A Global Inquiry-based Community Science Experience

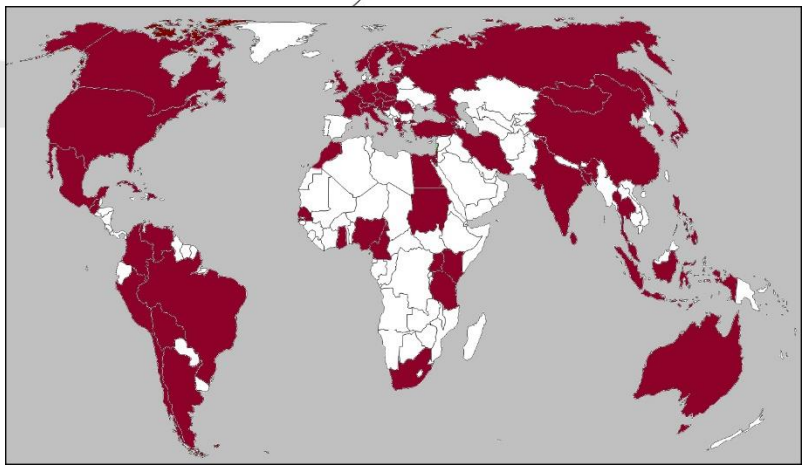

Smithsonian
Science Education Center


iap
SCIENCE
RESEARCH
HEALTH
the interacademy partnership

IAP membership

More than 130 national, regional and global academies

IAP for Science



IAP for Health
78 members, of which
52 also belong to IAP for Science

Creating an innovative, free education resource module on

Mosquitoes

+

Mosquito-borne Diseases

Quick Survey

Raise your hand if you think all mosquitoes are more or less the same.

There are over 3,500 species of mosquitoes.

Only ~10% of these can transmit diseases to humans.

Raise your hand if you think both male and female mosquitoes can transmit diseases to humans?

Only female mosquitoes suck human blood to make eggs and transmit diseases. Males and females feed on nectar and sugars from plants, such as flowers, and are pollinators.

Sharks kill approximately how many people per year?

less than 10 people per year.

Snakes?

~50,000 people every year

Humans?

~475,000 people every year.

Mosquitoes?

over 725,000 people every year.

a complex
socio-scientific
problem.

Led by a messy, complex, ill-structured question:

How can we seek to ensure healthy lives and promote well-being for all from mosquito borne diseases?

Many decisions to deliberate

Many perspectives to consider

Many possible solutions to evaluate

Mosquitos are an environmental part of the problem.

The use of pesticides to kill mosquitos is an ethical side of the problem.

Public comprehension and understanding of valid public health information (real vs. fake news) is a social part of the problem.

Providing bed nets to people in need is an economic part of the problem.

GENETICALLY MODIFIED MOSQUITO CONTROVERSY

IDENTITY BIAS TOWARDS ZIKA HEALTH INFORMATION

GENDER INEQUALITY OF ZIKA

ECONOMICS OF RESOURCE ALLOCATION ACROSS A COMMUNITY

OTHER DIMENSIONS OF THE PROBLEM

LACK OF EDUCATION ON MOSQUITOS

REAL VS. FAKE MOSQUITO NEWS

VACCINE CONTROVERSY

POVERTY

Solutions and decisions on how to appropriately address the problem are continually fluctuating geographically and culturally.

When studying this problem, we must understand and consider:

local identity

local perspectives

local culture

Complex problems require innovative educational solutions and leadership that challenge the status quo.

SUSTAINABLE DEVELOPMENT GOALS

2015 - 2030

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lifelong experiential learning

Dimensions of Instruction

- UN Sustainable Development Goals
- Inquiry-Based Science Education Practices
- Education for Global Citizenship
- Cross-cutting Concepts

We must educate and empower students to become everyday leaders within their culturally diverse communities.

To do so, we are asking youth around the world to turn inward on their local community.

And start to ask questions and inquire about the problem within the place they inhabit.

Turning everyone’s backyard into a scientific research site.

To answer questions like:

What do people in my local community think about mosquito borne diseases? (social)

Where could mosquitoes possibly live in my local community? (environmental)

What are the economic considerations of various mosquito management plans in our community? (economic)

Is it Ok to just kill all of the mosquitoes in our community? (ethical)

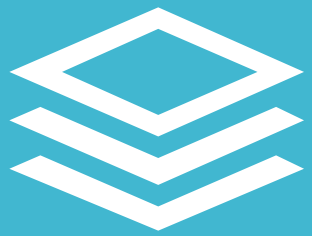
Who in my local community has information about this problem? (social)

And sharing that research in a growing global Citizen Science community

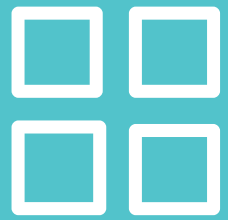
USDA – Invasive Mosquito Project

NASA GLOBE – Mosquito Habitat Mapper App

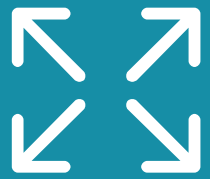
With a culminating purpose of having youth develop and communicate a variety of recommendations and suggestions for solutions to the mosquito problem that considers:



LOCAL IDENTITY



LOCAL PERSPECTIVES



LOCAL EVIDENCE

Timeline

- Phase I: Engage scientific community to identify research in the field *Jan – April 2017*
- Phase II: Engage international education community to assess current state of education materials *Jan – April*
- Phase III: Curriculum development *May – June*
- Phase IV: Module Layout, Field Test Nationally, Assess Pre- and Post-Module Understanding to Measure Growth *Sept – Dec*
- Phase V: Revise Module Based on Feedback and Assessment, Translate to Spanish, Set up Digital Version *January 2018*
- Phase VI: Conduct Field Test of Spanish Version Internationally *Feb – March*
- Phase VII: Revise and Disseminate Spanish Version Internationally on SSEC, STRI, USDA, IAP/SEP websites *March – April*
- Phase VIII: Translate to other languages *after April* 2018

Education Module

Free teacher + student guide with the tools to explore aspects of the problem in their local community.

Free lesson plans and resources to teach youth to think about a variety of solutions to messy, complex problems

Free hands-on activities to teach youth to use a variety of evidence when developing claims about a problem

Free project resources to assist teachers and teach youth to develop solutions to effectively communicate problem solutions within local communities

To foster education programs about life, work, and citizenship through the teaching of inquiry and civic decision making with evidence in a cultural context.

Zika is as much a social problem as it is a scientific one.

Through innovations and disruptions in traditional education, youth can be empowered as everyday leaders and given a voice concerning problems in their local communities and around the world.

Questions?

Peter McGrath
Coordinator
InterAcademy Partnership
mcgrath@twas.org
www.interacademies.net

Andre Radloff
Science Curriculum Developer
Smithsonian Science Education Center
radloffa@si.edu
www.ssec.si.edu