



The Green House Venture offers an extensive education program in bio-science and urban agriculture with a focus on students in 4th to 6th grades. Our goal is to prepare them, not only to see that they have what it takes to become the scientists of the future, but also to be well-rounded human beings with exceptional talents and a world of possibilities before them.



In 2016, we began our collaboration with the four elementary schools in the Urban Education Alliance by working closely with the principals and science teachers to create the after-school Ambassadors Program.

This unique educational setting brings together a group of promising students from each school one afternoon a week to pursue an immersive eight-week experiment in growing plants under carefully controlled conditions. Participants hear presentations related to the experiment – often from faculty at our partnering universities. They also study the underlying science with undergraduate mentors, go on field trips, and enjoy an array of other activities that enhance their knowledge.

The work with our student Ambassadors has become the ideal incubator and initial testing site for much that goes into our other offerings, including the Classroom Outreach Program and our Summer Adventure Camp. Those learning opportunities also inform and excite students, not as much through books or presentations, but through hands-on experiments. Going further, we have also pioneered the design of computer-controlled growing chambers that allow students to control a wide range of variables in our experiments.



The Ambassadors Program is guided by a professionally developed, three-year curriculum* grounded in federal and state science standards. The first two years take students from the visible to the molecular in understanding the growth of plants. In the third year, we turn to Earth systems that affect food production, including climate change. Students also learn about steps that they and their families can take to conserve the environment. Along the way, they are challenged to wrap their minds around age-appropriate lessons in Earth and atmospheric science, biology, chemistry, math, writing, art and public speaking.

Each semester, the Ambassadors conduct an experiment on edible plants, going from seed to harvest, studying the effects of variables such as light, wind, moisture and vital nutrients. Once a week, students record detailed measurements and observations in their notebook, capping off their observations on Harvest Day, which is the happiest class of the term. Afterwards, they analyze and graph their results, comparing them with their initial hypotheses.

Besides such major experiments, we do smaller ones that take only part of a session.



Students watch as photosynthesis creates oxygen



Blowing samples of various kinds of soil to see which ones are most vulnerable to erosion.

Each semester, we also go on field trips for various educational experiences:



Saint Louis University to launch a weather balloon.



The Department of Nutrition and Dietetics at SLU to learn how to make healthy donuts.



The Venture's Embankment Greenway to do soil testing.



Tower Grove Park to work with high-school students testing pond water and sifting through mud for small forms of life.

Much of the Ambassador Program's success is due to the participation of our higher education partners: St. Louis Community College, Harris-Stowe State University, Saint Louis University, Washington University, Saint Louis University High School and the Danforth Plant Science Center.



The high point of each year comes after the Ambassadors finish their first major experiment, when students are awarded lab jackets to show that they are really, truly scientists – or at least on their way.

Three-year Curriculum

SEMESTER 1: Visible Bases of Plant Development: Air, Soil, Light

SEMESTER 2: Molecular Bases: The Nutrient Cycles

SEMESTER 3: Visible Processes of Ecosystems: Sun, Plants, Animals, Water

SEMESTER 4: Molecular Processes: Soil-Based and Aquaponic Growing

SEMESTER 5: Earth Systems: Growing Zones, Weather, and Climate Change

SEMESTER 6: Ways to Restore, Conserve, and Sustain The Earth



AMBASSADORS: CHILDREN TEACHING CHILDREN

Starting in the fall of 2016, the Ambassadors Program will inaugurate the educational collaboration between **THE GREEN HOUSE VENTURE**, Saint Louis University and the schools of Urban Education Alliance. Guided by parents and educators, teams of students from each school will meet once a week to explore topics in science and technology. They will then bring their knowledge back to their own classrooms by making reports and by crafting imaginative blogs and videos to be offered on the **THE GREEN HOUSE VENTURE** website.



GOALS

Accelerated learning: Guided by Missouri's Next Generation Science Standards, the teams will undertake challenging, hands-on projects each semester. Besides presenting what they learn to classes at their own schools, children will create blogs and videos, offering lessons on line in science and technology as seen through the eyes of children.

Teamwork and networking: As students, parents, teachers and mentors learn to work together, they will develop a network of connections between four very different schools, each with special strengths. These connections will be vital to later, more extensive collaborations of the Venture.

Wider impacts: Over time, as student teams share their work on line, the Ambassadors Program will become a lively part of the Venture's effort to become a regional and national source for innovative ideas in science education.

IMPLEMENTATION

- Teams of 4-6 kids from Grades 4-6 in each Alliance school will come together weekly to work both separately and as a larger group, with older children helping to teach younger ones.
- Parents will provide encouragement, ideas, support, and transportation.
- Saint Louis University faculty will design the curriculum and the lessons, which will be taught by graduate students and facilitated by undergraduate assistants from the Micah Program.
- Alliance Teachers will prepare children at their schools to grasp presentations by Ambassadors.
- **THE GREEN HOUSE VENTURE** will coordinate with the schools and parents, assist with videos and blogs, and provide feedback. Once the Green House is built, staff will take over these functions.