

# THE GREEN HOUSE VENTURE

IMPROVING SCIENCE  
EDUCATION AND  
CHILDHOOD NUTRITION

## OUR MISSION

To educate, excite and equip elementary students to pursue a sustainable world through a hands-on program in bio-science and urban agriculture.

## OUR GOALS

- 1 Introduce children to a rich, hands-on learning experience that improves bio-science education
- 2 Increase student knowledge of and appreciation for proper nutrition, and encourage children and their families to adopt healthier eating habits
- 3 Lead more students to potential careers in bio-science to meet the pressing needs to fill emerging jobs in science and agriculture

## URBAN EDUCATION ALLIANCE

Built around the distinctive programs of four independent elementary schools, the Urban Education Alliance is a model of collaboration for meeting the common STEM educational needs of their combined student populations.

Formed specifically to provide the structure and design for **THE GREEN HOUSE VENTURE** programs, the Alliance attracts **nearly 1,700** socially and racially diverse children from **58 zip codes** across the St. Louis metropolitan area.



## PROGRESS REPORT: SUMMER 2020

*Now in its fifth year of operation, THE GREEN HOUSE VENTURE continues to pave the way for a compelling new direction in STEM education.*



# 2019- 2020

Like many other organizations, **THE GREEN HOUSE VENTURE** had to make big adjustments during the 2019-2020 school year due to COVID-19. Up until the middle of the Spring semester, the program was continuing to thrive and grow as in years past. Unfortunately, we had to suspend late spring activities, and we had to cancel this year's Adventure Summer Camp with its activities in science, planting, cooking, arts, technology and athletics. We'll be back again next year bigger and better than before.

**Here are some notable accomplishments from our 2019-2020 school year.**

## AMBASSADORS PROGRAM

Representative students from all four of the Urban Education Alliance schools continued to participate in the Ambassador lab classes that have been the core of the Venture's program since its beginning. In addition, students participated in a number of fun activities and adventures outside the classroom.

- Building on last year's introduction of new growing technology, we were able to use the Raspberry Pi computers in our experimental growing chambers to provide remote



observation through cameras, along with remote control of light, temperature, and air movement. We also purchased five laptop computers dedicated to teaching students to conduct online research.

- In the fall, the students undertook two successful six-week growing experiments focused on ecology. In the Fall semester, they simulated a stream-side ecosystem, focusing on the interaction between terrestrial and aquatic life. Using a computer-controlled growing chamber, students assembled eco-columns made of sections of soda bottles, growing beans and radishes in a terrestrial compartment with fish, snails, and duckweed in a connected aquatic compartment. Students gathered data on plant growth and monitored levels of nitrates, potassium, phosphates, minerals, and oxygen in the soil and water.

- Before the suspension of classes in the spring, students conducted an aquaponics experiment comparing plants grown in good soil with plants grown in gravel fed by nutrients from an aquarium stocked with goldfish.

The aim was to compare a soil-based system without added fertilizer and an aquaponic ecosystem where fish, worms, bacteria, and other organisms provide nutrients in a continuous cycle.

The natural process of breaking down fish waste into nitrates kept the fish healthy, and the plants fed by them



grew at least as well as those planted in soil. As in the fall, students gathered, graphed and analyzed chemical levels in the soil and water. They also recorded data on the health of the fish, on the length of roots and stems of the plants, and on the number of leaves, flowers, and fruits they produced.

- Students visited Saint Louis University in the Fall semester for a healthy cooking class offered by the Department of Nutrition and Dietetics. The menu featured delicious snap pea fries and apple donuts.
- Our 3-year curriculum for the Ambassadors Program continued its development and evolution with special emphasis on chemical factors affecting plant growth, as well as more advanced data from students and mentors on what worked and didn't work during experiments.
- A vital part of the Ambassadors program is the support provided by a team of six undergraduate mentors from Saint Louis University. This year, improvements in their orientation and weekly preparation improved their effectiveness in monitoring and tending the experiments, guiding students, helping them complete their work, and imparting greater understanding of the scientific method.
- We also made substantial improvements in the connecting with parents and getting them more involved in their children's learning.



### PARENT COMMENTS:

**"Very beneficial...** A'zeria doesn't often talk about her learning experience at school, but always talks about GHV at home."

**"Really love the GHV...** Skylar gets to learn a lot about plants and brings the info home to help me learn. She brought bok choy home and it is still growing!"

**"It's been really good...** We're even starting our own vegetable garden in our backyard using some of the things that Autumn has learned and taught us."

**"Really fun...** It's important to learn about plants and community. GHV did a very good job with both."

# ADDITIONAL ACTIVITIES



••• The Center for Plant and Life Sciences at St. Louis Community College continues to be one of the Green House Venture's big supporters with its traveling Lab Van that visits our Alliance schools on a regular basis. Each visit brings something new and exciting with lessons that deepen our students' knowledge about bio-science.

In one of their tours this year, the STLCC Van made the circuit to all

four Alliance schools, including its first visit to the new location of St. Louis Language Immersion School in Downtown St. Louis. In a novel, engaging experiment, instructors worked with students to extract and analyze DNA samples from strawberries. What a tasty way to learn!

••• Early in the Spring semester, Venture partner, Washington University, hosted Family Science Day. The field trip for students and their parents included a walking tour of the campus, and students participated in STEM activities to explore the process by which nature restores itself.

••• With transportation provided by Tower Grove Christian Academy, students from the four Alliance schools are able to participate in all regular curriculum programs, as well as field trips.



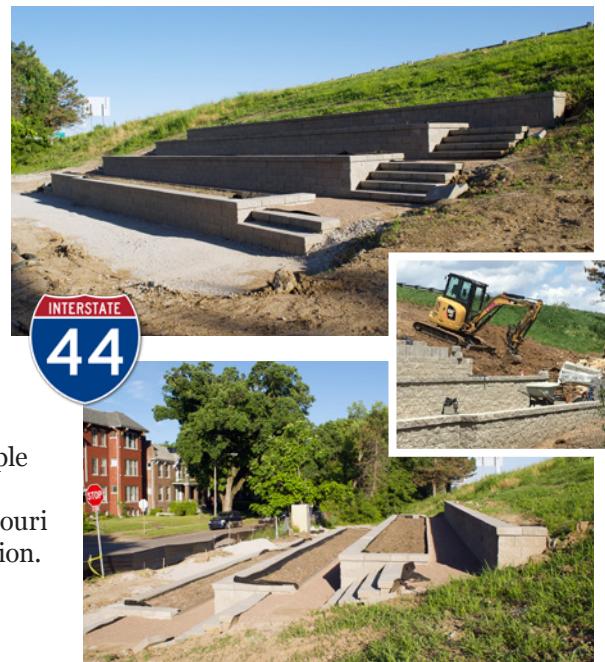
## UPDATE ON INTERSTATE 44 EMBANKMENT AND TERRACE GARDENS

Our most significant undertaking this past year has been the development of the I-44 Education Embankment Garden. Following last year's replanting of the overall 3½ acre space, we began the construction of the Terrace Garden. This 8,000 square-foot section is dedicated to growing nutritious plants that students and others will tend throughout the year, beginning in late Fall 2020.

We are proud that the Venture is one of the first groups in the Midwest following a 2015 directive from the Federal Highway Administration to integrate pollinator-friendly practices into landscape design and programs for managing roadside vegetation.

The work on the garden required the involvement and collaboration of multiple organizations, including the St. Louis Board of Public Service, Metropolitan Sewer District (MDS), DTLS landscape architects and urban designers, Missouri Department of Transportation (MoDOT) and the Federal Highway Commission.

Construction of the Terrace Garden was made possible through generous donations from MySun Foundation, John and Joan Vatterott Foundation, Ameren, Wells Fargo and others.



## BROADENING COMMUNITY AWARENESS

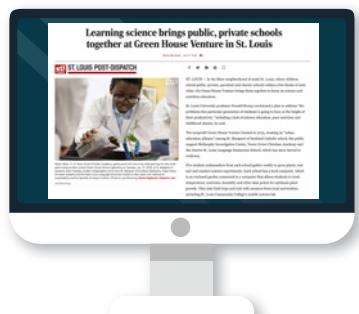
### Social Media

We increased our presence dramatically this past year on Facebook and Instagram, gaining hundreds of new followers with weekly updates on exciting activities taking place throughout the program. SLU Nutrition & Dietetics has added to our social media presence with a monthly posting dedicated to nutrition.

### Post-Dispatch story

Growing public interest in **THE GREEN HOUSE VENTURE** led to a front-page feature story on our program in the 1/27/2020 issue of the St. Louis Post-Dispatch.

[Click here to view online.](#)



# SEEDING FOR GROWTH

# VENTURE PARTNERS

# BOARD OF DIRECTORS

The success of **THE GREEN HOUSE VENTURE** would not be possible without the generous support of dozens of individuals and organizations, large and small, who share our dream to create a nationwide model for elementary education in bio-science and urban agriculture.

During the past year, we enjoyed gratifying growth in funding for our programs. Following the largest single-year contributions in 2019, total donations have reached over **\$515,000** since the Venture's beginning in 2015.

## DONORS

- John and Joan Vatterott Family Foundation
- MySun Foundation
- Wayne C. Kaufmann Charitable Foundation
- Thad Simons/NOVUS
- Ameren
- Wells Fargo
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- Gary Pohrer
- SNIA – Helping Hands
- St. Louis Philharmonic
- American Heart Association
- Villa Lighting
- John Rick
- KWS
- John Nickel
- Chris Adelman-Adler
- Missouri Department of Conservation



This year, we participated for the first time in **Give STL Day**, the region-wide non-profit fundraising event, that raised more than \$3,000 in pledges and donations for the Venture from numerous independent contributors.

The stature of **THE GREEN HOUSE VENTURE** has been greatly enhanced by our affiliation with notable organizations that have become active participants in our work.

### Danforth Plant Science Center

Nationally renowned leaders in nutrition research and supporters of STEM education programs

### Tower Grove Park

An exemplary Victorian park of international significance that provides recreational, educational and cultural opportunities for the public

### MoDOT

The state highway authority, providing a world-class transportation system that is safe, innovative, reliable and dedicated to a prosperous Missouri

### Operation Food Search

Distributing more than \$35 million worth of food and necessities to 330 community partners in 31 counties in Missouri and Illinois, as well as the city of St. Louis

### DTLS

Landscape architects and urban designers, offering innovative ideas and practical solutions for building nurturing relationships between people and nature

### Switch

An innovative agency that delivers an array of services to clients, including business meetings and live event production, mobile tours and activations, consumer events, digital and social media, and branded content and design

### Higher Education Advisory Committee

A consortium of representatives from notable colleges and universities across the St. Louis region. Despite the heavy toll that COVID-19 has taken on our higher education partners, they have continued to be avid supporters of the Venture's work.



Saint Louis University



Washington University in St. Louis



Harris-Stowe State University



St. Louis Community College

## OFFICERS

Thomas Purcell, *President Principal*  
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[www.GREENHOUSESTL.org](http://www.GREENHOUSESTL.org)

Contributions can be made through PayPal



Special thanks to Andy Dyer for his time and talent in designing this report