My Community, Our Earth:
Global Connections and Exchange Program

FINAL CUMULATIVE PROGRAM REPORT

Submitted by Association of American Geographers to US Department of State Bureau of Educational and Cultural Affairs Youth Programs Division for Award No. S-ECAPY-11-GR-162 (DT), September 1, 2011 - May 31, 2013, $425,000; Countries of The United States, Bolivia, Ghana, Nicaragua, Philippines

Photo Credit: Nick Oehm
EXECUTIVE SUMMARY

The My Community, Our Earth Global Connections and Exchange Program was undertaken by the Association of American Geographers with the goal to enhance mutual understanding between youth in the United States and their counterparts overseas. The overarching goal was to empower youth and their teachers to increase environmental, geographic, technological and cultural literacy. This was achieved through facilitation of real-time and offline exchanges and collaboration around youth-led mapping projects on the themes of Environment, especially Climate Change and the Green Economy, Food Security and Vulnerability to Hazards.

www.aag.org/gce

Over a 20-month period, we trained 279 teachers in 34 US States, Puerto Rico, Bolivia, Ghana, Nicaragua, and the Philippines, to use social networking, online mapping and the digital library of resources from the My Community, Our Earth: Geographic Learning for Sustainable Development Program, particularly new collaborative activity lesson templates developed specifically for this project, on the four key themes. School-to-college Geography Alliances in Alabama, Colorado, Michigan, Puerto Rico, Texas and Washington were engaged to feature educational pathways, which receive additional support by the National Geographic Society Education Foundation. Diversity Ambassadors reached out to more than eighty-five hundred students in underserved schools in Florida, Texas, Oklahoma, Maryland, Washington, DC and Georgia to participate in exchanges and to encourage international and science careers.

Educators were supported to interactively incorporate the core GCE themes into their curriculum and learning tools in their classrooms, to engage in international electronic dialogue and themed discussion exchanges and to facilitate the leadership development of an estimated 26,000 secondary school students worldwide. Youth teams, guided by their teachers and mentors, designed and implemented community-based projects based on the MyCOE inquiry-driven framework, inspired from, motivated by and shared with their international exchange colleagues. A total of 513 new youth-led projects were conducted through this initiative, which have been uploaded to a new Geoportal built upon the leading GIS software company Esri’s ArcGIS Online platform into a mapped Youth Leadership Project Gallery at www.aag.org/mycoegallery.

The program showcased the global exchanges and youth projects at key international events, including the UN’s 20-year anniversary conference of the Rio Summit for Sustainable Development in Brazil in June 2012, special celebration of Earth Day in April 2012 and 2013 and a MyCOE GCE Digital Video conference featuring a poster competition as well as live presentations from international GCE classrooms during the 2013 Annual Meeting of the Association of American Geographers in Los Angeles, California. A digital scrapbook recorded some of the event highlights at www.aag.org/MyCOE_DVC.

The program evaluation demonstrated high satisfaction and the achievement of core national educational standards. Participants gained more knowledge about the main environmental themes as well as a greater understanding of youth in other parts of the world.
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KEY STATISTICAL OUTCOMES

TARGETS
Total Program Targeted Number of Participants:
165 Teachers (teaching approximately 3,000 students)
   U.S. students (estimate) 1,000   Foreign students (estimate) 2,000
   U.S. educators 60 in 10 states   Foreign educators, 105 in 4 countries
Total Target Number of Youth-Led Mapping Projects: 500

OUTCOMES
Cumulative Confirmed Number of Participants:
279 Teachers (estimated 26,581 students across all activities)
   U.S. students (estimate) 13,089   Foreign students (estimate) 13,492
   U.S. educators, 166 in 34 States & Puerto Rico Foreign educators, 113 in 4 countries
Total Target Number of Youth-Led Mapping Projects: 513

• 174 members of the GCE teacher knowledge building community with 261 discussion threads and 2,318 page views of capacity enhancing content
• 8,539 students working with MyCOE Diversity Ambassadors, 85% of them from racial/ethnic groups traditionally underrepresented in higher education
• More than 300+ Facebook members (and growing)
• 100+ Followers on Twitter, with 1,217 tweets and 60,599 retweets
• High Profile publicity of AAG Staff Astrid Ng (GCE Social Networking & Youth Coordinator) in the US State Department's eJournal USA, translated into 5 different languages and an estimated 48 million readers worldwide in advance of the Rio+20 conference showcase
• School-to-college Geography Alliances in the US and Internationally linking 11 universities (including 2 Minority Serving Institutions) to participating schools in their service areas
• 34 digital pages of new web content (bilingual)
• 7 National Geography Standards met
• 10 webinars (live and recorded, 5 each in English and Spanish) and one video teleconference
• Delivery of an estimated 1,408 person-hours of training, including 407 delivered online, 395 person-hours of supplemental teacher training via recorded viewed webinars, 543 person-hours of tailored on-site support in person provided by coordinators, plus 63 person-hours of online user training in exchange technologies with AAG staff
• Expansive use of the GCE website with 14,882 page views registered over project period
• Digital Video Conference with 45 youth posters in competition, alongside a full day agenda of live student presentations given by virtual attendance of 104 students and 20 teachers from all four international sites plus Puerto Rico, to an audience of hundreds who were attending the AAG Annual Meeting in Los Angeles, among 7,500 conference registrants
• An online Youth Leadership Project Gallery showcasing geo-referenced project summaries, maps, and photographs featuring 513 new projects among the total of 645 postings overall, enabled with interactive comment functions and social media links
• 3,677 person-hours of live/real-time synchronous online youth exchanges via video/chat
• 91% of teachers conducted virtual international student exchanges in their classrooms for the first time
• 100% of teachers responding to final evaluation say the program improved their students' knowledge and critical thinking about the GCE themes
ACTIVITIES AND ACCOMPLISHMENTS

The program focused on empowering youth and their teachers to increase environmental, geographic, technological and cultural literacy. Activities that were designed and implemented to accomplish this goal revolved around the facilitation of real-time as well as offline exchanges and collaboration on youth-led mapping projects. Key stages of the project included an initial launch stage of identifying and recruiting teachers, training teachers, developing materials and themed content, posting resources, establishing participation platforms, engaging and orienting students. Following sets of activities included facilitation of exchanges, including both live and asynchronous mechanisms, as well as the organization of specific exchange pathways with collaboration project frameworks supported by a competitive mini grant program. Youth projects formed the core of activities and represent participant accomplishment, not only in terms of the number of completed projects but also for the learning objectives reached. Diversity and inclusion, always a concern of the program's design, became a later specific focus through the use of ambassadors in key participation areas to reach typically underserved students and emphasize the career potential for environmental scientists, geographers, and GIS technology specialists. Finally, publicity, conference and outreach activities gave participants the chance to connect in larger groups and the program to connect with stakeholders and the public at large. The narrative in this section organizes a report on activities and accomplishments across these stages of work.

Classroom Selection, Teacher Training and Orientation

Participant schools at the foreign sites were selected prior to the proposal and individual teachers were reconfirmed through the first phase and individual contact information was collected, especially email addresses. Changes to this roster were made only to the Philippines site when that nation experienced a series of typhoons, one that damaged schools where teachers had originally planned on participation through the Philippine Science High School system. Substitute participants (as individual teachers rather than schools) were identified from previous MyCOE activities in the region and accepted by program officers. In addition, since this was the only site without an alliance model (i.e. university teacher education faculty engaged with the teachers in schools), participants from two colleges were added to conform to the US model. The Philippines later identified the rest of the substitutes. (See also complete list of international schools, below.)

In the US, the National Geographic Society assisted the AAG on recruiting the first group of participating US teachers and students through the Education Foundation and the Geography Alliances. The Geographic Alliance network includes 53 sites in 49 states, which represented the eligible pool of applicants for recruitment to this initiative. AAG and NGS issued a quick-deadline call for participation for six MyCOE GCEP sites in the US. Alliances. Alliances led by Minority Serving Institutions of higher education and those with schools in minority serving areas were encouraged to apply. All alliance teacher recruitment encouraged participation across a range of youth of different ethnicities, race, gender, religions, geographic locations, socio-economic status and disabilities. Selection criteria was published in the call and included demonstrated ability and technical capacity to comply with program activities and expectations, commitment to community-engaged project-based learning and overall quality of the application and its relevance to program goals.

Given the limited number of eligible alliances, the very short timeframe for site recruitment, the process was kept open until the six sites were confirmed among the 10 sites that expressed interest, which included 2 Minority Serving Institutions as the lead alliance university (Hispanic Serving). Later phases
expanded this original cohort, as explained below, as international demand for exchanges outstripped the available hours for the original US participant classrooms (as approved by the Program Officer.)

MyCOE GCE Coordinators from all international sites and the six US Alliance sites met with staff in New York City in conjunction with the 2012 AAG Annual Meeting. The coordinators met for multiple sessions over three days, which included time for the participants to share progress and challenges as well as possible solutions or ideas for improving exchanges. The final sessions enabled the AAG staff to also gather recommendations in a formative feedback towards addressing needs at particular sites to improve participation rates as well as the quality of experience for teachers and students to connect.

In addition, coordinators were able to attend any session of the AAG meeting throughout the week (February 24-28). Attendance at this conference reached a record high, with nearly 8,700 registrants. Approximately 34% of participants came from a combined 80 countries other than the United States, affording a unique opportunity for the GCE Coordinators to interact with specialists from geography, geography education, climate change, food security and the other themes represented in the program. AAG highlighted a number of these, which may be of interest to the coordinators, including convening a distinguished and featured panel, entitled: "Preparations for Rio+20 and Beyond" from 2:40 p.m. to 4:20 p.m. in the Hilton New York Hotel on Saturday, February 25. Panelists include representatives from USAID, USDA, USGS, Esri and AAG. The MyCOE GCE’s State Department Officer was invited but unable to attend in the end.

Thus the original cohort of classroom participants were comprised of teachers and students from the following schools:

**Bolivia***: Universidad Mayor de San Andrés, La Paz; Colegio Don Bosco-El Prado, La Paz; Colegio Particular Jerusalem, La Paz; Instituto de Educación Bancaria, Cochabamba; Sistema Educativo Adventista, La Paz; Unidad Educativa Bolivia IV, La Paz; Unidad Educativa Fabril 18 de Mayo, La Paz; Unidad Educativa República del Perú, La Paz; Colegio Venezuela, Unidad Educativa Shalom, Colegio Miraflores, Unidad Educativa Franz Tamayo.

**Ghana**: University of Cape Coast, Cape Coast; Mfantsipim Boys Senior High School, Cape Coast; Sammo Senior High School, Cape Coast; University Practice Senior High School, Cape Coast;
Nicaragua: Universidad Nacional Autónoma de Nicaragua, Managua; Colegio Madre del Divino Pastor, Managua; Colegio Pan y Amor, Managua; Instituto Benjamin Zeledón, Managua.

Philippines*: Philippine Science High School Campuses: Southern Mindanao Campus, Davao City; Nueva Vizcaya Campus, Bayombong, Nueva Vizcaya; Iponan National High School; Iligan City East High School; General Santos City High School; Trento National High School; University of Southern Mindanao; Univ. of Southeastern Philippines.

United States: Alabama*: University of North Alabama; Causey Middle School; Florence High School; George Washington Carver High School; Georgia Washington Junior High; Hewitt-Trussville Middle School; Hokes Bluff High School; Isabella High School Science; Parker School High School; Phillips Academy High School; Simmons Middle School; Spain Park High School; The Altamont School High School.

Colorado: University of Colorado, Colorado Springs; Denver Center for International Studies - A; Denver Center for International Studies - B; Denver School of the Arts; Mackintosh Academy - IB World School; Mountain Range High School; Overland High School; Thornton High School; Vail Mountain School; William J. Palmer High School.

Michigan: Western Michigan University; J.W. Sexton High School; Lowell High School.

Puerto Rico: University of Puerto Rico; Agustin Stahl High School; Dr. Juan Jose Martinez Pimentel High School; Escuela Especializada de Ciencias y Matematicas High School; Escuela Jose Felipe Zayas High School; Francisco Oller High School; Ines Munoz Mendoza High School; Monserrate Leon de Irizarry High School; Pablo Casals High School; Trina Padilla de Sanz High School.

Texas: Texas A&M University; Cypress Falls High School; L.V. Berkner High School; Shepton High School.

Washington: University of Washington, Seattle; Chief Seattle High School; Cle Elum-Roslyn High School; Eagle Harbor High School; Eastside Catholic School High School; Oroville High School’ Redmond High School; Roosevelt High School; Sammamish High School; Secondary Academy of Success High School.

As noted, the international demand for exchange hours quickly began to exceed our ability to provide hours in US classrooms, due in part to scheduling constraints, and in part to a less flexible curriculum window. In order to level out the balance, we introduced activities to ensure the inclusion of a greater number of US classrooms (after receiving explicit Program Officer approval). These activities focused chiefly upon additional outreach to the
Advanced Placement (AP) teacher community, which drew many responses. An incentive which made the program more easily accessible in a smaller time-commitment that integrated more easily with ongoing classroom projects was developed and also motivated new sign-ups. Funds were directed from the migrant budget to provide $300 for classroom materials and use for teachers who signed up for exchanges and submit at least one youth project to the Geoportal. In this way, we were able to leverage existing activity to broaden the reach of the program while meeting the original need of demand for more hours of exchange that had been coming from international sites. Overall, then the program grew to exceed targets significantly, working in 34 States and Puerto Rico, with numbers as follows:

<table>
<thead>
<tr>
<th>Site</th>
<th>Target</th>
<th>Teachers</th>
<th>Students*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>29</td>
<td>32</td>
<td>1,717</td>
</tr>
<tr>
<td>Ghana</td>
<td>45</td>
<td>38</td>
<td>7,577</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>11</td>
<td>15</td>
<td>2,631</td>
</tr>
<tr>
<td>Philippines</td>
<td>20</td>
<td>28</td>
<td>1,567</td>
</tr>
</tbody>
</table>

**Total Foreign Sites** | **105** | **113** | **13,492**

<table>
<thead>
<tr>
<th>Site</th>
<th>Target</th>
<th>Teachers</th>
<th>Students*</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Alabama</td>
<td>10</td>
<td>14</td>
<td>750</td>
</tr>
<tr>
<td>US Alaska</td>
<td>0</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>US Arizona</td>
<td>0</td>
<td>9</td>
<td>180</td>
</tr>
<tr>
<td>US California</td>
<td>0</td>
<td>3</td>
<td>70</td>
</tr>
<tr>
<td>US Colorado</td>
<td>10</td>
<td>22</td>
<td>348</td>
</tr>
<tr>
<td>US District of Columbia</td>
<td>0</td>
<td>7</td>
<td>508</td>
</tr>
<tr>
<td>US Delaware</td>
<td>0</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>US Florida</td>
<td>0</td>
<td>9</td>
<td>7375</td>
</tr>
<tr>
<td>US Georgia</td>
<td>0</td>
<td>n/a</td>
<td>403</td>
</tr>
<tr>
<td>US Illinois</td>
<td>0</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>US Iowa</td>
<td>0</td>
<td>4</td>
<td>77</td>
</tr>
<tr>
<td>US Kansas</td>
<td>0</td>
<td>2</td>
<td>80</td>
</tr>
<tr>
<td>US Kentucky</td>
<td>0</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>US Maryland</td>
<td>0</td>
<td>3</td>
<td>57</td>
</tr>
<tr>
<td>US Michigan</td>
<td>10</td>
<td>10</td>
<td>298</td>
</tr>
<tr>
<td>US Minnesota</td>
<td>0</td>
<td>3</td>
<td>67</td>
</tr>
<tr>
<td>US Missouri</td>
<td>0</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>US Nevada</td>
<td>0</td>
<td>2</td>
<td>50</td>
</tr>
<tr>
<td>US New Hampshire</td>
<td>0</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>US New Jersey</td>
<td>0</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>US New York</td>
<td>0</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>US Ohio</td>
<td>0</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>US Oklahoma</td>
<td>0</td>
<td>n/a</td>
<td>93</td>
</tr>
<tr>
<td>US Oregon</td>
<td>0</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>US Pennsylvania</td>
<td>0</td>
<td>3</td>
<td>58</td>
</tr>
<tr>
<td>US Puerto Rico</td>
<td>10</td>
<td>15</td>
<td>315</td>
</tr>
<tr>
<td>US Rhode Island</td>
<td>0</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>US Tennessee</td>
<td>0</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>US Texas</td>
<td>10</td>
<td>10</td>
<td>995</td>
</tr>
<tr>
<td>US Vermont</td>
<td>0</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>US Virginia</td>
<td>0</td>
<td>3</td>
<td>120</td>
</tr>
<tr>
<td>US Washington</td>
<td>10</td>
<td>14</td>
<td>595</td>
</tr>
<tr>
<td>US Wisconsin</td>
<td>0</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>US Wyoming</td>
<td>0</td>
<td>1</td>
<td>20</td>
</tr>
</tbody>
</table>

**Total US Sites** | **60** | **166** | **13,089**

| All Sites | 165 | 279 | 26,581 |

*As always, student numbers are estimates that are derived from actual classroom counts as reported by participating teachers and averages to illustrate the approximate total youth that benefit from the MyCOE GCE program.*
Online Teacher Support and Training

The US and international teachers received training via live Webinars (using GoToWebinar software) that were scheduled at various days of the week and times of day to try to accommodate all of the sites at reasonable hours at least once. Webinars included PowerPoint presentations on the theme content and demonstrations of key tools that teachers could use in their classrooms. Frequently audience polls were given to add an interactive dimension and questions/answers were addressed during at the end of each session. Sessions were recorded, then uploaded onto the MyCOE YouTube Channel (www.youtube.com/user/mycommunityourearth) and posted on the website for teachers to view who could not make the live date/hour.

Webinars covered all of the following domains as specified in the proposal:

- Program Logistics (including how to use the AAG’s webpages, Knowledge community, CGGE modules, appropriate online behavior, procedures, etc.)
- Leadership Development (including sensitivity to cultural variance of it as a concept and behavior as well as Digital Citizenship)
- Content Collaborative Curriculum (Core= CGGE Modules in Global Climate Change, Water Resources, Global Economy and Population and Natural Resources)
- Supplemental Activity Curriculum (NASA Teaching Climate Change, National Geographic Education resources, Esri Education Lesson Plans)
- Project Topics (MyCOE approach, resources, online mapping tools, orientation around UN Rio+20 and global dialogues)

Below is the schedule of webinars completed, by topic and (non-unique, person-event) attendance:

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>LIVE ATTENDANCE</th>
<th>RECORDING VIEWERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 18th (Tuesday) 7pm EDT</td>
<td>Orientation and Q&amp;A for Alliance Coordinators and Country Coordinators</td>
<td>11</td>
<td>(not recorded)</td>
</tr>
<tr>
<td>October 31 (martes) 5pm EDT</td>
<td>Orientación para profesores MyCOE GCE</td>
<td>38</td>
<td>65</td>
</tr>
<tr>
<td>November 3rd (Thursday) 7pm EST</td>
<td>Introduction for Teachers</td>
<td>26</td>
<td>87</td>
</tr>
<tr>
<td>November 17th (Thursday) 7pm EST</td>
<td>Environmental Sustainability Topics and Resources: Climate Change</td>
<td>16</td>
<td>51</td>
</tr>
<tr>
<td>November 22 (martes) 5pm EST</td>
<td>Cambio climático</td>
<td>20</td>
<td>39</td>
</tr>
<tr>
<td>November 30th (Wednesday) 4pm EST</td>
<td>Environmental Sustainability Topics and Resources: Green Economy</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>December 1 (jueves) 5pm EST</td>
<td>Economía verde</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>December 12th (Monday) 7am EST</td>
<td>Environmental Sustainability Topics and Resources: Food Security and Hazards</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>December 13 (martes) 5 pm EST</td>
<td>Seguridad alimentaria, riesgos</td>
<td>15</td>
<td>24</td>
</tr>
<tr>
<td>January 10th (Tuesday) 3pm EST</td>
<td>Youth Leadership, Conducting Student Projects &amp; Exchanges: Lessons Learned &amp; Informed Practices</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>January 12 (jueves) 5 pm EST</td>
<td>Liderazgo, Proyectos e intercambios de estudiantes</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>188</strong></td>
<td><strong>343</strong></td>
</tr>
</tbody>
</table>

Below is the schedule of webinars completed, by topic and (non-unique, person-event) attendance:
The respective core country partners and the US Puerto Rico site supplemented this online training with significant in-person local activities that added perspectives and content/technical support as needed:

**Bolivia:** Two sessions on General Computing Skills and Internet Management, December 12 and 13, for 14 teachers held at the Universidad Mayor de San Andrés (4 hours each day); Fourteen (14) various types of subsequent training sessions tailored to the chosen projects and school needs (estimated 191 person-hours of contact).

**Ghana:** Three sessions on Program Orientation, December 9, 15 and 16, for 18 teachers held on site at each of the 3 participating schools (approximately 3 hours each). Three additional sessions on Tutorials using ArcGIS and geographic or mapping software for teachers and a few students held on site at each of the 3 participating schools (29 participants for approximately 2 hours each totaling 98 person-hours).

**Nicaragua:** A total of 11 personalized sessions were held with teachers at various dates throughout the quarter at each of the 3 participating schools. Orientation and training involved 8 teachers in 3 meetings each and 7 teachers in 5 meetings. Project Brainstorming January 27 for 15 teachers (4 hours). An additional 5 director meetings and 6 teacher sessions were held with 70 individuals at various dates throughout the launch period at each of the 3 participating schools. (114 person-hours).

**Philippines:** One session on Orientation and Project Brainstorming, December 13, for 7 teachers held in Davao City (3 hours). One on-site three-hour development meeting with 10 teachers and multiple activities that was individualized and tailored to the respective needs of various teachers (total 90 person-hours).

**Puerto Rico:** One session on Orientation and Geographic Technologies Refresher, January 27 for 10 teachers (5 hours). A specialized workshop on Geographic Technologies (50 hours).

**Online Resources, Materials Development and Participation Platforms**

**MyCOE GCE Learning Themes**

The targeted themes proposed were Environment (Climate Change and Green Economy), Food Security and Leadership. We found from training feedback that the focal themes for this initiative indeed resonate with the geography teachers’ ongoing curriculum at all sites. By request from coordinators and teachers, an additional topic was requested and presented under the related theme of Hazards and Vulnerability, to accommodate collaboration interest around certain aspects of food security that also bridge with climate change topics and the environment. The core set of educational resources proposed to support
integration with existing coursework in the respective school curricula were identified, consolidated, adapted, organized and translated on the program’s website:

- Climate Change: [www.aag.org/gceclimatechange](http://www.aag.org/gceclimatechange) [www.aag.org/gcecambioclimatico](http://www.aag.org/gcecambioclimatico)
- Green Economy: [www.aag.org/gcegreeneconomy](http://www.aag.org/gcegreeneconomy) [www.aag.org/gceeconomiaverde](http://www.aag.org/gceeconomiaverde)
- Food Security, Vulnerability, and Hazards: [www.aag.org/gcefoodsecurity](http://www.aag.org/gcefoodsecurity) [www.aag.org/gceseguridadadalimentaria](http://www.aag.org/gceseguridadadalimentaria)
- Youth Leadership: [www.aag.org/gceleadership](http://www.aag.org/gceleadership) [www.aag.org/gceliderazgo](http://www.aag.org/gceliderazgo)

Each set of resources provided a standardized suite of materials including: orientation texts to help define and contextualize each theme; classroom modules for integration with curriculum; case studies or project examples to illustrate the concepts presented; a list of recommended tools or mapping sites or geographic data for each topic; and ideas/recommendations for facilitating classroom exchanges and/or project collaborations under each theme.

Featured on each main resource site were four (4) new specific Activity Guides, developed specifically for this program, which are formatted like ready-to-use lesson plans so that teachers could not only easily navigate the resources provided online but also so they could immediately conduct activities in their classrooms in similar ways across sites. The guides permit sharing of results so that findings can become a later basis for collaboration or conversation among classrooms exchanging on related topics. These supplements to the original set of planned materials represent key "easy-entry" exercises used by any and all of the teachers to begin using the discussion fora and resource pages. An index of these entry-activities was also made available here on this main page: [www.aag.org/gcegeoportal](http://www.aag.org/gcegeoportal) in both English and Spanish.

- **Climate Change Ecological Footprint Quiz**: [www.aag.org/galleries/mycoe-files/MyCOE_Climate_Change_Activity.pdf](http://www.aag.org/galleries/mycoe-files/MyCOE_Climate_Change_Activity.pdf) ([www.aag.org/gceclimatechange](http://www.aag.org/gceclimatechange))
- **Green Economy Scavenger Hunt**: [www.aag.org/galleries/mycoe-files/MyCOE_Green_Economy_Activity.pdf](http://www.aag.org/galleries/mycoe-files/MyCOE_Green_Economy_Activity.pdf) ([www.aag.org/gcegreeneconomy](http://www.aag.org/gcegreeneconomy))
- **Food Security Food Source Inventory**: [www.aag.org/galleries/mycoe-files/MyCOE_Food_Security_Activity.pdf](http://www.aag.org/galleries/mycoe-files/MyCOE_Food_Security_Activity.pdf)
- **Hazards in My Community Activity**: [www.aag.org/galleries/mycoe-files/MyCOE_Hazards_Activity.pdf](http://www.aag.org/gcefoodsecurity) ([www.aag.org/gcefoodsecurity](http://www.aag.org/gcefoodsecurity))

Including these themes above, as well as the other informational pages on the [www.aag.org/mycoe](http://www.aag.org/mycoe) website, a very rich and complete set of learning materials for the program was designed and provided. These were continuously updated and improved throughout the program with formative feedback by participants. This includes the development of a Frequently Asked Questions (FAQs) section to assist coordinators and teachers alike to immediately learn the response to common queries. The FAQs came from the webinar sessions, discussion fora and general email inquiries. As new teachers were being added and provided access and support to view the recorded webinars, we realized that we also needed to produce a series of much shorter tutorial videos on discrete subjects, such as a 2-minute demonstration of how to log on to the Knowledge Community. These additional materials were added to the website
with an index for easy discovery by users (in English and Spanish) and are available on the MyCOE YouTube Channel (www.youtube.com/user/mycommunityourearth). Below is a list of these shorts, which are available as a listing from www.aag.org/gcehelp that is estimated at providing about 90 person-hours of additional online (recorded) help support.

Resources on major MyCOE Themes: Climate Change (9:38) (35 viewers) Green Economy (9:57) (22 viewers) Food Security, Hazards and Vulnerability (9:58) (25 viewers) Navigating Through the Knowledge Communities Logging in to the Knowledge Communities (3:30) (10 viewers) Sending messages (public and private) in the Knowledge Communities (3:09) (10 viewers) Programming your International Exchange (3:36) (7 viewers) Other Short Videos Where to download ooVoo (1:30) (201 viewers) Using our online Wufoo form to submit MyCOE projects (3:49) (24 viewers)

Recursos sobre temas principales MyCOE: Cambio climático (7:56) (67 viewers) Economía verde (10:05) (57 viewers) Seguridad alimentaria, riesgos, vulnerabilidad (10:08) (41 viewers) Navegando a través de los Knowledge Communities (Comunidades de Conocimiento) Ingresando a los Knowledge Communities (3:10) (8 viewers) Mandando mensajes (públicos y privados) en los Knowledge Communities (4:13) (6 viewers) Programando su intercambio internacional (3:37) (24 viewers) Otros videos cortos Donde descargar ooVoo (1:36) (1,358 viewers) Usando nuestro formulario Wufoo en línea para entregar proyectos MyCOE (3:00) (83 viewers)

Classroom Electronic Exchange Dialogue Platforms
During the first quarter the program prepared the online framework and human resources for preparations of teacher and classroom exchanges. AAG tailored a space on its Higher Logic social networking platform for the electronic dialogues under a new MyCOE GCE Knowledge Community. The template was adapted to facilitate teacher requesting or planning of real-time exchanges, including time zone support, as well as to set up sets of discussion for a around the themes. Teachers and coordinators posted profiles and photos and participated in discussion threads. The webinar on Youth Leadership and Successful exchanges included discussion of collegial online conduct, with resources collected on a website about Digital Citizenship (www.aag.org/gcedigitalcitizen). AAG provided an email address for reporting abuses or early identification of problems.
**Digital Collaborative Community Project Platforms**

The extensive MyCOE digital library and resources was reorganized to make it easier to find and use data, tools, and activities already available online (approximately 52 pages of material on the internet). In addition, the new Geoportal site, [www.mycoe.org](http://www.mycoe.org) was set up and released. Designed and created by the AAG MyCOE GCE team, the Geoportal's analysis step utilizes technologies underwritten by Esri on ArcGIS Online for the MyCOE partnership engagement in the 20th anniversary of the 1992 Rio Earth Summit. It is framed according to the long-standing MyCOE model to 1) ask a question related to how their community has changed since 1992 (the original Rio Summit) with respect to one of these themes; 2) observe data provided through the MyCOE portal, particularly spatial data; 3) analyze the information with the MyCOE web-based mapping applications; 4) draw conclusions about the nature of change in their communities, including positive and negative change; and 5) take action by engaging community leaders around their results.

The submission mechanism for uploading project results was also designed, prepared and released, using Wufoo software, available at [www.aag.org/mycoesubmit](http://www.aag.org/mycoesubmit). Projects that are uploaded to this form were reviewed and reposted to the gallery.

**Exchanges**

The core of the Global Connections and Exchange Program is the virtual link that the program activities forge across the participating classrooms around the world. These have been designed to include knowledge acquisition on the key themes (by sharing what was learned from library and activity guides in particular), skill building with technologies (including both communications technologies, internet techniques and also GIS or online mapping skills) and affective learning about leadership, collaboration and collegial online conduct. Due to the global nature of the initiative and time zones during school hours that do not overlap, the exchanges were not required to take place in real time. However, the live video and chat sessions were clearly the preferred method of exchange by students and teachers alike. This section summarizes the approach and outcomes from these virtual exchanges, of which we calculate more than 3,677 person-hours of time were shared.

The first exchange sessions were semi-structured and included facilitation in a staged approach, permitting the students to introduce themselves and freely ask their own questions of each other. To encourage exploration of themes and project collaborations, facilitators (which include their own teachers, the site coordinators and AAG staff) suggested additional questions or raised their own queries.
for the students to volunteer or take turns answering for each other. Given classroom schedules, setup time, and other factors, the average exchange lasted about 35 minutes but ranged a quarter of an hour to a full hour.

These early connections supported the students to explore how they are the same and how different they are from their counterparts in other places of the world. Later follow up conversations encouraged them to engage deeper in the content and perspectives of the GCE program. By the end of the second quarter the program had begun to shift to more frequent support of learning activities around the key themes and initiative teacher-to-teacher and classroom-to-classroom exchanges.

Whereas interactions during the video exchanges in the first stages of the program touched on project themes and cultural exchanges, the third quarter marked a turning point in the quality of these exchanges. Students and teachers that participated during exchanges were much more familiar with the process and what to expect out of the exchanges and also more familiar with each other. They thus began to become more open to share personal experiences with other sites during this third quarter. This was also important even when involving new classrooms, as it made it easier for students to “break the ice” and jump right into discussions with new counterparts.

There were a number of mostly logistical and often technical challenges related specifically to the online live video exchanges that program staff, coordinators, teachers and students had to develop creative means to overcome. These were not unexpected, nor did they significantly impair the exchanges, but they did generate the need for finding continuously new ways to motivate participants to have patience with time zone mix-ups, technology disconnects, late starts due to unplanned school interruptions and other obstacles. The program staff worked diligently to remind participants to use these occurrences as opportunities to learn about different realities in parts of the world with respect to interconnectedness, resources, access and even cultural understandings of schedules and time. We also migrated from ooVoo to Skype due to bandwidth requirements to accommodate slower connections. In large part, these challenges were taken in stride and to the extent known, did not dissuade overall participation in the program or have other effects on exchanges themselves.

During their discussions, students shared ideas about the projects they were working on developing and exchanged information and perspectives about GCE themes. Many of the discussions were focused on themselves as young people in different places — comparing what typical days in their lives were like. They also made promises to each other to keep in touch and often exchanged Facebook usernames to find each other’s profiles. The program staff asked teachers who supervised exchanges to provide formative feedback about what exchanges were like and what students felt about exchanges.

The following pages present both textual and visual impressions across the series of exchanges. Comments were made by GCE coordinators, teachers and from direct observations of students and are representative of the highly positive feedback on exchange experiences through the program.

PLEASE NOTE THAT CERTAIN IMAGES HAVE BEEN BLURRED TO PROTECT PRIVACY AND IDENTITY OF PARTICIPANTS. PERMISSIONS ARE NOT GRANTED FOR REPRODUCTION BEYOND THE PURPOSES OF THIS REPORT. IF ANY PARTICULAR PHOTOGRAPH IS REQUESTED FOR OTHER USE, PLEASE CONTACT THE PI.
(ooVoo exchange between Ghana and Alabama)

(Skype chat, projected exchange between Washington and Ghana)
Javier Nuñez (Bolivia): (Translated) The exchanges were a spectacular experience, for teachers as well as for students. After the first exchange, the following exchanges were easier because the students brought material such as maps and photographs to show where they lived. The longer exchanges helped them develop more confidence; for example in one exchange during which I was present, the students discovered that they shared the same musical tastes, that their schools were laid out differently, that some of the food they eat is similar (such as hamburgers). I could also observe that it was difficult to break the ice when exchanges started off purely academic. However, when they begin to speak about personal things, such as, do you have a girlfriend or boyfriend, the ice breaks and the conversation is much more fluid, including academic themes and their projects.

James Eshun (Ghana): It was a great day. The students had fun after their main project topics discussion. I didn’t dance (referring to the Ghanaian students, who were teaching Washington students how to dance “Azonto,” a popular dance in Ghana).

Alfonso Jirón (Nicaragua): (Translated) Students and teachers have told me that they like the virtual exchanges because they add a new dynamic that takes them out of their usual school routine, and in addition to learning about the different themes they also learned about geographic tools that they could use in their projects. They added that they were able to relate with students from other nations, which allowed them get to know each other and also share their experiences and their projects. Mission accomplished.


**Michael Casas (Teacher, Philippines):** It was a fun experience because it was our first time, as far as me and my students are concerned, to engage in an intellectual exchange with students from another country through a video conference. What's more amazing is, the students involved are living in different time zones and we managed to meet and do the exchange. The exchange continued with more questions that ranged from asking about our favorite food, tourist spots, dreams, past times, sports, and music! The students from Texas shared their wonderful musical instruments with us. Although we did not have any instruments ready, I tried to step up and sang a song ('You' by the Carpenters) on the spot just to have a reply to the beautiful presentation of our friends from Texas. The students from Texas also showed a glimpse of their beautiful school, their outputs and a lot of insights about their place and some other information about their lifestyle. It broke the ice between our students and precisely it will make them comfortable to work with each other in the future. That was cool according to my students and they are looking forward to having more exchanges in the future. In fact, they are thrilled about having friends from Texas, having another exchange in the future and learning new things from them too. This is a very positive impact.


**Student (Philippines):** Surely it was fun and I realized that under the name of let's say, Geography and Science, people or even students from around the world can have the chance to get to know others overseas and become friends with them. It's a good thing we are helping each other and our community here. To the people from Texas: Thank You for the time and I hope we will have more video conferences with you guys. :)

**Student (Philippines):** You probably don’t know a lot of people in the Philippines, but now you have a family in the Philippines!

**Rolando Bruno (Teacher, Puerto Rico):** The student exchanges were a source of motivation for my students, since none of them had ever had such an experience. As a teacher, I see these exchanges as opportunities for my students to grow as individuals and it motivates them to learn about other cultures.
This was such a wonderful experience for my students that they told their parents and their other teachers. We hope that we can participate in exchanges again.

**Megan Webster (Teacher, Texas):** Thank you so much for the opportunity to visit yesterday evening. My students and I really enjoyed the exchange and the various topics of discussion!! After the session, my students shared (among many things they learned during the videoconference) how they thought it was cool to get to meet students abroad especially where it was Thursday evening for us here in Texas, and Friday morning for you and your students - it was so geographical! Again, it was a great experience and we look forward to more in the future! From a teacher’s perspective this is what an education is all about, excitement to learn. Many of my students reflected on the experience as we covered and reviewed topics throughout the remaining school year. This leads me to believe it did enhance their understanding of the world and its people, while being a very memorable experience.

**George Thornton (Teacher, Washington):** We are happy and excited to work with the other schools and hope to keep doing more. The educational value is huge. It’s great for my kids and everyone involved. Taking advantage of these opportunities has really opened a lot of doors for my kids and myself. It’s a great message for everyone.
From observations during exchanges, as well as notes of comments from student participants, we remark upon the following insights from the live exchange component of the program:

**Students are eager to share their experiences:** To break the ice, students often discuss past times and extracurricular activities; during one exchange the classes brought out musical instruments and began singing an impromptu concert

**Students are curious about other places:** Questions are common about similarities and differences in school life, including noting the use/absence of uniforms, schedules, courses, homework load, and other student concerns; a few with mobile web cameras have taken each other on short tours of campus to view facilities and activities in progress (i.e. a football game)

**Students recognize similarities and differences:** One exchange included a discussion of how their home cities were laid out geographically, how residents got around, which led to talk of the differences in urban structure and also access

**Students are demonstrating tolerance and respect:** Mutual questions have addressed such topics as cultural practices, religions, history, and language; one exchange with Bolivia brought in another teacher to demonstrate speaking of an indigenous language; a discussion of transatlantic connections emerged in an exchange with Ghana regarding history of slavery in reference to a local place of disembarkment commemorating lives lost

**Students explored the key MyCOE GCE Themes:**

- **Food Security:** Commonly students ask about what foods their counterparts eat or like to eat, leading to questions about fast food availability and access to local food sources as well as questions of drinking water quality
- **Climate Change and Green Economy:** One discussion compared community energy sources, leading to observations about hydropower versus coal driven economies
- **Hazards and Vulnerability:** One discussion explored the aftermath of Hurricane Katrina and of a deadly series of landslides in La Paz, developing into an exchange about emergency preparedness
- **Leadership:** Students have given more formal presentations (with posters) about youth-designed class projects that will be adapted for submission to MyCOE GCE for reaction by their counterparts

**Students developed identity and self-confidence:** One of the most significant obstacles that the program and participants were able to overcome was to connect sites in the United States with Spanish-speaking sites abroad. The program experienced high levels of exchange activity from the Spanish-speaking sites, particularly Bolivia, which is significant because as the Bolivian coordinator stated, “...at first, the teachers were surprised to see people from other parts of the world who spoke in different languages...” and “... in the latest exchanges, the teachers got the courage to speak to teachers in the United States.” He also told us that “... at first [students] were very shy and it was difficult to find conversation topics”, however after
the first exchanges “...[they] developed more confidence.” To help bridge the language gap at first, AAG staff (Astrid Ng) provided simultaneous translation between the sites during the actual online exchanges in real time. When students became more confident and wanted to speak to each other directly, teachers in the U.S. identified which students spoke Spanish in their classrooms and put these students in leadership roles to facilitate their classrooms through the exchanges. One of the teachers in Washington stated that allowing U.S. Spanish-speaking students to lead discussions made them feel like they were important and gave them a boost in confidence as well, because they felt that their class was relying on them to help them through the exchange. This is important since it sent these students a positive message that their language skills were important and appreciated. This same teacher has expressed that Filipino-American students were very interested in connecting with their peers in the Philippines to talk about the similarities and differences in their upbringing.

**Students experienced expanded access and opportunity:** Particularly meaningful exchange dialogues resulted from connecting with the Colegio Pan y Amor, one of the GCE schools in Nicaragua. This school is run by a non-profit organization and reaches out to school-aged children in very poor neighborhoods who would otherwise not have the chance to enroll in a decent school, much less participate in programs like this one. The Colegio Pan y Amor students receive two warm meals a day and a cereal drink before leaving school in the evening, which may often be their last meal of the day. The school prepares the children in technical careers such as accounting and computing so that they can find jobs as soon as they graduate. Not only were the students in this school able to connect with U.S. peers on six different occasions, they are also being introduced to geographic technologies that could prove valuable to their future work prospects. Conversely, US students were made aware of the challenges their counterparts face.

**Mini Grants**

In order to stimulate deeper engagement with GCE themes, foster creativity in adoption of the MyCOE methods, and reinforce burgeoning collaborations across specific sites, the program offered a Mini Grants program to participating classrooms. Individual teachers, schools, teams of teachers or youth-leaders involving at a minimum one participant from a GCE site in the US plus one site from a GCE site abroad were eligible to participate in the Mini Grant Competition. The application form, available online, asked teachers to provide the following information about their proposed mini grant projects: the total number of students involved, how many hours of international exchange they planned on participating in, what types of exchanges the activities would include (live video chats, Facebook, e-mail, etc.), the number of expected youth projects that would be created, a budget breaking down how they would use mini grant funds, what MyCOE GCE themes would be addressed (Climate Change, Green Economy, Food Security, Hazards and Vulnerability and Youth Leadership), how themes would be addressed, where learning materials were coming from (the MyCOE GCE website, materials from the AAG Center for Global Geography Education, school curriculums, etc.), the main purpose and learning outcomes of the proposed mini grant project and why ideas were creative ways to achieve international understand and mutual learning. The online application form is still available for viewing at: https://mycoe.wufoo.com/forms/q7x3z9/

A total of 23 mini grant proposals were received via the program’s online application form: four from Bolivia, six from Ghana, eleven from the Philippines and two from the United States. The mini grant proposals were reviewed by 5 expert reviewers who selected 20 of the proposals to recommend for funding. Three proposals were deemed not to meet the criteria for the mini grant competition and these were not recommended for funding.
Out of the 20 mini grant proposals received and recommended for funding, three were from Bolivia, six from Ghana, nine from the Philippines and two from the United States. The program then worked with the Nicaraguan coordinator and teacher community, who had contacted the program and were interested in working on mini projects but they did not develop written proposals to turn in applications on time. Four additional mini grants were awarded to the Nicaraguan site for their mini grant projects that had been documented and developed with staff encouragement and the input of the national coordinator.

Mini Grant awardees were chosen on the basis of (1) the proposed scope of participation (how many students, how many hours, etc.); (2) feasibility as demonstrated in part by past participation in the MyCOE GCE activities and exchanges; (3) creativity; and (4) opportunity for fostering mutual learning outcomes. A total of $44,450 was awarded to the 24 mini grant groups. The mini grant projects were supervised by the international coordinators who carefully administered the funding in accordance with performance goals.

<table>
<thead>
<tr>
<th>Country</th>
<th>Proposals funded</th>
<th>Themes covered</th>
<th>Students involved*</th>
<th>Key Words from Mini Grant Proposals</th>
<th>Total Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>3</td>
<td>GE, FS, HZ, YL</td>
<td>550</td>
<td>geography olympics, geocaching, Inca trail mapping, waste management in schools, environmental awareness</td>
<td>$7,200</td>
</tr>
<tr>
<td>Ghana</td>
<td>6</td>
<td>CC, GE, FS, HZ, YL</td>
<td>93</td>
<td>Fishing productivity, waste management, community action research, interviews, city planning, field trips, data collection</td>
<td>$10,000</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>4</td>
<td>CC, GE, YL</td>
<td>120</td>
<td>Nutrition, deforestation, lakes</td>
<td>$1,000</td>
</tr>
<tr>
<td>Philippines</td>
<td>9</td>
<td>CC, GE, FS, HZ, YL</td>
<td>1053</td>
<td>Flooding, drought, carbon footprint, recycling, geohazards, environmental management, interviews, community action research, field trips, mentoring, workshop series, indigenous people schools (IP)</td>
<td>$19,250</td>
</tr>
<tr>
<td>USA (CO)</td>
<td>2</td>
<td>CC, GE, FS, HZ, YL</td>
<td>340</td>
<td>University forum for high school students, mega-cities, community problem solving, professional development</td>
<td>$7,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
<td><strong>2,156</strong></td>
<td></td>
<td><strong>$44,450</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Estimates of the number of students involved in the mini grant projects.
CC: Climate change; GE: Green economy, FS: Food security; HZ: Hazards and vulnerability; YL: Youth leadership

The mini grant program was important in maintaining generating exchange hours, as an integral component of the mini grant program for sites to communicate with each other.
This map depicts the connections that have been made through sites participating in online exchanges. Thicker lines represent more person hours of exchange between locations. The mini grants also served the intended purpose of deepening impact and relevance to sites, which exhibited interest and capacity to do so.

Following are statements made by MyCOE GCE mini grants teachers explaining the relevance of the award to them and their students in terms of educational goals, or proposed connections to the learning environment in their classrooms. Some of the comments also point to what their projects aimed to achieve within their communities as demonstration of the program's focus on youth engagement and leadership.

**BOLIVIA**

“Teaching geography in our educational institutions has remained unchanged for various years, leading to a repetitive and distorted understanding of what geography really is among students. Because of this, students consider geography as “another subject” that they must complete as part of their education. We have proposed [this project] with the aim to change this idea...” – Alejandra Choque Flores, teacher

*It is important to implement an education that includes green economy and food security for our students for the respect of planet Earth. -David Royers Vaca, student assistant*

**GHANA**

*Our ideas will educate people on the true picture of what is actually happening in Ghana about how pollution of water bodies are affecting fish productivity in Ghana. Students will be involved and educated on how important it is to protect water bodies and to arouse their interest in choosing a career in fish farming. Our idea will also educate people on importance of waste segregation and plastic recycling. – Edmond Agbele, teacher*

*[This is important] to introduce the youth in Ghana to local technology through the projects of the MyCOE GCE. Green Economy has been identified as a tool for protecting the environment and stimulating local development, thus contributing to global efforts in managing climate change and global warming. – Kingsley Aboagye, teacher*

*Involving youth in community research [will help them] to understand their environment [and] will lead to sustainable development. [We will] introduce the youth to indigenous technology through the projects of the MyCOE GCE –Michael Bentum Quainoo, teacher*

*The seminars, field trips, focus group discussions and the other direct students activities and involvement would bring out originality, and the online exchanges of ideas can generate a good international learning situation. –Samuel Kobina Asiamah, teacher*
PHILIPPINES
Through these simple activities, our students will learn a lot about Climate Change and its effects on earth and people’s lives. [The] students will learn that they can do a lot in helping take care of the earth. –Aimee Marie Gragasim, teacher

This project provides a creative way to achieve international understanding and mutual learning because this promotes and supports greening school campus programs. –Arlyn A. Dacanay, teacher

This idea is a creative way to achieve international understanding and mutual learning because our exchanges about our environment and ecosystem services can help us give a clearer picture of how different people regard their environment. We can develop online activities that students from different countries could use to facilitate understanding of different environments. –Cynthia V. Andaya, teacher

Solid waste is still a major problem worldwide. Although there are sound management programs from other countries but here in the Philippines still not in the priority to be acted upon and to be solved. Even in our community or school there is no efficient way and program in addressing solid waste. It is needed to pass the idea to the young minds to come up with sound environmental programs and their implementation. –Eleazar B. Guia, teacher

Waste management is a concern of everybody. Relative to business establishments, they find it cost effective if they use non-biodegradable plastic cellophanes as food containers. With this newly implemented ordinance, establishments are now finding alternatives to be more cost efficient without compromising the ordinance issued by the city government. In an international context, the results of this study can be used as reference for waste management related researches and policymaking.  –Jefferson Nuneza, teacher

Our project is creative because we will be focusing on water related issues and at the same time close mentoring between the students and the teachers involved from both sites will be given. Moreover, site visits and field trips will be incorporated in the project to make the experience more fun and hands on for the students. Finally, students will showcase their outputs in a mini local water conference or display to inform the public of the results of their research projects. –Michael Casas, teacher

The results of the study will provide the administrators, faculty and staff baseline information about how the kinds of lifestyle their students have contributed to climate change. This will help them come up with programs that would allow the members of the Philippine Science High School System explore their ecological footprint to reduce one’s contribution to climate change.  –Michael Casas

The idea is creative and unique because Science Camps are fun ways of allowing students to have hands on learning experience of concepts and theories. Added to that, there will be mutual understanding among students, because they will be learning from the experiences of the two sites and create ties among themselves. –Michael Casas

This proposed program primarily aims to help students and teachers from Indigenous People (IP) schools. These are the groups which may be considered a minority here in Southern Philippines and they are the group of people who needs our help the most. We firmly believe that with this outreach activity, we could help improve and alleviate their situation through education. –Ruwina Gonzaga
This proposal is designed to allow students to interact with students across national borders during the various video exchanges as well as to interact with students between schools of different levels, which is rare in Colorado Springs. The students' interactions with those from other MyCOE sites will provide understanding of specific challenges similar to those in Colorado Springs, as well as providing an opportunity for a discussion and, hopefully, a greater variety of solutions to those problems since the participants at all locations will be discussing methods to address them from multiple points of view. The interactions between students from Palmer High School and those from West Middle School will give Palmer students the chance to mentor those at West through the community action process as well as provide program continuity, as the 8th graders from West will transition into Palmer for high school, and into the high school portion of this project. –Anton Shulzki, teacher

I will present through the Cherry Creek School District Professional Development classes a course on how to incorporate the [MyCOE GCE] modules into everyday practice. The modules would be very beneficial to Social Studies and even Science classrooms for students to have hands-on experience working with the modules. I would also like to attend and possibly present a similar review on how to use these modules in Advanced Placement Human Geography classrooms. Our district holds a conference each November, specifically for AP teachers. Many of these modules fit nicely into the AP curriculum. I would also be interested in submitting a proposal to the July 2013 NCGE conference in Denver in order to share my experiences using the My Community Our Earth resources. –Kristi Fitch, teacher

Themes being explored in the MyCOE GCE Mini Grants can be seen in the following word cloud, made from the compiled text of their project plans. This graphic illustrates how the localization of GCE themes was operationalized with the additional support for creative adoption. Among others, terms that are highlighted and depict this local creativity include "awareness", "waste", "recycling," and "carbon."
Diversity Ambassadors

In December 2012, the Program Director formally reviewed the original proposal to identify what additional goals, outcomes, or objectives remained to be addressed in the final semester of work. While all targets for participation had been met at that point (or were confirmed as progressing on pace such as with youth project total numbers), the PI noticed an important opportunity to leverage AAG activity related to broadening participation in STEM education and promotion of careers in STEM fields, particularly geography. To this end, a new outreach component engaging with the AAG Diversity Ambassadors was developed. The Internal Evaluator assessed the plan and agreed with the approach for Spring 2013. Additionally, the plan incorporated a focus around careers materials activities and engagement of the entire suite of activities around the planned Digital Video Conference to leverage the enthusiasm for the youth projects to raise awareness of possible careers in related specialties, with the support of the Diversity Ambassadors.

So, with the aim of explicitly intensifying the program's engagement of greater numbers of US students from demographic groups that are traditionally underrepresented in higher education, the AAG recruited and deployed six (6) MyCOE GCE Diversity Ambassadors, spread across the continental USA (Florida, DC, Georgia, Maryland, Oklahoma, Texas). This team was convened around a flexible outreach model developed by the PI to active pursue and garner the support of teachers in classrooms and after-school youth mentors for exchanging around community based projects using GIS such as collecting data in a national park, creating maps on paper or on the computer with data they collected, understanding sustainable development and food through hands-on gardening, or how El-Niño affects students home state. Students involved were diverse in their ethnic and racial background, about 85% of them representing minority populations; language skills included ESL speakers; a range of grade levels, public and charter school attendance. Students’ feedback to the activities was highly positive and especially so for the Skype live, real-time exchanges with peers in all four international partner countries.

The Diversity ambassadors set out to actively engage in-person and on-site with collaborators, partners and resources available in their local community with the virtual, ongoing GCE program activities and exchanges. Ambassadors were selected from among the AAG’s existing network of volunteer experts, and included university faculty, nonprofit professionals, high school teachers and graduate students; their involvement provided a closely related addition to the Geography Alliances that the MyCOE GCE had already been working through. Each ambassador submitted monthly online reports to the PI to document progress frequently. AAG Staff member Niem Huynh was assigned an ambassador role for the DC area and also was tasked as a team leader among ambassadors to coordinate best practices and reporting among the group. Ambassadors used various methods to initiate diversity outreach including:

- networking with alumna who are now teachers,
- developing connections through current teacher interns within home university,
- seeking support from university administrator and department,
- personal outreach to community organizations and public institutions that serve under-represented youth (e.g., library, urban/botanical garden, business, organized youth institutions),
- cold calling and emails to administrators of nearby schools serving minority students,
- enlisting undergraduate students to assist,
- forming a collaborative team with fellow teachers,
- offering a teacher workshop,
- sending project flyer to teacher listserv in geography, social science and science disciplines.
Ambassadors worked with teachers of a diverse range of subjects: biology, chemistry, environmental science, Spanish, media arts/communication and marine science. The activities conducted by Ambassadors were tied to GCE themes as well as the knowledge and/or skills gained in these classes. The students represented diversity in a range of areas: diverse ethnic and racial backgrounds, particularly minorities; language skills ranging from native to ESL speakers; mixed sex groups; range of grade levels, public and charter school attendance; IB and traditional education stream.

The enthusiasm and generally respectful attitudes of the student participants during classroom-to-classroom exchanges provides anecdotal evidence about mutual understanding across borders. In particular, the model of the Diversity Ambassador offered not only a physically present role model but also a platform for explicitly ensuring that the diversity and outreach component stage of the program has unfolded successfully into the virtual components of the program. A summary of approximate student demographics is reported in the table below. In some cases, the composition is estimated because of the constraints on official records of participating students permitted by schools.

<table>
<thead>
<tr>
<th>Ambassador Site (State)</th>
<th>Number of students</th>
<th>Grade levels(s)</th>
<th>Estimated Student demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX</td>
<td>220</td>
<td>9, 10, 11, 12</td>
<td>182 African American</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>36 White</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 Hispanic</td>
</tr>
<tr>
<td>GA</td>
<td>3</td>
<td>6, 7, 8</td>
<td>3 African American</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 females, 2 males</td>
</tr>
<tr>
<td>January</td>
<td>223</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL - North</td>
<td>121</td>
<td>10, 11, 12</td>
<td>Four classes from Riverview High School. Marine course 1A and 1B are made up of a diverse cohort, relative to Marine Science 1C and 1D.</td>
</tr>
<tr>
<td>TX</td>
<td>150</td>
<td>11, 12</td>
<td>99% of Jack Yates High School students are African American. Harmony ESTEM students are first generation students from ethnicities such as African, Indian and Asian.</td>
</tr>
<tr>
<td>FL - Miami</td>
<td>952</td>
<td>9, 10, 11, 12</td>
<td>373 Biology/AP Biology</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>23 AP Env. Science</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>165 AP Human Geography</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>147 Chemistry</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>164 Physical Science/Technology</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>438 males, 436 females</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>94 White, 55 African American, 701 Hispanic, 22 Other</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>78% of students on free/reduced lunch.</td>
</tr>
<tr>
<td>DC/MD</td>
<td>115</td>
<td>9, 10, 11, 12</td>
<td>Parkdale HS: 5 classes of ESL students in science class (41 females/57 males; students come from Afghanistan, Iraq, Yemen, El Salvador, Mexico, Nepal, China, Guatemala, Rwanda, Cameroon, Haiti, Dominican Republic, Ethiopia, Vietnam, Honduras). Students range in grades from 9-12. 1 class of IB biology (11 females/10 males; students come from a range of countries including South Africa, China, Latin American countries, and from US). La Plata HS: 1 class with 16 students; 3 females/13 males; 15 White/1 minority.</td>
</tr>
<tr>
<td>February</td>
<td>1,338</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

25
<table>
<thead>
<tr>
<th>Location</th>
<th>Grade(s)</th>
<th>Gender(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>12</td>
<td>9</td>
<td>Grade 9 students taking Introductory Spanish. 4 males, 8 females. Several students speak Spanish as their first language.</td>
</tr>
<tr>
<td>FL- North</td>
<td>121</td>
<td>11, 12</td>
<td>The students who participated in this month’s activities were 11th and 12th graders in Marine Science 1 classes at Riverview High School.</td>
</tr>
<tr>
<td>TX</td>
<td>50</td>
<td>11, 12</td>
<td>All students are African American.</td>
</tr>
<tr>
<td>FL</td>
<td>68</td>
<td>9, 10, 11, 12</td>
<td>68 student Team Leaders, this number does not account for Leaders that participate in multiple activities. These students were all part of the 952 student contacts from the prior period.</td>
</tr>
<tr>
<td>DC/MD</td>
<td>252</td>
<td>9, 10, 11, 12</td>
<td>Duke Ellington School of the Arts: 18 students attended, all part of the Student Government (15 females, 3 males; 16 African American, 2 White). Capital City Public Charter School: 125 students (74 females, 50 males; 70 African American, 57 Hispanic, 2 Asian, 2 White). First Colonial High School: 109 students (62 females, 47 males; 10 African American, 5 Asian, 7 Hispanic, 86 White).</td>
</tr>
</tbody>
</table>

**March**

<table>
<thead>
<tr>
<th>Location</th>
<th>Contacts</th>
<th>Grade(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX</td>
<td>10</td>
<td>11, 12</td>
<td>All students are African American.</td>
</tr>
<tr>
<td>FL- North</td>
<td>11</td>
<td>11, 12</td>
<td>Marine Science 2 classes at Riverview High School, indirectly 986 Middle school students interacted with them during Earth Day event.</td>
</tr>
<tr>
<td>GA</td>
<td>250</td>
<td>9, 10, 11, 12</td>
<td>No new details provided</td>
</tr>
<tr>
<td>OK</td>
<td>6</td>
<td>9</td>
<td>Cherokee Nation students</td>
</tr>
<tr>
<td>FL</td>
<td>4,843</td>
<td>9, 10, 11, 12</td>
<td>No new details provided</td>
</tr>
</tbody>
</table>

**April**

<table>
<thead>
<tr>
<th>Location</th>
<th>Contacts</th>
<th>Grade(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC/MD</td>
<td>1</td>
<td>11</td>
<td>No detail provided</td>
</tr>
<tr>
<td>FL- North</td>
<td>58</td>
<td>11, 12</td>
<td>Asian, Black, Hispanic, multi-ethnic, 32%</td>
</tr>
<tr>
<td>TX</td>
<td>50</td>
<td>11, 12</td>
<td>All students are African American.</td>
</tr>
<tr>
<td>OK</td>
<td>75</td>
<td>9</td>
<td>56% female; 3 Heritage speakers of Spanish; high likelihood American Indian participation estimates</td>
</tr>
<tr>
<td>GA</td>
<td>150</td>
<td>9, 10, 11, 12</td>
<td>No new details provided</td>
</tr>
<tr>
<td>FL</td>
<td>1,021</td>
<td>9, 10, 11, 12</td>
<td>Approximately 237 students from other classes participated in Environment Day; similar demographic information as before</td>
</tr>
</tbody>
</table>

**May**

<table>
<thead>
<tr>
<th>Location</th>
<th>Contacts</th>
<th>Grade(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>1,355</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**OVERALL TOTALS**

<table>
<thead>
<tr>
<th>Location</th>
<th>Contacts</th>
<th>Grade(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>8,539</td>
<td></td>
<td>Where demographics are known, we estimated from ambassador reports that the program served 85% US minority (non-white) students, 50% girls.</td>
</tr>
</tbody>
</table>
The theme of these activities ranged greatly from one class period to multiple days and all are closely tied to one or more GCE theme: climate change, food security and vulnerability, green economy, natural disasters and hazards, sustainable development and youth leadership. The global exchange or connections component also ranged from observation or commenting on other youth projects to multiple, extended live online classroom collaboration, depending upon the needs, interests and availability of the particular group. The paragraphs below provide some examples of the types of activities that the Diversity Ambassadors in particular conducted:

**Mapping:** Mapping activities provide students with possibilities to add data they have collected, to identifying spatial patterns, and make conclusions. Students are exposed to creating maps with paper and crayons, professional license software and freely available online program platform. The Florida team, led by Ambassador Nick Oehm, is active in their use of geospatial technology as well as searching for data to support this effort. As a result, they have worked closely with the Ambassador coordinator (Huynh) and GIS support/project staff (McKendry) to locate appropriate data, modify data to fit the geospatial technology platform, and for general technical support.

**Data collection and field work:** Nick Oehm (Ambassador for Florida) and fellow teachers in Florida have maximized the presence of green space and natural parks (e.g., Deering Estate, Miami Dade Nature Preserve, Biscayne National Park, Fruit & Spice Park) for student outdoor learning. Teachers are involved as project leaders while elected students take on the role as team leader. Student groups are actively engaged collecting data (e.g., water and leaf samples, interviewing local farmers), which are analyzed and added to digital maps. They have been exchanging thus far with schools in both Nicaragua and Bolivia, nearly exclusively in Spanish, given their Miami student populations being heavily comprised of those of Latino and Hispanic origins.

A class from Houston was engaged in full experience in a community garden in Houston. Their day began at a local garden, ECOTONE, where Chef Tasha Gray explained best practices for sustainable gardening, composting, food deserts, food security and health disparities. This was followed by pulling out weeds, laying and tilling soil, and planting various vegetables (squash, watermelon, cucumbers, zucchini, lettuce, carrots and others). This process was filmed by students and interviews of community
members included in a documentary. The theme of their international exchanges explored the differences in food security with peers in Ghana, which resonated strongly with the majority African American student population. The groups have also exchanged with the GCE sites in the Philippines.

**Career Planning:** Nekya Young has engaged students by sharing her career path in the field of geographic information system. This caught the attention of organizers of “Girls’ Summit: Positive Attitude, Positive Results” and she was invited to a high profile event. She has also been involved with a radio interview that provided public outreach on geography and featured the MyCOE GCE project. Nekya Young and community members hosted a one-hour radio show on the local KCOH station in Houston, Texas. Students explained their experiences with the program and lessons learned.

Her encouragement for students to identify how geography can add to or enhance their career choice has also inspired students to learn more about geography. In one particular case, Nekya and a colleague (Sonia Garcia, an AAG Broadening Participation Scholar) are pursuing avenues for a student to attend the Geoscience summer program at Texas A&M University. Another example is of a Hispanic high school junior who became highly interested to pursue a career in geography, asking for more information about college programs and scholarships. Students were very engaged and posed numerous questions about the ties between geography and her interest in Fashion Merchandise. Nekya explained that “Geographers use geocoding to examine buying patterns of consumers in order to promote sales, etc.” peaking the interest of girls using the technology learned through the program for possible future careers in other fields.

Niem Huynh worked with Teacher Seth Brecher and students from Ellington High School, who attended a four-day College Summit workshop with a group of students at University of Maryland Baltimore County. The workshop focused on providing leadership development as well as intensive college preparation in the area of personal statement writing and college list development for the students, many who will be the first generation to go to college in their family. Brecher underscored that the students would not have been able to attend this very important program if it were not for their participation in MyCOE GCE.

**Knowledge adaptation and transfer:** Students have multiple opportunities to share their learning within the MyCOE GCE project with other students. At a personal scale, students learn about how food security relates to health issues (e.g., obesity) and access/lack of access to food, natural hazards and weather
patterns such as Ivan Ramirez, Ambassador in Florida’s work with Hurricanes and El Niño, relating these environmental sciences to them, their neighborhood, and the larger community. Ramirez’s students have exchanged about the various consequences of climate change with students in Bolivia who are studying problems of flooding in La Paz. At a local scale, students discovered opportunities to produce sustainable food and the complex physical systems in the natural environment. At a global scale, students learned how their consumption and actions affect others inhabiting Earth and how many Earths are needed if everyone lived like them.

The MyCOE GCE materials and activities were designed to not replace but enhance students’ school curriculum and they can apply knowledge/skills learned from another class to the MyCOE GCE projects. For example, students in a media arts/communication class filmed their journey as they learned about food security, green economy and biodiversity. Also, Niem Huynh (Ambassador in DC/Maryland) led a class discussion on natural hazards, drawing on the class’s diverse ethnic background and recent immigration status, to elicit personal stories, experiences that ranged from sand storms, tornados, volcanic eruptions, floods and earthquakes.

**International understanding and connections through place:** The teachers and students engaged by Ambassadors have of course also participated in many online exchanges with students from all of the four participating countries: Bolivia, Ghana, Nicaragua and the Philippines. In addition, the Atlanta, Georgia based Ambassador, Tim Hawthorne, began connecting with peers in Puerto Rico in ways that give a sense of a shared region in the Atlantic. Oklahoma based ambassador, Amanda Coleman, developed connections around the shared identities of local Native American students in her classrooms to the indigenous issues that are faced in Bolivia, using mapping and food security as a conversation center.

**Youth Projects**

Throughout the entire program, teachers and youth were encouraged to form working teams to conduct digitally supported collaborative community-based projects. Following and in conjunction with use of the formal classroom materials provided and incorporated into their own curricula and local school activities, students were guided to explore and employ the extensive MyCOE digital library and resources. These projects related to the exchanges in various ways; some classrooms used the exchanges to explore project ideas while others used exchanges to share final results, while others developed common project frameworks for later comparison, depending on the particular relationship of the teachers. Commenting and collaboration around projects that were posted to the gallery was facilitated across the multiple international sites and among US participants.

Special competitions were created to help stimulate student interest in submitting projects throughout the calendar rather than all at the very end and many GCE students took advantage of these
competitions to turn in their projects by particular deadlines throughout the course of the program. These included: Earth Day, Rio+20 Showcase and the Digital Video Conference. By the end of the program, we had received a grand total of 513 new collaborative community-based youth-led projects, submitted by GCE working teams formed by teachers and youth conducting exchanges. Youth teams have varied in size, from two to three students to entire classrooms. A few projects were also submitted by individual students. Projects typically utilized the MyCOE modified scientific inquiry model to 1) ask a question related to how their community has changed over time with respect to program themes; 2) observe data provided through the MyCOE portal, particularly spatial data; 3) analyze the information with MyCOE web-based mapping applications; 4) draw conclusions about the nature of change in their communities, including positive and negative change; and 5) take action by sharing the results of their work. Some used the Geoportal, which organized the various materials and resources available into the five-step process.

Projects were submitted to the program via an online collection form through Wufoo.com. The English version of the application form is available here: https://mycoe.wufoo.com/forms/z7x3k1/. The Spanish version of the application form, which was created to help facilitate project submission from MyCOE GCE Spanish-speaking sites is available here: https://mycoe.wufoo.com/forms/m7x3s5/. Because youth must be at least eighteen years old to submit projects via this interface, GCE teachers and in some cases international coordinators played an important role in helping students submit their projects.

The projects received through the online form were all uploaded to the MyCOE Gallery by AAG personnel. The MyCOE Gallery, where youth are able to view as well as share their projects via social media sites including Facebook and Twitter and where they also directly made comments and asked questions about projects. All of the projects can be seen online at: http://www.aag.org/mycoegallery.
In addition to the commenting features on individual project pages, two of the international sites established country level dedicated blogs for participants in those sites to publicize project related work as it unfolded, but also for sharing at a higher level with their exchange partners at other US sites. This included Bolivia (maintained by International Coordinator Javier Nuñez) at: http://geografiabolivia.blogspot.com/ and Philippines (maintained by Teacher Michael Casas) at: http://mycoephilippines.blogspot.com/
The site at Ghana also hosted a blog with updates from the program albeit not a blog dedicated solely to the GCE Program (maintained by International Coordinator James Eshun) at: http://futuregeographers.wordpress.com/.
Links are available at www.aag.org/gceblogs.

It is interesting but not surprising to note that some project themes were more popular in some countries than others — themes that were popular in certain countries reflected what students were most likely to discuss during exchanges and also seemed to reflect the particular characters of local communities. This outcome is encouraging, given MyCOE program goals to engage youth in relevant issues that resonate with their daily lives yet have global significance. For the GCE exchanges, this approach to focus on local issues aids in the sharing of relevant information and enriching the opportunity to learn about these other places in the world. For example, in Bolivia, many of projects submitted under hazards, vulnerability and risk were about the problems they have with landslides, which is a persistent theme that comes up during Bolivian exchanges. In the Philippines, several students submitted projects about water resources and flooding, and this too is a common theme they discuss in their exchanges due to recent floods, which have affected the country and relate strongly to climate change. (In fact, in the very beginning of the MyCOE GCE program, the program lost participation from schools who were flooded and had damage to their computer labs.)

The breakdown of projects into these themes accurately describes both the major environmental topics that students see more relevant in their communities as well as popular topics discussing during the
online virtual exchanges. The majority of projects were submitted by students in the US (and Puerto Rico) and the Philippines. The US participation rate is likely due to the heavy outreach done in the US to connect to all international sites, and in the Philippines likely represents that the projects coming from mini grants in particular grew to become the principal collaboration mechanism, overcoming challenges that real-time online video exchanges presented due to the time-zone arrangements. The tables below summarize the submissions by country and by theme:

<table>
<thead>
<tr>
<th>Total MyCOE GCE Projects</th>
<th>Number by Country</th>
<th>% of total submissions by Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>73</td>
<td>14%</td>
</tr>
<tr>
<td>Ghana</td>
<td>91</td>
<td>18%</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>28</td>
<td>5%</td>
</tr>
<tr>
<td>Philippines</td>
<td>163</td>
<td>32%</td>
</tr>
<tr>
<td>United States and PR</td>
<td>158</td>
<td>31%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>513</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**Most Popular Themes by Country***

<table>
<thead>
<tr>
<th></th>
<th>Bolivia</th>
<th>Ghana</th>
<th>Nicaragua</th>
<th>Philippines</th>
<th>US &amp; PR</th>
<th>ALL Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate Change</td>
<td>14%*</td>
<td>14%</td>
<td>4%</td>
<td>35%*</td>
<td>11%</td>
<td>19%</td>
</tr>
<tr>
<td>Food Security</td>
<td>12%</td>
<td>24%</td>
<td>18%</td>
<td>16%</td>
<td>19%</td>
<td>18%</td>
</tr>
<tr>
<td>Green Economy</td>
<td>30%</td>
<td>29%</td>
<td>29%</td>
<td>12%</td>
<td>2%</td>
<td>15%</td>
</tr>
<tr>
<td>Hazards, Vulnerability &amp; Disasters</td>
<td>29%</td>
<td>10%</td>
<td>25%</td>
<td>17%</td>
<td>20%</td>
<td>19%</td>
</tr>
<tr>
<td>Youth Leadership</td>
<td>3%</td>
<td>9%</td>
<td>0%</td>
<td>1%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Sustainable Development</td>
<td>12%</td>
<td>14%</td>
<td>25%</td>
<td>20%</td>
<td>46%</td>
<td>26%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*For example: “Fourteen percent of projects from Bolivia were about Climate Change.” and “The most popular theme in the Philippines was Climate Change.”

**Percentage of Themed Projects from GCE Sites**

<table>
<thead>
<tr>
<th></th>
<th>Climate Change</th>
<th>Food Security</th>
<th>Green Economy</th>
<th>Hazards, Vulnerability &amp; Disasters</th>
<th>Youth Leadership</th>
<th>Sustainable Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>10%</td>
<td>10%</td>
<td>28%</td>
<td>22%</td>
<td>13%</td>
<td>7%</td>
</tr>
<tr>
<td>Ghana</td>
<td>13%</td>
<td>24%</td>
<td>33%*</td>
<td>9%</td>
<td>53%</td>
<td>10%</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>1%</td>
<td>5%</td>
<td>10%</td>
<td>7%</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td>Philippines</td>
<td>58%</td>
<td>28%</td>
<td>25%</td>
<td>28%</td>
<td>7%</td>
<td>24%</td>
</tr>
<tr>
<td>US &amp; PR</td>
<td>17%</td>
<td>33%</td>
<td>4%</td>
<td>33%</td>
<td>27%</td>
<td>54%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*For example: “One third of all projects submitted on Green Economy came from Ghana.”
Below are a few summaries provided by project authors to qualitatively illustrate how the youth-led projects approached each of the main themes of the MyCOE GCE Program:

**Climate Change**

*Perception of the impact of global warming and sea level rise among residents on the coast of Cataño, Puerto Rico*

*Note: Translation provided by Elizabeth Chatfield Vernier*

**Project Description:** Global warming will disproportionately impact island and continental coasts due to the effects from the rise in sea level. These effects include coastal erosion, aquifer salinization, and greater susceptibility to floods and storm surge. The Municipality of Cataño, located in the southern part of San Juan Bay, the capital of Puerto Rico, is highly susceptible to these phenomena since it is almost at sea level. A large part of its coastal infrastructure will be flooded in this century, affecting hundreds of families that will have to relocate if appropriate measures are not taken. This research project explores the perception of the Cataño coastal region’s residents regarding the impact the sea level rise will have on their community. This perception is essential to understanding the knowledge level citizens possess when helping to make decisions about municipal-level urban planning.

**Correlation between the Philippine science students’ annual family income and carbon footprint, Davao City, Philippines**

The study aims to determine the difference in the carbon footprint of students from Philippine Science High School-Southern Mindanao Campus (PSHS-SMC) under different income brackets. The survey was taken by four students in every year level from three different scholarship categories namely the FULL (family income per annum: Php 60,000 and below), PARTIAL (family income per annum: Php 60,000-Php 119,000), and SPECIAL (family income per annum: Php 120,000 and above) scholarships considering their carbon footprints from December 2011 to February 2012. The results reveal that special scholars have the largest carbon footprint while full scholars have the least carbon footprint. The results of this research moved us as students to write proposals lobbying to the local government that they enforce a comprehensive “Climate Change Agenda” to heighten climate change awareness and intensify campaigns to uphold alternative lifestyle among the residents of Davao city to promote sustainable development.

**Green Economy**

*Impact of human activities on the Fosu Lagoon, Ghana*

**Project Description:** The research used observation and interview to solicit information. The main question was the sources of waste and pollutants found in the Lagoon. It was identified that the major contributor of waste and pollutant in the Lagoon was the mechanic shops. Artisans pollute the land they work on and the lagoon which is source of fish supply and employment to some
natives. Fumes from faulty vehicles emit pollutant gases (carbon dioxide, carbon monoxide, nitrous oxide), which are all greenhouse gases increase the temperature and contribute to the warming of the environment. Dirty oil and greasy substances waste were identified to have contributed substantially to the destruction of the lagoon ecosystem. As a solution, Geographical and Environmental Clubs and Societies should educate the public about the risks in polluting the environment. Environmental laws governing pollution should be enforced. Metropolitan Assembly/Central Region Development Commission should relocate the fitting shop site.

**La chatarra un problema para mi comunidad, Managua, Nicaragua**

Project Description: La chatarra es un conjunto de elementos metálicos que no tienen utilidad, por lo tanto son vendidos y exportados a otros países que de ellos hacen un uso útil, al deshacernos de estos residuos beneficia a la sociedad, por su valor económico que puede suplir algunas necesidades (alimentos, vestimenta). Estos desechos son la problemática en la comunidad del barrio, porque provoca que los habitantes tengan proliferación de alimañas, agua estancada y contaminada en sus entornos. La pregunta que se planteo para este proyecto fue: ¿Si realmente afecta la chatarra a mi comunidad? La respuesta la encontramos realizando una encuesta a los habitantes de la misma, quienes protestaron de la mala higiene de las chatarreras, a pesar de las sugerencias que les ofrece el Ministerio de Salud (MINSA), ellos solicitan una solución a esta problemática que afecta su higiene ambiental y su salud debido a la contaminación causada por las chatarreras.

**Food Security**

**World Water Week: Feeding the Future, Seattle, Washington**

Project Description: Student leaders organized a number of events for our school to enjoy during our festival. Tuesday, March 20th closed with a well-attended basketball tournament fundraising for East African Relief through Doctors Without Borders. On Wednesday, an organization called FEEST entertained our student body with a startling and motivating assembly for awareness regarding food deserts and local food justice. On Thursday, all students participated in a synchronous school-wide lesson during the study hall period. The lesson materials were on a website for teachers to access. Students looked at food from a systems approach and they tried to estimate the water footprint of their diets. Our big finale of the week was our all school teach-in on Friday the 23rd. There were 25 different workshop sessions. We closed our Friday event with an all-school assembly with water/food-themed games and a live performance from a band to celebrate the successes of the week.

**Hazards, Vulnerability and Risks**

**Riesgos de desastres naturales en La Paz, Bolivia**

Project Description: El motivo de este proyecto es para hacer conocer a las personas sobre los riesgos que podemos correr y que pueden existir en nuestra ciudad si no sabemos dónde construir nuestras casas. También debemos de consultar a la alcaldía si es una buena zona para construir una casa, si antes no hubo ríos porque si construimos donde antes fueron ríos corremos riesgos por la tierra puede estar remojada. Las todas las personas tienen que tener
siempre una supervisión para ver si sus casas están en buen lugar que no sean encima de ríos, porque donde vieron ríos la tierra está remojada y con el tiempo puede ver deslizamientos como ya sucedieron en distintos puntos de La Paz.

Youth Leadership

Vulnerable communities in historic Cape Coast, Ghana

The study looks at how the youth can be transformed in to effective, law-abiding citizens and future community leaders. Simple random, purposive sampling methods with structured interviews and focus group discussions were employed in gathering data. The study identified Government, Traditional leaders and parents as the regulators of youth life. However, weak controls have caused high teenage pregnancies, under-aged marriages, high illiteracy rate in fishing communities, general poverty, child labor, children selling in the streets or engaged in fishing during school hours, people selling chaotically at lorry stations and obstructing vehicular traffic, improper disposal of human waste and refuse at beaches and in drains. We collaborated with traditional leaders, metropolitan officials, educationists and community leaders to find solutions. A reversal of the trend warrants stringent measures that would educate and empower the youth, make them understand their environment, take responsible leadership roles and make effective decisions concerning the community and livelihood.

Recognition for Youth Led Community Mapping Projects

As noted above, the program conducted particular competitions to stimulate interest and connections to broader global discourse around themes, including the Earth Day Competition and the Rio+20 Competition. Another (poster) competition was conducted at the Digital Video Conference (described later in this report.) The deadline for the Earth Day competition was April 22, 2012. Out of the 43 projects submitted for this competition, three projects were selected as winning projects and one of these was a GCE project. “Talomo River Over the Years: Davao City’s Primary Water Source”, won the first place prize in the high school level category of the Earth Day Competition and these Filipino students were awarded $200.

The Rio+20 Competition received projects under the following themes to coincide with key focus areas at the United Nations Conference for Sustainable Development: agriculture, climate change, forests, food security, green economy, hazards and vulnerability and youth leadership. Projects that were submitted to the Earth Day competition were also automatically considered for prizes for the Rio+20 Competition. Out of the 146 projects submitted, eleven MyCOE GCE projects were honored with recognition. The titles of these eleven winning GCE projects are:

- Assessing Coastal Erosion in Abakam Duakor in Cape Coast (Ghana)
- Constructional Works and Food Insecurity in Apeowsika and Amamoma (Ghana)
- Correlation Between the Philippine Science Students’ Annual Family Income and Carbon Footprint (Philippines). *Note: This project also won our most popular project, as it received the greatest number of online votes from the public.
• El Megadeslizamiento en la zona Callapa (Bolivia)
• Environmental Hazards and Food Security in Shama (Ghana)
• Hazards Maps of Davao City (Philippines)
• Impacts of Human Activities on the Fosu Lagoon (Ghana)
• La chatarra—un problema para mi comunidad (Nicaragua)
• Vulnerable Communities in Historic Cape Coast (Ghana)

The panel of judges that selected the winning projects was composed by individuals from Esri, USDA, NCGE and AAG members.

*As mentioned above, one of the GCE projects won the “Most Popular” award. When projects were uploaded online, online “sharing” buttons were included that allowed the students to directly post their projects on blogs and on social media sites such as Facebook and Twitter. The program’s project Geoportal also allowed for students to vote and comment on the online projects. Students and their teachers went to Facebook to ask others to vote for their projects. Below are images of the Geoportal as well as some comments taken from individual project pages as well as Facebook:

“Browsing through the projects submitted here makes me think that the youth is truly the most potent “force” that we can tap in saving our one and only Earth. Let us continue to encourage the youth to be active in making the change that we would like to see in our world possible!” –Filipino teacher

“Davao is known to have the 2nd cleanest drinking water in the world, and one of our major concerns is how to keep it that way. We need research papers like this as a basis for policy implementation in keeping the quality of one of our most valuable resources. This project is one step closer towards saving our watersheds, which will eventually benefit all of us and the future generation.” –Filipino student

“Acabo de ver los proyectos que enviaron los estudiantes de los diferentes países y realmente están muy buenos, si continuamos concientizándo a los más jóvenes podemos lograr salvar nuestra tierra, pues la juventud tiene esa energía que necesitamos para cuidar el ambiente [I just saw the projects that the students submitted from different countries and they are really good. If we continue to make youth more conscientious we can achieve saving our planet; the youth have the energy that we need to take care of the environment].” –Bolivian teacher

“Que buenas iniciativas por el proyecto MyCOE, los trabajos enviados nos permiten ver la realidad de cada país especialmente en Bolivia y lo mejor de todo esta hecho por estudiantes. Muchas felicidades por estas iniciativas [What great initiatives from the MyCOE project—the projects sent in allow us to see the reality in each country, especially Bolivia, and the best thing is that they are created by students. Congratulations for this initiative.]”—Bolivian student

“I think this research topic is great and marvelous because it has really pin point the real situation on the ground. I have witnessed the activities around this lagoon and it’s really serious.” –Ghanaian student
After the winners were selected for the Rio+20 competitions, everyone who submitted a project (whether or not they were selected as winners) received a certificate of recognition for their participation in the competitions. Roughly 477 certificates were mailed out to GCE students, teachers and schools who submitted projects. High school GCE projects that were selected as winners received MyCOE medals, flip cameras, books and other print resources from the AAG. University GCE projects that were selected as winners (university level winners were GCE partner universities or universities that have partnered with GCE high schools) were sent Juno GPS units donated by Esri and Trimble, Inc.

**Digital Video Conference, Publicity and Outreach**

Publicity and Outreach objectives aimed to raise awareness of the program as an opportunity for global connections as well as to recruit participation in exchange activities, and to circulate news about results as activities unfolded. This section summarizes the extensive reach of program communications and outlines the capstone event, the Digital Video Conference, which brought all of the results together at the end of the program. All communications clearly acknowledge the sponsorship of the Bureau of Educational and Cultural Affairs of the US Department of State.

- Announcements in the AAG Newsletter (readership of 12,000), AAG’s 59 Knowledge Communities, National Geographic’s Alliance networks of 53 sites in 49 states; and the 4 embassies public affairs offices, periodic appearances on the front page of the AAG’s website, which receives over 50,000 unique hits per month, and in the main digital AAG communication outlet, the AAGSmartBrief.
- Main project website at www.aag.org/gce and www.aag.org/gceespanol (in Spanish)
- Announcements inviting GCE students to participate in the Earth Day and Rio+20 competitions were posted on Twitter, Facebook and the AAG Knowledge Communities. When winners were announced, they were published on the AAG website and were also released as AAG Press Releases and in the AAG Newsletter.
- General outreach publicity about MyCOE, including the GCE initiative included news messages to 1,124 individuals, 43 listservs, and the AAG Geogram (8,069 subscribers) and the AAG SmartBrief (7,094 subscribers).
- Tailored US State press releases and broader announcements about the Geoportal publicized localized efforts
- Three AAG staff attended the National Council of Geographic Education in San Marcos, Texas from October 5-7, 2012. One hundred MyCOE GCE flyers were distributed to teachers and Alliance Coordinators present.
- AAG participates in the Annual Meeting of Geography Alliance Network Coordinators. On April 19, 2012, two AAG staff were present to share AAG geography education materials. Fifty MyCOE GCE flyers and twenty of each activity (Ecological Footprint, Food Security, Green Economy, and Hazards) were distributed. AAG again attended this event to promote MyCOE GCE results and other materials on February 28, 2013.
• An “email blast”, featuring MyCOE GCE, from National Geographic was sent out to all Alliance Coordinators
• The MyCOE GCE flyer and project summary were posted on the AP Teacher Community for the subjects Biology, Chemistry, Environmental Science, and Geography
• MyCOE GCE flyer and information were sent to teachers via geography and science list serves (e.g., GIS Research Group, GeoEd, GISEd, Maine Science)
• E-announcements to 3,000 teachers on the Alliance for Climate Change Education list
• Personal outreach included staff sending scores of personal emails to their individual contacts.
• MyCOE GCE bookmarks inserted into over 7,500 tote bags that were handed to each person that was registered for the AAG Annual Meeting in Los Angeles 2013. This means that every person who was registered for the meeting received information about the interactive poster session.

The poster session was also highlighted in panel sessions during the meeting to generate interest.

• Earth Day Geoportal Update on April 22, Earth Day 2013, circulated an updated version of the online Geoportal and Youth Project Leadership Gallery.
• Press releases to the top 10 US Newspapers, 4 wire services, 40+ trade publications (see below)

**Top 10 US Newspapers:** Wall Street Journal; USA Today; New York Times; Los Angeles Times; Washington Post; Daily News; New York Post; San Jose Mercury News/Contra Costa Times/The Oakland Tribune; Chicago Tribune; Houston Chronicle.

**Wire Services:** Reuters, Associated Press, Agence France Presse, and United Press International;

**Trade/Geography-Related:** African Studies Association; American Geophysical Union (AGU); American Historical Association (AHA); American Planning Association; American Society of Landscape Architects (ASLA); American Sociological Association (ASA); ArcNews Quarterly (ESRI); Association for Asian Studies, Inc.; Association for Canadian Studies; Association of Japanese Geographers (AIG); Association of Korean Geosciences Societies; Geosciences Journal; Association of Professional Geographers of India (APGI); Associations des Geographes francais; Brandeis University, Center for Israel Studies; Chronicle for Higher Education, The; Deutsche Gesellschaft fuer Geographie (DGfG); Die Erde (Journal of the German Society of Geography, Berin); Directions Media; Earth Imaging Journal; Earth Magazine/AGI; Geoconnexion; Geography Research Forum; Geoinformatics Magazine; Geological Society of America; Geographical Society of China; GeoWorld; GIM International (online); GIS Café; GIS Development ; GIS Lounge; GIS User; GPS World; IPGH/PAIGH (Argentina); National Association of Geographers of India; Professional Surveyor; SEEDmagazine; Social Science History Association ; South East Asian Geography Association (SEAGA); The Geographical Association (UK); Vector 1/ magazine.

In consultation with ECA, the main Points of Contact within PAS at the respective embassies in Bolivia, Ghana, Nicaragua and the Philippines were provided with tailored press releases that also included numbers and names of participating organizations within each country. Embassies all thanked staff and indicated that local circulation was assured. AAG Staff has requested from embassies that they provide copies of any press that picked up the story.

In the run-up to the anniversary conference of the Earth Summit, United Nations Conference on Sustainable Development (Rio+20), significant global publicity has been accomplished thanks to AAG Staff Astrid Ng, who serves as the GCE Social Networking & Youth Coordinator. Astrid wrote an essay on Youth Leadership that was competitively selected for publication as the lead feature article in the State Department’s eJournal USA. This publication is translated into 5 different languages and has an estimated
readership of 48 million worldwide. It is available online at http://iipdigital.usembassy.gov/st/english/publication/2012/03/20120330095934dirtsa3.980219e-02.html#axzz1szLLBZWm

AAG staff organized for engagement of MyCOE as a Partnership with the UN Conference on Sustainable Development in Rio, Brazil, June 2012, or Rio+20 to showcase the past decade of sustained programs, activities, youth and mentor networks and resources that have been developed by this partnership and by respective partners, which include many U.S. government agencies and emphasize the sustainability and flexibility of the MyCOE framework, through programs such as the MyCOE GCE.

The partnership was highlighted in a side event session organized by the U.S. Department of State, U.S. Department of Agriculture, Esri, NASA and the Association of American Geographers and was featured at the Youth Innovators Event, the grand finale of the Forum on Science, Technology and Innovation for Sustainable Development organized by the International Council for Science (ICSU) and the UN Major Group on Scientific and Technical Communities. Over 1,000 people attended the event from June 11-15, with another 1,000 watching the live webcast and many more interacting via social media.

A special video presentation was produced in conjunction with other partner activities funded by USDA and NASA that gave an overview of MyCOE broadly but also featured the MyCOE GCE activities, including a number of the sites and the fact that there are major exchanges underway. This video is available at: http://www.youtube.com/watch?v=2p37B9FQ_80.

AAG staff also set up a MyCOE display at the UN Major Group on Youth and Children Exhibit Hall, where GCE and other projects were exhibited around the themes of food security, climate change, water, sustainable cities, community empowerment, youth leadership, hunger and poverty alleviation. The interactive display included lightweight, low footprint and highly-mobile technologies to share with more attendees across larger spaces with less equipment.

Information about the program was also distributed and shared with individuals at approximately 52 sessions and roundtables. A post Rio+20 report detailing the participation of the MyCOE GCE program during the conference was circulated to MyCOE Partners at various federal agencies (USDA, NASA, USAID, etc.).
The MyCOE GCE Digital Video Conference was held in conjunction with the 2013 Annual Meeting of the Association of American Geographers in Los Angeles, California, which registered an attendance of approximately 7,500. The DVC format and agenda centered on a specially convened MyCOE GCE Poster Session on Wednesday, April 10, entitled “Young Leaders Mapping Sustainable Development Challenges: My Community, Our Earth Beyond Rio+20”. Forty-five (45) on-site posters were included around all GCE themes and were presented by mainly university students or faculty who had been working with high school students on community geography and environment and GIS research projects. These were judged for a special competition by MyCOE program alumni and current GCE coordinators. In addition, a special area of the venue was staged so that during the poster session, all four of the GCE international sites plus Puerto Rico also presented posters via a live Skype videoconference. Students and their teachers in Bolivia, Ghana, Nicaragua, the Philippines and Puerto Rico, prepared live presentations of MyCOE projects that they had prepared through the MyCOE GCE to a live audience during the poster session which was also web-broadcasted live and recorded. The students also interacted with audience members who asked them questions and gave feedback on their projects. For many students as well as teachers, it was their first time presenting at a conference. A Diversity Ambassadors Panel and Reception period followed, where the MyCOE GCE Diversity Ambassadors shared their progress with engaging minority high school students and career pathway awareness, in addition to discussing issues pertinent to minority students in higher education generally. Finally, the AAG sponsored an International Reception to celebrate the global character of the conference, which was well attended.

The MyCOE GCE DVC showcased and celebrated the sustainable development work of youth in themes including agriculture and food security, biodiversity, climate change, forestry, green economy, hazards and vulnerability, poverty eradication and fresh water supplies, while giving them the chance to learn about the sustainable development work being done in the GCE international sites.
A virtual welcome was given to launch the DVC by US State Department Program Officer Andrew Posner who joined on a large screen by Skype. In addition to the 45 posters presented physically during the poster session, the DVC counted on presentations from students in Bolivia, Ghana, Nicaragua, the Philippines and Puerto Rico through a live Skype videoconference that was projected into the poster session room. These presentations were recorded and streamed live through UStream and could be accessed real time through the MyCOE UStream account: http://www.ustream.tv/channel/my-community-our-earth. This live streaming made the presentations and exchanges available to other US GCE sites and others that were not able to be present in Los Angeles for the meeting.
Each site had 30 minutes to present their posters (including time for questions and answers from the in-person audience in Los Angeles).

**BOLIVIA**
Two groups from Bolivia presented their posters at the DVC. The first one was a group of female students and their teacher from the Liceo Venezuela, which is an all-girls high school in La Paz. The posters presented were: Risks en Touristic Areas; The Choqueyapu Lake as a Focus for Contamination; and The Lack of Adequate Nutrition in La Paz Homes. The other Bolivian group was from the school Colegio 16 de Noviembre in El Alto, Bolivia. These students presented on recycling in the city of El Alto, Bolivia. Over 30 students gathered in Bolivia to watch the presentations and participate in the DVC.

**GHANA**
Students from Mfantsipim Boys High School and Sammo Senior High School in Cape Coast, Ghana, presented a poster on “Assessing Coastal Erosion in Duakor-Abakam in Cape Coast Metropolis”. The idea behind the project was to assess the extent of change in the coastline, determine factors causing coastline erosion in Cape Coast and also provide solutions including adaptation strategies.

**NICARAGUA**
The presentation from Nicaragua came from students of the Colegio Pan y Amor, a high school in Managua funded by a nonprofit organization that was created in Nicaragua to combat child labor and poverty through education. The students in the Colegio Pan y Amor come from some of the poorest and most violent neighborhoods in Nicaragua. The school begins with preschool and ends with high school—the last three years of high school is dedicated to vocational training. The Nicaraguan students presented on several environmental issues affecting Managua including: illegal trash bins, reforestation, genetically modified foods, the production of methane gas and issues concerning nutrition.
PHILIPPINES
Students in the Philippines presented three projects:
Time Series on Gonorrhea and Trichomoniasis Cases in Davao City;
Phytochemical and Heavy Metal Content in Kappaphycus;
And Carbon footprint of the Philippine Science High School Southern Mindanao community.

These students were from the Philippine Science High School Southern Mindanao Campus (PSHSSMC).
PSHSSMC is a regional campus of the PSHS System located at Davao City. It is a Science High School where students are required to take Science and Mathematics college-level courses.

PUERTO RICO
Five twelfth grade students from the Escuela Superior Francisco Oller in Cataño, Puerto Rico presented their poster about “Climate Change Knowledge in Flood Zones in Cataño”. They explained how with their teachers, their classroom divided into groups to interview the citizens in various regions of Cataño to A) ask questions about how much people knew about climate change and their vulnerability to climate change and B) educate these individuals about the possible threats they faced due to climate change.
The DVC poster session also counted with a small competition and prizes for the best posters, and MyCOE and GCE staff members served as judges and awarded a first, second and third place winner at the end of the session. The winners were:
*First place: Amelia Joan Richey from the University of Arizona with “Social and Environmental Progress: Reconciliation Ecology in an Arizona-Southwest Schoolyard”;
*Second place: Adam Levina from Central College with “Enhancing Campus Sustainability: Building a Campus Wide Composting Program”;
*Third place: Peter Kamau from Miami University
*Honorable mentions: Ryan Barrett from Georgia State University with “Investigating the Atlanta Food System: A Mixed Methods Study of Environmental Sustainability and Human Health”; Andrew Ruegg from Arizona State University with “Fire Frequency in San Diego County: What Census Blocks can Tell us About Ex-Urban Growth and the Human Dimension of Regional Wildfire Vulnerability” and Carolina Busch Pereira from the Universidade Federal do Tocantins with “Art and Geographic Education”.

![Image of people at a table and waving]
A Diversity Ambassadors Panel and Reception period followed, where the MyCOE GCE Diversity Ambassadors shared their progress with engaging minority high school students and career pathway awareness, in addition to discussing issues pertinent to minority students in higher education generally. Finally, the AAG sponsored an International Reception to celebrate the global character of the conference, which was well attended. A photo booth permitted attendees to take home memories of the event. Other displays included a booth showcasing the MyCOE Global Connections and Exchange Program, including a digital exhibit with project gallery and video narrated about the effort. An interactive space with a discussion table encouraged attendees to help create Participatory Community Graffiti Art, stationed as a chalkboard divider compelling responses to the phrase "Geography is . . ." Staff collected an arrangement of the photos, video, and other project imagery and recordings to gather together designed as a Digital Scrapbook of the DVC. This includes an updated MyCOE Youth Leadership project gallery, at www.aag.org/MyCOE_DVC.
CHALLENGES AND LESSONS LEARNED

The program as a whole encountered challenges that were foreseeable and expected given the large and complex set of targets as well as the technology divide known to present difficulties for virtual exchange activities. While no major surprises were confronted, there were many lessons learned that informed the design of MyCOE GCE throughout implementation, which were typically incorporated through formative feedback and enabled adjustments to make improvements on an ongoing basis. This section recounts important challenges and lessons learned for the sake of recording refinements and as a reference for future potential activity.

One of the more important challenges encountered related to our inviting participation by the respective Cultural and Scientific staff in US embassies of the site countries during the exchanges or other local activities. This also included making arrangements with the schedules of the State Department Program Officers to attend virtual sessions and on site conferences such as the coordinator orientation meeting in New York in 2012 or the Los Angeles based DVC. We were not able to achieve as much direct participation as desired, understandably, due to the realities of very busy personnel as well as federal travel restrictions that happened during this project period. However, our close working relationships and excellent communication permitted us to enjoy a good level of engagement and the support necessary for ensuring our performance in the program was meeting goals and objectives of the sponsoring agency.

One setback to the pace of the program was discovered when we learned that Esri was not able to produce all of the features and functionalities of the Geoportal as originally envisioned by AAG according to the timeframe or needs of the MyCOE GCE project. This was overcome by the persistence and creativity of AAG Staff instead taking the lead to adapt the available Esri platforms for this purpose. The end result was a system functioning largely as desired, however, the ArcGIS Online system at-large requires a separate log-on which may have deterred some participation, particularly by less computer-savvy international teachers. The international coordinators expecting this possibility planned extra sessions on-site with teachers to ensure all who wish to use this tool during the exchanges were able to do so with extra support. AAG Staff also automated sign-up as much as possible to minimize multiple steps for users to get started. Since using this particular mapping tool was not a requirement for projects, the impact of this technical adaptation on MyCOE GCE targets was negligible. The only perceived challenge was a loss of opportunity for Esri as a partner to enjoy greater awareness and use of the platform.

Regarding participation challenges, in the Philippines, a typhoon that occurred just as we were launching the program damaged schools that were in the Philippine Science High School system, and a number of teachers had to withdraw participation due to the fact that computer and internet facilities were no longer available in their schools. With support from the PI, the international coordinator identified prior participants from the MyCOE program in the Philippines and recruited new teachers from additional schools to maintain participation levels. Since this substitution was budget neutral, the State Department Grants Officer approved the
change in named schools. The lesson learned upon reflection is that the excellent previous network of the AAG in this region ensured that the plans could continue despite what could have been catastrophic for that site, which turned out to have extremely strong participation in exchanges and projects.

In the US, the short period for site and teacher recruitment put a strain on confirming the final target numbers prior to launch of the exchange phase. The timing of recruitment during a busy season, coupled with the fact that in some US States, geography is taught more commonly at lower grade levels than the targeted higher grade levels, made recruitment more challenging (particularly in Texas for example). However, we chose not to delay the January launch, which coincided well with the start of Spring semesters in the US. This was in many ways unavoidable due to the September award date.

Nevertheless, to ensure that the program achieves the teacher participation rates by the end of the project period, we simply extended the timeframe for accepting new teacher participants. Accordingly, we also consolidated the training into a "crash course orientation" for those coming on later than the first cadre to accelerate incorporation into the group as a whole. Besides this action, the mini-grants served as a "snowball" activity to reach out to additional teachers beyond the first group of participants. While teacher numbers eventually reached targets quite early, we kept recruitment open throughout the project period in order to meet the demand for exchanges, and to remain flexible to the needs of classrooms. One of the administrative challenges throughout, then, was the need to balance timing and demand for activity across the US and international sites. We began with an imbalance and needed more U.S. participation in exchange hours earlier on. However, towards the final semester, the balance shifted and U.S. sites were anxious for international classroom connections that were less frequently available. We were grateful for permission from the State Department Program Officer to open up participation in the MyCOE GCE to new states that were originally not included in the first quarter recruitment and training stage and believe this support was key to our ability to continue to innovate with the program. Ultimately, we were able to give teachers a greater choice and leverage to participate at the level of intensity that worked best in their given school and workload context.

Anticipated technical and logistical challenges confronted the MyCOE GCE team throughout the program, and partial solutions to were continually being implemented to keep adjusting to needs overseas as well as with US sites. Namely the live exchanges had experienced scheduling and also connection issues at times. In order to facilitate finding times with classrooms available for exchanges, AAG Staff took a very proactive approach and collected school calendars and hours from the site coordinators as guides for reducing the back-and-forth communications necessary for finding and confirming live exchange times. The system originally was intended to become partially automatic, but staff needed to continue to keep a very hands-on attention to scheduling.

Not surprisingly, many of the international sites could connect but suffered from periodic interruptions in internet service that made live exchanges especially challenging. We offered either ooVoo or Skype platforms for the video based exchanges, which run better at different times and places depending on the configuration, and also at times when sound quality was poor or out, utilizing the chat features to greater extent, etc. Also, the international site coordinators were able to diagnose specific local obstacles and the budget line item reserved for "digital divide" solutions was utilized for the purpose of overcoming speed or connection issues at particular schools.

Another technical challenge related to access, but not internationally, within US schools related to reaching the US GCE sites through the program’s online websites and communications, since the MyCOE website is blocked in several of the US high schools. The DVC was streamed online so that other sites (including the GCE U.S. sites) could also participate, however the link to the live streaming was also
blocked in some high schools that were hoping to participate live, limiting participation. In order to mediate this issue, program staff have made materials available through e-mails to teachers, copying and pasting information from the MyCOE website. The actual very low levels of viewers registered to see the live webcast streaming are a strong indication of these policy-related challenges in US schools. The planned Digital Scrapbook will also help enable those who were not permitted to connect to visualize the activities that were not conveyed live. Other social media, including Skype, are not allowed on almost all school campuses. In some cases permission from the principal was requested. When Skype was allowed in schools, some exchanges were affected by technological/internet issues in the under served schools visited by Diversity Ambassadors.

Connecting some of the sites across the linguistic divide did present some challenges from time to time; however, the inconvenience is minimal, given the bilingual staffing, identification of US students with Spanish skills; and Latin American students with some English skills; chat simultaneous interpretation; and the bilingual support of Puerto Rican students. Although students acted as translators, it was not always easy to communicate for inclusion of all present in the classroom and facilitators were encouraged to be cognizant of this fact.

While the program is designed to leverage communication and internet technologies as a means of virtual exchanges, our experience underscored the importance of having a face-to-face interaction with at least some of the participants, namely in this case the international and US site coordinators, that supplements the online and digital nature of the program inherent in the design. This personal engagement reinforced the strong relationships that had begun and the timing of the meeting was serendipitously optimal, whereby enough history with the team had passed for information exchange yet the virtual exchanges and connections across classrooms were only beginning. Without the previous relationships to build upon, and then this in-person orientation to solidify these personal connections and the trust needed to have a cohesive team, the task of facilitating the international linkages may have represented additional challenges.

One of the most important lessons confirmed about pedagogical approach, was one of empowerment: allowing students to be the leaders of exchanges and to let sites plan and conduct exchanges on their own with staff support on standby proved to be helpful to deepen engagement and commitment to the program. Because this mirrors the long-standing character of the MyCOE partnership for Youth Led projects, this lesson was reinforced with participants as much as possible. As stated by our Bolivian coordinator and witnessed by AAG staff facilitating exchange connections, “Many times the teachers influenced the themes too much and the students got nervous”. In the initial exchanges, teachers were many times so preoccupied with trying to talk about project themes or academic work, that students froze up and did not know what to say or were not as engaged. When students were able to talk about themselves, doors of communication were opened, and later subjects of conversation turned to their work, the main GCE themes and project ideas. Furthermore, when AAG staff participated throughout entire exchanges, we observed that students and even teachers were much more reserved compared to the recorded video exchanges. This may be due to the self-consciousness of having a third party watching and listening to them or perhaps simply expecting the convening facilitator at AAG to lead the exchange. Whatever the reasons, AAG staff moved to a process of connecting the two (or more) sites and introducing them to each other, then leaving the sites to exchange on their own. In case any problems come up, a staff member remained online and ready to address any issues with connections, questions, etc. Teachers and coordinators often provide recorded copies when possible for later evaluation and always provided a written or oral summary of the exchange for documentation purposes.
The Diversity Ambassadors also provided thoughtful reflections on the hurdles they were confronted with and lessons they gained in the process of their outreach to schools serving minority students. Most Ambassadors found it challenging to develop new relationships and to network with schoolteachers. This obstacle was attributed to a number of factors: not all local high schools teach geography, lack of response to emails/calls, busy school schedule and need to fit in curriculum, preparation for state performance exams. In under served schools, we found that lack of transportation is the primary issue for students not participating in field trips that related to their projects, and large class size made it sometimes difficult to manage a mapping project as a group.

The importance of formative evaluation continued to be confirmed throughout the program, as we took periodic informal and formal means, such as taking the opportunity during the brief lull in US participation due to summer break on school calendars to review the first year of progress, and again at the winter break prior to the final semester, as well as more formally via the evaluation activities that have been conducted internally. This process consistently led to new ideas and actions for improving the quality and quantity of engagement in ways that we are confident have ensured that program goals were met or exceeded. For example, while the program originally expected for students and their teachers to work on projects to prepare themselves for the international exchanges, this had not turned out to be the case. Usually, classrooms participated in exchanges first and turned in projects later. This meant that the timing of submission of youth-led projects came in later quarters. The program design from the outset was flexible enough to take advantage of the benefits of this kind of organic response in participation, supported by the informal and formal assessment process. In the end, the students were able to discuss the progress of their projects with one another during the exchanges, which eventually helped guide the exchanges into more educational topics. We learned about this advantage and began to actively encourage this approach.

EVALUATION RESULTS AND PARTICIPANT IMPACT

We implemented a rigorous evaluation that adheres to standards of the US Department of Education’s National Center for Education Evaluation and followed the required Project Components and Guidelines of the POGI and guidelines contained in the RFGP of the GCE program. The evaluation gathered objective evidence to monitor progress, compare and evaluate the success of the program, using both quantitative and qualitative information and both formative and summative activities. The plan employed an outcomes approach model, to focus on early aspects of program planning and attempt to connect resources and activities with desired results. Developed with a theory of change in mind, this approach supports both short-term intended results and a program’s long-term desired impact.

The overarching goal is to empower youth and their teachers to increase their environmental, geographic, technological and cultural literacy. Specific project objectives have been mapped to indicators of outputs and outcomes and their respective main methods of measurement in the evaluation. Summative activities included in this final program report address the following in detail: 1) how the program benefited overseas and U.S. participants, 2) how the programmed served USG foreign policy interests, 3) how the program will continue once the grant concludes, 4) and how the program can be improved and expanded if funding is available. Participants were given pre-and post-surveys with the intent of conducting analysis of change over time, which is reported in selected individual measures below. The content included information on satisfaction, learning, behavior and institutional change. Content analysis of projects and other materials supplied by youth and teacher participants enabled a very rich qualitative analysis and support the interpretation of quantitative data.
Preliminary Participant Characteristics

As part of the first quarter, all teacher participants were asked to take a pre-survey to serve as a baseline of metrics for the program objectives. This was issued in SurveyMonkey in both English and Spanish in October 2012 and included new teachers as they were added. In addition, during the webinars, the facilitator issued a few short polls on the subject, which provided snapshot insights into additional teacher perspectives at the start of the program, for formative input.

- 91% of participants in the webinar will be conducting international student exchanges in their classrooms for the first time.
- 64% currently teach about climate change and another 18% would like to add this topic.
- 50% of teachers wish to increase their knowledge of climate change science.
- 78% have observed media reports about green economy in their respective locations.
- 82% currently teach about hazards in their classes.
- 73% currently teach about food security or agricultural issues in their classrooms.

We collected 88 responses in the pre-survey, which represents a response rate of 69 percent at the time, well above statistical averages for survey responses (usually 30 percent). Information on 97% of these responses included information that will permit not only aggregate comparisons of change, but also changes within the responses of a single individual.

(N=128)

Use of Computers in the Classroom

Level of Comfort using computers in general
Use of Online Mapping, GIS, or GPS

Level of Comfort using geographic technologies

Use of Virtual Learning Exchanges, Social

Level of Comfort using communication Networking technologies

Percentage Summary of Responses by US or Foreign Site (n=37, n=51)

<table>
<thead>
<tr>
<th>Do you use computers in the classroom? (please choose one)</th>
<th>Do you use online mapping, Geographic Information Systems (GIS), GPS, or other geographic technologies when teaching?</th>
<th>Have you ever used any kind of virtual exchange, online communications or social networking technologies to facilitate your students to exchange with other students from other parts of the world?</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Sites</td>
<td>Foreign Sites</td>
<td>US Sites</td>
</tr>
<tr>
<td>Seldom or never</td>
<td>2.7%</td>
<td>35.3%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>24.3%</td>
<td>39.2%</td>
</tr>
<tr>
<td>Often or frequently</td>
<td>73.0%</td>
<td>25.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How comfortable are you using computers in general in the classroom?</th>
<th>How comfortable are you using these geographic technologies in the classroom?</th>
<th>How comfortable are you using these kinds of communication technologies in the classroom?</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Sites</td>
<td>Foreign Sites</td>
<td>US Sites</td>
</tr>
<tr>
<td>Uncomfortable</td>
<td>0.0%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Reasonably comfortable</td>
<td>16.2%</td>
<td>31.4%</td>
</tr>
<tr>
<td>Very comfortable</td>
<td>83.8%</td>
<td>41.2%</td>
</tr>
<tr>
<td>Does not apply</td>
<td>0.0%</td>
<td>23.5%</td>
</tr>
</tbody>
</table>
It is clear from the early results that we began with a disequilibrium of use of computers, geographic technologies and communications technologies between the US and Foreign Sites, whereby the former are more likely to have used them in classrooms or learning situations. On the other hand, the levels of comfort in using computers were more similar across sites. However, US participants registered lower comfort levels for use of geographic & communication technologies among those who do use them.

**Assessment of Youth Projects**

The program’s evaluation team reviewed a total of 146 Youth projects submitted in the Rio+20 call for participation, 112 of these came from GCE participating sites. The evaluation was conducted by experienced AAG staff who were not directly responsible for the program implementation at that time, so that the benefits of an assessment performed as an independent, separated function could be realized. The evaluation aimed to gauge the impact of the MyCOE GCE program. Given the larger call for projects afforded by the MyCOE Rio+20 effort, of which GCE was a part, we were able to assess the GCE projects relative to non-participating submissions, which serves as a control group of sorts.

Compared to the control group, GCE sites were better able to demonstrate geographic knowledge throughout their projects and were also able to better design geographic research projects. GCE sites were also able to better acquire and analyze spatial as well as virtually display this geographic data using geographic technologies. Projects drew on secondary data (e.g., maps, collected data from agencies) as well primary data. Of the 56 projects that explicitly mentioned their data source, forty-nine (87.5%) GCE projects and 7 (12.5%) non-GCE projects collected their own data through methods such as interviews, observations, direct measurements of water quality or a mixed methods approach. They were thus seven times more likely to collect data on their own for use in their projects. It is also evident that promoting the core GCE themes clearly inspired non-participating youth to submit projects on those themes. A majority of the projects focused on MyCOE GCE themes (135 projects or 92.5% of total). Giving greater visibility to these themes seemed to generate more critical thinking about these themes to non-participating youth. Interestingly, non-participating project themes were predominantly focused on climate change, while GCE projects were more broadly spread across the spectrum of focus topics.

Many projects demonstrated strong project design skills from formulating a relevant and researchable question to providing concrete recommendations from their findings. Visual aids such as maps and graphs were used to show results and study areas in 134 projects or 91.8% of total projects. A smaller number of projects showed/discussed results from statistical or spatial analysis (31 projects or 21.2% of total). The types of projects ranged in scope from awareness and education programs, research projects within communities to build knowledge about a particular problem and research projects within communities that included action components.

The program’s evaluation team also reviewed some of the recorded conversations that have occurred during the international exchanges generated through the mini grants, as well as comments sent to us by teachers who have participated in these exchanges. Evaluation of this information led to the discovery of 7 common themes present because of the international exchanges and mini grant projects:

- Knowledge (GCE themes and place-based geography)
- Perspectives (spatial, ecological, international/cultural)
- Skills
- Personal growth
- Personal emotions or affection for the online exchange experience
- Pedagogy
Knowledge (GCE themes and place-based geography)

Through the online exchange, teachers observed that students learned about place-based geography including the culture of other students and their way of life, better understanding of the world, as well as temperature and seasonality of remote locations. By far, learning about another culture was the most highly-cited outcome of these exchanges.

Students exchanged ideas of their GCE projects. The most striking GCE theme is student leadership. Powerful examples of students taking initiative to lead the conversation are evident. For example, students brought maps and materials to share about their local community or breaking the ice by singing or sharing personal stories. In essence, the exchange allows students to engage “directly with themes that are relevant to the world” (original quote was in Spanish – “que viven experiencias directas de temas de relevancia mundial y a la vez conocen otras culturas que los enriquece en su ámbito personal”, Rolando Bruno, Puerto Rico).

Perspectives (spatial, ecological, international/cultural)

MyCOE GCE’s ability to bring students from different cultures together has influenced student perspectives. The general consensus is that students appreciate other cultures and want to learn more; they understand the value of international exchanges.

Skills

Use of geographic tools such as map reading, whether to apply to their project or simply to locate a city (as students in Iowa did to locate Nueva Vizcaya in the Philippines) was noted. Other skills which are equally important and useful for scientific research and communication in general were mentioned. These included learning to ask questions of each other as well as to communicate with peers. When the technology failed, students found other ways to exchange information such as through email.

Personal growth

The dynamic experience has opened fertile opportunities for student development at a personal level. In an exchange between the state of Washington with Spanish speaking countries of Bolivia and Nicaragua, students were enriched with Spanish and Latino culture. This increased students’ “energy and interest” (George Thornton, Washington State) and in particular, a positive demonstration of the culture that made “Hispanic students more aware and proud of their own heritage and language” (George Thornton, Washington State). In another exchange, bilingual Spanish speaking students from Colorado acted as the translators between their class with Bolivian students.

In one example, personal growth for a student means developing affection for newly met friends from the Philippines. After Lucas’ class (Kansas) had an exchange with students from the Philippines on December 10, 2012, one of his students heard about the typhoon that hit southern Philippines. This student began to track the weather in the Philippines to make sure that the students with whom she had gotten to know were doing okay (image of the weather tracker on her computer shown to the right. This example symbolizes a deeper connection than just getting to know Filipino students during the exchange, it
shows that even after the exchange, she was still processing and trying to make a connection from afar to the point that she is tracking the weather by herself (no one told her to do it). The exchanges are not simply an "in the moment" experience; students actually become more aware of what is going on in other places and it has an impact on them.

The image to the right was taken from a Kansas student's computer with weather forecasts of Manila, Philippines and Shawnee, Kansas.

Teachers also noted their personal growth. After the first exchange, teachers from Bolivia summoned “the courage to speak to teachers in the US” (Javier Nunez-Villalba, Bolivía). Thus, personal growth happens on both sides of the exchanges, to teachers and students alike.

**Personal emotions or affection for the experience**

Comments about the value of the Skype experience, the excitement of students to participate in the exchange, and how much they enjoyed it were overwhelming and clearly articulated in the teacher comments. These positive sentiments are unchanged given that some classes stayed later after school or attended class in the early morning.

Gratitude was often expressed for the help and support that Astrid Ng provided. When there was a lull in the conversation, she provided questions to continue the discussion. In a few instances, technology was an issue, but teachers often found solutions to manage these. An example of a teacher’s dedication is from Ghana. The teacher bought a generator to allow for continued exchanges, a solution to frequent power cuts in their community. Another example of dedication is of Philippine students who arrived at 5:30AM several times to participate in exchanges.

**Pedagogy**

Teachers also learned teaching ideas through the online exchanges. In particular, teachers mentioned that they are now aware of various teaching materials especially those related to climate change. Another teacher mentioned that he is learning GIS skills through mentoring from a partner teacher in the US, who is simultaneously sharing 33 years of pedagogical insight. Teachers are extending these learning opportunities to colleagues (fellow teacher and school superintendent) by inviting them to observe/participate in an exchange. This word-of-mouth tactic has piqued the interest of some teachers in Puerto Rico who have asked to participate with their classes.

A US teacher mentioned that the interaction, from a teacher's perspective, “is what an education is all about, excitement to learn” (Megan Webster, Texas). Student excitement extends to taking leadership of the exchange by “controlling the keyboard for the rest of the exchange” and “chatting and typing” (Michael Casas, Philippines). Another teacher noted that student-led exchange works better than those that are too tightly controlled by the teacher.

Student and teacher commitment is evident in the comments. In one case in Nicaragua, due to school relocation, the teacher made alternative plans to connect online. Teachers will also call students during the Christmas holiday to ensure the projects are completed. Teachers in the Philippines and their students are online as early as 5 AM local time to accommodate the schedule of US students. Two schools (Philippines and US) will jointly collect data on carbon footprint studies in their respective schools. This level of collaboration and commitment is beyond an hour of online exchange.
National Education Standards
To formalize the ways in which these activities contribute to national educational standards, Dr. Huynh has mapped how each of the aggregated learning activities links directly to the standards in Geography for Life (2nd Edition) (2012) in the table below.

<table>
<thead>
<tr>
<th>Geography for Life/ Activity</th>
<th>Mapping</th>
<th>Data Collection</th>
<th>Career Planning</th>
<th>Knowledge Transfer</th>
<th>International Site Exchanges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard 1: How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard 3: How to analyze the spatial organization of people, places, and environments on Earth’s surface</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard 4: Physical &amp; human characteristics of places</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Standard 6: How culture and experience influence people’s perceptions of places and regions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard 7: The physical processes that shape the patterns of Earth’s surface</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard 10: The characteristics, distribution, and complexity of Earth’s cultural mosaics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard 15: How physical systems affect human systems</td>
<td>x</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>


How the program benefited overseas and US participants
The impact and value of MyCOE GCE to participants is represented by their desire for the program to continue. Comments consistently highlighted how much students and teachers enjoyed the live Skype exchanges as well as students’ learning and action on environmental issues as an outcome of doing projects. Diversity Ambassadors noted the amount of support MyCOE GCE provided to engage minority youth in a geo-literacy curriculum, making it an easier and fun experience for high school students. The evaluation below looks at comments on four elements of the program: 1) participant satisfaction with the program and exchange experience, 2) participant learning, 3) participant behavior, and 4) institutional changes.

1) Participant satisfaction with the program and exchange experience

MyCOE GCE activities

Four activities directly related to GCE themes were created for classroom use and posted on the MyCOE GCE page (http://www.aag.org/gce). These activities are characterized by three features: 1) a design enabling teachers to complete the activity in one 60 minute class period, 2) engaging students in an inquiry process from asking a question and collecting data to analyzing data and making conclusions, 3) a step-by-step guide to submit projects online. These activities were well used and received positive feedback from teachers. Of the total survey response, 69% of teachers used these activities with their class while others used school curriculum activities (26.5%) and other materials (4.5%) to complete projects.
All teachers agreed on the value of the activities, specifically, its usefulness for student learning (4.8/5 – Strongly Agree), useful format for students to collect data (4.8/5 – Strongly Agree), and that the activities were easy to follow (4.7/5 – Strongly Agree). The activities most used were food inventory and hazards.

**Percentage use of MyCOE GCE activities, by Mini grant holders and US teachers**

<table>
<thead>
<tr>
<th>MyCOE GCE activities</th>
<th>Mini grant holders</th>
<th>US teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparing Ecological Footprints</td>
<td>26.5%</td>
<td>15.4%</td>
</tr>
<tr>
<td>Community Food Source Inventory</td>
<td>26.5%</td>
<td>53.8%</td>
</tr>
<tr>
<td>Green Economy Scavenger Hunt</td>
<td>17.6%</td>
<td>0</td>
</tr>
<tr>
<td>Investigating Hazards</td>
<td>29.4%</td>
<td>30.8%</td>
</tr>
</tbody>
</table>

These activities enriched the school curriculum with activities that promoted data collection. A range of examples support teachers’ creativity to adapt the activities to fit with the issues within their own local community. For example, some classes went on field trips in their local area to make observations (e.g., pollution on the environment), take action (e.g., clean up and collect garbage), or studied maps to assess changes in their city (e.g., before and after a natural disaster). These scenarios of active learning were praised by teachers as ways for students to learn about doing research and to work on a collaborative project.

Each activity has a data collection component. Students were eager to compare and discuss their data with peers, and as a result saw how their impact affects the environment. This, in turn, encouraged students to think about promoting change. A teacher summarizes this sentiment well “estas guías nos ayudaron a comprender los riesgos que corren nuestras comunidades con las actividades destructivas que realizamos por nosotros mismos y proponer un cambio de actitud para vivir en un ambiente sano y saludable.” (English translation: “these guides helped us understand the risks people face in our communities, inspiring us to propose a change in attitude to live healthily in a healthy environment”) In addition to the knowledge learned and research skills developed, students also enjoyed the process and had fun. In one case, a class developed a geocache game from the Green Economy Scavenger Hunt activity.

**Live Skype Exchanges**

The majority of exchanges were via live Skype exchange (59.1%) while other forms of communication included student-to-student exchange (e.g., e-mail, Facebook) (24.3%) and teacher exchanges (16.6%). These exchanges took place between classrooms in four international partner countries (Bolivia, Ghana, Nicaragua, and Philippines) and 26 US states (Alaska, Arizona, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Iowa, Kansas, Maryland, Minnesota, Missouri, Nevada, New Hampshire, New Jersey, New York, Oklahoma, Pennsylvania, Puerto Rico, Rhode Island, Texas, Virginia, Washington).

The live exchange stirred interest, anticipation and excitement amongst students. For teachers, many expressed how much their class learned about local geography, green practices and sustainability in another part of the world. The platform provided a space where students asked high-level questions related to geography. Some examples of student questions include where people in each country live or how elevation affects life in respective countries.
Exchanges were primarily student driven, directed by questions related to each other’s way of life, agriculture, food, lifestyle, school, etc., all of which helped students discover the culture of their peers in other world regions. Another discussion topic was on student projects; the exchange of ideas and examples of research work provided new ideas for partner countries to try out. In learning about the different lifestyle, one class of US students thought more critically about food sources and security after an exchange with Nicaraguan students. Each group shared their food choices, leading to a discussion of food sources and diversity of food choices and global availability. In addition, a few US teachers noted that their students received “excellent feedback and encouragement” from their Skype partners. The reverse is also true: a US class with many ESOL students from Latin America provided very different hazards they experienced with students in Bolivia. Likewise, international students were glad to practice and use English for the exchange.

The exchange sparked US students’ interest to learn more about the partner country. In various cases, US students did more research on the country and included them as a comparison to their class data. One teacher noted that students enjoyed researching about countries they Skyped with and in the process discovered that “geography is more than learning landforms.”

Asynchronous exchanges

At the time of the summative evaluation 420 projects (of the final 513) had been publicly posted on the MyCOE GCE gallery site (www.aag.org/mycoegallery) and a total of 326 comments were made by students and teachers across 80 projects. For projects that received feedback, the minimum was 1 to a maximum of 53 comments. These were tagged as containing one of the following features: comment, question, and research methods. It is possible for a comment to have more than one element. A sample (20%) of the 326 comments was randomly selected and read for content. Of the sample (n=75), the breakdown of feedback focus is research methods (20%), question (28%), and simply comment (57%). Note that the total does not equal 100% as some comments fell into more than one category. Table 2 defines and provides examples of comments while Figure 3 shows a screen capture of a visual of comments for a project.

<table>
<thead>
<tr>
<th>Comment type</th>
<th>Examples, taken verbatim from the project comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short and sweet: Feedback are very short, positive feedback on peer projects. These make up a very small proportion of those sampled.</td>
<td>Example 1: I live in Sugarland, TX. Nice to see people in my community tracking this! Example 2: Esto seria un interesante proyecto... para tomar la importancia de la Geografia e intercambio cultural entre paisas.</td>
</tr>
</tbody>
</table>
Constructive comment: Feedback reviews what is learned from the project, usually interjecting personal opinions, and providing encouraging thoughts.

Thoughtful comparison: Feedback reflects deep thought about the posted project and some sort of comparison to personal experience or participation in MyCOE project is made.

Future/finding oriented questions: Feedback is a combination of project observation and questions to further the conversation on the findings or how the results can be used for the future.

| Example 1: The information that this study have will help the local government in formulating laws & policies to improve the water quality of Davao River which will be beneficial to locals who depend on it. God bless and good luck to the proponents especially to their adviser Mike Casas! |
| Example 2: Religion and the noise of worshiping hasn’t really been a problem in the United States, so this project is extremely interesting. I never thought that the music and sounds of worship would disturb the environment. I always thought that people enjoyed hearing the sounds of worship because it shows that people are still religious in this modern era. This project has showed me another side to a viewpoint I hold. |
| Example 1: This is a very interesting and wonderful project. We feel you have gone to expert places to gather your information...but also wonder over what period of time does one need to gather results to show that there has been a climate change...we would love to see the results from several decades...and compare those to see if there has been a change over a larger amount of time.... this project was a wonderful idea and hard work was put into gathering the data. |
| Example 2: I feel this is an important topic because it could prevent bigger problems. If there were to be a major food shortage in the city crimes could outbreak and it could get chaotic. Looking into new food sources and new connections of food supply may be a good route to go. Also putting restrictions on converting farmland into business and residential land would be a good starting point because keeping topsoil would help prevent city flooding and landslides. |
| Example 1: Great idea doing independent research in order to help contribute to making the environment cleaner, and more sustainable. What specific suggestions did you pitch to the local government and have any of your ideas been enacted? |
| Example 2: How about identifying really vulnerable areas and populations such as communities that are densely populated with poor income families and how they might be at risk? |
| Example 3: What an interesting study! Why do you think that the students who live in the dorms have better climate change awareness. Why this study made us think a lot about the environment. Why do you think females required more planets than men? |
| Example 4: We feel that this is a very worthwhile study and covered a lot of territory.... It is great that local students get involved in their community by addressing a problem that affects people throughout the world. The environment must be preserved and sustained not just for this generation, but for many generations to come. When visiting the mining site, did many of your classmates find it as an informative experience? And what is being done in your community to stop the destruction of the local ecosystem? |
Research methods comments/questions: Feedback creates a constructive space for peers to share scientific opinions and questions to further each other’s work. This is a “peer review” process that stems from interest in each other’s work and comparing it across countries.

| Example 1: | Very unique approach to studying climate change and the amount of public knowledge on the subject. If you had to try and pinpoint the source of a person’s climate change awareness by doing this experiment again, where would you look to this time instead of the educational attainment in teachers and faculty? |
| Example 2: | We wonder if it might not be easier to break it down into one specific problem and follow that through with the study… as opposed to lumping all of the hazards together into one problem. Perhaps separating the weather related problems from the earthquakes. On a whole we found it very interesting and find the places where you sought to get your information very worthwhile pursuits. We commend your efforts. |
| Example 3: | We found this study very interesting and of course liked the results…but also feel that with science you do need more data over a period of time …. In our classes we are generally told we need to use at least 3 sets of information before we can draw conclusions…. however the results did make us ever hopeful that we will all adapt to what is put before us and succeed in our endeavors. |
| Example 4: | Hmm, this could be a good start of something, especially raising local public awareness in your area! How did you go about collecting data, and how do you plan to use the results to better raise public awareness? |

Collaboration/Suggestions: Feedback invites future collaboration or suggestions for future work.

| Example 1: | Hola: les saludo desde La Paz Bolivia, con el colegio Venezuela de nuestra ciudad, hicimos algo parecido pero con el tema de la comida Chatarra, pero queremos ampliarlo, para lograr concentrar a los estudiantes acerca de la alimentacion. si estan interesados escribanme mi correo es: alejandradevargas@hotmail.com. saludos. |
| Example 2: | Estimado amigo: te escribo desde La Paz -Bolivia, tu idea es buena y se puede realizar, me gustaria participar contigo en el desarrollo del conocimiento y para esto te propongo que podamos hacer un proyecto con las "olimpiadas de Geografia" en USA y en Bolivia. Para poder concretar la idea te pido que me escribas: mi email es: alejandradevargas@hotmail.com Saludos |
| Example 3: | We are in the process of restoring our greenhouse on our high school campus. Is it possible to give us a more detailed description of your greenhouse project? We are interested into starting a small farmers with the produce grown. |

Students and teacher comments on projects have created a varied learning opportunity for all. Those commenting learn about other’s project ideas, research methods, and presentation style leading to comparison of data (if both parties worked on similar topics) and personal reflection of similarities and differences. The level of commentator questions is impressive in that they demonstrate an understanding of the topic, are well thought out, and students practice asking relevant questions. This is a geography skill that is called for in *Geography for Life (2nd edition)* (Heffron & Downs, 2012) but which geography classrooms do not always practice. The process of asking questions and also being critical about data and research methods forms a space that emulates a peer-review process. This result is valuable because students learn the value of putting their work out for public review as a way to improve and network with peers.
Examples of student comments on peer projects

2) Participant Learning

Below we summarize participant survey data and comments about learning in the MyCOE GCE project. The scores were tallied on a Likert scale, out of a possible total of 5 points. The percentages represent the number of respondents (out of the total) who either “Agreed” or “Strongly Agreed” with the project objectives. The responses from three different communities of participants are represented for comparison, namely International Coordinators, US Teachers, and Diversity Ambassadors.

<table>
<thead>
<tr>
<th>Project Objectives</th>
<th>International Coordinators (n=4)</th>
<th>US Teachers (n=35)</th>
<th>Diversity Ambassadors (n=6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve students’ knowledgeable about the themes of Environment, Climate Change, Green Economy, and Food Security</td>
<td>4.8 – Strongly Agree 100% Agree</td>
<td>4.6 – Strongly Agree 100% Agree</td>
<td>4.7 – Strongly Agree 100% Agree</td>
</tr>
</tbody>
</table>
Based on student projects and teacher comments, student gain involves one or multiple learning experiences: 1) content knowledge and skills, 2) personal reflection, and 3) action. The activities and classes provide a formal setting for students to learn content knowledge (e.g., where their food comes from, how marketing impacts on food choices, environmental impact of large-scale agriculture, unequal distribution of water, mapping data with geospatial technology), skills (e.g., mapping, using a geospatial tool), as well as learning about similar issues from peers who have lived in another country. For example, a teacher in Maryland observed that her ethnically diverse class offered another level of learning where students were able to share natural hazards that occurred in their countries and then further compared them to those they have experienced here in Maryland. The learning spans disciplinary boundaries as classrooms from geography, languages, sciences, to media integrated discipline specific knowledge/skills to the MyCOE GCE project. In a classroom in Miami, the lead teacher and fellow colleagues organized MyCOE Geography and the Environment Day. One thousand students, ranging in grades from grades 9-12, participated and learned about career opportunities in geography, spoke to professionals and graduate students who use geography/GIS in their work, and had the opportunity to practice using ArcGIS Online.

Learning by personal reflection happens when students see how their actions have potential impact on the environment. In one case, a Maryland teacher noted that her students were unaware how many resources they consumed until they compared their figure with other countries. This new consciousness of how one’s action influences others is the impetus to action. The category of action captures the drive to do something to better the collective, after learning about one or more of the GCE themes. Evidence of this is the sentiment from students and teachers feeling the need to help provide solution or challenges facing their community (Philippines class) or in Houston, where students were led to start a community garden and the process documented in a film. In a Virginia classroom, students transferred their knowledge to a community service project, hosted fundraisers, and shared their knowledge with elementary school students. The projects and activities help students feel important, in the case of Nicaragua because they helped protect the flora, fauna, and the environment and this made them proud to be able to protect people and the environment.

<table>
<thead>
<tr>
<th>Improve students’ critical thinking abilities about the MyCOE GCE themes indicated above</th>
<th>4.8 – Strongly Agree 100% Agree</th>
<th>4.5 – Agree 97% Agree</th>
<th>4.5 – Agree 100% Agree</th>
</tr>
</thead>
</table>

Students’ level of critical thinking is a summary of their comments on peer projects as well as their projects completed. Teachers value the program because the components (Skype exchange, projects, and related activities) promote critical thinking about the environment, particularly through a framework for analysis of local change in a global context. More specifically, student feedback demonstrates that they are able to use what they have learned from MyCOE GCE to make constructive comments to peers, ask questions that lead to more consideration. Together, these comments provide a very safe peer-review space for students and are evidence of their critical thinking abilities.

<table>
<thead>
<tr>
<th>Increase students’ understanding and respect for people from other countries</th>
<th>4.8 – Strongly Agree 100% Agree</th>
<th>4.6 – Strongly Agree 97% Agree</th>
<th>4.2 – Agree 83% Agree</th>
</tr>
</thead>
</table>

Teachers have excellent comments about the cultural exchange, for both their students’ and personal learning about another country. Some examples that demonstrate US students’ understanding and respect is their use of social media to keep in touch with international peers and building friendships.

In learning about international students, US students realize there are more similarities than differences and that some of their stereotypes are false. In one case, as US students learned more about what Ghana is really like, they learned the invalidity of their past notions of this nation. Another exchange that caused laughter and understanding of location-specific-jargon is the word “coca”. Students in the US thought their peers from Bolivia meant cocaine when talking about “coca” but Bolivian students were referring to coca leaf. People chew coca, a very traditional and common vegetation in the field. Overall, the exchange allowed students to communicate with others outside of their own culture and some US students acted as translators in their native language, taking on a leadership position.

<table>
<thead>
<tr>
<th>What was learned or shared during the exchanges was taken into consideration for mapping projects</th>
<th>5 – Strongly Agree 100% Agree</th>
<th>4.3 – Agree 85% Agree</th>
<th>4.2 – Agree 67% Agree</th>
</tr>
</thead>
</table>
The Skype exchanges provided ideas for project development as well as data comparison/analysis. Many teachers noted that students’ interest were sparked by the upcoming exchange and began to explore the potential exchange country for data comparison. An exploratory discussion on water source between US and Bolivian students was the foundation to student projects. “Many students and teachers in La Paz did not know the source of water for the city. The questions they asked U.S. students made them reflect on the source of water for the city of La Paz. We explained that the main source of water is the Cordillera of the Andes, then there was a concern because the glaciers are near the city, are no longer. Then the students asked where will the water come from when glaciers melt? This question led many students do their work on glaciers and water.”

Reading of projects posted online also served a role for student thinking as this inspired US students in one class to select the Food Source Activity to complete. None of the students who participated had ever used digital mapping to create their own map, and the teacher believes (from listening to their conversations during the project) that it was the most rewarding aspect of the whole experience for these students.

<table>
<thead>
<tr>
<th>Expand the computer literacy skills of teachers</th>
<th>5 – Strongly Agree</th>
<th>4.5 – Agree</th>
<th>3.8 – Neither Agree or Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100% Agree</td>
<td>94% Agree</td>
<td>67% Agree</td>
</tr>
</tbody>
</table>

Teacher response exceeds grant proposal expectation that 75% of teachers agree
A coordinator from Nicaragua was excited to use technology for map design.
The low agreement rate by Diversity Ambassadors reflects obstacles in the public school system. Some schools and school boards do not allow social networks or software (e.g., Skype) to be installed on school computers and access to some MyCOE GCE related sites are blocked. Further, some school districts simply don’t have the resources to support activities on the computer.

<table>
<thead>
<tr>
<th>Improve teachers’ level of comfort in the use of international communications technologies in the classroom</th>
<th>5 – Strongly Agree</th>
<th>4.5 – Agree</th>
<th>3.8 – Neither Agree or Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100% Agree</td>
<td>89% Agree</td>
<td>83% Agree</td>
</tr>
</tbody>
</table>

Teacher response exceeds grant proposal expectation that 50% of teachers agree
Philippines coordinator noted that teachers she worked with “are more empowered and more comfortable in trying virtual meetings and webinars.”
The low agreement rate by Diversity Ambassadors reflects obstacles in the public school system. Some schools and school boards do not allow social networks or software (e.g., Skype) to be installed on school computers and access to some MyCOE GCE related sites are blocked. Further, some school districts simply don’t have the resources to support activities on the computer.

<table>
<thead>
<tr>
<th>Expand teachers’ adoption of online mapping for community-based project learning in the classroom</th>
<th>4.75 – Strongly Agree</th>
<th>4.5 – Agree</th>
<th>4.7 – Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100% Agree</td>
<td>91% Agree</td>
<td>100% Agree</td>
</tr>
</tbody>
</table>

Teacher response exceeds grant proposal expectation that 75% of teachers agree

<table>
<thead>
<tr>
<th>Deepen teachers’ understanding and respect for people from other countries</th>
<th>5 – Strongly Agree</th>
<th>4.4 – Agree</th>
<th>4.3 – Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100% Agree</td>
<td>79% Agree</td>
<td>100% Agree</td>
</tr>
</tbody>
</table>

Understanding that what is the norm in one country may be vastly different in another. Bolivian students and teachers were surprised to learn that high school students in the US have a car to drive to school. In Bolivia, public transport is the main mode of commute, few teachers have cars and no students own one.
3) Participant behavior

Participant behavior is noted especially by their action – to take what they have learned and to apply it. In Nicaragua, a coordinator shared that students were so motivated by what they learned about Food Safety and Environmental Pollution that they worked on awareness campaigns to disseminate the information to neighborhoods, schools, leaders, and residents. They also created school gardens. This is similar to
another teacher who said that students had a change in “attitude when they learned about their impact on the environment and how they can make a difference”.

From a teacher perspective, a very active teacher in the Philippines shared that his teaching style during the Skype exchanges shifted from a teacher-centered to a student-driven classroom.

4) Institutional changes

Institutional change takes time, effort, and commitment; however, the power of MyCOE GCE on student learning has captured attention. Below are early examples of how MyCOE GCE related work may serve as a model for near future educational changes.

A coordinator in the Philippines remarked that students were interested in the topic of climate change, particularly the idea of carbon footprint. As a result of its popularity with students, the theme is now widespread in the schools that used the MyCOE GCE module. In fact, multiple coordinators and teachers have noted that students not already in the MyCOE GCE program asked to take part.

A teacher and students in Washington State have produced documentaries on geography, the first one launched is about kames and kettles, a bilingual film with subtitles in Spanish and English. Four more videos will be completed by the end of the school year. Another element of the initiatives, inspired by the MyCOE GCE program, is data collection in the field. Students will be using GPS and ESRI online maps to survey points and then posting the data and images. The main page of the program is: http://wdfw.wa.gov/conservation/research/projects/wla_monitoring/sinlahekin/. His students in film class will take photos and video to produce a documentary on doing field work in geography and science which will be shared with the University of Washington for their research project on getting more field work in science, technology and geography. The culmination of this teacher’s work and MyCOE GCE is being looked at as a model example for the whole state.

As a direct result of this project, some student team leaders took an active role in their learning and experienced working with professionals in the field. For example, in Miami, a student team leader had the chance to interview Dr. Tiffany Troxler from the Intergovernmental Panel on Climate Change. The interview was recorded, will be edited for posting online. Another student team leader worked with Project Director Terri Reyes in a mangrove-fostering program. AP Environmental Science students and volunteers temporarily adopted 80 mangrove propagules that will be returned in the fall as part of Eco Artist Xavier Cortada’s Reclamation Project (http://www.reclamationproject.net). These propagules will ultimately be planted in reclaiming a disturbed mangrove wetland.

**How the Program Served USG Foreign Policy Interests**

We compared MyCOE GCE data with the goals explained on the US Department of State for Youth page (http://future.state.gov/why/44560.htm).

*What America shares with the world*

The USA is a diverse nation, building on the foundation of natives as well as immigrants from around the globe, building on common values common to its citizens and the rest of the world:
The synchronous online exchanges and asynchronous sharing of information creates an environment for students to learn how the above values are manifested outside of the USA, in addition to understanding GCE themes and awareness of practices outside of the US. Teachers expressed unanimous positive feedback on the exchanges as a learning agent for their students. Foremost, students from the US and international partner countries noted that the dialogue provided a rich cultural exchange from learning about lifestyle differences to sharing research findings/data collection methods. This created a sense of “connection” between students and awareness of issues (local to global). Teachers cited cultural exchange as the most desired outcome for their participation in this project. A common teacher comment about the Skype exchange is that “students were able to gain a cultural awareness of how others in a different part of the world live and to teach these students about culture in the U.S.” Another teacher adds that the awareness include both social and political issues.

The Skype experience is especially important for students who have little means of traveling within their city or state, let alone outside of the country. As one teachers states, “having the opportunity to interact and share information with Ghana, Africa and Philippines students and teachers using Skype was the best experience I ever had as a teacher.” Equally for students, where US students acted as translators with Latin American countries, the benefit is that they feel “valuable and ‘special’ in being able to participate” and demonstrates the incentive to learn more languages.

Technical tools that supported movements towards democracy and citizen protest (e.g., Arab Spring) were applied in some MyCOE GCE projects. For example, an Ambassador from the state of Georgia introduced students to field-based and active learning activities using such tools as ArcGIS mobile apps and Ushahidi crowd mapping platforms.

**Foreign policy in the world today**

The USA is confronted with challenges that cross national boundaries, one of which is *Environmental Issues*. The MyCOE GCE program is squarely focused on educating students and supporting teachers to better understand this issue and how citizens around the world are finding solutions. The MyCOE GCE themes are not only important to foreign policy, they are issues that minority youth can relate to and understand, points out the Texas Ambassador. Thus, Diversity Ambassadors played an important role to bring environmental issues to another population of the US student body, children of immigrants and immigrant children. The table below summarizes the types of environmental issues discussed in Skype exchanges, project themes and the work of mini grant holders.

<table>
<thead>
<tr>
<th>Skype exchanges</th>
<th>Project/teaching themes</th>
<th>Mini grant holders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food security: 22.8%</td>
<td>Food security: 31.6%</td>
<td>Food security: 20.4%</td>
</tr>
<tr>
<td>Climate change (includes carbon footprint, sustainability): 17.7%</td>
<td>Hazards: 15.8%</td>
<td>Green economy: 20.4%</td>
</tr>
<tr>
<td>Cultural understanding: 16.5%</td>
<td>Climate change: 10.5%</td>
<td>Hazards and vulnerability: 20.4%</td>
</tr>
</tbody>
</table>
### How the Program will continue once the Grant concludes

There are various ways that teachers and students can build future capacity using the current structure and materials developed for MyCOE GCE. First, the MyCOE GCE activities are available online and teachers have been encouraged to continue using them. Second, many teachers have expressed the desire to continue this work in the future. One suggestion from some teachers is review the projects online for students to develop ideas. Third, teachers who participated in the Skype exchange have each other’s contact information and can continue the spirit of live exchanges. A teacher from the Philippines would like to continue having students learn through doing a project, especially since they have learned how to conceptualize problems and provide solution(s) using the scientific method. In addition resource materials developed from this grant may be incorporated into future MyCOE projects or relevant educational workshops, trainings or projects, thus giving leverage to other work.

Anecdotally, the staff has received much interest from coordinators, teachers and others who would very much like to continue the program. The platforms that have been developed remain available for independent use.

### How the Program can be improved and expanded if funding is available

The MyCOE GCE project has evolved and adapted to challenges by actively reviewing its formative evaluation to make improvements. A prime example is the launch of an Ambassadors initiative, where a small group of geographers throughout the US outreach to teachers in their immediate community, to attract more educators and student projects. As a result, 71.4% of US teachers who participated in the program worked with or learned about the program form the AAG/Ambassadors, where only 23.8% and 4.8% learned about the program by the Geography Alliance in their state and the National Council for Geographic Education, respectively.

Learning from the success of the Diversity Ambassador initiative, one recommendation is to use this model for other outreach programs. For example, AAG manages the exchanges with help of Ambassadors and teachers where they take on a leadership role while expanding and managing outreach in their region.

The other lessons learned can also be easily incorporated to an improved future program.
CONCLUSIONS AND RECOMMENDATIONS

Our vision has been to implement a far-reaching international virtual exchange program with secondary school teachers that empowers youth to increase their environmental, geographic, technological and cultural literacy. This was fully and successfully accomplished by facilitating online exchanges between young people in the US and their counterparts in other countries that utilize both social networking and online mapping technologies supported by robust educational resources, effective pedagogical approaches, a flexible and dynamic program design that responded to participant needs through formative feedback and a team of talented and committed professionals working together to make it happen. We appreciate the opportunity provided by the US State Department's Bureau of Educational and Cultural Affairs and welcome new chances to continue working towards these goals.

In conclusion, we reflect not upon the outputs and outcomes already reported in the executive summary, key statistics and at length in the report; instead we focus upon a few key insights that reach beyond administrative or pedagogic domains already discussed in this report. These are offered in hope they may serve as strategic recommendations to shape future programmatic directions. Foremost, we see much potential need and demand within the US education system, particularly within under served schools, to connect internationally. The challenges of a rather inflexible school schedule and a sometimes myopic focus on existing curricula rather than innovative experiences must be overcome in order for global connections and exchanges to be successful broadly. Nevertheless, the impacts were significant and very meaningful. Conversely, we also experienced significant international demand, but at the same time were privileged to work with significant international capacity to carry out stellar experiences for students around the world. Participants have demonstrated a desire to continue such experiences, and with the investment required to build relationships of trust and effectiveness, longer term program funding should be considered in order to sustain continuity.

Consideration of technical and logistical difficulties may also be a part of such an ambitious effort to utilize communications technologies in particularly distant locations around the world, but such obstacles can certainly be overcome thanks to the skills, talent and creativity of key staff. By this, we mean not just technical resourcefulness, but especially we have experienced that facilitation and "soft skills" have been critical to success both internationally, in US sites, and with the implementing staff. Perhaps the most important of these is to reinforce how important it has been to have core program personnel that are fluent and even bilingual in the languages of participating countries (i.e. Spanish).

Furthermore, the significant amount of in-depth international experience of the whole team, particularly with countries that are in developing regions, has enabled easier, and we think better, decision-making during implementation. Pairing this experience with four international coordinators with whom the AAG has already worked extensively on past programs, has permitted the program to build upon a strong foundation of an existing set of relationships characterized by respect and trust, which has in turn paved the way for immediate results and the team's ability to focus on project outcomes. These factors have positively influenced activities such as the identification and adaptation of the learning resources and exchange moments to be more relevant to the international contexts.

Finally, building upon these insights, we urge consideration of a capstone experience to bring together participants at the end of the program. While the DVC did so virtually, an in-person event to bring together even just some of the student and teacher collaborators presents a life-changing opportunity and may serve as additional motivation for engagement. Our original proposal requested such an event, but the program framework constrained inclusion of this element.
PROGRAM STAFF LISTING

Principal Investigator and Program Design
Dr. Patricia Solís
Director of Outreach and Strategic Initiatives
Association of American Geographers
psolis@aag.org
202-234-1450 x 222

Social Networking and Communications Specialist
Exchanges, Translation, Participant Logistics and Tech Support
Astrid Ng, AAG Research Associate
ang@aag.org

Evaluation Support, National Standards Assessment
US Teacher Outreach, Diversity Ambassador Lead
Dr. Niem Huynh, AAG Senior Researcher
nhuynh@aag.org

Other Key AAG Staff

Teacher Webinar Facilitator: Dr. Susan Gallagher Heffron, Former AAG Senior Project Manager for Geography Education
Internal Evaluator: Dr. Michael Solem, AAG Director of Educational Affairs
Communications Technology: Greg Osburn, AAG Information Technology Coordinator
Coordination and Outreach Support: Dr. Jean McKendry, AAG Senior Researcher
Communications and Website Support: Marcela Zeballos, AAG Research Associate
International Coordination

Country Coordinator in Bolivia: Javier Nuñez-Villalba
Technical Support in Bolivia: Juana Alejandra Choque Flores
Country Coordinator in Ghana: James Kweku Eshun
Country Coordinator in Nicaragua: Alfonso Jirón García
Country Coordinator in the Philippines: Rochelle T. Papasin
Technical Support in the Philippines: Michael V. Nalitan

Diversity Ambassadors

Neyka Young (Texas Southern University) - Houston, TX
Nick Oehm (FCE LTER - Florida International University) - Miami, FL
Ivan Ramirez (New College of Florida) - New York City, NY
Timothy Hawthorne (Georgia State University) - Atlanta, GA
Amanda Coleman (Northeastern State University) - Central Oklahoma
Nate Sessoms (Brotherhood Crusade) - Los Angeles, CA

www.aag.org/gce