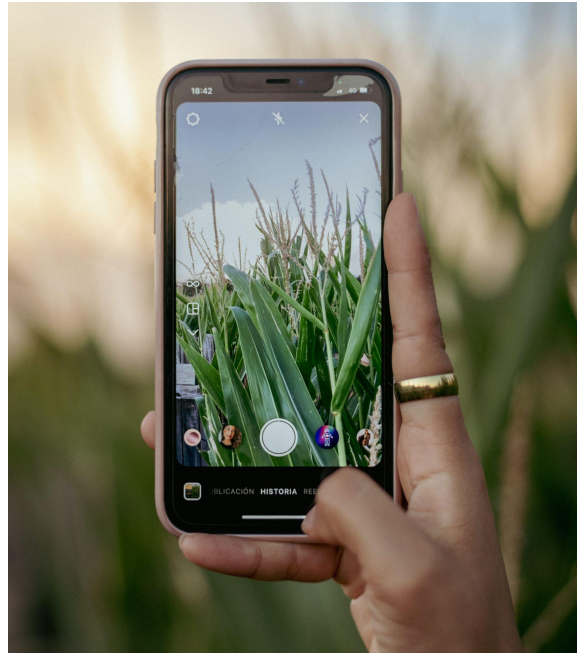


## Problem solving challenge: Reducing Plastic Waste in Communities (description)

This 4-hour workshop, under the umbrella of Problem Solving Challenge in the STEAM category of Science, focuses on Smart Agriculture for Food Security. The lesson is designed to engage participants in addressing the real-world issue of food insecurity due to poor agricultural practices. Utilizing a case study from a BBC article, the workshop guides participants through the process of brainstorming, researching, planning, and developing technology-driven solutions for smart agriculture. The solutions may incorporate elements like precision farming, IoT-enabled sensors, and data analytics. Teams will present their solutions for peer and instructor feedback, culminating in a reflective discussion on the applicability of their solutions in real-world scenarios. Digital access to all necessary materials and guidelines is provided to ensure sustainability.



By the end of this workshop, participants will have gained a comprehensive understanding of the challenges and solutions related to food insecurity and smart agriculture. They will have engaged in collaborative problem-solving, research, and critical thinking, culminating in the presentation of technology-driven solutions. The workshop aims to equip participants with the skills and knowledge to apply these solutions in real-world scenarios, thereby contributing to sustainable agricultural practices.

## Description of Activity:

### 1. Introduction and Scenario Overview: 30 minutes

- Introduce the concept of smart agriculture and its importance in addressing food security.
- Present the scenario using the BBC article as a case study, accessible via digital link.
- Discuss the challenges of food insecurity due to poor agricultural practices.

Participants are given a scenario in which a community is experiencing food insecurity due to poor agriculture practices (for example see this [BBC Article](#)). The goal is to create a smart agriculture system that uses technology and data-driven approaches to increase crop output, reduce resource waste, and assure sustainable farming practices. Innovative solutions such as precision farming, IoT-enabled sensors, and data analytics should be considered by teams. Teams can create or choose their own solution pack for the specified article and issue.

Backup scenario: Consider a region that is heavily reliant on nonrenewable energy sources. The task is to provide a comprehensive plan for integrating renewable energy technologies including solar, wind, and hydroelectric power into the current energy infrastructure. (For example, [government incentive schemes like this](#), to make renewable energy use and investment attractive, highlighting some barriers.) Participants must examine aspects such as energy production, storage, distribution, and potential implementation barriers. ([Read this article about some advantages and barriers](#) to renewable energy system implementation.)

### 2. Team Formation and Brainstorming: 30 minutes

- Form teams and provide digital access to the scenario and guidelines.
- Teams brainstorm potential solutions, considering precision farming, IoT-enabled sensors, and data analytics.

### 3. Research and Planning: 45 minutes

- Teams conduct research on precision farming, IoT-enabled sensors, and data analytics.
- Develop a preliminary plan for their smart agriculture system.

#### 4. Solution Development: 45 minutes

- Teams finalize their solutions, considering technology, sustainability, and feasibility.

#### 5. Mock Presentations and Peer Review: 30 minutes

- Teams present their solutions to each other for peer review.
- Incorporate feedback for final presentation.

#### 6. Final Presentations and Feedback: 30 minutes

- Teams present their finalized solutions.
- Peer and instructor feedback.

#### 7. Conclusion and Reflection: 30 minutes

- Summarize key takeaways.
- Open floor for participants to share what they've learned and how these solutions could be implemented in real-world scenarios.

#### STEAM Category:

- Science

Image: [www.pexels.com](http://www.pexels.com)