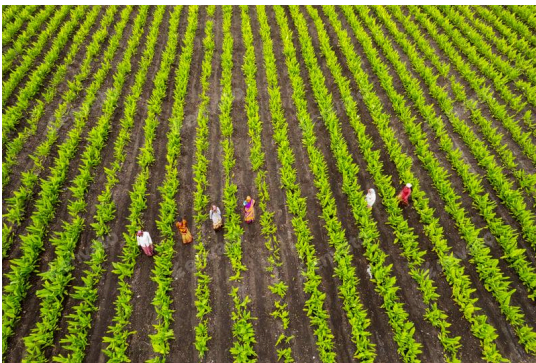


# Cultivating Young Changemakers: How Student-Led STEAM Innovation is Tackling Climate Hunger at Gaza Primary School

*Global STEAM & Leadership Challenges – Case Study*



“True education doesn't ask students to memorize the crisis—it empowers them to solve it.”

—[Adrit Munkombwe](#), STEAM educator and [Teach For Zimbabwe](#) Fellow

## The Climate Crisis on Our Doorstep: A Community in Jeopardy

Gaza Primary School is located in a remote, rural farming community in Zimbabwe, where families have relied on traditional agricultural cycles for generations. In this vibrant community, the soil is not just dirt; it is the lifeblood of every household. However, in recent years, the devastating effects of global climate change have become increasingly visible on our doorsteps. Unpredictable rainfall patterns, prolonged dry spells, and acute water shortages have broken the traditional agricultural calendar, making it incredibly difficult for local families to grow enough food to sustain themselves. For many learners at our school, access to three nutritious meals a day is no longer guaranteed. This pervasive hunger follows them into the classroom, directly affecting their ability to concentrate, participate fully, and thrive academically. As a Teach For Zimbabwe Cohort 6 Fellow, I firmly believe that education must be a dynamic tool to help learners confront these immediate realities. Instead of teaching climate change and sustainability abstractly through textbooks, I wanted our learners to experience collaborative problem-solving through real-world action. This vision birthed the Climate-Smart STEAM Garden—an initiative designed to transform our schoolyard into a living, practical learning laboratory where learners explore Science, Technology, Engineering, Arts, and Mathematics (STEAM) while solving real community challenges like food insecurity and water scarcity.

## Co-Reflecting on Vulnerability: Turning Lived Struggles into Scientific Inquiry

We began our journey not as teachers instructing students, but as a unified community of researchers. Together with learners, local educators, and village elders, we conducted a community asset-mapping exercise to examine the intersecting challenges affecting us. Several critical issues emerged from our discussions: severe water scarcity during dry periods, unreliable rainfall, which decimated crop yields, widespread food insecurity affecting student health, a lack of practical STEAM learning materials in our

rural school, and an absence of sustainable income streams to support our school feeding programme. During our town-hall-style circles, learners shared deeply personal stories about how their families struggle to survive during drought seasons. These emotional discussions helped learners instantly connect abstract classroom theories to their lived daily experiences. This collective realization led us to co-formulate our driving question: How can we use our collective STEAM knowledge and local innovations to grow food sustainably, even in the face of harsh climate change and water shortages?

## Designing the Living Lab: Merging Ancestral Wisdom with the STEAM Framework

To answer this, learners formed design teams, drawing conceptual sketches of an eco-friendly garden layout. They designed a Climate-Smart STEAM Garden that functions simultaneously as a sustainable food source and a hands-on learning environment. The project beautifully integrated different STEAM disciplines:

- **Science:** Learners studied soil microbiomes, plant biology, and the direct impacts of climate change on agriculture. They experimented with sustainable farming practices, discovering how mulching and organic composting drastically improve soil moisture retention and crop resilience.
- **Technology:** Using basic observation charts and available mobile digital tools, learners systematically documented plant growth rates and weekly rainfall patterns, analyzing how shifting environmental conditions directly dictate crop development.
- **Engineering:** Applying structural problem-solving and design thinking, learners mapped the physical garden layout. They engineered physical configurations to conserve water, utilizing strategic planting spacing and specialised mulching layouts to minimise surface evaporation.
- **Arts:** Learners channelled their creativity into advocacy, painting vibrant posters and crafting public awareness messages centred on climate justice, environmental stewardship, and water conservation, which were proudly displayed across the community.
- **Mathematics:** Students applied practical math by calculating precise planting distances, estimating potential crop yields based on area, and budgeting how much food the garden could consistently contribute to the school feeding programme.

Through this beautiful interdisciplinary approach, the garden transcended agriculture—it became our school’s premier, living STEAM classroom.

## Grit in the Garden: Overcoming Climate Bottlenecks through Adaptive Engineering

Bringing our designs to life was a true test of grit. The biggest obstacle was water availability. During intense dry periods, maintaining the crops required learners and teachers to manually collect and transport water over long distances, a back breaking task that highlighted the daily climate struggles faced by rural Zimbabwean communities. We also battled poor soil fertility in specific plots, a lack of standardized farming tools, crop pests, and blistering temperatures that accelerated evaporation.

Yet, these obstacles were reframed as powerful learning opportunities. Learners experimented dynamically with climate-smart agricultural techniques, transforming organic school waste into nutrient-rich compost to restore the soil and layering local grass as mulch to trap every drop of moisture. Through unyielding determination, teamwork, and innovation, our garden flourished. At harvest time, learners proudly gathered a massive quantity of maize cobs—enough to completely fill a traditional scotch cart. The harvest was triumphantly transported back to Gaza Primary School, marking a profound

moment of collective pride and celebration for students who had poured months of hard work into the earth.

## From Seeds to Sovereignty: Quantifying Our Success and Reinvesting in the Future

In total, our pilot project produced four bags and two full buckets of high-quality maize, with final yields expected to touch five bags. This harvest directly fueled the school feeding programme, allowing learners to eat nutritious, warm meals prepared directly from their own crops during the week of 23–27 March 2026. To ensure long-term sustainability, we sold one bag and two buckets of maize to the local community at \$7 per bucket, generating \$35 in revenue. These funds were immediately reinvested to purchase additional ingredients for the school kitchen, ensuring the feeding initiative continues uninterrupted.

The Climate-Smart STEAM Garden yielded three transformative outcomes:

- **Developing Student Leadership:** Our learners transformed from passive recipients of aid into active, confident innovators solving community crises. They completely owned the lifecycle of the project—from planning and crop monitoring to financial management. This nurtured deep roots of leadership, collaboration, and resilience.
- **Strengthening Community Collaboration:** The project bridged generational divides. Local village farmers visited the school to share invaluable, ancestral traditional knowledge regarding drought-resistant soil management, while teachers integrated these insights directly into academic curricula.
- **Building Sustainable Solutions for the Future:** We proved that resource-constrained rural schools are hubs of immense innovation when students are trusted to lead using STEAM methodologies.

Inspired by this remarkable success, we plan to scale our initiative by introducing low-cost, water-saving drip irrigation systems, diversifying into a wider variety of vitamin-rich crops, and establishing the garden as a permanent, regional STEAM learning hub. We are also creating a peer-to-peer mentorship pipeline where learners share these climate-smart practices directly with their families to improve home farming resilience. The Climate-Smart STEAM Garden at Gaza Primary School has proven that when learning becomes action, challenges naturally transform into opportunities, and young minds discover their inherent power to engineer a sustainable future.

For more information about the **Future of Work initiative**, visit the official [website](#).  
Join the **Global STEAM Community** through [this link](#).

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