



# Piloting STEM Education at the Urban Farm at Enston Home



## A Report for The Boeing Company from The Green Heart Project

Executive Summary.....	p.2
Report on Fall 2019- Spring 2020 Activities.....	p.3
I. Formation of “Urban Farm Committees”	
II. All-School and Classroom Presentations	
III. Engaging Students in the Architectural Design Process	
IV. Urban Garden Party	
V. Farm to School Program Curriculum Development	
VI. Pilot STEM Lessons and Site Visits to the Farm	
VII. School Community Engagement Events	
VIII. Green Heart at Home Programming	
Looking Forward.....	p.9

Jesse Blom, Executive Director  
[jesse@greenheartsc.org](mailto:jesse@greenheartsc.org)  
cell: 262-501-0855

# Executive Summary

Thanks to sponsorship from The Boeing Company, The Green Heart Project has made great progress in engaging three new partner schools at its new ½ acre Urban Farm at Enston Home site. Throughout the 2019-2020 school year, The Green Heart Project has fostered relationships and actively engaged with our three new Urban Farm partner schools: James Simons Elementary, Charleston Charter School for Math and Science and Charleston Catholic School.

Through the following actions and events, we have worked hard to form a solid foundation for our future STEM-based Farm to School programs at the Urban Farm:

- Formation of School-based “Urban Farm Committees”
- All-School and Classroom Presentations
- Engaging Students in Architectural Design Process
- Urban Farm Garden Party
- STEM-based Farm to School Program Curriculum Development
- Pilot STEM lessons and Site Visits to the Farm
- School and Community Engagement
- Green Heart at Home Programming

As we move closer towards the construction, activation and implementation phases of STEM programming at the Urban Farm, we are confident in the momentum that has been built during the past two semesters. We are excited to build on this foundation as we move forward to the launch of our pilot year of STEM programs at the Urban Farm.

**GROW MINDS, CULTIVATE COMMUNITY**

# Report on 2019 - 2020 Activities

Thanks to sponsorship from The Boeing Company, The Green Heart Project has engaged its three new partner schools in many capacities. The fall semester of 2019 was dedicated to forming relationships through meetings with teachers, administrators and students, and building awareness and ownership of our project within the various school communities. Throughout the fall of 2019 and spring of 2020, The Green Heart Project also engaged all three school communities in an array of events, pilot programs and field trips, building a foundation for the inaugural year of weekly STEM programs set to begin in the fall of 2020.



## I. Formation of “Urban Farm Committees”

We have worked within each school community to build an “Urban Farm Committee,” made up of teachers, administrators, and parents. This collection of various stakeholders within the school will help to streamline communication about the Urban Farm project within each school. The Green Heart Project has convened meetings of these committees at each school and provided organizational tools, such as shared calendars, to create a structure through which teachers, administrators, and parents can communicate. Green Heart staff has engaged with these garden committees multiple times, introducing the new Urban Farm and creating clear plans and objectives for future engagement.

## II. All-School and Classroom Presentations

Green Heart staff members have delivered educational presentations at each school to entire school bodies, to individual classrooms, and to PTA’s, building awareness about the Urban Farm and Farm to School programs. Through these presentations, our staff has informed school communities about our vision for the Urban Farm and has invited students to engage with the new site through participation in the design process of the farm

**GROW MINDS, CULTIVATE COMMUNITY**

and promotion of programs and activities at the farm, including STEM programs. These presentations have greatly aided our efforts to spread awareness of the new project and begin to engage school communities with the programs that will be hosted at the site.

### III. Engagement in the Architectural Design Process

During the design and construction of the Farm Stand, our first structure at the Urban Farm site, each school community was invited to participate in design review sessions with the Clemson Architecture School. Administrators, teachers, parents, and students attended these design review sessions, hearing from students and faculty at Clemson about how design decisions were made, and asking critical questions about the design and construction process. The structure was completed in the second week of December. In addition to the design of the Farm Stand, students from our school communities have also engaged in the design of the farm by contributing written and artistically drawn suggestions for what the farm should include. These suggestions have provided useful design ideas, such as the inclusion of flower-lined walkways and birdhouses at the farm.



### IV. Urban Garden Party

The Green Heart Project hosted an event on October 16, 2019 at the future site of the Urban Farm at Enston Home, marking a milestone in community building for this project. Leading up to the event, students from all three new partner schools were visited by Green Heart Project staff and tasked with an activity. After an informative presentation, students were asked to spend 3-4 weeks envisioning, designing, and illustrating their visions for their future farm, on 4'x8' canvasses to be displayed prominently at the Urban Garden Party. Additionally, 4th grade students from a current partner school, Meeting Street Academy, participated in a hands-on cooking lesson during the event, and offered a “taste test” of local sweet potato hash for attendees. Finally, in addition to their canvas project, high school students from Charleston Charter School for Math and Science hosted a mock

**GROW MINDS, CULTIVATE COMMUNITY**

farmer's market at the future location of the on-site Farm Stand, distributing fresh produce to event attendees and to Enston Home residents.



## V. STEM Curriculum Development

Over the past school year, Green Heart's Programs Team has begun to adapt current Farm to School program curriculum and develop new lessons and curriculum for our Urban Farm site. Given our history of teaching elementary-aged students, we have a wide array of STEM and Farm to School program curriculum aimed at preK-5th Grade students, specifically 31 "classic" garden & culinary lessons, and 24 "stem" grade-level specific lessons. That said, with the expansion of our programs to middle and high school students, our team has been working to take existing lessons and adapt them to meet middle and high school state-learning standards.

As of June 2020, our team will have successfully finalized an 8-week long high-school level curriculum, including units focused on Sustainable Agriculture: soil management, crop management, water management, disease/pest management and waste management; Business and Entrepreneurship; Career Preparedness; Healthy Living; and Citizenship. Throughout the Spring and Summer of 2020, our Programs Team is updating our year-round curriculum (31 classic sessions & 24 STEM sessions) to include content and activities aligned with middle and high-school level academic standards. This curriculum will be updated and new STEM lessons finalized for the launch of Fall 2020 programs with our three new partner schools.

**GROW MINDS, CULTIVATE COMMUNITY**

## VI. Pilot Lessons and Site Visits

Over the past two semesters, Green Heart has hosted classes from multiple partner schools at our new site to pilot STEM lessons and preview the future of programming.

*James Simons Science Class Tour* - In December, Ms. Jarman's science class (7th & 8th graders) from James Simons School visited the Urban Farm site to preview the project and learn more about future programs at the farm.

*Charleston Charter for Math and Science STEMester Program* - In January, Green Heart staff hosted a group of ~15 students from Charleston Math and Science (CCSMS) for a 2-day "STEM-ester" program focused on urban farming. With the support of educators from CCSMS, Green Heart staff lead students through two days of garden activities, STEM education and general orientation to the new farm site.



On the first day of the STEMester, Green Heart staff visited CCSMS to present to the class an overview of The Green Heart Project and our Urban Farm project. After the presentation, Green Heart staff led students to the Urban Farm for a tour of the site and to perform a percolation test, which tested whether our new site drains well enough to build a rain garden. Green Heart staff led students through a lesson on what a percolation test is, why it is important and how to conduct one and students put their learning into action by performing multiple percolation tests.

On the second day of the STEMester, students returned to their test to gather the results of their test, which concluded that our site does drain well enough to host a rainwater garden. After gathering their test results, students walked to Mitchell

**GROW MINDS, CULTIVATE COMMUNITY**

843.790.3188 | 759 King Street, Ste. A | Charleston, S.C. 29403  
www.greenheartsc.org | @GREENHEARTCHS

Elementary, where they met Green Heart staff for an afternoon of garden-based activities. During this afternoon, students engaged in garden work, including weeding, watering and planting, and took part in educational workshops on crop identification and composting. Students also received a tour of the Mitchell site, where students were encouraged to envision what garden features and activities they would like to see incorporated at the Urban Farm site.



## VII. School Community Engagement Events

In addition to piloting STEM programs at the Urban Farm site, Green Heart staff has also been actively engaged within our partner school communities attending and hosting various schools events.

*Farm to Cafeteria Events-* Over the past school year, the Green Heart team has hosted “Farm to Cafeteria” events, which feature fresh, locally grown produce in school cafeterias, at all three of our partner schools.

In November, we partnered with Vertical Roots, a local hydroponic lettuce farm, to host a Salad Bar at Charleston Catholic School. At this event, students learned about the science and technology utilized to grow hydroponic lettuce and “taste-tested” this locally grown lettuce as they made small, side salads with other fresh produce including crops harvested from our Green Heart gardens. At the salad bar, students also learned about our Urban Farm project and previewed our Farm to School program content as Green Heart educators engaged students in conversations about urban farming, health and nutrition, the Urban Farm project, and future STEM programs at the site.

In January, we partnered with Vertical Roots again to have a cafeteria pop-up event at Charleston Charter for Math and Science. At this event, representatives from Vertical Roots engaged with staff and students in conversations about hydroponic farming while

**GROW MINDS, CULTIVATE COMMUNITY**

Green Heart staff shared more information about the Urban Farm site and the programs that will be hosted at the site. To give students an idea of some of the crops that will be grown on the farm, the event featured a taste test of Lettuce Hummus Wraps made with Vertical Roots lettuce, hummus and an assortment of Green Heart crops including broccoli, cauliflower, carrots, radishes, turnips, kale and collards.



In February, we worked with Charleston County School District Nutrition Services to host an “All Hail the Kale” event at James Simons Elementary. At this event, Green Heart staff set up a table in the school cafeteria and, during their lunch period, students were invited up to taste-test “Garlic Kale Pesto” made with Green Heart grown kale. During these “taste test” sessions, students were informed about the new Urban Farm site and its programs and engaged in a brief educational lesson on the process of growing kale and the health benefits that it brings to our bodies.

We also attended other events at these partner schools to promote our farm and programming including a “Winter Festival” at Charleston Charter for Math and Science. All of these events allowed the Green Heart team to foster relationships with students, staff and PTAs while also informing the school community about the Urban Farm site and future programming.

## VIII. Green Heart at Home

With COVID-19 as a catalyst for online learning, The Green Heart Project has developed a new learning program called “Green Heart at Home.” This video-based series of online learning resources will utilize technology as a vehicle to continue our mission of educating students, cultivating community and connecting people while outside of a traditional Green Heart classroom and garden lessons. This learning resource will provide 3 lessons a week that focus on topics including gardening, science, arts & crafts, movement, and cooking. The lessons are led by Green Heart staff and educators and encourage

**GROW MINDS, CULTIVATE COMMUNITY**



students to engage with garden-based STEM lessons despite the closure of our partner schools and our gardens. The lessons will be disseminated via Green Heart's website and social media channels, and sent to teachers at our partner schools as they share educational content with their student populations during this period of quarantine.

## Looking Forward

Despite the general slowdown of the COVID-19 pandemic, we have received final permitting from the City of Charleston (TRC) and the State of South Carolina (DHEC) to begin construction of the Urban Farm site. We are awaiting the lifting of restrictions on social gatherings to begin construction of the farm, which will be done primarily with volunteers. Students, staff, and families from our partner schools will be invited to participate, alongside residents of the Enston Home, and groups of employees from our donor and partner organizations, such as The Boeing Company. We hope that a group from Boeing might join us to help build the garden this summer!

**GROW MINDS, CULTIVATE COMMUNITY**