closest to young people, families and community, is a game-changing strategy. Families are vital players in raising awareness of the value of STEM and in brokering their participation in activities that build STEM competencies. In a national survey, 99% of parents said they want to be involved in their child's education; however, they don't understand the role they can play in their child's learning. Through communities of practice and quality tools, we are providing opportunities for OST programs and staff to create meaningful partnerships with families that help youth persist on a lifelong STEM journey.

Conclusion

As we head into the second half of the Moonshot initiative, we've set our sights on not just one million girls, but MILLIONS of girls in STEM. We'll continue to expand access and opportunity by building the capacity of afterschool and summer programs to reach more girls in under-resourced communities. And following our theory of change, we'll see engagement deepen to support cultivating an engineering mindset in more girls.

Three big opportunities lay ahead. First, in response to the lasting impacts of the pandemic, we are leaning more heavily into supporting math in afterschool and summer programs. Applying math and science are key elements of the engineering mindset. This priority is in direct response to what we're hearing from families, youth and educators in the field. Supporting programs in scaling what works in math will not only support our Moonshot goal, but also help address educational inequities. Second, amplifying youth voice, scaling opportunities for near peer mentorship and access to role models and mentors is an expressed need and lesson-learned from our work with the Moonshot Flight Crew. We'll further test replication models in states and at the national level to continue to expand access. Lastly, while the Moonshot aims to build the capacity of local programs to do STEM well, we are also building their capacity to measure, evaluate and understand what's working and to what degree so we can continuously improve our efforts for young people. The remaining years of the Moonshot will demonstrate more robust program evaluation across greater sample pools and deeper learnings into the systems change impact the initiative is having on barriers to STEM especially for under-resourced communities.

The power of partnerships makes the transformational change of the Moonshot possible. Together, we're reimagining who can build, who can engineer, and who can create. We hope the information in this report will serve as a powerful validator of this approach and inspiration for the continued work ahead.

Sincerely,



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THE 50 STATE AFTERSCHOOL NETWORK

Organizations in all 50 states dedicated to expanding access to high-quality afterschool and summer opportunities for all youth.

MAINSRING CONSULTING

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EXECUTIVE SUMMARY

The Million Girls Moonshot reaches hundreds of thousands of girls and marginalized youth.

The Million Girls Moonshot is a nationwide out-of-school-time initiative aimed to inspire and prepare the next generation of innovators by engaging 1 million more girls in STEM learning opportunities and help them develop an engineering mindset, a set of ten skills and attitudes including using math and science, iteration, persistence, teamwork, and envisioning multiple solutions.¹

The Million Girls Moonshot brings together partners with shared values, a spirit of collaboration, and an unwavering belief that by empowering girls to lead us into the future, lasting change happens. The Moonshot uses a collective impact model to engage girls in informal STEM learning opportunities by partnering with exceptional STEM learning providers, funding partners, and afterschool intermediaries in each of the 50 states.

The Moonshot seeks to build robust partnerships at the national, state, and local level to get more businesses, local community members, and schools engaged in transforming the afterschool STEM landscape. These partnerships are a vital part of the Million Girls Moonshot because they connect more afterschool and summer programs to high-quality STEM resources, which in turn reach more girls and non-binary youth.

In Year 2, Moonshot partners report that they established new connections with more than 1,200 organizations, ranging from schools and universities to STEM-based employers. This rapid growth in partnerships shows the cascading effect of the Moonshot, and the persistent efforts of Moonshot partners to transform STEM learning across the country.

² In Year 2 the Moonshot reached 65,000 afterschool and summer programs, which engaged approximately 1.4 million girls, out of 2.75 million youth in total.

Of the 65,000 afterschool and summer programs that connected to the Moonshot in Year Two, 67% serve youth from low-income households and over 50% serve BIPOC youth. About 33% of programs serve youth in rural or frontier communities and 25% serve English Learner youth.

1. See Appendix A for more information about Engineering Mindsets.

2. April 1, 2021 – August 31, 2022.

Transformative Practices are setting a new standard for high-quality STEM learning.

The Million Girls Moonshot removes barriers for youth by raising awareness of the research-based Transformative Practices and supporting grantees and partners in enhancing program practice in afterschool and summer STEM programming with youth. The Practices serve as the backbone for the resources, training, and curricula offered by the Moonshot, and guide the development of new partnerships.

- **Engineering Mindset** – activities that engage girls in developing a set of ten skills and attitudes 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.

Moonshot Voices: Growth in Year Two

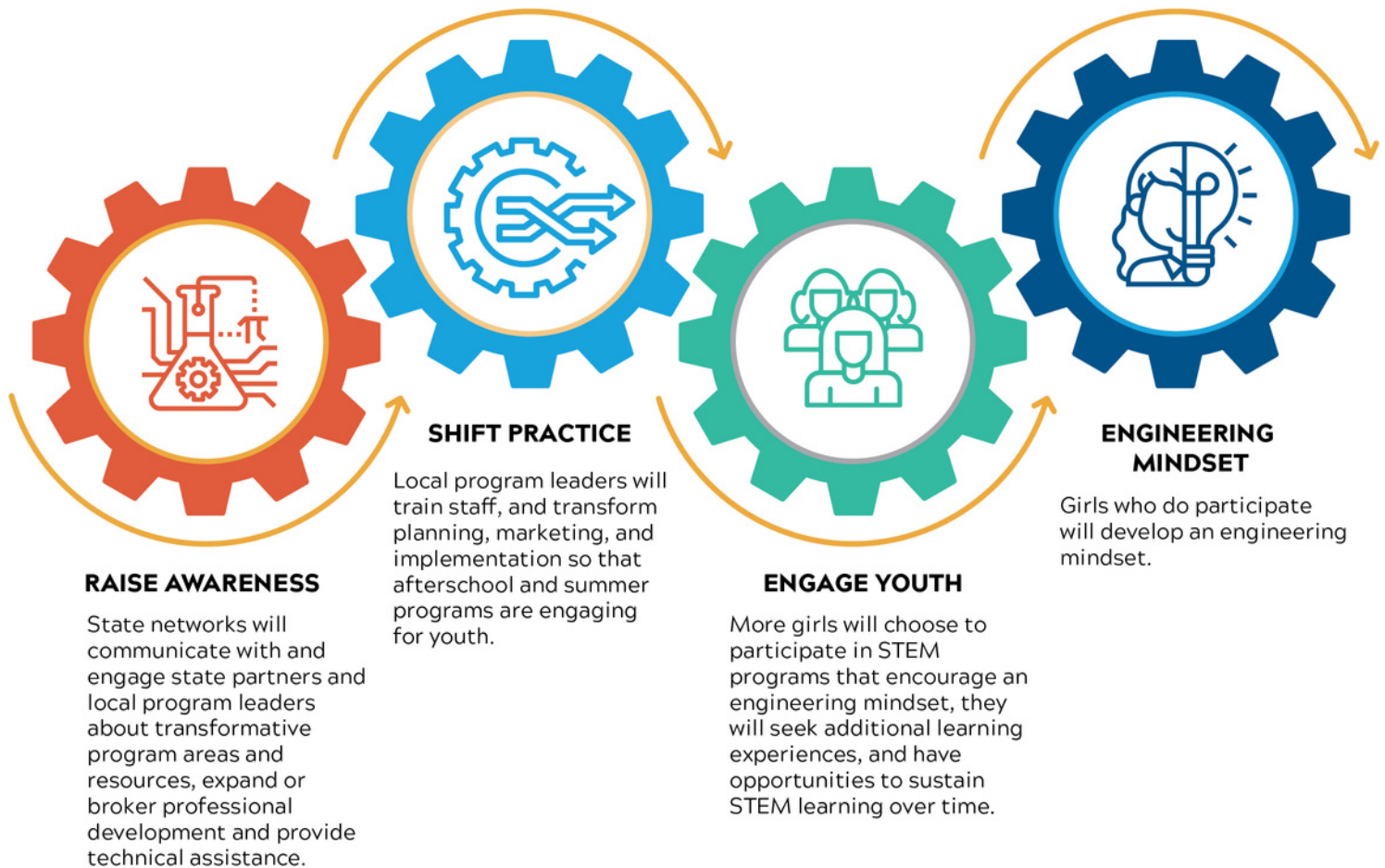
"Our (first year in the Moonshot) was an opportunity to explore what's happening in the state around informal STEM, talk to folks about the new initiative, and start building partnerships. We got a lot of systems in place so that we're sharing Moonshot resources on a regular basis in Year 2 and bringing new partners together around equitable and inclusive STEM. Now, we are more intentional in terms of what we participate in and focus on and have a clearer idea of how to keep things moving forward in a goal-oriented direction."

-Christine Jones Monaccio, Virginia POST

Afterschool and summer programs are shifting their practice in ways that benefit girls and marginalized youth.

The Million Girls Moonshot is driven by a Theory of Action; youth-serving organizations move through a series of interconnected steps to engage more youth in quality STEM.

THEORY OF ACTION



In Year 2, the Moonshot progressed along the Theory of Action by focusing on shifting practice among afterschool and summer programs, while sustaining existing efforts to raise awareness of the Moonshot and the tools, training and resources aligned with the Transformative Practices. As the Moonshot and its partners curate and disseminate quality tools, trainings and resources, available evidence suggests afterschool and summer programs connected with the Moonshot are shifting their practice to offer more quality STEM learning experiences to more youth across the U.S.

Moonshot momentum is growing – more girls and marginalized youth are developing an engineering mindset.

Working together, the Moonshot's partners are rapidly expanding the reach of the initiative. In Year 2, the Moonshot reached 65,000 afterschool and summer programs, which engaged approximately 1.4 million girls, out of 2.75 million youth in total.

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This includes approximately 2,500 programs, serving 80,000 girls, that were part of **intensive offerings** like communities of practice and ongoing technical assistance.

These in-depth activities are best suited to engage youth in learning that leads to an engineering mindset.

Input from about 300 youth in Moonshot-connected afterschool and summer programs shows 7 in 10 agreed their afterschool program helped them to feel more engaged with STEM, and half said they were more likely to think of themselves as “a person who does STEM.” These early indicators are linked to longer-term outcomes like majoring in a STEM field in college or pursuing a STEM-related career.

The Flight Crew launched in Year 2 is a youth-centered leadership development opportunity for girls and nonbinary youth in STEM. Sixteen young people were part of the inaugural Flight Crew cohort; they participated in regular leadership development sessions, led STEM-focused awareness building activities in their communities, and spoke at national convenings to amplify the voice of girls in STEM.

By using new learning tools to advocate for themselves and others, participating youth reported the Moonshot's Flight Crew helped them to feel their voice was heard and they built new tools to advocate for themselves and others. Participants reported the best thing about being a Flight Crew member was meeting new role models that look like them, feeling heard, and making connections with their peers. Building on the success of the first cohort, the Flight Crew will be doubling in size in 2023.

Looking ahead: deeper engagement with even more STEM programs and the girls they serve.

While the Million Girls Moonshot has already reached a million girls and nonbinary youth, there's more to do to assure these young people have the opportunity to develop an engineering mindset. Sustained engagement in equitable, inclusive STEM opportunities is a critical feature of the Moonshot; the partners' collective efforts in Years 3 and beyond are aimed at assuring that happens.



Awareness-building and supports for professionals to shift their practice to offer quality STEM to more youth are maturing amongst the Moonshot's partners, all centered on the Transformative Practices. More youth development professionals and programs are engaging in in-depth Moonshot offerings, which sets the stage for more girls and nonbinary youth to engage in inclusive, equitable STEM activities and build an engineering mindset.

Looking to Year 3, Moonshot partners will build on the foundations they have established to keep raising awareness of the Transformative Practices while expanding their efforts to reach more girls as they build an engineering mindset. The statewide Afterschool Networks are all signaling continuous progress toward their ability to engage youth development professionals, policymakers, and fellow STEM advocates in promoting more equitable and inclusive STEM. Robust, consistent investments make this progress possible: resources and curricula, operating funding, and ongoing technical assistance for networks and program staff amplify this collective effort.

One of the strengths of the Moonshot is its adaptability to local conditions and opportunities. The Moonshot's partners are leveraging the distinct assets of their respective communities to promote the Transformative Practices and to engage more girls and nonbinary youth in high quality STEM experiences. The ongoing impacts of COVID-19 still affect afterschool and summer programs' ability to engage in Moonshot-related activities.

In light of these continued challenges, the Moonshot will continue to call upon its partnerships to provide in-depth learning opportunities to networks and programs that are aligned with the Transformative Practices in Year 3:

- In response to poor national statistics in math performance, FHI 360 will offer a yearlong workshop series to introduce afterschool educators to evidence-based strategies will support youth in building their math identity.
- For afterschool and summer program educators are unable to join in-person offerings, Click2Engineering offers virtual workshops and communities of practice focused on the 10 practices for an engineering mindset. These virtual offerings allow more afterschool and summer program educators to join regardless of location.

Together, these efforts will continue to engage more girls in opportunities to build engineering mindsets, key skills, and knowledge they will need to thrive in the world of tomorrow.



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