



International GeoScience Education Organisation

November 2020 Newsletter

<http://www.igeosced.org/>

2018 – 2022 IGEO Executive Committee

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Council Members: <http://www.igeosced.org/about-the-igeo/officers/>

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Dear IGEO members worldwide,

I hope that you and your family are safe in this difficult time.

Many of us in these months face a lot of changes in daily routine, but we are continuing to work online for improve earth science education worldwide. If there is a good aspect in all this situation is that we adapt and get used to communications technology and we increase our networking activities and our skill in using online platform

In this contest the International Earth Science Olympiad (IESO) that is one of the main activities of IGEO and that involve 43 countries in the 2019 IESO in the Republic of Korea, was cancelled for 2020. By the way we already planning the IESO 2021 in an online format with the support of our Russian colleagues of Tyumen University and the IESO Examination Board. The format will pass to some adaptations and dedicated workshop will be offered to the nationals' mentors in the next months to explain the details of this new format.

As will be online, without cost of transport, that will be a great opportunity for new countries interested in participate to be engaged in this special event. Teams of 4 students and 2 mentors participate on IESO for each country and students are engaged in competitive and cooperative activities. We will provide soon news information about next IESO.

Since 2018 IGEO adopted a new organizational strategy based in strengthen local network by regional chapters. The Latin America was the first IGEO chapter, you find a details descriptions of the last 2 years activities in this newsletter. Since 2019 born also a European chapter with the collaboration of the European Geoscience Union (EGU).

We hope that soon others regional chapters begin to operate in others part of the world, we will be glad to share the experience of the previous chapters for help on develop new one.

Best wishes,

Roberto Greco

Manipal's MSc Geology students on-board *Sagar Sampada* on a scientific training cruise



Picture 1 Looking for marine mammals during Manipal Institute of Technology MSc Cruise

Manipal Institute of Technology's MSc Geology students got a unique opportunity to get trained on sediment and organic matter sampling techniques on-board the Fishery Oceanography Research Vessel (FORV) *Sagar Sampada* for three days between 9 and 11 December 2019 (picture 2). The students were taken on a cruise off Kochi port for about 70 km in the Arabian Sea. They were shown different areas of the ship like engine room (picture 3), navigation area (Bridge) (picture 4), on-board scientific laboratories, and familiarized with their working. They were demonstrated *hands-on* as how the scientists obtain the deep seabed sediment samples for studies on past climate, geology, and fishery sciences. A sediment grab sampler was lowered through winches for a depth of 50 m and fine sediment of the ocean floor was collected (picture 5). The students processed the samples for the different life forms observed and preserved it for geochemical analysis. They also were shown the mode of sampling for phytoplankton, fish larvae and zooplanktons using the Bongo sampler (picture 6). They also experienced living in the ship in shared accommodation and bunker beds.

The team of 11 students was led by Dr K Balakrishna, Professor of Geology in the department of civil engineering at MIT, Manipal. He also officiated as the deputy chief scientist of the cruise no. 393. Dr Are Shivaji, senior scientist of the Centre for Marine Living Resources and Ecology (CMLRE) led the cruise as the chief scientist. This cruise was organized by the CMLRE- Kochi, a research laboratory owned by the Ministry of Earth Sciences (CMLRE), Government of India. This is only the second instance CMLRE has organized a dedicated cruise for the University students. This is an initiative of the government of India to motivate young post-graduates to take up oceanographic research. The entire expenditure for the cruise was borne by the Government of India.



Picture 2: With the Chief Scientist, the MSc Geology students and faculty



Picture 3: In the Ship's engine room



Picture 4. On the Ship's Bridge



Picture 5 Grab sampler on aft deck



Picture 6. Deploying the Bongo Sampler

2nd Anniversary of LAIGEO

We celebrated our 2nd year as the Latin American chapter of the International Association for Geosciences Education launching of flyers with messages alluding to the network and our actions on the anniversary week (last week of July). On the main day Friday, JULY 24, 2020, a webinar was held by our general coordinator PhD Ana Castillo Clerici and members of the steering committee.

LAIGEO
International
Geoscience
Education
Organisation
Latinoamérica

CONFERENCIA MAGISTRAL

FECHA: 24 de julio de 2020
Hora: 18:00 horas
(Horario Sao Paulo, Brasil)

Celebrando el segundo año como capítulo latinoamericano de la Asociación Internacional para la Educación en Geociencias los invitamos al Webinar:

La educación en Geociencias como aspecto fundamental para mejorar la vida de las naciones de América Latina y El Caribe

Expositores:

- PhD. Ana María Castillo Clerici
- MSc. María Jesús Bravo
- PhD. Héctor Luis Lacreu
- PhD. Roberto Greco
- PhD. Sandra Villacorta

Código de reunión:
meet.google.com/eic-bxgw-tpr

Google Meet

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@Latinamericanchapter
@LAIGEO1

Roberto Greco está presentando

History

- **1993: International Conference on Geoscience Education and Training, Southampton, UK**
– *The first international conference focused on Geoscience Education*
- **1997: GeoSciEd II, Hilo, Hawaii**
– *Steering committee created to pursue formation of an International organization devoted to Geoscience Education*
- **2000: GeoSciEd III, Sydney, Australia**
– *Formal adoption of constitution of IGEO*

GEO

Webinar Series: “Geoheritage as a tool for education in Latin America and the Caribbean”

Between August 14 and September 11, weekly virtual talks focused on the use of geoheritage for education took place.

The webinar series was inaugurated by Argentina professionals, who showed two interesting geopark projects, one on Sierras Bayas (Olavarria, Buenos Aires) and the other on Juana Koslay (San Luis). Brazil lectures were on educational activities developed in its national geopark and other projects on geological heritage. Panama exposed the Volcamp Camp, an initiative to promote the study of volcanoes to the youth. Paraguay showed advances by the geoheritage research group of the National University of Asunción for the promotion of Earth sciences in school children. Chile presented the Puchuncaví geopark project which helps in awakening in the students an interest in geosciences. Peru showed the geological heritage of its national geopark and the Bolivia lecture was on the Torotoro geopark project. Finally, Uruguay presented educational experiences developed in the Grutas Del Palacio geopark and Colombia showed initiatives linked to promote geosciences education and to analyse the approach of geoheritage in UNESCO global geoparks.

CICLO DE WEBINARS

En América Latina y El Caribe, es necesario transmitir el valor educativo de los geositos para su correcto aprovechamiento y concientizar acerca de la protección de su espacio. En la búsqueda de contribuir con el debate acerca de este contexto en la región, se ha planificado el ciclo de webinars:

"Geopatrimonio como herramienta para la educación en América Latina y El Caribe"

FECHA	PAÍS EXPOSITOR
14-08-20	Argentina
21-08-20	Brasil
28-08-20	Paraguay, Panamá
04-09-20	Chile, Bolivia, Perú
11-09-20	Colombia y Uruguay

Hora:
18:00 horas
(Horario Sao Paulo, Brasil)

El objetivo central será conocer la situación actual de cada país en cuanto a patrimonio geológico y geoparques (proyectos) y acciones que permitan su uso como herramienta educativa.

 @Latinamericanchapter
  @igeolatinoamerica

 @LAIGEO1
  @latinamericanchapter

CICLO DE WEBINARS

"Geopatrimonio como herramienta para la educación en América Latina y El Caribe"

Geopatrimonio y educación
Paraguay y Panamá

Conferencia	Ponente
Geopatrimonio y educación en Paraguay: "Relictos de Antiguas Superficies de Planación en el Noroeste del Paraguay Oriental"	Lic. Geól. Yennifer Sarubbi Facultad de Ciencias Exactas y Naturales, UNA
Geopatrimonio y educación en Paraguay: Recorrido guiado por patrimonios geológicos para el ciclo escolar básico y nivel medio.	Lic. Geól. Diego López Facultad de Ciencias Exactas y Naturales, UNA
Geopatrimonio y educación en Panamá: Experiencia del Campamento Volcamp	Ing. Rita Rodríguez Universidad Tecnológica de Panamá

28 de agosto de 2020
Hora: 18:00 horas (Horario Sao Paulo, Brasil)

Código de reunión:
meet.google.com/reo-hosg-spi


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Geopatrimonio
como herramienta para la educación en
América Latina y El Caribe

DR. CÉSAR GOSO, Coord. Cient. del
Geoparque Mundial UNESCO Grutas del
Palacio, Uruguay

Geoeducación: uno de los pilares
para la Geoconservación.

DR. CATALINA GONZÁLEZ, Grupo de
investigación de geología ambiental
de la universidad EAFIT, Colombia

Enfoques de la interpretación del
Geopatrimonio en los Geoparques
Mundiales de la UNESCO.

JOSÉ GÓMEZ, UNAM y Observatorio
Colombiano de Patrimonio Geológico,
Colombia

El lugar del cuerpo en movimiento en
experiencias geoeducativas.

Código de reunión:
meet.google.com/wtd-eheq-ogb

**Ciclo
Webinars**
**11
Septiembre
2020
18h
Sao Paulo**

CICLO DE WEBINARS
"Geopatrimonio como herramienta para la
educación en América Latina y El Caribe"

Geopatrimonio y educación en Brasil

Conferencia	Ponente
El proyecto Os cinco sentidos do Geoparque Seridó, RN	Prof. Marcos Nascimento (UFRN)
El proyecto Geodia en el Geoparque Caçapava do Sul, RS	Prof. André Weissheimer de Borba (UFSM)
As iniciativas educativas e geoturísticas no Geoparque Pirineus, GO	Prof. Anete Oliveira (UnB)

21 de agosto de 2020
Hora: 18:00 horas
(Horario Sao Paulo, Brasil)

Código de reunión:
meet.google.com/piw-zqip-qaw

Google Meet

@geolatinoamerica
@latinamericanchapter
@Latinamericanchapter
@LAIGEO1

Foto: Geoparque Pirineus (GO): proposta - Repositório Institucional de Geociências, CPRM.

Some of the flyers of the LAIGEO webinar series on Geoheritage



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LAIGEO y su contribución a la mejora de la enseñanza y difusión de las geociencias en América Latina y Caribe: actividades realizadas y proyectos futuros

Sandra P. VILLACORTA^{1,2}, José SELLÉS-MARTÍNEZ^{1,3,4}, Roberto GRECO^{1,3}, Anete M. OLIVEIRA^{1,6}, Ana M. CASTILLO^{1,7} y Diego ARIAS REGALÍA^{1,3}

Abstract: *LAIGEO AND ITS CONTRIBUTION TO THE IMPROVEMENT AND SPREADING OF GEOSCIENCES EDUCATION IN LATIN AMERICA AND THE CARIBBEAN: ACCOMPLISHMENTS AND GOALS.* The progress of geoscience education in Latin America and the Caribbean is severely hampered due to a problem that affects the whole region. At pre-university levels, it can be seen that contents do not exist or are insufficient and, in many cases, educators have not been trained either in the discipline or its particular didactics. The situation at the university level is different. Even though with quality teaching and research, there it is evident that careers related to geosciences are not promoted as widely as other areas of knowledge and professional practice. The Latin American chapter of the International Geosciences Education Organization (LAIGEO) aims in contributing to the solution of this problem working to make teaching-learning of geosciences comprehensive and accessible to students, teachers and citizens in general. This goal is achieved through the production of strategies and materials for teaching and learning elaborated from an interdisciplinary perspective, based on specialized didactic research and incorporating local geological knowledge and examples. The organization seeks not only to train in the discipline and provide vocational guidance to pre-university students about their professional future but also to make them aware that their contribution to the dissemination and application of geosciences will benefit society. This process could be achieved through the development of activities such as courses and workshops, scientific meetings, material design, etc. Consequently, the LAIGEO's on-going programs and projects, that are described in brief in this contribution, are directed to contribute to the achievement and strengthen the organization's goals.

<http://www.insugeo.org.ar/publicaciones/docs/scg-35-2-03.pdf>

New Latin-American professionals are Council members on IGEO

Yosbanis Cervantes

Vice-rector for research and Postgraduate studies at the University of Moa (Cuba), since 2017.

Doctorate and a master's degree in mining (2017, 2008) from the University of Moa. Director of the Environmental Studies Centre between 2010 and 2017.



Wilfredo Ramos

Current president of the College of Geologists of Bolivia and Professor at the Universidad Mayor de San Andrés (La Paz). Doctor in Earth Sciences from the National University of La Plata and a specialist in Environmental Engineering from the National Technological University, Regional Faculty of La Plata (Argentina).



New members on LAIGEO committee

Maria Julia Solari

BSc. in Geology, Professor and specialist in Environment and Environmental Pathology by the National University of La Plata. High School teacher.



Anete Oliveira

Doctor in Geosciences from the University of Arizona University (USA), Master from the University of Pretoria (South Africa). Professor at the University of Brasilia and researcher in Teaching and dissemination of Geosciences since 2010. Art therapist from the Potiguar University (Brazil, 1999). Organizer of the Brazilian Olympics of Geography and Earth Sciences from 2017 to 2019.



Diego Lopez

Professor on Geosciences at the Faculty of Exact and Natural Sciences of the National University of Asunción. Member of the University Assembly. Postgraduate specialization in University Didactics in 2019.



Highlighted on LAIGEO web: Posts about geoheritage on the region

Proposal for the Sierra Bayas geopark (Buenos Aires, Argentina)



Geosites in the El Valle de Anton region (Coclé, Panama)



Geosites of the Sagua-Moa-Baracoa region, Cuba proposed by University of Moa,



Geosites in the eastern region of Paraguay proposed by the Faculty of Exact and Natural Sciences of the National University of Asunción.



Areas with potential to become geoparks proposed by the Bolivian College of Geologists



Kutralkura: the first Geopark in Chile



Diego Lopez está presentando

Primeras Actividades

- En el año 2019 se fortaleció la realización tanto de actividades a nivel local (nacional) con patrocinio de LAIGEO como el inicio de la colaboración internacional para la generación de instancias de participación e interacción entre los participantes latinoamericanos, principalmente orientada a la educación universitaria y de formación docente.
- En Marzo de ese mismo año se ha participado como miembro de LAIGEO en el Congreso Iberoamericano de Educación y Sociedad 2019 y reunido con representantes de la UNESCO para realizar acciones conjuntas como realizar materiales educativos relacionado a la geociencia para su divulgación.

Conferencia LAIGEO

Julio Cardenas is presenting

GUÍA GEOTURISTICA VALLE VOLCANES DE ANDAGUA - 2016

VALLE DE VOLCANES DE ANDAGUA (2008-2009): Se ha elaborado material con descripción de 11 rutas geoturísticas (actualmente en revisión), que resalta la diversidad geológica y paisajística del valle. Este material es un producto de la colaboración entre el INGEOMET y el LAIGEO.

Fuente B.Zavala INGEOMET

● GRABANDO

Detalles de la reunión

Personas (77) Chat

Anna Paula, si hay geociencias en enseñanza primaria y secundaria pero es muy básica

Anna Paula Lima Costa 16:37
Gracias Elena

Elena Peel 16:38
de nada

Pedro Martinez Sanguinetti 16:38
Actualmente hay un geólogo Uruguayo haciendo una especialidad en educación en una

EMMANUEL FRANCO NETO 16:38
Excelente conferencia

LUIS ALEXANDER ALVAREZ QUISPE 16:39
Saludos de Peru

Envía un mensaje a todos

Open Letter to Latin American authorities to call the action on Education in Geosciences issues

After a debate by the LAIGEO members, it was resolved to make public the concern about the enormous perceptible deficit in the educational programs of compulsory education in Latin America and the Caribbean with respect to the teaching of Earth sciences (Geology, Geophysics, etc.).



Organizaciones y grupos de investigación integrantes de la red



Carta abierta de LAIGEO a las autoridades y público en general

Promover una educación en ciencias de la Tierra para todos y de calidad en bien de nuestras naciones



>> Click aquí para firmar el formulario de adhesiones a la carta abierta <<

*Lista de adherentes, pertenencia institucional y país (actualizada cada 48 h)

1. Hector Lacreu, Universidad de San Luis, Argentina
2. José Selles Martínez, Universidad de Buenos Aires, Argentina
3. Yosbanis Cervantes, Universidad de Moa, Cuba
4. Wilfredo Ramos, Colegio de geólogos de Bolivia
5. Horacio Villalba, Universidad Nacional del Centro de la provincia de Buenos Aires, Argentina

Soil screening for lead by high-school students in Peru

Alexander van Geen¹, Franziska Landes¹, and Johny Ponce²

¹Lamont-Doherty Earth Observatory of Columbia University, Palisades, NY 10964, USA
(<https://www.ldeo.columbia.edu/>)

²Center for Research in Environmental Health, CREEH, Lima, Peru (<https://creehperu.org/>)

Infants ingesting soil contaminated with lead (Pb) from old paint, mine tailings, fallout from smelting, and battery recycling can suffer from reduced intellectual development, behavior problems in school, and lower earnings later in life. This has been shown by numerous studies and is widely accepted. Across the world, child exposure to Pb has fortunately also declined substantially in recent decades because of the phasing out of Pb-paint and Pb addition to gasoline. What is much less clear, however, is how to address most effectively the less frequent but still substantial cases of infant exposure to Pb around the world.

A key reason Pb exposure is difficult to redress is lack of data. Monitoring of blood-Pb levels in infants is standard practice in only a small number of countries. Such monitoring also reveals exposure only after it has occurred. A better way to prevent exposure is therefore to monitor the environment for potential sources of Pb instead. Here the difficulty is patchiness. One room in an older house may contain old peeling Pb-paint and the other not. One yard or park may be contaminated with Pb from tailings or other sources and the other not (Filippelli et al., 2018; Landes et al., 2019a). The only way to find out is to test such areas.

Fortunately, this is where geoscience educators and their students can play an important role. The key ingredient for detecting high levels of Pb in the environment is sodium rhodizonate, which is quite sensitive and specific. It is used in a commercial kit for Pb in paint manufactured by 3M (https://www.3m.com/3M/en_US/company-us/all-3m-products/~/All-3M-Products/Consumer/Home-Improvement/LeadCheck-Swabs/?N=5002385+8709316+8711017+8740610+8753945+3294857497&rt=r3). Rhodizonate has been used to detect Pb glaze, which is occasionally still used in Latin America, and as a red indicator in wet wipes (https://www.skinc.com/catalog/index.php?cPath=600000000_601000000_601000050). Rhodizonate is also the basis for a simple procedure that has been used to screen soil for hazardous levels of lead from around the world (Landes et al., 2019b).

The procedure has been used by high-school and college students to test park and backyard soil in New York City (<https://blogs.ei.columbia.edu/2017/10/09/many-backyards-in-brooklyn-neighborhood-are-contaminated-with-high-levels-of-lead/>). The procedure has also been adapted for deployment by high-school students as part of their science curriculum in Peru, where the impact of exposure to Pb on cognitive has also been demonstrated (Vega-Dienstmaier et al., 2006). Until the pandemic hit the country in April 2020, a total of 2500 samples had been collected and screened by 1171 students from 11 high schools under a project funded by USAID (https://sites.nationalacademies.org/PGA/PEER/PEERscience/PGA_181437). The students sieve soil samples in the field samples, register GPS coordinates and site photos on a smartphone, and analyze them at school under supervision (see photos below). The results are subsequently verified by measuring the total Pb content of the soil samples by X-ray fluorescence, after which all the results are mapped by the students and presented to the community. Geoscience educators around the world where Pb exposure from paint or soil could be an issue may want to consider involving their students in a similar project!

References

Filippelli GM, J Adamic, D Nichols, J Shukle, E Frix (2018). Mapping the urban lead exposome: A detailed analysis of soil metal concentrations at the household scale using citizen science. *Int. J. Environ. Res. Public Health* 15, 1531. <https://doi.org/10.3390/ijerph15071531>

Landes, F., Inauen, J. Ponce, J.C., Markowski, K., Ellis, T., van Geen, A., F. C., Inauen, J., Ponce-Canchihuamán, J., Markowski, K., Ellis, T. K., & van Geen, A. (2019a). Does involving parents in soil sampling identify causes of child exposure to lead? A case study of community engagement in mining-impacted towns in Peru. *GeoHealth* 3, 218–236. <https://doi.org/10.1029/2019GH000200>

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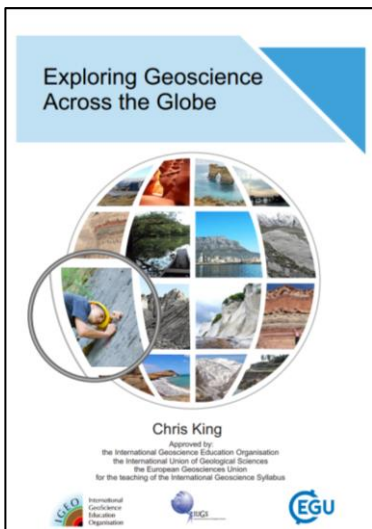
Vega-Dienstmaier, JM; JE Salinas-Piélagoli; M del Rosario Gutiérrez-Campos; RD Mandamiento-Ayquipa; M del Carmen Yara-Hokama; J Ponce-Canchihuamán; J Castro-Morales (2006). Lead levels and cognitive abilities in Peruvian children. *Brazilian Journal of Psychiatry* 28. <http://dx.doi.org/10.1590/S1516-44462006000100008>



Photos showing (left) soil sample collected by student from Columna Pasco school and (right) soil extraction analyzed by students from Ricardo Palma school, both in Cerro de Pasco, Peru. Credit: CREEH.

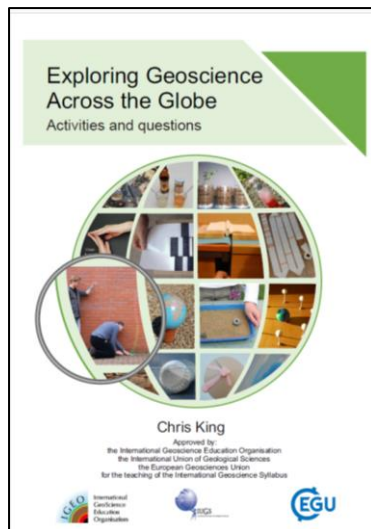
Launch of *Exploring geoscience: Activities and questions* online book

We are pleased to announce the online publication of the new companion book to *Exploring geoscience across the world* – our new *Activities and questions* book.



Exploring geoscience across the globe textbook, available online at:

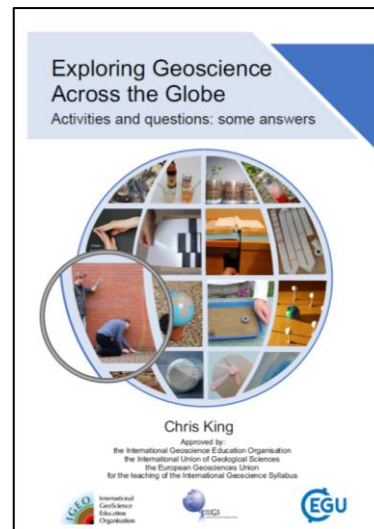
<http://www.igeoscied.org/teaching-resources/geoscience-text-books/> or
<http://www.igeoscied.org/wp-content/uploads/2020/09/Exploring-geoscience-Sept2020.pdf>



New

Activities and questions book, available online at:

<http://www.igeoscied.org/teaching-resources/geoscience-text-books/> or
<http://www.igeoscied.org/wp-content/uploads/2020/11/Exploring-geoscience-activities-and-questions.pdf>



New

Activities and questions: some answers book available by emailing

chris@earthlearningidea.com

Like *Exploring geoscience* our *Activities and questions* book is free to download at: <http://www.igeoscied.org/teaching-resources/geoscience-text-books/>. It is keyed into the chapter and section headings of the *Exploring geoscience* book and contains online links to more than 300 geoscience teaching activities together with more than 300 questions to consolidate pupil understanding. The questions range from those which can be answered by careful reading of the *Exploring geoscience* textbook to deep questions that require deep and creative thinking.

Also published on a hidden part of the International Geoscience Education Organisation (IGEO) website is the *Activities and questions: some answers* book, with answers to and discussions about the questions. To avoid pupils across the world being able to access these answers, please email chris@earthlearningidea.com to show you are a legitimate teacher, educator or other interested person by sending:

- your CV;
- an email note to say that you will not allow your own or any other pupils have access to the *Some answers* book.

Chris will then be very happy to send you the access details for the *Some answers* book.

With the International Geoscience syllabus published on the IGEO website, the *Exploring geoscience across the world* textbook to support the syllabus, and the new *Activities and questions* book with the accompanying *Some answers* book, teachers and educators across the world have access to world class geoscience knowledge, understanding and teaching materials, approved by the International Geoscience Education Organisation (IGEO), the International Union of Geological Sciences (IUGS) and the European Geoscience Union (EGU). Let us all now use these to educate the world for geoscience.

Lamont-Doherty's DE&I Pre-College Internships: Summer, 2020

Summary

This summer, LDEO scientists and educators led three internship programs focused on diversity, equity, and inclusion (DE&I): the SSFRP, the Next Generation of Hudson Educators, and the Early Engagement in Research program. Participants included 69 high school students, approximately 22 undergraduates and a dozen high school science teachers as mentors. The students were 46% Latinx, 22% Black, 15% Asian, and 12% White (2 students are Afro-Latinx). All programming had to move online; but feedback from participants indicates that the programs were able to make significant progress, even in the face of COVID restrictions.

Starting with the SSFRP:

This summer our largest donor did not want to fund online activities, so we had to reduce the number of participants. Nonetheless, we had 43 high school students, 16 college students, and 10 high school science teachers. We have always been majority female, but this summer the program was almost entirely so (only 2 of the 16 undergrad Team Leaders and 1 of the 44 high school students were male). The lack of male participants was largely a result of our funding situation: most of our male students have come to us through the funder that dropped out and the Young Women's Leadership Network, one of our founding partners, asked us to take in students from other programs that were cancelled this summer.

Our high school students were predominantly people of color: only 4 students were white. Nearly half the group were Latinx students (20/44). 10/44 students were Black and 10/44 were Asian, including both south and east Asian students.

Among the undergraduate team leaders, 9/16 were Latinx, 5/16 were Black, 3/16 were White, and 1/16 was Asian.

A large majority of our high school students are from schools serving working class and poor students (>85% Title I/III participation). Many are or will be first generation college attenders.

It became clear in late April that no in-person programming would be possible, and we had to redesign our experiential very quickly, hands-on, team- and project-based research program to an entirely virtual reality. We floated an initial plan to which our team leaders (TLs) made some major adjustments, based on their own experiences with online learning and life in the pandemic. Our TLs are STEM majors who have been with the program for years, and have established their own online community of practice, somewhat outside the view of the SSFRP leadership. We spent May and June working in various caucuses (college students, teachers, Lamonters, everyone together), and in the end, chose to allow the undergrads to take the lead in developing workshop curricula. Pairs of TLs worked together, coached by high school science teachers, who contributed a great deal of time and effort, even before their own online school year had finished. The teachers assisted in curriculum design, finding resources, and managing their online sessions.

The team leaders decided to have most students participate in three 2-week workshops. 14 of the TLs divided into 7 pairs, each of which created a 2-week curriculum. They taught their curriculum three times to three separate teams of 6 students. Every two weeks, the high school students presented results. There was an 8th workshop that spent the summer working through

about a decade of nutrient data collected in Piermont Marsh. They (2 HS students, a recent college grad who now works in a lab at CCNY, and a chemistry teacher) had all participated in collecting the data.

The seven workshop curricula covered topics in:

- Environmental Health
- Environmental Racism
- Environmental Activism
- Global Warming and COVID
- Pandemics
- Affordable Green/Sustainable Living
- Coding for Environmental Health

Workshops ran for 4 to 5 hours each day, nominally 2 hours in the morning and 2 hours in the afternoon. The program leadership (me, Susan Vincent, Anjelle Martinez and Ben Bostick) "Zoom bombed" around the sessions, listening in and sometimes answering questions. We met in the evenings with team leaders and teachers, at least once each week, to check in and discuss course corrections and issues with particular students. Overall, the principle issue for team leaders was student engagement, and a great deal of their effort went into drawing students into the online communities established by the workshops.

At the end of each 2-week workshop cycle, Anjelle collected feedback surveys from the high school students. We also administered a survey on non-cognitive development in science programs that Cassie Xu, Margie Turrin, and I are developing.

In addition to our Zoom sessions, we were able to get the students equipment to make some measurements in or just outside their homes:

The Global Warming and COVID workshop participants used hand-held "TemTop" instruments to measure CO₂, PM₁₀ and PM_{2.5}. The Coding for Environmental Health team assembled and programmed their own CO₂ sensors; measured CO₂ at a network of student homes and compared their data across sites and with measurements from Wade McGillis on a NYC street. The Affordable Green/Sustainable Living team set up small gardens on students' windowsills where they measured plant growth and water chemistry before and after passing through these gardens. Ben Bostick set up a network of PM_{2.5} monitors using the "Purple Air" instruments and network (which Dan Westervelt had a role in designing). Each of our students had 2 instruments, one outside and one inside their home. As far as we could tell, these ca. 10 locations are a significant addition to the Purple Air presence in NYC, and the students have for the most part agreed to keep up their sub-net into the future.

Several important corners were turned.

Prof. R. Baskar elected to leadership of Society for Promotion of Science and Technology

Prof R Baskar from Guru Jambheshwar University of Science and Technology Hisar, Haryana has been elected unanimously as a member of the Governing Council of the Society for Promotion of Science & Technology in India (SPSTI) in the Tenth Annual General Meeting of the SPSTI held on October 17, 2020. This membership is for five years. The (SPSTI) is a not-for-profit NGO engaged in popularization and promotion of science and developing scientific temper in the society, children, and youth in particular. Established by thirty-seven leading Scientists, Academicians and Administrators in 2009, the Society has completed 11 years of excellence. With this new responsibility, he will be organizing a large number of activities to promote scientific temper. He will also focus on Earth and Environmental issues. <https://spsti.org>

