THE SMART GREENHOUSE PROGRAM

Cultivating Code, Engineering the Future.

A collaboration between the Unity Foundation NP and the Hazelwood School District.

Students arrive with no programming experience. They leave having built, tested, documented and publicly published an automated growing system that runs on its own — and defended it to an outside panel of engineers.

THE INVESTMENT

$50,000

funds the first full year implementation of the Smart Greenhouse Program for the **2026–27 school year** — instructor, hardware, curriculum, mentors and the capstone showcase.

THE PROGRAM

The Smart Greenhouse Program is a year-long **"real world"** learning opportunity in computer science and sustainable agriculture, born out of the 2025 partnership with Hazelwood Central High School. Unity Foundation developed the curriculum that teaches students the technical skills needed to operate it, and completed a pilot program in 2026.

The 2026–27 cohort meets **Fridays** to operate an automated greenhouse in a real-world classroom. Students use **Python, CodeHS and micro:bit** to integrate software with physical circuitry — actuators, relays, sensors — and **Google Workspace** for documentation and project management. They learn to balance environmental variables and solve real AgTech challenges like fail-safe design and fault detection.

WHAT STUDENTS ACTUALLY DO

Python, from zero
CodeHS and MicroPython across 26 sessions. No prerequisites, no CS teacher required.

Real hardware, real stakes
micro:bit V2, relay, pump, fan, soil probe — with a signed safety protocol before anything is energized.

Smart agriculture
Every team grows its own bed. Every threshold in the code is a claim about a living crop, defended from data.

Data literacy
A season of real readings, a real anomaly to find, and a full session on how charts mislead.

Open source & ethics
Licensing, attribution, data ownership and algorithmic fairness — taught as engineering, not an appendix.

Industry & capstone
A working engineer in the room, a public project site, a capstone defended to an outside panel.

26
sessions building one system — not twenty-six disconnected assignments

12
competencies leading to a certificate and two career pathways

4
named careers, with pay ranges and education pathways, in every session

5
national frameworks aligned: CSTA, NGSS, AFNR, ISTE, Career Ready Practices

100%
of student work published openly, free for any district to adopt

DONATE

WHY THIS $50,000 INVESTMENT MATTERS

A $50,000 investment funds the full-scale implementation of the curriculum for the 2026–27 school year — beginning with the person who teaches it.

THE INSTRUCTOR

Principal Software Engineer · 25+ years

Our instructor brings more than 25 years of industry experience as a Principal Software Engineer, building large-scale cloud and data architectures for platforms including AWS and Azure. In the classroom he teaches the disciplines he practices professionally — Agile methodology, real database design, and production-grade software patterns. Mentoring is central to his role as a Principal Engineer, giving him a proven ability to guide students through complex material with patience and clarity, teaching them to think, and build, like an engineer.

1 The Hardware Foundation
Classroom Grow Stations. A no-solder, instructor-assembled Demo Station using a micro:bit to manage a relay-controlled fan and water pump with overflow prevention; team carts with 3–4 plants each, analog thermometers for data logging from Session 4, and shared clamp grow lights.

2 Professional Readiness
Workforce-aligned practices — data literacy, documentation, peer design reviews and professional communication — integrated directly into the learning experience rather than bolted on at the end.

3 Accessible Tech
The Demo Station infrastructure ensures every student can participate in high-level physical computing, regardless of prior experience or the state of the building.

4 Curriculum Integrity
Ensuring our dedicated software development professional has the full, ready-to-teach implementation guide and classroom resources needed for student success.

5 Open Source & Ethics
Licensing, attribution, data ownership and algorithmic fairness — taught as engineering, not an appendix.

6 Capstone Showcase
The year culminates in a final session where students present their completed Smart Greenhouse work, documentation site and final project to an external panel.

SPONSORSHIP OPPORTUNITIES

LEVEL	GIFT	RECOGNITION & ACCESS	WHAT YOUR GIFT MAKES POSSIBLE
Founding Cornerstone LEAD INVESTOR	**$50,000+**	Below, plus Founding Sponsor of the Program · Recognition carried inside the openly licensed curriculum into every district that adopts it	Funds the full first year of implementation — and a district replication package, so the next Missouri district does not start from zero.
Systems Architect BENEFACTOR	**$25,000**	Below, plus prominent placement across program collateral · A seat on the capstone review panel · Joint press	Sponsors an entire school site for the year — stipends, mentors, family engagement, the showcase.
Closed Loop CIRCLE	**$10,000**	Below, plus Two employee guest-engineer slots · Named in board and grant materials	Adds what equipment cannot: instructor preparation, the guest-engineer program, and the summer kits students keep.
Grow Station PARTNER	**$5,000**	Below, plus your logo on every student project site published that year · Invitation to the capstone showcase	Underwrites one classroom end to end for a year: equipment, consumables, printing, spares.
First Light SUPPORTER	**$2,500**	Named on the Unity Foundation web site and in the showcase program · Annual impact report	Equips three classrooms with the full grow station — controller, pump, sensors, lights, seed and soil.

THE IMPACT

By donating, you aren't just funding a class. You are putting tools in the hands of students who are ready to solve the most pressing challenges of our time: food security, resource management and climate-resilient farming. You are turning the classroom into a workforce development pathway, and the students into the next generation of industry-ready innovators.

THE UNITY MISSION

At Unity Foundation, we believe world-class technical expertise should be a catalyst for community growth, not a luxury reserved for global enterprise. Founded by Dr. Ebrahim Moshiri — whose career spans pioneering work with NASA, the EPA, and the launch of the Iridium® global satellite network — the foundation is dedicated to bringing decades of specialized engineering experience directly to underserved communities in North St. Louis.

Let's grow the future together.

The season is already planted. Fund the year that grows from it.

All donations directly support the classroom. We'd love to connect if you're interested in sponsoring the program or volunteering.

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DONATE

Unity Foundation

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