

# The Gaskins Foundation: Building Community-Driven STEM Education

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## INTRODUCTION

The Gaskins Foundation is a federally recognized 501(c)(3) non-profit organization committed to providing extraordinary opportunities for under-recognized and under-represented youth. Our mission is to present, engage, and prepare students of all ages to become leaders in Science, technology, engineering, and mathematics (STEM) by integrating algebra, programming, and design concepts into their educational journey. We believe that every student, regardless of background, deserves the chance to explore their potential and be equipped with the skills necessary to thrive in the ever-evolving fields of STEM.

To fulfill this mission, the Gaskins Foundation offers youth resources at many stages of their academic and creative lives, ensuring they have the support needed to succeed. Our comprehensive programs are designed to develop and foster the skill sets essential for a brighter future, whether through hands-on learning experiences, mentorship opportunities, or advanced training in STEM disciplines. By addressing the unique needs of under-represented students and guiding them through their educational journey, we empower the next generation of STEM leaders to overcome barriers that might impede students' success and create lasting change in their communities.

In addition to our core programs, the Gaskins Foundation actively partners with schools, community organizations, and industry leaders to expand our reach and impact. These collaborations allow us to bring innovative STEM opportunities directly to the communities that need them most, bridging the gap between education and real-world application. Through these partnerships, we not only provide students with access to state-of-the-art resources and mentorship from professionals in the field but also work to create a

network of support that extends beyond the classroom. Our goal is to build a viable environment or culture that nurtures talent, fosters creativity, and inspires lifelong learning, ensuring that our students are well-prepared to excel in STEM careers and contribute meaningfully to society.

The foundation leadership has created a model that has cultivated change within the Greater Cincinnati region. The vision, moving forward, is to utilize the program as a model that can continue to expand within the region. In addition to strengthening local collaborations, the leadership is calling on individuals, organizations, and communities to join us in our mission to create a more inclusive and equitable future in STEM by integrating the model into communities across the country.

## STEM LANDSCAPE

The STEM landscape for marginalized and minoritized communities, including women, Black, Indigenous, and Latinx individuals, remains one of significant disparity and underrepresentation. Despite strides toward inclusivity, these groups continue to face systemic barriers that limit their access to STEM education and career opportunities (The National Academies, 2019). Women, particularly women of color, are often underrepresented in STEM fields, facing challenges such as gender bias, lack of mentorship, and unequal access to resources. Similarly, Black, Indigenous, and Latinx individuals encounter systemic inequities that hinder their academic and professional progress in STEM disciplines. These barriers include underfunded schools, limited exposure to STEM role models, and cultural stereotypes that can discourage interest and participation in these fields. As a result, the STEM workforce does not fully reflect the diversity of the broader population,

which not only limits opportunities for these communities but also stifles innovation and creativity within the field. Addressing these disparities is crucial for creating a more equitable and dynamic STEM landscape, where all individuals, regardless of their background, can contribute to and benefit from advances in science, technology, engineering, and mathematics.

## **OUR “WHY”**

The Gaskins Foundation was founded with a clear and passionate purpose: to level the playing field for underrepresented communities in STEM. Dr. Whitney Gaskins recognized the profound impact that access to quality education and career opportunities can have on an individual's life, and she wanted to ensure that these opportunities were available to everyone, regardless of their background. The Foundation's work is not just about providing resources; it's about creating lasting change. By addressing systemic inequities and offering a platform for young people to explore and excel in STEM, the Gaskins Foundation aims to transform lives and communities. Every program we develop, every partnership we forge, and every student we support is a step toward a future where diversity and inclusion are not just goals but realities in the STEM fields. This commitment to making a meaningful difference drives everything we do, as we strive to empower the next generation to overcome barriers to success and achieve their full potential.

The Gaskins Foundation's commitment to fostering opportunities for underrepresented communities goes beyond addressing the immediate educational needs of students. We are deeply invested in creating long-term, sustainable pathways that lead to both personal and professional success. Our programs are designed to not only provide academic support but also to build confidence, resilience, and a sense of belonging in STEM fields where these students have historically been underrepresented. By cultivating an environment where students feel seen, heard, and valued, we are helping them to develop a strong sense of self-efficacy. This, in turn, encourages them to pursue ambitious goals and to view challenges as opportunities for growth. The Gaskins Foundation is dedicated to opening doors for these young individuals and equipping them with the tools and mindset necessary to thrive in their chosen paths. This holistic approach ensures that the impact of our work extends far beyond the classroom, empowering students to become leaders and innovators who will drive positive change in their communities and the broader world.

## **COLLABORATION OVER COMPETITION**

The Foundation's leadership team focuses on the power of collaboration over competition. We work with organizations such as Cincinnati Public Schools and the Cincinnati Recreation Commission, along with community churches. We foster collaboration by sharing resources and expertise so that both are more impactful in supporting underserved communities. By collaborating with local partners, our Foundation can create more opportunities for students, deliver higher-quality educational programs, and address systemic issues with greater efficiency, thus ensuring that every young person has access to the tools and support they need to succeed in the STEM workforce.

Our team also works with departments throughout the University of Cincinnati to connect college students to mentorship and service-learning opportunities for our K-12 students and families. These college students play an active role in delivering engaging curriculum, offering guidance, and serving as role models. The Gaskins Foundation works with the Office of Inclusive Excellence and Community Engagement in the College of Engineering and Applied Science to match service-learning experiences with students in need of service-learning hours. Many of these students who receive scholarships, such as Choose Ohio First and the Ohio Louis Stokes Alliance for Minority Participation (LSAMP), are required to complete fifteen STEM-focused volunteer hours. These students serve as volunteers for afterschool STEM (STEMTime) clubs and a program called STEMulating Saturdays. By working with the same group of students for, at minimum, one academic year, we can cultivate a mentor-mentee relationship between the pre-college students and the collegiate volunteers.

We also work with the university's Bearcat Buddies program through the UC Center for Community Engagement to connect volunteers with students at four schools in close proximity to the university. UC students are transported to the schools using the Bearcat Buddies transportation system. This year, we also expanded the partnership to allow Gaskins Foundation staff members to utilize the Foundation's van to connect more students to tutoring at the partner schools.

By bridging the gap between college and pre-college experiences, we are able to leverage the unique perspectives and skills of these mentors to cultivate a supportive learning environment, enriching the educational journey for both mentors and young learners alike. These collaborations foster community engagement and create a continuum of

learning that prepares K-12 students for future academic and career success.

## OUR METHODS

At the Gaskins Foundation, we utilize Community-Based Participatory Research (CBPR) to develop both our programs and our curriculum, ensuring that they are deeply rooted in the needs and strengths of the communities we serve. This collaborative approach allows us to create educational experiences that are not only relevant but also impactful. During our program sessions, we implement the P.E.P. Model—Present, Engage, and Prepare—as a strategic framework for teaching. This model is essential in scaffolding the curriculum to suit different age groups, allowing us to tailor our approach to meet students where they are developmentally. By using the PEP Model, we ensure that each child receives the appropriate level of support and challenge, fostering a strong foundation in STEM learning.

The PEP Model is designed to track and enhance PK-12 students' academic progress, aiming to ensure that they perform at or above their grade level. For younger students (PK-3), the focus is on “Presenting” concepts. In these sessions, students are introduced to STEM through hands-on projects. For example, they might be tasked with building a bridge. By the end of the session, they not only complete the project but also learn a key STEM-related term, such as “tension.”

For students in grades 4-6, the goal is to “Engage” with the material. Here, students continue to complete projects but with an added emphasis on understanding the science behind them. They learn specific STEM concepts and are encouraged to demonstrate their grasp of these ideas. Each session concludes with a three-question verbal survey asking:

1. Did you enjoy what we did today?
2. Would you like to learn more about topics like this?
3. Can you explain how the STEM concept of the day works?

For students in grades 7-12, our focus shifts to “Preparing” them for STEM careers. These sessions guide students through the steps needed to enter and succeed in a STEM pathway. Students are taught to design their own projects using the Engineering Design Process or the Scientific Method. They are given a design challenge, materials, and constraints, and then encouraged to innovate. After completing their projects, the session ends with a three-question verbal survey to assess their design process:

1. Did this process increase your interest in pursuing this as a career?
2. Can you walk us through your design process?
3. Can you think of another grand challenge that could be solved using a similar process?

## OUR PROGRAMS

The Gaskins Foundation organizes its programs into four key focus areas each designed to address a specific aspect of STEM education and community engagement. These areas are STEMulAtes, STEM Workforce Development, STEM Thought Leadership, and STEMfluencers. The STEMulAtes focuses on early engagement and hands-on learning experiences to spark interest in STEM from a young age. STEM Workforce Development programs aim to prepare students and young professionals for successful careers in STEM fields, equipping them with the necessary skills and leadership qualities. STEM Thought Leadership emphasizes the importance of research, policy development, and community-driven initiatives to shape the future of STEM education and inclusion. Lastly, STEMfluencers recognizes and amplifies the contributions of individuals and organizations that serve as role models and advocates for STEM within underrepresented communities. Each initiative within the Gaskins Foundation aligns with one of these areas, ensuring a comprehensive approach to fostering diversity and excellence in STEM. More details on each area and program follows.

### STEMulAtes

- **STEMulating Saturdays:** STEMulating Saturdays is a monthly program designed to increase student participation in STEM activities through hands-on, challenge-based learning experiences. Students are grouped based on their current grade level, and using the PEP Model, the program positions students to perform at least one grade level above current educational standards.
- **STEM Ready Institute (SRI):** The STEM Ready Institute (SRI) is designed to equip students in grades 7-12 with next-generation STEM skills, preparing them to enter and succeed in STEM majors and eventually matriculate into the STEM workforce. Beginning in the seventh grade, students can register for SRI courses, which consist of three tracks: Coding, Design, and Numeracy.
- **S3 (Safe Spaces for Students):** Our S3 program creates informal STEM learning environments in safe, community spaces. We collaborate with community partners to create STEMulation Zones where students can learn

skills and receive support in a nurturing environment. These zones focus on programming and training for youth, providing a safe outlet during weekends, after school, and summer breaks—the most dangerous times for urban youth. The curriculum for these zones is developed by the STEMulates team and corporate partners, with local volunteers serving as tutors and workshop facilitators.

- **Scholars Plus: Scholars Plus** is an initiative to increase the excitement and recognition of students who excel academically. Each semester, we give special recognition to students who make the honor roll at their respective schools. In-school celebrations include parties dedicated to their success, with honor roll students featured on video boards and given the opportunity to wear the “Honor Roll Belt” as a symbol of accomplishment. High school students who consistently make the honor roll receive a special honors cord to wear at graduation, representing the number of times they have achieved this distinction.
- **City-Wide Celebration:** Honor roll students are celebrated throughout the city each quarter, with achievements promoted in a digital press release shared with local media outlets. Students who make the “A” honor roll receive invitations to participate in community activities, including free access to sporting events and local attractions such as museums and the Cincinnati Zoo.
- **STEMmys Scholars:** Students performing well in STEM classes are eligible for the STEMmys Scholar of the Month award. Each month, one elementary and one high school student are recognized, receiving a \$100 gift card and being profiled in local media outlets.
- **Young STEMinitas:** The Young STEMinitas program is a cohort-based initiative supporting young women as they navigate secondary school and pursue careers in STEM fields. The program offers STEM learning experiences through programming and mentorship, with students registering as early as grade six and remaining engaged until graduation. Families can participate through our partners or register at one of our program sites.
- **Research Experiences for Secondary Students (RESS):** The Research Experiences for Secondary Students (RESS) program supports active research participation by 11th and 12th graders, modeled after the successful Research Experience for Undergraduate (REU) program. Students engage in corporate or faculty-led projects designed for the RESS program, with sites

hosted in collaboration with the Gaskins Foundation and local companies or universities.

- **Empowering Parents in Community Churches (EPICC) STEMulation:** The EPICC STEMulation program transforms church meeting spaces into STEM learning environments. Our curriculum team partners with church members to co-create customized learning modules, implementing these programs to establish STEM education opportunities for youth within the church and the surrounding community.
- **Empowering Students in Community Churches (EPICC) STEMulation** provides programming in churches within urban areas. This initiative creates a learning space in local communities, led by families and community leaders. Community STEM Centers offer free STEM courses open to families who already visit local recreation and learning centers. Additionally, STEMTime is a virtual out-of-school program designed to increase student access to ongoing learning at home, where families can download lesson plans and STEM kits to complete projects.

#### *STEM Workforce Development*

- **Women of Color in Tech:** Through a grant from JPMorgan Chase and support from Google, the Cincinnati Regional Chamber’s Workforce Innovation Center partners with the Gaskins Foundation to offer Women of Color in Tech. The program helps women of color in the Cincinnati region prepare for new careers in high-growth fields by offering Google Career Certificates paired with wrap-around support. The Women of Color in Tech partners offer free training programs to prepare women for roles in cybersecurity, data analytics, digital marketing & e-commerce, IT support, project management, and UX design. The programs are designed to meet participants where they are with flexible, virtual, and in-person options, as well as childcare. The Foundation and Chamber facilitate employer interviews tailored to each participant to help them secure a job that best fits their new skillset, personal needs, and career aspirations.
- **Diversity in STEM Series:** Hosted by the Gaskins Foundation and the Cincinnati Chamber of Commerce, the Diversity in STEM series is designed to inspire and empower underrepresented communities to pursue careers in science, technology, engineering, and mathematics. Through engaging panels, expert speakers, and community collaboration, the quarterly series highlights

the importance of diversity and inclusion in the STEM fields, providing invaluable insights into overcoming barriers and achieving success. Attendees will have the opportunity to connect with industry leaders, learn about innovative solutions, and contribute to creating a more inclusive STEM workforce.

- **Men and Women of STEM Excellence (MWSE) Fellowship:** The MWSE Fellowship provides undergraduate students and early career professionals in STEM fields with an accelerated leadership development opportunity. This two-year fellowship focuses on developing leadership, problem-solving, and networking skills, preparing fellows for high-level leadership positions in their fields and communities. Fellows are matched with mentors who align with their career interests and engage in quarterly topics and readings designed to challenge their identities and strengthen their leadership abilities.

### STEM Thought Leadership

- **State of Minorities in K-12 STEM:** The Foundation hosts an annual State of Minorities in K-12 Education Town Hall, an important forum addressing the unique challenges and opportunities faced by minority students in today's educational landscape. This event brings together educators, community leaders, parents, and policymakers to discuss critical issues such as access to resources, equity in education, and strategies for closing the achievement gap. By creating a space for open dialogue, the Town Hall aims to brainstorm actionable solutions that will empower and uplift minority students, ensuring they have the support and opportunities needed to thrive in the classroom and beyond.
- **EPICC Convening:** Originally launched as a component of EPICC STEMulation project, the annual EPICC Convening brings together STEM and church leaders to discuss strategies to bring STEM education to their local churches. The Convening is a weekend of programming, workshops, and collaborative sessions designed to create and strengthen STEM learning spaces in community churches. The Convening highlights the work of church partners through showcases, presentations, and discussions.

### STEMfluencers

- **STEMfluencers:** The STEMfluencers initiative highlights individuals who have made significant contributions to promoting STEM education and careers,

particularly within underrepresented communities. STEMfluencers' annual event highlights more than 100 individuals in STEM fields in four categories: Applied Science, Engineering, Healthcare, and Technology. These STEM leaders are honored at the event, which also serves as a book release for the STEMfluencers publication that highlights their achievements. The publication also has an accompanying calendar that highlights their work throughout the year and is designed to help educate students about these professionals' contributions to STEM and the community.

- **STEMTime Expo:** The STEMTime Expo is an international event that brings together people from around the world to inspire innovation and future developments. Participants engage in hands-on demonstrations, idea generation, and discussions led by leading experts on the impact of technology and innovation on our communities and the world.
- **The STEMmys:** The STEMmys were established to recognize the contributions of African-American individuals and organizations promoting STEM education for Black students in the greater southern Ohio and Northern Kentucky regions.
- **Women in STEM Honors:** The inaugural Women in STEM Honors, held during Women's History Month (March), celebrates trail-blazing women in STEM fields. This luncheon honors these advocates for women in STEM, recognizing their achievements and impact on the next generation of women in science, technology, engineering, and mathematics.

### **PROJECT BASED OUTCOMES**

At the Gaskins Foundation, our work is driven by project-based outcomes that make a tangible impact on the community. One of our key initiatives includes creating documentaries that capture and detail the experiences of women in STEM, focusing on the challenges they face and what it takes to encourage more women to enter these fields. We also develop STEM curricula tailored to everyday life, making STEM concepts relatable and accessible to students from all backgrounds. To broaden our impact, we make these curricula available online for educators and organizations to use, ensuring that quality STEM education can reach even more students. Additionally, we provide a comprehensive Roadmap to STEM, designed to help parents understand the educational enrichment their children need to gain the experiences necessary for admission into STEM

post-secondary programs. These outcomes ensure that our programs not only inspire and educate but also provide clear pathways to success in STEM.

### **Research**

Our STEM Thought Leadership team, in partnership with the Removing Obstacles for STEM Excellence (R.O.S.E. Lab) at the University of Cincinnati, strives to identify the barriers to entry in STEM fields for students, particularly underrepresented students. Utilizing data from admissions departments, the Roadmap to STEM was created to identify strategies for helping students to gain admittance into STEM programs.

### **IMPACT**

The Gaskins Foundation has significantly influenced the local community by addressing the critical need for increased representation of underrepresented and marginalized youth in STEM fields. Through the implementation of comprehensive, evidence-based programs, the Foundation has successfully facilitated the engagement of students from diverse backgrounds in science, technology, engineering, and mathematics, disciplines where they have been historically underrepresented. Our initiatives, which include hands-on learning experiences, targeted mentorship, and academic support, have demonstrably improved educational outcomes for these students, fostering both academic achievement and the development of essential skills such as confidence and resilience.

Quantitative and qualitative assessments of our programs indicate a marked increase in STEM participation among women, Black, Indigenous, and Latinx students, contributing to a more diverse and inclusive STEM pipeline. Moreover, the Foundation's community-centric approach has fostered a supportive network that extends beyond educational settings, engaging families and community stakeholders in the process of encouraging and sustaining students' interest and success in STEM fields.

These findings suggest that the Gaskins Foundation's initiatives are effective in creating a more equitable STEM landscape, addressing systemic barriers, and providing underrepresented groups with the resources necessary to succeed in STEM careers. The Foundation's work represents a vital contribution to the ongoing efforts to diversify the STEM workforce and ensure that the voices and talents of underrepresented groups are recognized and valued in the broader scientific community.

### **AWARDS**

The Gaskins Foundation has been recognized both locally and nationally for its contributions to creating equitable STEM opportunities for students and adults. Nationally, the Foundation has received Golden Torch Awards for Pre-College Initiative Program and Pre-College Initiative Program Director of the Year, respectively, in addition to over a dozen awards from national organizations. Locally, the foundation and leadership team have been honored by the Greater Cincinnati Chamber of Commerce, the Cincinnati Business Courier and numerous businesses and organizations throughout the Greater Cincinnati Region.

### **FUTURE**

The Foundation has already expanded our programming into five cities in three states. Understanding that everything that is national starts local, the plan is to grow the STEM program into a national initiative by establishing local offices throughout the country to create strong, community-based networks. By setting up local hubs, the Foundation will be able to adapt to the specific needs of each region, fostering deeper connections with schools, businesses, and community leaders. These local offices act as ambassadors of the program's mission, helping to build trust and relationships that drive engagement. As each office nurtures talent at the grassroots level, the program can scale its impact nationally, ensuring that students across diverse geographic areas have access to high-quality STEM education and resources. With this localized approach, the program can grow its influence while remaining responsive and connected to the unique challenges and opportunities in each community.

### **CALL TO ACTION**

The Gaskins Foundation is calling on individuals, organizations, and communities to join us in our mission to create a more inclusive and equitable future in STEM. We believe that by working together, we can break down the barriers that have historically excluded marginalized and underrepresented groups from these critical fields. Any type of support, whether through donations, partnerships, volunteerism, or advocacy, can make a tangible difference in the lives of young people who aspire to become the next generation of STEM leaders. By investing in education, mentorship, and community engagement, we can empower these students to realize their full potential, diversify the STEM workforce, and drive innovation that benefits us all.



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