In 2015, the UNDP identified a series of 17 important worldwide goals referred to as the Sustainable Development Goals (SDGs). These goals make up a blueprint for the future well-being of the planet. In 2016, following a major outbreak of Zika, the IAP SEP, under the leadership of Dato Lee Cheong, decided during the Global Council meeting in Santiago, Chile that education is not only a crucial part of the SDGs due to its role as a specific goal (Goal 4: Quality Education), but it is essential that IAP SEP educate youth on the science of the SDGs to help nations progress on all goals. This presentation discusses how the Smithsonian Science Education Center in collaboration with IAP are developing *Smithsonian Science for Global Goals* Community Research Guides for engaging youth in understanding, discovering, and acting on the world’s most complex sustainability problems.
Outline

- Who are we?
- Smithsonian Science for Global Goals
- Example Global Goals Module: “Mosquito!” Interactive
- Implementation Support
- Closing Video that summarizes the project
- Questions?

Who are we?
The Smithsonian is the world’s largest museum, education, and research complex with 19 museums, 9 research centers, 5 education centers, 3 cultural centers, 21 libraries, and a zoo. All free to the public.

The Smithsonian believes in lifelong experiential learning. Each year, we reach 11M through our educational programming and 33M through museum visits.

https://www.si.edu/dashboard/public-engagement
Our Reach

Timeframe: School Years 2007 - 2018

39
K-8 Curriculum Modules in Multiple Languages

20
Smithsonian Science for the Classroom Modules plus an Accompanying Literacy Series

Smithsonian Science Stories

50
U.S. States plus Washington, DC

1,698
U.S. School Districts

7.3M
U.S. Students Served

29
Countries Outside the U.S.

https://www.si.edu/dashboard/public-engagement

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Smithsonian Science for Global Goals

SECTION 2

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What global challenges do our youth face?

“Are we educating students to solve the global challenges of our generation?”

The clock is ticking! A six year old today will be in the graduating class of 2030 tomorrow.

“Focused actions are needed to lift the 767M people who live on less than $1.90 per day, and to ensure food security for the 793M people who routinely confront hunger...We need more determined progress towards sustainable energy, and greater investments in sustainable infrastructure. And we need to bring quality education within reach for all...”

UN Secretary-General Antonio Guterres
Smithsonian and IAP are developing free curriculum based on the UN Sustainable Development Goals to empower youth ages 8-17 to use science for social good.

17 goals
169 targets
232 indicators
Lots of science!

https://sustainabledevelopment.un.org/sdgs
Energy: How do we balance access to energy and environmental concerns?

Biotechnology and Humans: How do we balance technology, actions, and ethics?

We are creating a global learning experience for youth ages 8-17 that is locally relevant but globally important by combining STEM education with civic engagement.
Our Theory of Action outlines how we are helping to develop globally STEM literate citizens with sustainable mindsets.
Example **Global Goals Module:** “Mosquito!” Interactive

Students begin by building an identity map (and reading the identity maps of scientists so they can see themselves in others). They then add to their map what they know about the complex issue.
<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is okay to kill all of the mosquitoes on the planet. (ethical)</td>
<td></td>
</tr>
<tr>
<td>It is important that we have energy to heat our homes, even if it means some harm to the environment. (environmental)</td>
<td></td>
</tr>
<tr>
<td>Cities should be able to control their own waterways, even if it other towns get less water downstream. (social)</td>
<td></td>
</tr>
</tbody>
</table>

The Storyline
- Part 1: Problem
- Part 2: Community
- Part 3: Life Cycle
- Part 4: Transmission
- Part 5: Habitats
- Part 6: Management
- Part 7: Action Plan

We then engage students directly with the science behind the Global Goals—using their community as
Examples of what students do:

- Map their community.
- Determine where mosquitoes live in their community.
- Investigate how to control the mosquito population near their school, museum, or neighborhood.

Scientists from diverse backgrounds are highlighted throughout serving as role models to students

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Organization: Virginia Modeling, Analysis & Simulation Center at Old Dominion University (VMASC)
The Storyline

- Part 1: Problem
- Part 2: Community
- Part 3: Life Cycle
- Part 4: Transmission
- Part 5: Habitats
- Part 6: Management

Students engage in citizen science, map out an action plan, and implement their plan—using their new scientific knowledge to do social good in their community.

Example Action Plans in Panama

- 6 year olds collected plastic trash near their school to reduce standing water.
- 17 year olds developed their own mosquito repellant.
Question 8: How well do you understand mosquitoes?

The Smithsonian Science Education Center administered both the pre- and post-test for the second round of field testing. For the Our Lady of the Pines Mosquito! module survey, 74 participants completed the pre-test and 84 participants completed the post-test for this item.

What’s been our impact? - Agency

Question 29: Use the slider to show your confidence level in your ability to cause change in your local community about local problems?

The Smithsonian Science Education Center administered both the pre- and post-test for the second round of field testing. For the Our Lady of the Pines Mosquito! module survey, 73 participants completed the pre-test and 82 participants completed the post-test for this item.
Implementation Support

Curriculum alone is not enough.
We also host a one day event designed to raise awareness of the complex global issue with local stakeholders.
Contextualized for local needs.
Engages stakeholders first hand in the topic using hands-on investigations.
For example, in Panama, we invited: expert scientists from the Smithsonian Tropical Research Institute (STRI); the Ministry of Education (MEDUCA); the Inter-American Development Bank; Smithsonian Affiliate Biomuseo; and

Caption: Mosquito! “Building Awareness for Sustainable Education” (BASE) and Professional Development (PD) event in Panama June 2018 held at Smithsonian Tropical Research Institute (STRI) in partnership with MEDUCA, SENACYT, IADB, and J&J.
Professional Development

- Smithsonian Science Education Center then hosts a two-day professional development workshop on the Global Goals module for teachers and education leaders from around the region, representing both public and private schools.

Smithsonian Science Education Academies for Teachers (SSEATs) include training on existing SSfGGs content.
- Trained teachers return to home regions to implement free Global Goals curriculum resources and share resources with additional teachers in their home school and district.
- Action plans created by students are then shared amongst teachers.
Next Steps: Fundraising to Continue to Grow the Program

Closing Video, Discussion, and Questions?

https://public.3.basecamp.com/p/RzCD3yKYXVpPQVx23CDZgA9R
Thank you!

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