

## Global STEAM & Leadership Challenges – Case Study

# Programmatic Area: STEM

*Shining a Light: Empowering Students Through Solar Innovation*



“As an educator, I believe that empowering our youth with the tools of STEAM can illuminate not only their minds but their communities. Through innovation and collaboration, we can transform challenges into opportunities for sustainable growth and resilience.”

—Ebenezer Anyadiiegwu, STEAM educator and [Teach For Nigeria](#) fellow

### A Journey Begins in Odeda

My name is Ebenezer Anyadiiegwu, a STEM Educator and Teach For Nigeria fellow, posted at Egba Odeda High School Junior in Ogun State, Nigeria. I teach Mathematics and am deeply committed to climate education and the Sustainable Development Goals (SDGs). As an SDG Advocate and Climate Education Champion, my engagement with students goes beyond the classroom. On my first day in the school and community, I discovered a significant challenge: the lack of reliable electricity. This challenge motivated me to establish a STEM club, the "Young Innovators' Club," with the school's approval within just a week of my arrival.

### Darkness in Odeda

In Odeda, where I teach, life without electricity is a daily challenge. Power outages are so frequent that over 80% of families and institutions, including our school, are left in the dark, unable to carry out even the most basic tasks. For our students, this means struggling to charge phones, complete homework, or study at night. Teachers face similar problems, unable to prepare lessons or use digital tools. To cope, villagers resort to cutting down trees for firewood, which is not only unsustainable but accelerates environmental damage. It was clear we needed a solution that could power not just homes, but our entire community's future.

### Harnessing the Sun

Recognizing the severity of the electricity issue, we embarked on a mission to find a sustainable solution. I involved my students in brainstorming sessions, encouraging them to think creatively about how we could address this problem using locally available resources. Our process was both inclusive and educational, allowing students to develop critical thinking, problem-solving, and leadership skills. Together, we decided to leverage solar energy to power household appliances, aiming to provide a reliable, renewable, and sustainable energy source for our community.

Our team, consisting of myself, Peter O., Samuel E., Akinremi K., and Raphael O., was motivated by the profound impact that frequent power outages have on the lives of residents. We aimed to mitigate these challenges by providing a sustainable and reliable alternative energy solution through solar power. Our essential question was, "How can solar-powered innovations revolutionize household appliances for sustainable living and energy efficiency?"

## Turning Trash into Power: A Journey of Innovation

Our journey started in the most unexpected place—among discarded plastic bottles, broken electrical appliances, and damaged solar panels. Instead of seeing waste, we saw opportunity. Together, my students and I began repurposing these materials, turning them into solar-powered fans, torchlights, and bulbs. With each repaired fan and socket, we felt a growing sense of pride and possibility. The solar panels we scavenged became the heart of our project—powering not just our creations, but our belief that we could light up our community using nothing more than innovation and teamwork.

The steps involved in our project were:

1. **Research and Planning:** We conducted thorough research on renewable energy technologies, particularly solar power, and planned our approach.
2. **Material Collection:** We collected discarded materials from the community, providing the necessary components and promoting sustainable consumption (SDG 12) by reducing plastic waste.
3. **Design and Innovation:** We designed and assembled the solar-powered appliances, incorporating hands-on learning to foster students' innovative skills.
4. **Implementation:** We installed the solar panels and connected them to the appliances, ensuring that they were functional and reliable.

Throughout the project, we faced challenges such as technical issues with the solar panels and the need for specialized knowledge. We addressed these by collaborating with experts in solar energy technology and engaging in continuous learning and adaptation.

## Lighting the Way: How Solar Energy Transformed Our Community

The difference our project made was clear the moment the lights came on. Students could now study at night under the cool breeze of solar-powered fans, no longer held back by power outages. Teachers could prepare lessons with ease, transforming the classroom experience for everyone. What started as a simple project has sparked something much bigger—a shift toward sustainable energy. Our reliance on firewood and fossil fuels is fading, and in its place, a greener, cleaner future is growing, one solar panel at a time.

Lessons That Will Light Our Path Forward:

- **Community Involvement is Crucial:** Engaging the community in every step of the project, from brainstorming to implementation, ensuring that our solutions were well-received and tailored to their needs. This involvement also fostered a sense of ownership and empowered students to become leaders and problem-solvers within their community.

- **Innovation through Resourcefulness:** Using locally available and discarded materials not only made the project cost-effective but also taught students the value of resourcefulness and sustainability. This hands-on approach promoted creativity and engineering skills, vital components of STEAM education.
- **Continuous Learning and Adaptation:** Overcoming technical challenges required us to continuously seek knowledge and adapt our strategies, demonstrating the importance of perseverance and flexibility in problem-solving. This experience enhanced students' critical thinking abilities and ability to apply scientific principles to real-world issues.

Our solar-powered innovation project has successfully addressed the challenge of unreliable electricity in Odeda. By harnessing the power of solar energy, we have created a brighter, more sustainable future for our community. This project exemplifies the potential of STEAM education to drive positive change, empower individuals, and build resilience against climate change. We invite others to join us in this journey towards sustainable development and community empowerment.

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