



**WORLD SMARTS**  
STEM CHALLENGE



## Learn How to Apply for the 2016 Secondary School World Smarts STEM Challenge

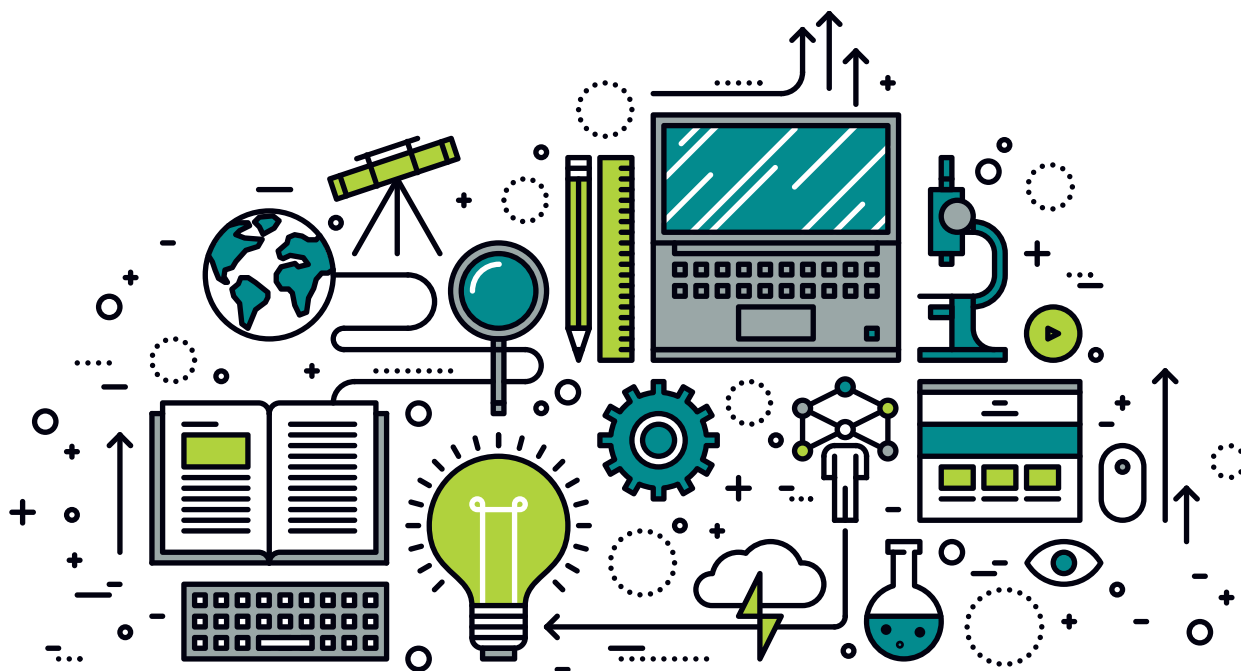


**APPLICATION DEADLINE: JUNE 1, 2016**

For this 2016 pilot year, we are only accepting  
applications from secondary schools in:

**Prince George's County, MD | Washington, DC | Ghana**

# The World Smarts STEM Challenge



The World Smarts STEM (Science, Technology, Engineering, and Math) Challenge is a competition that pairs high schools from different countries to work together on collaborative international teams to compete with their peers by creating innovative STEM-based solutions to pressing global problems affecting their local communities.

The purpose of the World Smarts STEM Challenge is to develop and increase the number of secondary school students who go on to successfully major in STEM fields in higher education while building skills in innovation, investigation, problem solving, and global citizenship. Teams are co-led by teachers from their home schools and each teacher will be provided with a structured framework for the three-month virtual competition, in-person and virtual professional development training, teaching resources, technology support, and coaching from IREX throughout the competition period. Teacher resources will include standard-aligned curriculum flexible for an in-classroom or after-school setting.

This pilot year of the Challenge will be open to 10<sup>th</sup> and 11<sup>th</sup> grades in high schools in Washington, District of Columbia; Prince George's County, Maryland; and Ghana. Approximately 15 schools will be selected in each country to form 15 teams comprised of US and Ghanaian students and teachers working on the same teams to develop solutions to challenges in response to the United Nations Sustainable Development Goals (SDG). SDGs are 17 targets to advance the world's broader sustainability agenda and address the root causes of poverty and the universal need for development.

This year's Challenge will address:

- SDG 3:** Ensure healthy lives and promote well-being for all at all ages
- SDG 6:** Ensure availability and sustainable management of water and sanitation for all
- SDG 7:** Ensure access to affordable, reliable, sustainable and modern energy for all
- SDG 11:** Make cities and human settlements inclusive, safe, resilient and sustainable
- SDG 12:** Ensure sustainable consumption and production patterns

The semifinalist teams with the top-ranked solutions will travel to Washington, DC to present projects to a panel of expert finalist judges from industry, academia, and the policy community. The winning team will be supported in marketing their innovation to angel investors, crowd-funding initiatives, and corporate partners to further develop, prototype, pilot and market their idea. IREX will match up to USD \$10,000 in monies raised.

# Announcing the 2016 World Smarts STEM Challenge

- ① DEFEND YOUR COMMUNITY AGAINST HAZARDOUS WASTE & POLLUTANTS
- ② REPOWER YOUR COMMUNITY'S ENERGY USE

Each team will pick one challenge to work on.

## Examples of STEM-related solutions to the 2016 global challenge

- ① DEFEND YOUR COMMUNITY AGAINST HAZARDOUS WASTE & POLLUTANTS



### LOCATION

Any Town, USA



### LOCAL PROBLEM

Water pollution from coal mining resulting in tap-water restrictions



### STEM SOLUTION

A household method to identify processing chemicals and potential purifying tool

- ② REPOWER YOUR COMMUNITY'S ENERGY USE



### LOCATION

Any Town, Ghana



### LOCAL PROBLEM

Unreliable energy available in remote neighborhood



### STEM SOLUTION

Build an engineering plan for a hydroelectric station in river through city

## Did you know...

The world produced 41.8 million metric tons of e-waste in 2014 — an amount that would fill 1.15 million 18-wheel trucks? Lined up, those trucks would stretch from New York to Tokyo and back.

(Source: Natural Resources Defense Council)

Energy is the dominant contributor to climate change, accounting for around 60 percent of total global greenhouse gas emissions?

(Source: United Nations Sustainable Development Goals)

# Participation Requirements

**There is no fee to participate in the World Smarts STEM Challenge.**

This pilot year of the program was made possible by a grant from Carnegie Corporation of New York. Selected teams are expected to actively participate each week throughout the three-month Challenge program and follow the Challenge learning and virtual team collaboration framework.

**To participate in the World Smarts STEM Challenge, teachers must apply on behalf of their students and schools. The selected teachers will:**

- Form and lead a gender-balanced team from their home school of no more than eight students;
- Participate in a professional development workshop in Accra, Ghana in Summer 2016;
- Partner effectively with their teacher co-lead in either the US or Ghana;
- Lead his or her team's virtual and in-person instruction and collaboration;
- Engage in ongoing communications and support with IREX; and
- Motivate and ensure the team's completion of the competition.

**The participating teams will:**

- Work with their counterparts in Washington, DC; Prince George's County, MD or Ghana over the course of three months through a virtual platform to collaboratively design and implement innovative solutions to contemporary global and local development problems;
- Ensure their ideas are innovative, their own, and meet academic integrity standards;
- Submit a written five-page description of their solution and a video no longer than five-minutes to creatively showcase their STEM solution and to be considered for the Washington, DC semi-finalist competition;
- If selected as a semifinalist, attend the World Smarts STEM Challenge Contest and Showcase in Washington, DC in early 2017.



# Challenge Timeline

**AUGUST 2016**

**MARCH 2017**



## TEACHER DEVELOPMENT

- Week-long training in Ghana
- Continuing education credits
- Global education and virtual lesson plans in line with learning standards



## THE CHALLENGE

- Bi-national team collaboration
- Network of expert support
- Collaborative virtual learning
- Develop solution for global challenge



## WORLD SMARTS STEM CHALLENGE CONTEST AND SHOWCASE

In Washington, DC



## GRAND PRIZE

The winning team gets the chance to make their idea become a reality

# Significant Deadlines

**June 1, 2016**..... Teacher Applications Due

**June 2016** ..... Selected Schools Announced

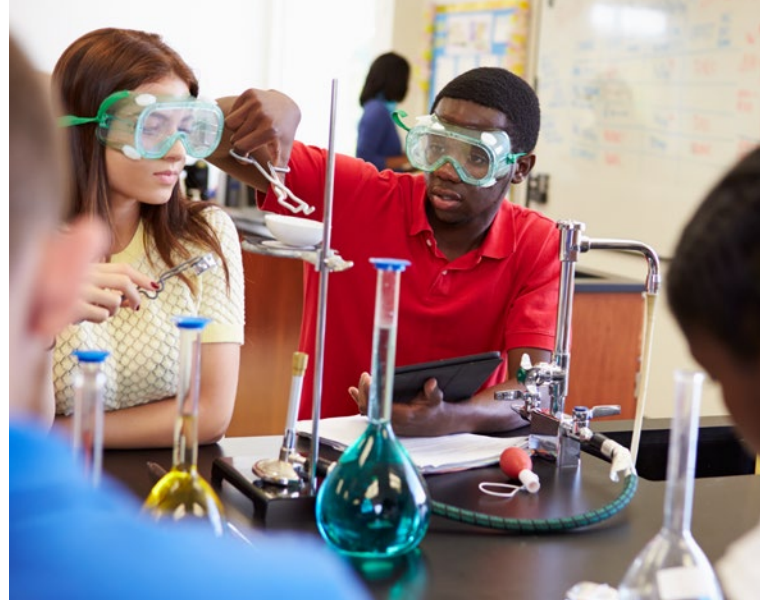
**Summer 2016** ..... One-Week Teacher Team Leader Workshop in Ghana

**September 2016** ..... World Smarts STEM Challenge and Virtual Exchange Begins

**December 2016**..... Video Contest Entries Submitted

**January 2017** ..... Semifinalists Notified

**March 2017**..... World Smarts STEM Challenge Contest and Showcase in Washington, DC



## Putting together a team!

### TEAM SELECTION CRITERIA

- Motivated, committed STEM teacher-coach
- Supportive school principal/director
- Demonstrated school commitment to support innovation, STEM education, and global citizenship
- Ability and commitment to forming gender-balanced teams (please note schools that serve only boys or only girls can collaborate with another school in their community locally to create their half of the international team)
- Sufficient Internet access to support virtual collaboration
- Priority will be given to schools that reach underserved student populations

### TEAM COMPOSITION

IREX generally recommends limiting teams to one team per school, but will be flexible as needed. Each school's teacher representative will need to assemble a gender-balanced team of eight students from the 10<sup>th</sup> and/or 11<sup>th</sup> grade. Each school's team will be paired with a school from the other country. The bi-national teams will be no more than 16 students. For example:



One student team of eight and one teacher from Washington, DC



One student team of eight and one teacher from Koforidua, Ghana



Complete World Smarts STEM Challenge Team of 16 students and two teachers



## Application Instructions

Go to [www.irex.org/worldsmarts](http://www.irex.org/worldsmarts) to download the application.

The deadline for applications to participate in the World Smarts STEM Challenge is June 1, 2016 and must be completed and submitted by the teacher representative.

- Submit your completed application with the signed letter of endorsement from your school administrator by email to [worldsmarts@irex.org](mailto:worldsmarts@irex.org) by **June 1, 2016**.
- Please answer all questions on the application in English.
- All answers in the application, including the short-answer questions, must be your own, original work.



IREX is an independent nonprofit organization dedicated to building a more just, prosperous, and inclusive world by empowering youth, cultivating leaders, strengthening institutions, and extending access to quality education and information.



[irex.org/worldsmarts](http://irex.org/worldsmarts) | [worldsmarts@irex.org](mailto:worldsmarts@irex.org)

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