



WORLD SMARTS
STEM CHALLENGE

STUDENT GUIDE

World Smarts STEM Challenge

Create a better world through
STEM solutions

SAVE THE PLANET. BUILD YOUR COMMUNITY. PREPARE THE FUTURE.



Guidelines for Using the Guide

This guide is your map through the program. The materials and resources are intended to be a launching pad for investigating the problem that your team chooses to tackle in response to the challenge prompt (page 2).

Throughout the guide, you'll notice icons like the ones below that indicate whether the activity is completed by yourself, with your country team, with your complete binational team at different times (asynchronously), or with your complete bi-national team at the same time (synchronously) and needs to be completed or submitted on Canvas. Your mentor will also help explain.

Country
Team



Bi-National
Team



Canvas



Team Role



OBJECTIVES – Each Week will include an “Objectives” section that also serves as a checklist you and your teammates can always come back to ensure your on track!

Weekly Milestones

WEEK 1 Community Building

WEEK 2



MIND MAP

What are the needs in my community?

WEEK 3



DEFINE the

problem you will solve as a binational team. Submit to IREX.

WEEK 4 & 5



IDEATE a

sustainable solution. Submit to IREX.

WEEK 6



PROTOTYPE

Design a simple prototype.

WEEK 7



TEST the

prototype.

WEEK 8



SUBMIT a

prototype concept and video pitch.

Submissions by experts (Week 9)

VIRTUAL GLOBAL STEM EXPO

(Week 10)



Welcome to the World Smarts STEM Challenge!

Prepare to flex your innovation muscles in this exciting international STEM challenge! For the next 8 weeks, schools in the U.S. and Ghana will pair up to create the best sustainable STEM solutions to community challenges. Sustainable solutions unlock potential in communities and contribute to solving the global challenge of sustainable development. Through this challenge, you will develop skills to collaborate across cultures, solve problems, develop innovative STEM concepts, and cultivate teamwork and leadership skills, all while solving global challenges at the local level.

CHALLENGE PROMPT

Your challenge prompt is as follows:

The United Nations (UN) has established 17 Sustainable Development Goals (SDGs) in order to create a plan for peace and prosperity for people and the planet, now and into the future.



Image courtesy of the [UN Department of Economic and Social Affairs](https://www.un.org/development/desa/disabilities/envision2030.html)¹

For the World Smarts STEM Challenge, we are going to focus on goal eleven and thirteen:



¹ <https://www.un.org/development/desa/disabilities/envision2030.html>

STEM Spotlight

Young people all over the world are making big impacts on climate change and STEM by innovating and making their voices heard.



In Ghana, Perk Pomeyie of the Ghana Youth Environmental Movement used graphic design and social media to mobilize young people around #FridaysforFuture and #SchoolClimateStrike. He also collaborated with the International Youth Climate Movement in the region to mobilize during the United Nations' Africa Climate Week in Accra in March 2019.

“As a grassroots activist in Ghana, this was the first time I gained a strong personal conviction that my work in the little corner of my community has a potential to cause change at the top, if supported with the right tools, capacity, and resources.”

—PERK POMEYIE OF THE GHANA YOUTH ENVIRONMENTAL MOVEMENT

WEEK 1 GETTING STARTED



COUNTRY TEAM



AT LEAST 1.5 HOURS

This week, you will complete the following tasks with your country team. Allow at least 1.5 hours.

OBJECTIVES

- Understanding the World Smarts STEM Challenge
- Team Icebreaker
- Team Building Activity
- Your Leadership Role

YOUR ASSIGNMENT:

- Binational Team Introduction

Complete the activities below.

1. Understanding the World Smarts STEM Challenge (10 minutes)

Watch this short video on the World Smarts STEM Challenge.



<https://youtu.be/l6OAr1UBI-U>

Answer the following questions:

What is the purpose of the World Smarts STEM Challenge?

What is the end goal of the challenge?

Review the challenge prompt and review criteria 🕒 (5 minutes)

Based on the video from the United Nations, what is your understanding of the focus of this challenge?

2. Team Icebreaker 🕒 (10 minutes)

Get to know your country team!

- What is your name and favorite subject at school?
- If you could go anywhere in the world, where would you go and why?
- What about this challenge excites you?

3. Teambuilding Activity 🕒 (45 minutes)

Build a solar data gathering tool with your country team and share your experience with your binational team members. The Solar Science Station can record local solar data using the build in solar panel and volt meter.

Step 1: Watch the Brown Dog Gadgets 'Solar Science Station Assembly Guide' on Canvas (5 minutes)

