GLOBE
Asia – Pacific
Regional Meeting
2022

Country Report

Table of Content

Australia

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Skype:
Website: https://www.csiro.au/en/education/Programs/GLOBE

Cooperating organizations: Australian Space Agency (ASA)

Participating schools: Deakin University, Australia GLOBE v-school, Meadows Primary School, Fountaingate Secondary College

Funding by: CSIRO/ASA

GLOBE protocols used in country: Cloud Observations, Biometry Trees, Vegetation Cover, Air Temperatures, Barometric Pressures, Precipitations, Relative Humidities, Snowpacks

Number of schools currently reporting data (2021): Four

Description of the program in your country and recent activities in 2021:

GLOBE is jointly funded by the CSIRO and ASA. I have continued to recruit teachers and advertise GLOBE including the GLOBE Observer app through targeted newsletters and online events. Australia has recently introduced a new national curriculum in schools, this coupled with the challenges associated with Covid 19 has directly impacted the level of engagement with GLOBE. In particular the completion rate of Protocol eTraining by classroom teachers.

My GLOBE activities 2021:

25/1/2021 Incorporate GLOBE in your classroom in 2021 *CSIRO Education Newsletter*

REPORT FOR 2021

24/2/2021 GLOBE-Data collection and ideas of the Classroom *Webinar*
12/4/2021 Join the 2021 Community Tree Challenge *CSIRO Education Newsletter*
20/4/2021 The GLOBE Program and Earth Day *Webinar*
2/6/2021 The GLOBE Program in (and out of) your classroom *Webinar*
18/6/2021 Using GLOBE protocols in the Botanic Gardens *Face to face meeting*
3/8/2021 Mosquito Habitat Mapper and World Mosquito Day *Webinar*
10/8/2021 The GLOBE Program for Environmental Educators *Webinar*
19/8/2021 International Day of Clean Air for blue skies *CSIRO Education Newsletter*
2/9/2021 International Day of Clean Air for blue skies *Webinar*
27/10/2021 Open Access Week GLOBE presentation *Webinar*
29/10/2021 Australian Citizen Science Association GLOBE presentation *Webinar*
19/11/2021 The GLOBE Program future webinars and NASA's Soil Moisture Active Passive Mission *CSIRO Education Newsletter*
25/11/2021 Introduction to GLOBE and the online assessment *Webinar*
26/11/2021 GLOBE, NASA's citizen science program. What might it look like in your classroom? *Face to face Conference*
2/12/2021 The SMAP Mission and how your students can help *Webinar*
9/12/2021 Introduction to GLOBE's Atmosphere and the online assessment

JAPAN

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Name:

Dr. Machiko Tsubaki (Professor)

Dr. Ei-ichiro Harako (Professor)

Dr. Tomoyasu Yoshitomi (Professor)

Dr. Tomoyo F. Koyanagi (Associate Professor)

Function: Country Coordinator (CC)

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Cooperating organizations:
Ministry of Education, Culture, Sports, Science and Technology (MEXT)
Science, Innovation and Development Unit, Economic and Scientific Affairs, U.S. Embassy Tokyo

Participating schools:

- Elementary School
  - Renkouzi Elementary School
- Junior High School
  - Omagi Junior High School
  - Katsushika Aoba Junior High School
  - Tokyo Gakugei University Koganei Secondary School
  - Hatsushiba Ritsumeikan Junior High School
- Junior and Senior High School
  - Nanzan Girls' Junior&Senior High School,
  - Saint Joseph Joshi Gakuen
- High School
  - Narita International High School
  - Rankoshi High School
  - Ujiyamada High School
  - Hachiman Technical High School,
  - Kanagawa Prefectural Ikuta High School, Japan
  - Kyoto Kaiyou High-school, Japan
  - Prefectural Ayabe HighSchool ,East Branch, Japan
  - Kasumi High School, Japan
  - Hiroshima Prefectural Gionkita High School

Funding by:
Ministry of Education, Culture, Sports, Science and Technology (MEXT)

GLOBE protocols used in country:
Atmosphere (Cloud, Temperature, Barometric pressure, Relative Humidity etc)
Hydrology (Water Transparency, Water Temperature, Dissolved Oxygen, Salinity, Electrical Conductivity,Freshwater Macroinvertebrates etc)
Pedrosphere (Soil Characterization, Soil Moisture etc)
Biology(Land Cover, Biometry etc)
Phenology (Green-up, Green-down, Seaweed reproductive phenology)

Number of schools currently reporting data (2021):
8 schools

Description of the program in your country and recent activities in 2021:

1. GLOBE teachers' virtual Meeting
GLOBE Japan Center organized the virtual meeting on 28th July. GLOBE teachers and some students gathered to the meeting and gave presentations about their GLOBE activities. GLOBE staffs explained the relationships between SDGs and GLOBE program and encouraged their activities toward the achievement of SDGs. The member of U.S. Embassy in Tokyo, Mr. Cordy Walsh, also gave some comments and encouraged GLOBE teachers and students to continue their observation activities.

2. School Visit
The staff teachers of GLOBE Japan Center visited the new GLOBE school, Tokyo Gakugei University Koganei Secondary School on 19th November. We visited the observation sites and gave the GLOBE teachers and students some advices.

3. GLOBE workshop in Autumn (30th October)
GLOBE staff teachers gave lectures on the GLOBE protocols (Atmosphere, Hydrosphere, Pedosphere and Biosphere) to school teachers, university students and local people. The participants were interested in GLOBE activities and 11 participants got GLOBE teacher accounts after the workshops.

4. GLOBE workshop in Winter (26th December)
GLOBE staff teachers hold another workshops and gave lectures on the GLOBE protocols (Atmosphere, Hydrosphere, Pedosphere and Biosphere) at Tokyo Gakugei University on 26th December. Teachers from 9 GLOBE schools and the other 12 teachers and university students also took part in this workshop.

Maldives

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Cooperating organizations:

Participating schools:

- Ahmadhiyya International School
- Arabiyya school
- Centre for Higher Secondary Education
- Dharumavantha school
- Feydhoo school
- Ghaazee School
- Ghiyasuddin International School
- Hiriya school
- Huravee school
- Iskandar School
- ISLANDERS Education
- Jamaluddin School
- Kalaafaanu School
- Majeediyya School
- Maldives Citizen Science
- Ministry of Education (GLIDWENR)
- Muhyiddin School
- Rehendhi School
- Thaajuddeen School

Funding by:
Nil

GLOBE protocols used in country:
Atmosphere
Biosphere
Hydrosphere
Pedosphere

Number of schools currently reporting data (2021):
Nil

Description of the program in your country and recent activities in 2021:

Due to the covid 19 situation in the country, all the extracurricular activities were suspended for the most part of the year. A special permit by the ministry of Education was required for any activity other than the academic curriculum. How ever an awaness session was organized by I'zzudhdheen School on coral reefs and sea creatures for the students of grade 4. A total of 58 students took part in the session. The session was conducted by the GLOBE Country coordinator.

REPORT FOR 2021

NEPAL

Name: ***Yogendra Chitrakar***

Function: Country Coordinator (CC), GLOBE Evaluation Working Group Member

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Cooperating organizations:

- Environmental Camps for Conservation Awareness (ECCA)
- Program Implementing Schools

Participating schools in 21:

1 schools in Jhapa and 4 Schools in Lalitpur.

Funding by: ECCA projects and YLACES in cooperation with US Embassy, Kathmandu for GLOBE Plus Program

GLOBE protocols used in country:

- Hydrology
- Atmosphere
- Mosquito
- Land coverage

Number of schools currently reporting data (2021):

None due to COVID pandemic school shut down and not running properly. Some schools started manually, not posted yet.

Description of the program in your country and recent activities in 2021:

Local Mosquito Training

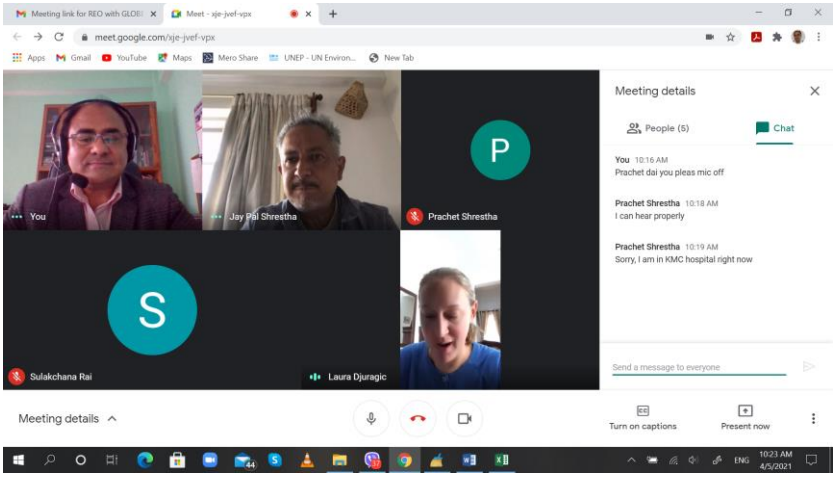
As a part of Zika Education and Prevention Project under the GLOBE Program, ECCA

has been conducting series of Country Mosquito Trainings since June, 2018. But due to COVID 19 lockdown in schools and difficult situation after that create problems to do program in 2020. However, looking at favourable time, ECCA had implemented three GLOBE protocol and mosquito awareness trainings on March 2021 for 15 schools of East Nepal.

COVID 19 awareness and prevention program

ECCA Nepal has trained the school on making chlorine and sanitizer for disinfecting the water and school classrooms and equipments. ECCA has supported around 100 schools with chlorine and 50,000 masks for school students and teachers. It has helped school to reopen and build confidence among parents to send their children in schools.

GLOBE Plus Post Program



ECCA had online meeting with Nepa US Embassy officials Director Laura G. Djuragic and Mr. Jay Pal Shrestha , Regional ESTH Affairs Specialist on April 3 2021. ECCA has informed about the GLOBE activity in Nepal and possible future programs. During meeting Mr. Jay Pal mentioned about GLOBE Plus Post Program and accordingly ECCA submitted the appication for 5 schools ie, five sets of GLOBE basic Atmosphere, Hydrosphere and Pedosphere (soil) equipment (sets valued at $500 each) supplied by Youth Learning As Citizen Environmental Scientists (YLACES).

ECCA received the following GLOBE materials from US Embassy on October 6, 2021.

S.N	Particulars	Quantity
1	PH Meter	5 pcs
2	Thermometer	5 pcs
3	GPS Meter	2 pcs

4	PH Buffer Capsules	5 pcs
5	Rain Gauge	5 pcs
6	Measuring Tape	5 pcs
7	Compass	5 pcs
8	Infrared Thermometer	5 pcs

GLOBE Orientation and Handover of GLOBE Materials

ECCA conducted the GLOBE Orientation and Handover of GLOBE Materials in Crescent Academy and Pushpanjali Secondary School on November 21, 2021 and Gyan Shikha Boarding School on 19 December 2021. Mr. Yogendra Chitrakar, GLOBE Country Coordinator provided the GLOBE information and future possibilities through GLOBE Observer APP and IVSS platform. Ms. Manisha Godar, Ms. Upama Tamala Rai and Ms. Merina Rana Magar assisted to understand the materials supported from GLOBE Plus Program and about the GLOBE website for learning GLOBE and data entry. There were around 20 students from nature clubs in both schools with science teachers and nature club coordinators.

GLOBE Webinars

ECCA has created an opportunity for the students to participate in different Regional GLOBE webinars and for the presentation of their learning in webinars in the Zoom platform. These opportunities had helped the schools, teachers, and students to create comfort in participation and virtual learning. But still, some schools had problems attending due to internet problems and access, however, at least practice was initiated.

- Air Quality Awareness Webinar by Dr. Watcharee Ruairuien – June 21, 2021
- Mosquito Awareness Campaign and Regional GLOBE Science Journal – August 20, 2021
- Micro Plastic Webinar – August 20, 2021
- Awareness of Tree Protocols – September 20, 2021
- IVSS webinar – October 6, 2021
- GLOBE Scientist Story by Yashraj Patil- GISN Member – October 8, 2021
- Air Quality Awareness Webinar – November 5, 202
- GLOBE Observer APP and IVSS – December 3 2021
- Micro plastic – December 14, 2021

Challenges

- Many schools are facing challenges to cover regular annual curriculum and exams after COVID-19 Lockdown, as they are prioritizing more on that.
- There were holidays of Dashain, Tihar, and Chath festivals in schools during October and November.
- The schools are just recently started on November 14, 2021, after the government allowed them to open the schools.

- Schools and parents are not confident to send their children to out-of-school programs. Even some parents are not sending their children to schools due to not having confidence in school preparation.

Palau

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Website:

Cooperating organizations:

1. Ministry of Marine Resource
2. Ministry of Health and Human Services
3. Palau Conservation Society (PCS)
4. Palau International Coral Reef Center
5. Environmental Quality Protection Board (EQPB)

Participating schools:

1. Public Middle School- (14)
2. Public High School- (1)

Funding by:

None but supported by MOE in kind

GLOBE protocols used in country:

1. Atmosphere
2. Biosphere
3. Mosquito Mapping
4. Micro plastic (UK survey)

Number of schools currently reporting data (2021):

14 middle school are reporting data and 1 high school for micro plastic but all other protocol we are doing but reporting and submitting on line have been a challenge for the schools.

Description of the program in your country and recent activities in 2021:

Ocean Stewarship, Miro Plastic activities are a recent activity we did before school came to its closer due to increase number of covid-19 cases in Palau. High school was doing presentation and reports on mosquito to the student body and was graded for their participation and performances in this activity. They are planning on doing their mosquito mapping and findings during science fair 2022 in March.

Philippines

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Skype:
Website:

Cooperating organizations:

- Philiippine Science High School System;
- Batasan National High School
- Office of the Mayor of the Municipality of Pili
- Municipal Environment and Natural Resources Office;
- Local Youth Development Officers;
- Federation of Pili, Youth Officers;
- Bureau of Fire, Pili, Camarines Sur;
- Philippine National Police (PNP) – Special Weapons And Tactics (SWAT), Pili, Camarines Sur;
- Philippine Army;
- Barangay Tinangis;
- Pauyam Group

Participating schools:

- Undetermined number of participating schools

Funding by:

- In cooperation and collaboration with participating organizations and institutions

GLOBE protocols used in country:

- Atmosphere
- Biosphere
- Hydrosphere
- Pedosphere

Country Data:

- 9,250 Students - 569 Teachers - 2,405 GLOBE Observers - 13,467 Data Entry - 494 Observations in 2021	- 643 Trained GLOBE Teachers - 282 GLOBE Schools Nationwide - 74 Trainers

Number of schools currently reporting data (2021):

- Based on ADAT, a total of 494 observations were made in 2021 mostly from Citizen Scientists or Observers.
- Four (4) Schools were reported active in 2021

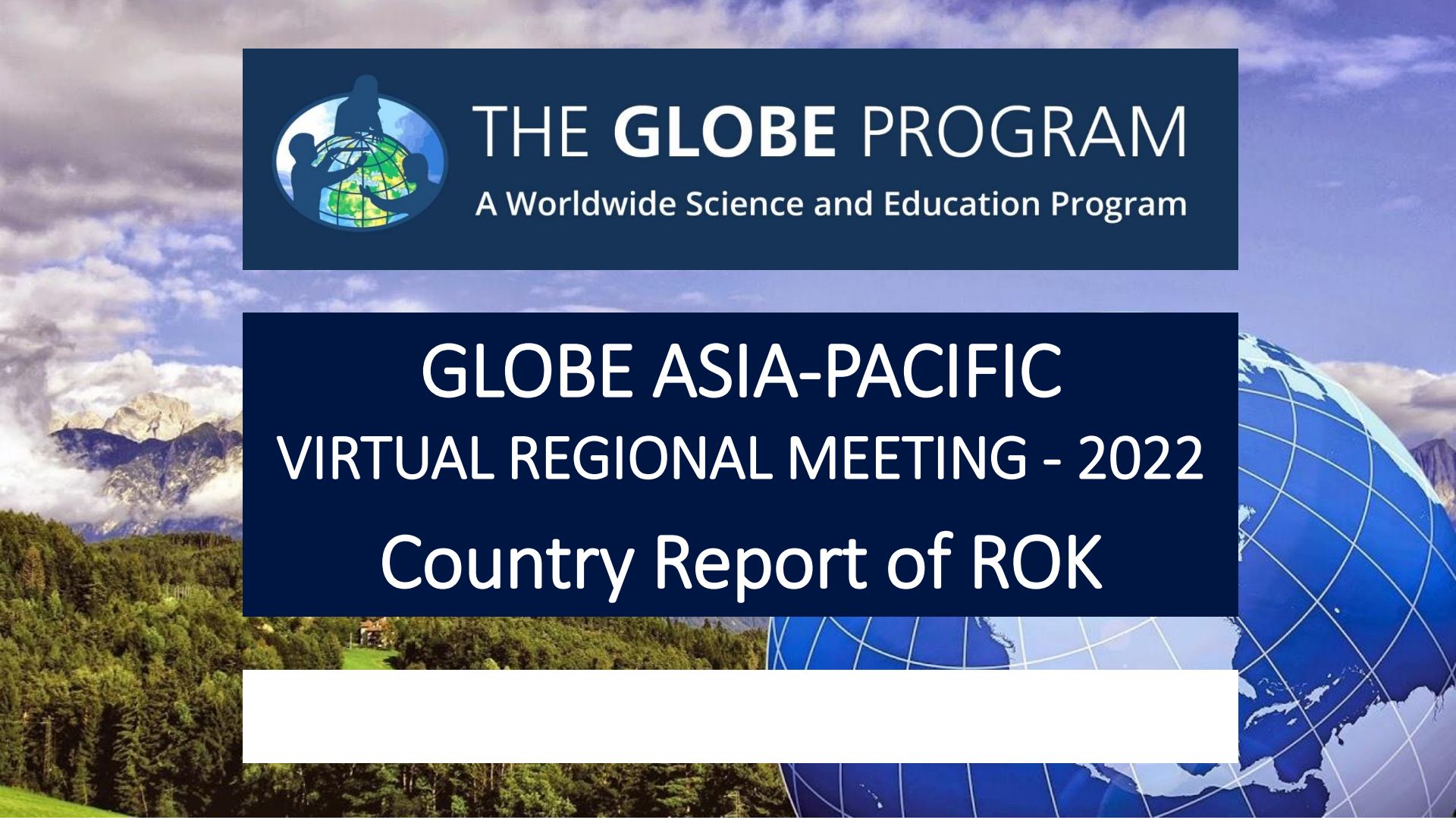
Description of the program in your country and recent activities in 2021:

NO.	NAME OF ACTIVITY	DATE	REMARKS
1.	The GLOBE Program (Philippines), One Million Trees by 2025 Program, and Tree Protocol training	1 February 2020	In collaboration with the LGU and Civic Societies in Pili, Camarines Sur. The objective of the program is to rehabilitate Mount Isarog (a dormant Volcano) by planting one million trees, and monitoring them using the GLOBE Tree App and Tree Protocol.
2.	Trees Around the GLOBE Research Seminar in Cooperation with NASA-Jet Propulsion Laboratory and NASA's Wallop Flight Facility	9 March 2021	(Online) 80+ participants from 16 countries.
3.	Closeout Video Presentation/ Country Report on the Zika Protocol	25 March 2021	With representatives from the US State Department, NASA, NSF and GIO
4.	GLOBE Program (Philippines) EduShare Moodle LMS Tutorial	9 April 2021	www.globeprogram.org is an online LMS for GLOBE Teachers and Schools.

5.	The GLOBE Program (Philippines), One Million Trees by 2025 Program, and Tree Protocol training	23 April 2021	In collaboration with the LGU and Civic Societies in Pili, Camarines Sur. The objective of the program is to rehabilitate Mount Isarog (a dormant Volcano) by planting one million trees, and monitoring them using the GLOBE Tree App and Tree Protocol.
6.	NASA TRACER-AQ Campaign Webinar for Provincial Schools	28 Sept. 2021	With 2,091 registered attendees and participants. Livestreamed in YouTube and Facebook. With Dr. Brenna Briggs, Science and Communications Program Manager, NASA Airborne Science Program at Bay Area Environmental Research Institue
7.	NASA TRACER-AQ Campaign Webinar for NCR Schools	29 Sept. 2021	

Other Notable Achievements in 2021:

- Four (4) Filipinos, 3 of them from the Philippine Science High School System, were elected as members of the GLOBE Working Group – Diversity, Equity and Inclusion (DEI) Group; Science Group; Technology Group; and Education Group.
- Integrating ADAT in STEM Research. A GLOBE Teacher Presentation (Josephine Joy Tolentino) at the Biology Teachers Association (BIOTA) Annual Conference, *"Data Science of the GLOBE Program integrated into STEM Research Projects."*
- GLOBE Teacher (Joan B. Callope), Presentation on "Teaching in the Time of Covid-19 : Classroom Experience", Organized by IPST and GLOBE Program (Thailand).
- GLOBE Student, Joshua Andrei A. Alayon (BNHS), was selected as one of 12 international student vloggers for GLOBE
- 2021 GLOBE Program IVSS Presentation, and Regional Meeting Student Presentation



THE **GLOBE** PROGRAM

A Worldwide Science and Education Program

GLOBE ASIA-PACIFIC
VIRTUAL REGIONAL MEETING - 2022
Country Report of ROK

Republic of Korea

KOFAC
Korea Foundation for
the Advancement of Science & Creativity
한국과학창의재단

About KOFAC

(the Korea Foundation for the Advancement of Science & Creativity)

- **Founded in 1967**
- **A government-affiliated institute**
  - **the Ministry of Science and ICT(MSIT), ROK**
  - **the Ministry of Education(MOE), ROK**
- **Missions:**
  - **Make policies to promote S&T Culture**
  - **Cultivate students of creative talent**

KOFAC
Korea Foundation for the Advancement of Science & Creativity
한국과학창의재단

History of Participation

- from 1995 to 2005: 1st period for GLOBE
- from 2016 to present: 2nd period for GLOBE
- 2019: GLOBE Asia-Pacific Regional Meeting of Country Coordinators
  - Seoul, Republic of Korea(May 22 to 23, 2019)

History of Participation

- from 2016 to present: # of projects

Subjects	2016	2017	2018	2019	2020	2021
Atmosphere	7	19	36	25	6	15
Hydrosphere	4	7	17	11	6	2
Biosphere	3	4	5	8	4	4
Pedosphere	-	3	1	5	2	1

Participation of 2021

- **15 Schools, 15 Teachers, and 55 Students**

# of Participations	# of Teachers	# of Students
# of Elementary Schools	6	21
# of Middle Schools	4	13
# of High Schools	5	21
Total	**15**	**55**

What We Did in 2021

- Virtual Workshop (1): July 2 to 3
- Virtual Workshop (2): August 23
- Mid-Report Assessment: September 6 to 8
- Final Report Assessment: October 16 to 17
- Virtual Fair in Metaverse: October 30 to 31

Problems & Challenges

- **Lack of Financial Support since 2021**
  - Trying to restore financial support in the future

- **Encourage teachers and students to take part in the GLOBE programs more than last year's**

- **Improve the quality of reports for each projects**

THE COUNTRY REPORT:
THE GLOBE PROGAMME IN SRI LANKA

GLOBE Asia Pacific Regional Meeting

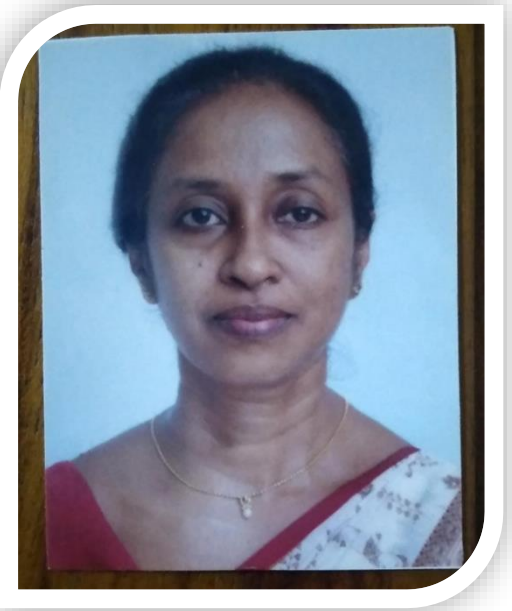
Damayanthi Balasuriya

Director of Education

Ministry of Education

Sri Lanka

Profile



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- Telephone No : 094 112177379/ 094 718138392
- Skype : damayanthibalasuriya

Cooperating Organizations

- Provincial Departments of Education (9)
- Central Environment Authority
- Government Universities
- Funded by: Consolidated fund, Government of Sri Lanka

Participating Schools

122 schools and 161 teachers

Province	No of schools
Western	45
Central	12
Southern	14
Northern	4
Eastern	3
North Western	14
Uva	4
Sabaragamuwa	15
North Central	11

GLOBE Protocols Used In Sri Lanka

- Atmosphere
- Hydrosphere
- Pedosphere
- Biosphere

GLOBE Activities in Sri Lanka

1. Expanding the programme

2. Quality improvement

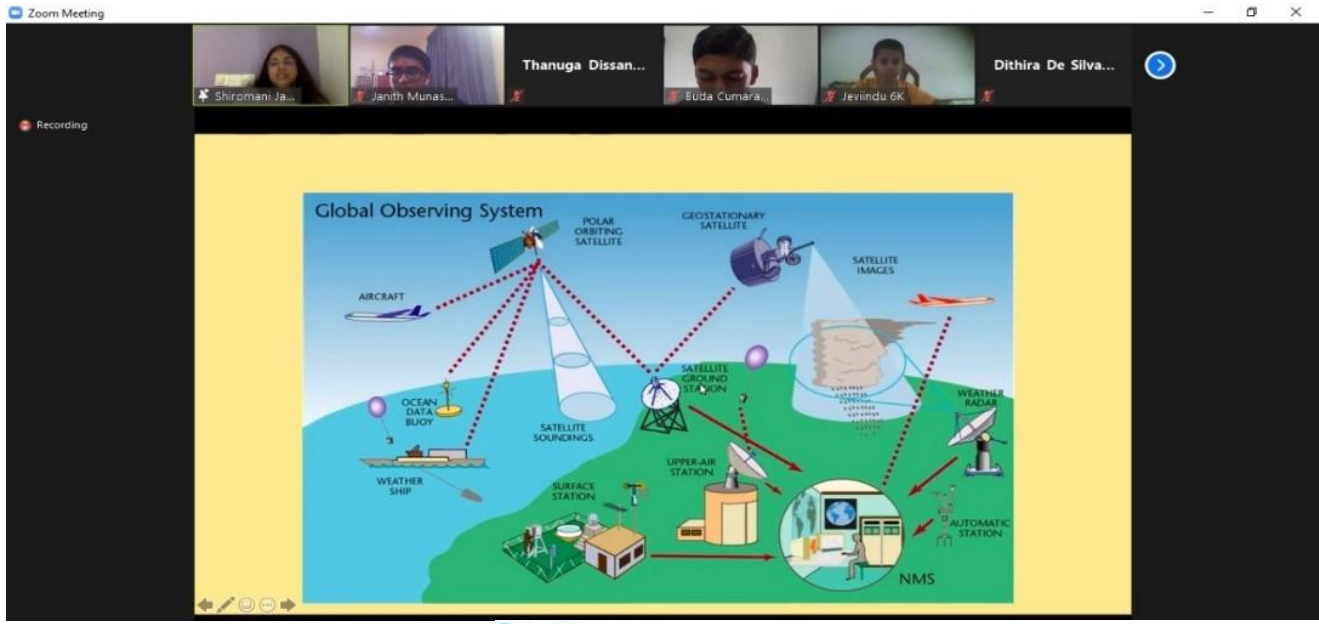
1. Expanding the Programme

- **Conduct online teacher training programmes**
  - Refresher Training for the GLOBE Teachers (Atmosphere, Hydrosphere, Pedosphere, Biosphere)
  - Capacity building workshops for teachers on student research projects

- Education officer training and awareness programmes

2. Quality improvement of the programme

- Appointing regional monitoring officers to monitor the GLOBE programme
- Student project evaluation programme
- Sustainable development programme
- Tree planting programmes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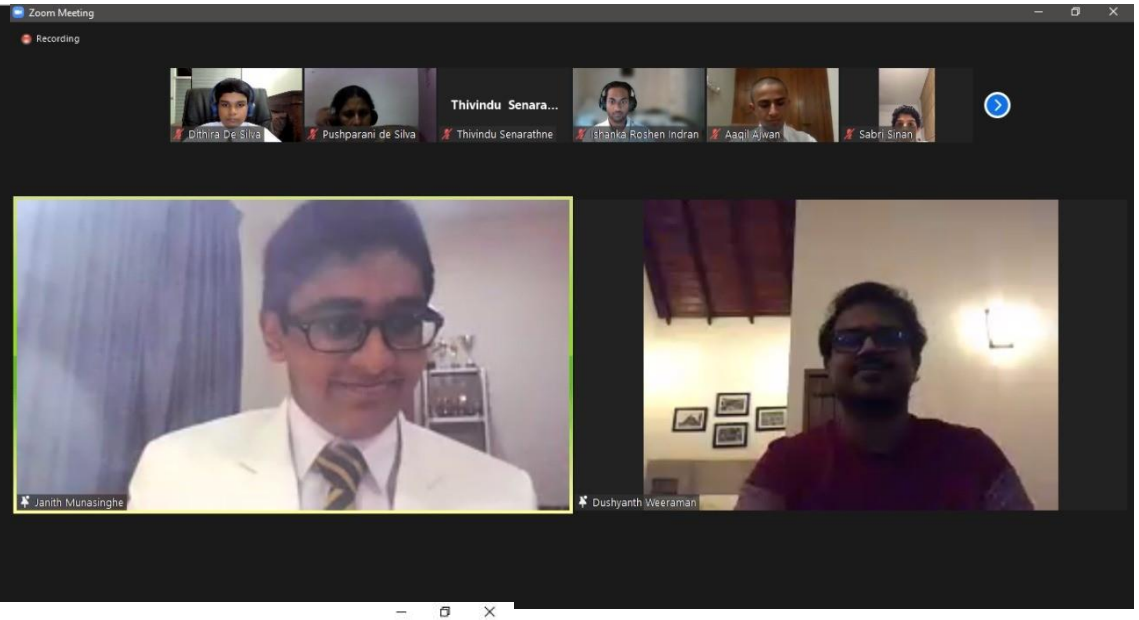
Shiromani Ja...
Janith Munas...
Thanuga Dissan...
Buda Cumara...
Jeviindu 6K
Dithira De Silva...
Global Observing System
POLAR ORBITING SATELLITE
GEOSTATIONARY SATELLITE
SATELLITE IMAGES
AIRCRAFT
SATELLITE GROUND STATION
OCEAN DATA BUOY
SATELLITE SOUNDINGS
WEATHER RADAR
UPPER-AIR STATION
WEATHER SHIP
SURFACE STATION
AUTOMATIC STATION
NMS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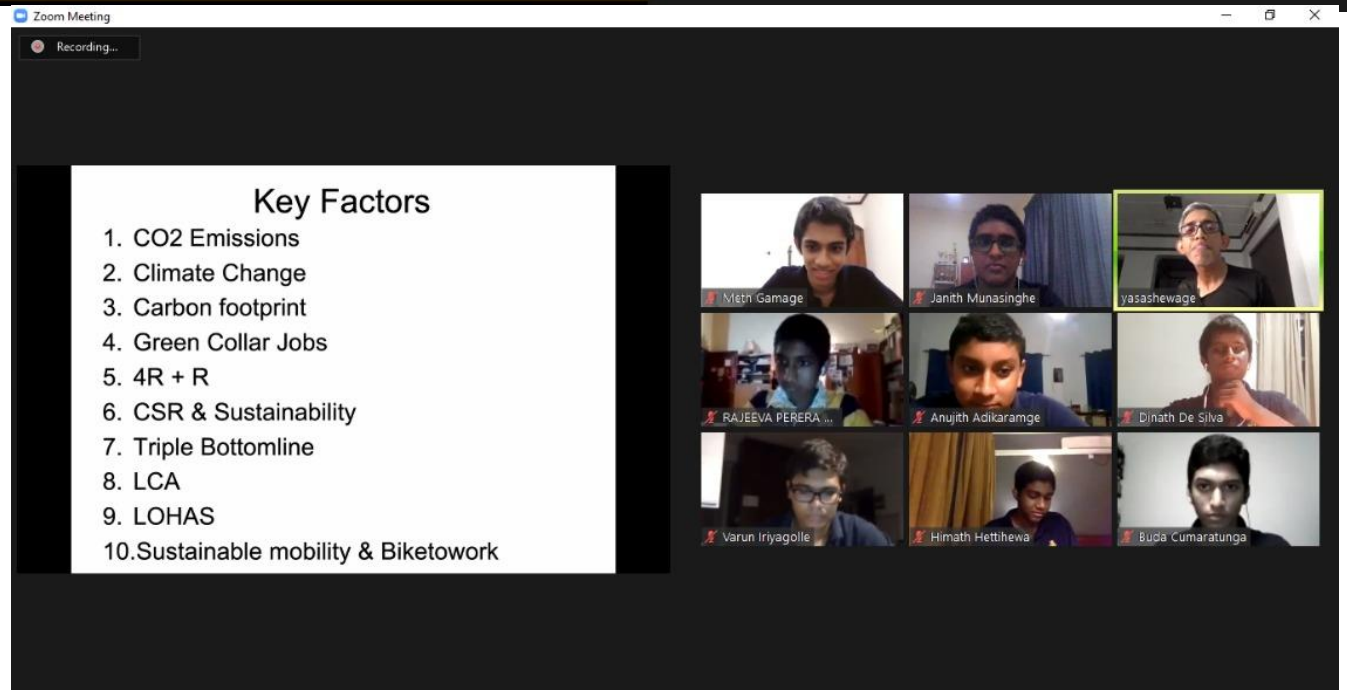
Recording
Dithira De Silva
Pushparani de Silva
Thivindu Senara...
Thivindu Senarathne
Shanka Roshen Indran
Aaqil Ajwan
Sabri Sinan
Janith Munasinghe
Dushyanth Weeraman


Zoom Meeting
Recording...
Key Factors
1. CO2 Emissions
2. Climate Change
3. Carbon footprint
4. Green Collar Jobs
5. 4R + R
6. CSR & Sustainability
7. Triple Bottomline
8. LCA
9. LOHAS
10.Sustainable mobility & Biketowork
Methi Gamage
Janith Munasinghe
Yasashewage
RAJEEVA PERERA ...
Anujith Adikaramge
Dinath De Silva
Varun Iriyagolle
Himath Hettihewa
Buda Cumaratunga

Challenges

- Covid 19 pandemic situation
- Lack/ limitation of capital allocation to purchase equipment
- Lack of internet facilities for data entry
- Difficult to allocate extra time within school hours to conduct GLOBE protocols

Way Forward

- Provide GLOBE equipment to schools
- Provide financial assistance to build weather units in schools
- Continuation of student research projects evaluation programme
- Conduct national GLOBE learning expedition
- Strengthening elementary GLOBE for primary students
- Expanding student project work through the Environmental Pioneer programme in collaboration with the Central Environmental Authority, Sri Lanka
- Commemoration of special Environmental days with GLOBE teachers & students. Ex. Wetland Day, Water Day, Earth day, Environment Day, etc.
- Contribution of regional collaborative projects

Thank You

Taiwan

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Cooperating organizations:
None

Participating schools:
1. The Affiliated Senior High School of National Taiwan Normal University
2. The Affiliated Jhongli Senior High School of National Central University
3. National Wu-Ling Senior High School
4. National Lo-Tung Senior High School
5. National Chia-Yi Girls' Senior High School
6. Kaohsiung Municipal Girls' Senior High School
7. New Taipei Municipal DanFeng High School
8. National Chutung Senior High School
9. National MiaoLi Senior High School
10. Yin-Pei Junior high school
11. Nan-Kwang Senior High School
12. National Feng-Shan Senior High School
13. New Taipei Municipal Jin-Shan High School
14. Keelung Municipal Anle Senior High School
15. National Keelung Senior High School
16. Taipei Municipal Ming Lun High School
17. Taipei Municipal Zhongshan Girls High School
18. Taipei Municipal Jianguo High School
19. Fudan High School
20. National Hsinchu Senior High School
21. National Feng-yuan Senior High School
22. ST. Viator Catholic High School
23. Da-Dun Elementary School, Taichung City
24. National Taichung Girls' Senior High School
25. National Changhua Senior High School
26. National Hualien Girls' Senior High School
27. Houjia Junior High School
28. Kaohsiung Municipal Youchang Junior High School
29. The Affiliated High School of National Chung Hsing University
30. Taipei Yangming High School
31. Taipei Municipal Zhong-zheng Senior High School
32. Taipei Municipal Wan Fang Senior High School
33. Tainan Municipal North District Kaiyuan Elementary School
34. Taichung Municipal Focus Junior High School
35. National Magong High School
36. National Kinmen Senior High School
37. Mingdao High School

38. Liou-Guei Senior High School
39. Kaohsiung Municipal Cianjin Junior High School
40. Fu-Sing Elementary School
41. Taipei Municipal Ming Lun High School
42. Shihcheng Elementary School
43. Gangping Elementary School
44. Shun-Tien Junior High School
45. New Taipei Municipal New Taipei Senior High School
46. Banqiao Senior High School
47. Tainan First Senior High School
48. Taichung First Senior High School
49. Taipei Municipal Ta Tung Senior High School
50. New Taipei Municipal Hsin Tien Senior High School
51. Taoyuan Municipal Xin Wu Senior High School

Funding by:
Ministry of Science and Technology, Taiwan

GLOBE protocols used in country:
Digital Multi-Day Max-Min-Current Air, Soil Temperature, Barometric Pressure Protocol, Clouds Observations, Precipitation, Relative Humidity, Surface Temperature, Davis Weather Station, Water Temperature, Water pH, Transparencies, Alkalinities, Conductivities, Nitrates, Salinities, Dissolved Oxygens, GPS, Biometry Trees, Vegetation Covers, Mosquito Habitat Mapper, MUC, Carbon Cycle, Microplastics Monitoring (developing protocol)

Number of schools currently reporting data (2021):
16

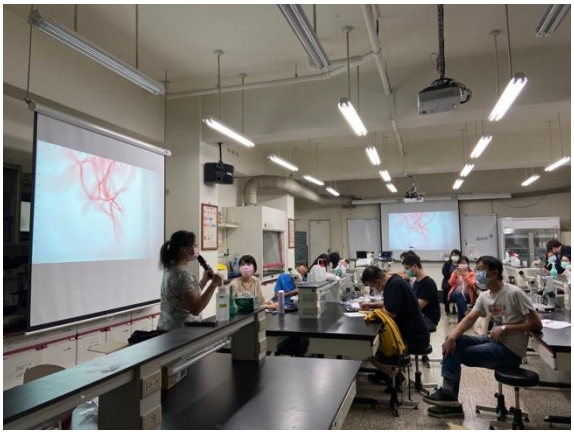
Description of the program in your country and recent activities in 2021:
GLOBE Taiwan keeps focusing on the international cooperation. We encouraged students to participate in GLOBE IVSS. In 2021, there were 29 projects submitted to IVSS, which is the most submitted reports ever. 29 reports were from 6 schools and four of them earned 4-star.
In 2020, GLOBE Taiwan and America Institute in Taiwan (AIT) have applied for GLOBE PLUS Post, which helped new GLOBE schools to engage in GLOBE, collected data on mosquitos, increased scientific collaboration and encouraged STEAM education, promoted English-language learning, and empowered women and girls. In 2021, students who joined this project submitted three reports about mosquito problem to GLOBE IVSS. In order to enhance students' English ability, AIT and GLOBE Taiwan hosted the GLOBE-STEM English Presentation Skills Workshop for GLOBE teachers to teach them how to make a successful scientific presentation by PowerPoint, video-recording, and posters.
GLOBE Taiwan Office hosted 2021 GLOBE Asia-Pacific Regional GLE on 2 May 2021. This event was part of the 2021 GLOBE Asia-Pacific Regional Meeting. GLOBE Taiwan Office invited Dr. Ying-Hwa Kuo, Director of UCAR Community Program, as an on-line keynote speaker to talk about "Improving Weather Prediction and Monitoring Climate Change with Radio Occultation Technique."
After the keynote speech, there were 13 student teams from India, Philippines, Sri Lanka, Thailand, Vietnam and Taiwan virtually sharing their GLOBE science reports. The topics included aerosol issues, chemical pollution, the impact of CO_2 concentration on the weather, the influence of the soil pH, electrical conductivity on the ecological system, the observation of mosquito larvae, and the relationship between tree grow-up and sunshine. The following activity was the on-site Taiwan student poster presentations. There were 30 posters from 15 schools that joined the meeting. The subjects included students' GLOBE investigations, teachers' GLOBE teaching plans, and the implementation in GLOBE schools.
GLOBE Taiwan Office invited American Institute in Taiwan Economic Officer Rhiannon Bramer, Director of the Department of International Cooperation and Science Education Ministry of Science and Technology Chih-Peng Chu, Vice President of National Central University Dr. Kwang-Hwa Lii, Director of GLOBE Implementation Office Dr. Tony P. Murphy, Coordinator of GLOBE Regional Coordination Office for Asia-Pacific Dr. Desh Bandhu and Director of UCAR Community Program Dr. Ying-Hwa Kuo jointly opened 2021

virtual Asia-Pacific Regional Meeting. In total, there were 607 participants virtually joining and 126 participants joining the meeting in person.
GLOBE Taiwan encouraged teachers to co-work with international teams to improve their GLOBE teaching. Since one Taiwan teacher has been guiding students to study the microplastic topic for a long time, we encouraged the teacher, who has ever guided students to investigate the issue of marine plastic pollution, to share his teaching with the microplastics monitoring protocol team. The teacher led students to collect the microplastics in oysters in three coastal areas of Taiwan. They used the vacuum pump to filter the water and get the sample and identified the plastic by the hot needle test. Although the method of identification is different from the microplastic monitoring team, the teacher and the team exchanged their concepts on teaching and development of the protocol.

Photos:

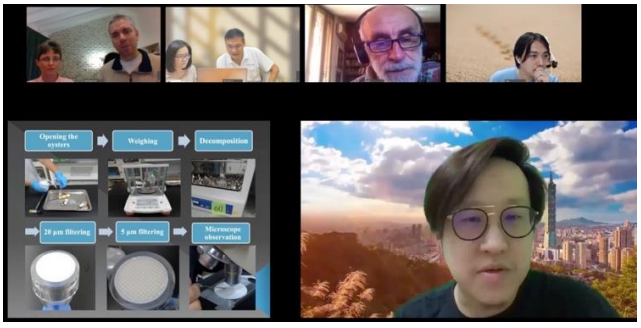
2021/11/06 Microplastics Developing Protocol Teacher Training

2021/11/06 Microplastics Developing Protocol Teacher Training



2021/11/06 Microplastics Developing Protocol Teacher Training

2021/11/06 Microplastics Developing Protocol Teacher Training



2021/07/22 Microplastics Experience Sharing Meeting

2021/05/02 GLOBE Asia-Pacific GLE Group-Photo

2021/05/02 GLOBE Asia-Pacific GLE & Regional Meeting-Student Presentation (India)

2021/05/02 GLOBE Asia-Pacific GLE & Regional Meeting-Student Presentation (Philippines)

2021/05/02 GLOBE Asia-Pacific GLE & Regional Meeting-Student Presentation (Online Participants)

2021/05/02 GLOBE Asia-Pacific GLE & Regional Meeting-Student Presentation (Taiwan)

2021/05/02 GLOBE Asia-Pacific GLE & Regional Meeting-Student Presentation (On-site Participants)

2021/05/02 GLOBE Asia-Pacific GLE & Regional Meeting-Student Presentation (Poster Presentations)

2021/04/10 GLOBE-STEM English Presentation Skills Workshop

2021/02/26 GLOBE-STEM English Presentation Skills Workshop

2021/02/26 GLOBE-STEM English Presentation Skills Workshop

2021/02/26 GLOBE-STEM English Presentation Skills Workshop

THE INSTITUTE FOR THE PROMOTION OF TEACHING SCIENCE AND TECHNOLOGY (IPST)
MINISTRY OF EDUCATION, THAILAND

GLOBE THAILAND REPORT

2021

Reported by

GLOBE THAILAND

Contents

GLOBE THAILAND REPORT 2021

1. Cooperation with Universities in Promoting Environmental Science Research Based on IPST Concept

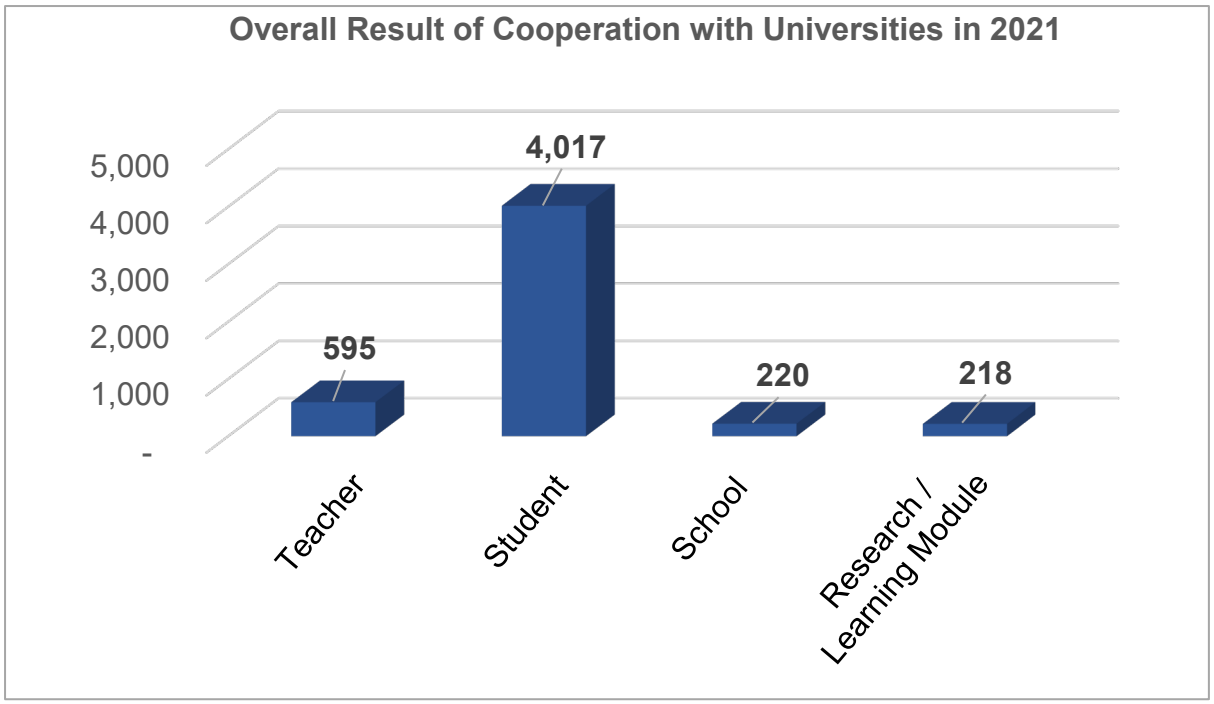
IPST collaborates with GLOBE network universities to systematically multiply environmental education results in order to build GLOBE Thailand's cooperative academic network at both the national and international levels, as well as to develop students' knowledge and competence in conducting environmental science research in the context of STEM education. In fiscal year 2021 (1 October 2020 - 30 September 2021), IPST allocated operational funds for this purpose to 25 universities: Srinakharinwirot University, Walailak University, Kasetsart University Kamphaeng Saen Campus, Prince of Songkla University, Surat Thani Campus, Thaksin University, Loei Rajabhat University, Udon Thani Rajabhat University, Ubon Ratchathani Rajabhat University, Rajamangala University of Technology Isan, Mae Fah Luang University, Surat Thani Rajabhat university, Surin Rajabhat University, Suranaree University of Technology, Phuket Rajabhat University, Rambhai Barni Rajabhat University, Lampang Rajabhat University, Rajamangala University of Technology Suvarnabhumi, Phetchabun Rajabhat University, Uttaradit Rajabhat University, Ubon Ratchathani University, Maejo University, Kanchanaburi Rajabhat University, Mahidol University, Yala Rajabhat University, and Thepsatri Rajabhat University. In total, 4,017 students, 595 teachers, and 218 projects (and learning modules) from 220 schools participated in different activities organized by the universities as follows:

No	University	Teacher	Student	School	Research Project/ Learning Module
1	Srinakharinwirot University	17	51	12	16
2	Walailak University	14	163	5	5
3	Kasetsart University Kamphaeng Saen Campus	29	83	24	19
4	Prince of Songkla University, Surat Thani Campus	12	324	5	5
5	Thaksin University	73	275	24	46
6	Loei Rajabhat University	9	60	6	21
7	Udon Thani Rajabhat University	25	73	16	12
8	Ubon Ratchathani Rajabhat University	29	182	5	5
9	Rajamangala University of Technology Isan	68	181	5	10
10	Mae Fah Luang University	18	54	18	*
11	Surat Thani Rajabhat university	8	169	3	6

No	University	Teacher	Student	School	Research Project/ Learning Module
12	Surin Rajabhat University	56	291	4	4
13	Suranaree University of Technology	22	*	10	*
14	Phuket Rajabhat University	10	428	7	9
15	Rambhai Brani Rajabhat University	14	97	6	7
16	Lampang Rajabhat University	23	36	12	12
17	Rajamangala University of Technology Suvarnabhumi	25	616	5	5
18	Phetchabun Rajabhat University	25	75	25	19
19	Uttaradit Rajabhat University	63	493	7	5
20	Ubon Ratchathani University	43	27	4	4
21	Maejo University	*	*	3	*
22	Kanchanaburi Rajabhat University	*	*	3	*
23	Mahidol University	*	*	3	*
24	Yala Rajabhat University	6	254	3	3
25	Thepsatri Rajabhat University	6	85	5	5
Total		**595**	**4,017**	**220**	**218**

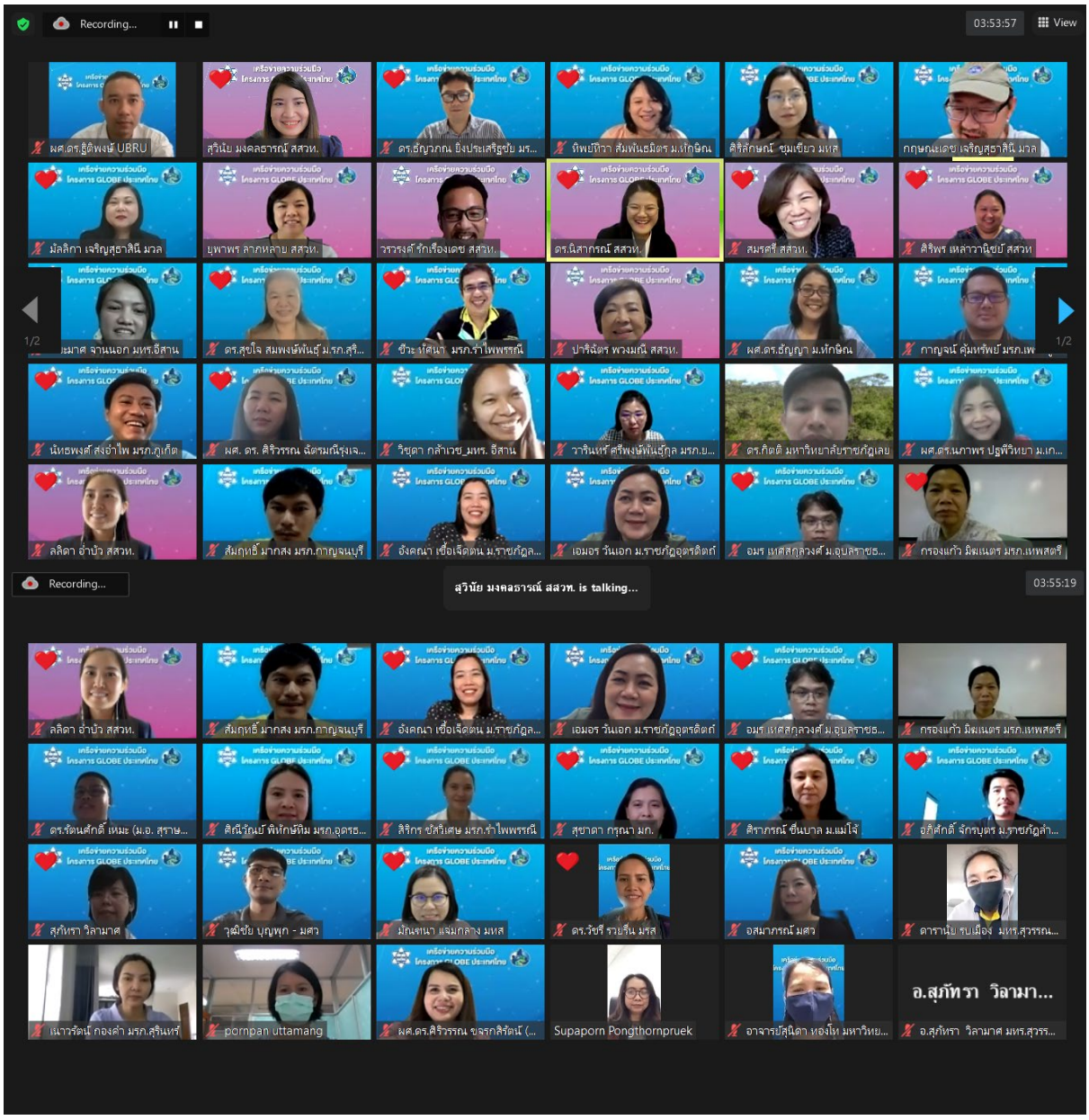
Remark

* Under operation because of epidemic of COVID-19


Overall Result of Cooperation with Universities in 2021
5,000
4,000
3,000
2,000
1,000
-
595
4,017
220
218
Teacher
Student
School
Research / Learning Module

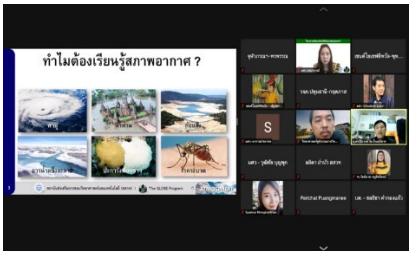

GLOBE University Network Operations Progress Conference 2021
June 1, 2021

GLOBE University Network Presentation Conference 2021
September 17, 2021



1. **Srinakharinwirot University**

A GLOBE STEM Training workshop to monitor the environment through an online workshop. The 51 students and 17 teachers from 12 schools collected data on the Atmosphere, Biosphere, and Mosquitos and created 16 projects.

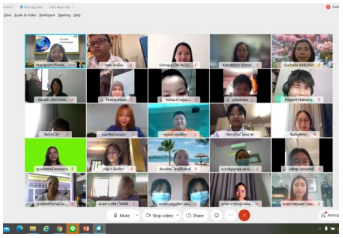


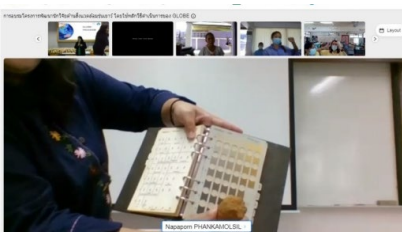
2. **Walailak University**

GLOBE STEM Training on Atmosphere, Tree Height, and Mosquito Protocol through face-to-face workshop was organized by Walailak University. The 163 students and 14 teachers from five schools collaborated on five projects.

3. Kasetsart University Kamphaeng Saen Campus

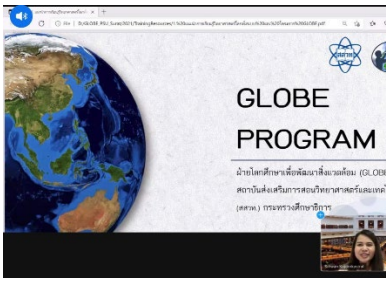
Kasetsart University's Kamphaeng Saen Campus held an online STEM session on the Atmosphere, Hydrosphere, Pedosphere, and Biosphere. The student project is built on a partnership between scientists, teachers, and students. The 19 projects were generated by 83 students and 29 teachers from 24 schools.

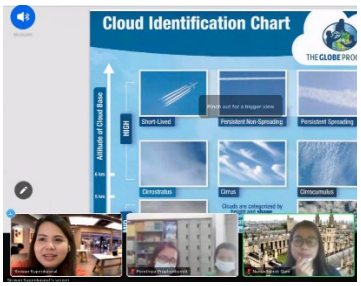


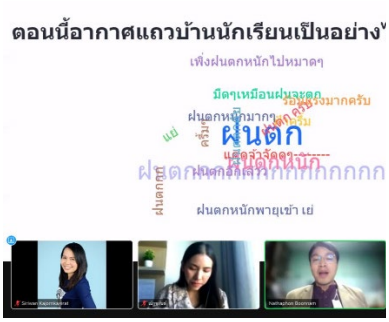



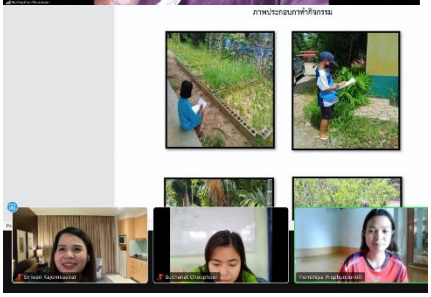
4. Prince of Songkla University, Surat Thani Campus

GLOBE STEM Training on Atmosphere and Hydrosphere was held at the Prince of Songkla University, Surat Thani Campus through an online workshop. The 324 students and 12 teachers were drawn from five different schools. Five projects were created by the students.



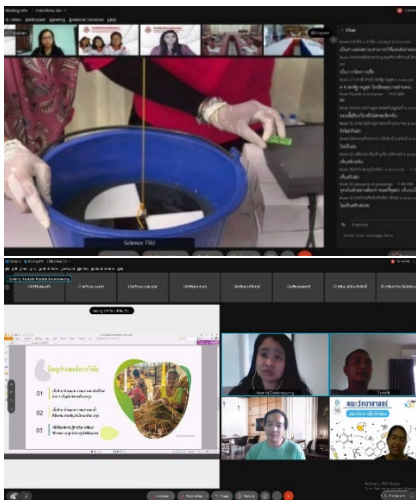
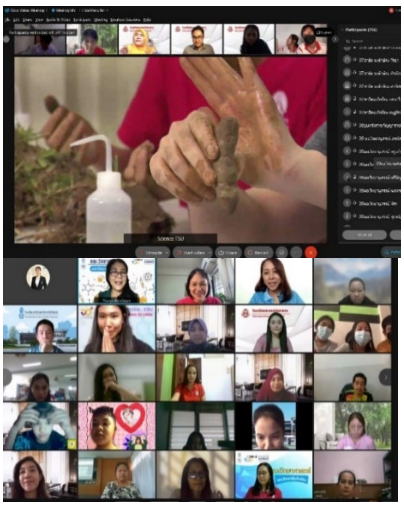


5. **Thaksin University**

Through an online session, Thaksin University provided GLOBE STEM Training on Atmosphere, Hydrosphere, Pedosphere, Biosphere, and Mosquito. There were 275 students and 73 teachers from 24 different schools in attendance. Students created 46 projects as a result of the program.

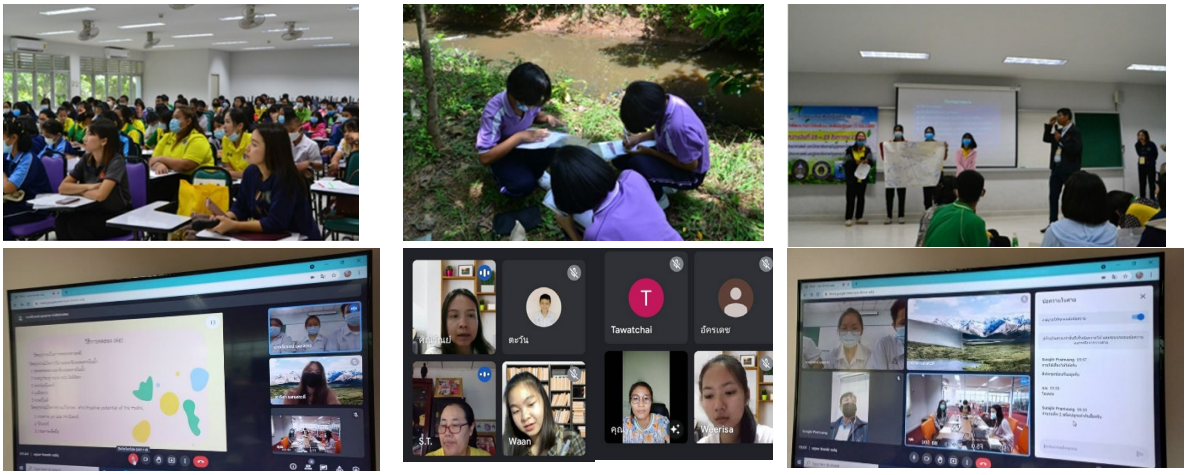
6. **Loei Rajabhat University**

GLOBE STEM Training on Atmosphere and Hydrosphere was held as a face-to-face session at Loei Rajabhat University. Six schools sent 60 students and 9 teachers. Students created 21 projects as a result of the program.



7. **Udon Thani Rajabhat University**

Udon Thani Rajabhat University held a GLOBE STEM Training session for 73 students and 25 teachers from 16 schools, collecting data on the Hydrosphere, Pedosphere, Biosphere, Atmosphere, and Mosquito through face-to-face and online workshops. The students created a total of 12 projects.

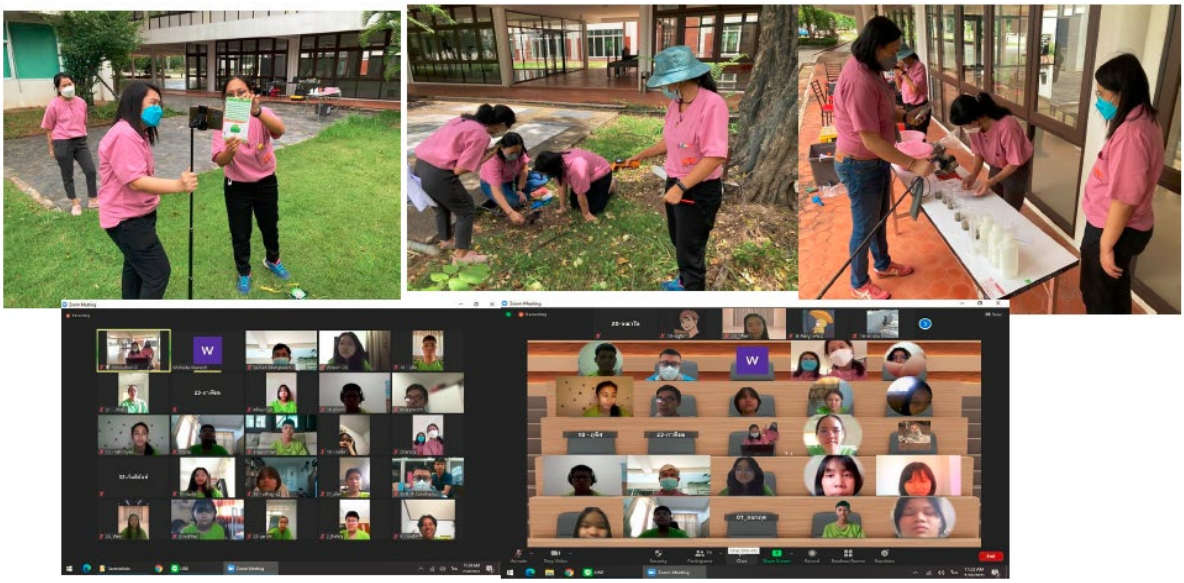


8. Ubon Ratchathani Rajabhat University

Ubon Ratchathani Rajabhat University held a GLOBE STEM Training session for 182 students and 29 teachers from five schools, gathering data on the Pedosphere, Hydrosphere, Atmosphere, Biosphere, and Mosquito. Five projects were created by the students.

9. Rajamangala University of Technology Isan

The 181 students and 68 instructors from five schools were trained in Pedosphere, Hydrosphere, Mosquito, Tree protocol, and STEM education at Rajamangala University of Technology Isan through face-to-face and online workshops. Students created ten projects for their final assignment.

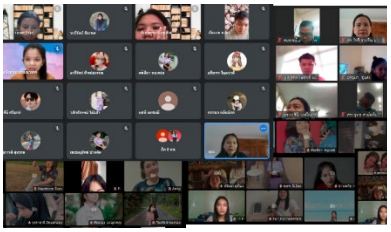


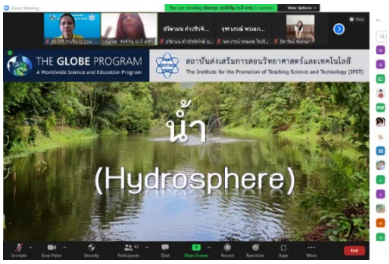
10. Mae Fah Luang University

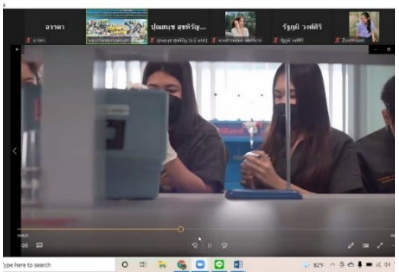
GLOBE STEM program was trained by Mae Fah Luang University through an online workshop for 54 students and 18 teachers from 18 schools by gathering data on the Hydrosphere and Atmosphere. Twelve projects were prepared by the students.

11. Surat Thani Rajabhat university

Surat Thani Rajabhat University conducted an online GLOBE STEM session for 169 students and 8 teachers from three schools, collecting data on the Hydrosphere, Biosphere, Atmosphere, and Pedosphere. Students created six projects as a result of the class.

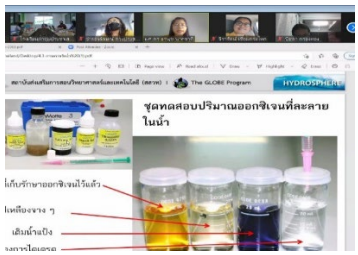


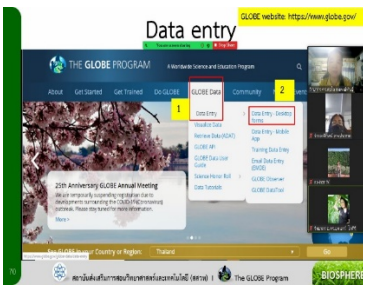



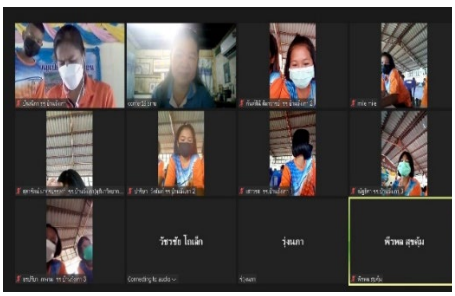
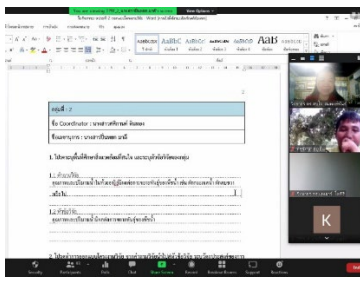



12. Surin Rajabhat University

Surin Rajabhat University provided an online session for 291 students and 56 teachers from four schools to learn about the Biosphere, Atmosphere, and Tree Height. Students created four projects after the workshop.

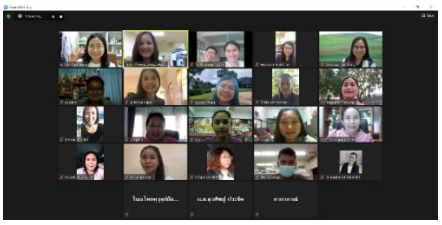
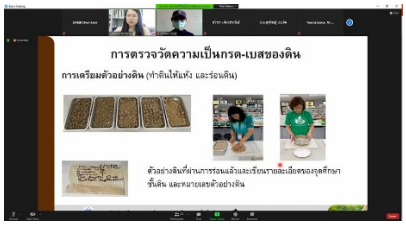





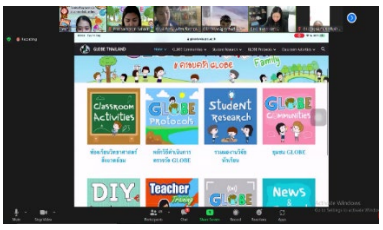
13. Suranaree University of Technology

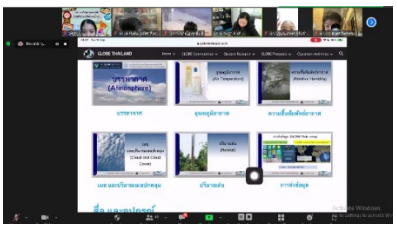
Suranaree University of Technology provided an online session for 22 teachers from ten schools to prepare for GLOBE STEM by collecting data on the Atmosphere, Pedosphere, Hydrosphere, Biosphere, and Mosquito.

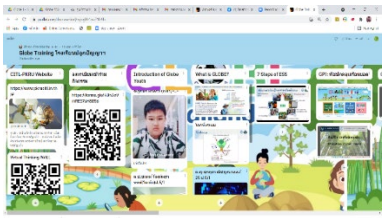
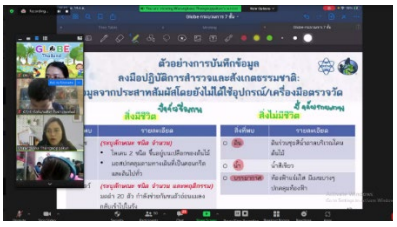



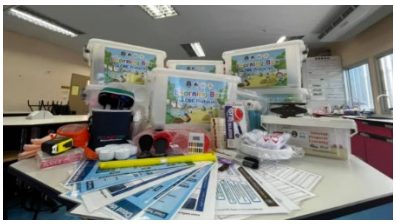
14. Phuket Rajabhat University

By gathering data on Pedosphere, Hydrosphere, Biosphere, and Mosquito, Phuket Rajabhat University instructed GLOBE STEM workshop participants via an online workshop and provided Learning Boxes to 428 students and 10 teachers from seven schools. The students created nine projects.



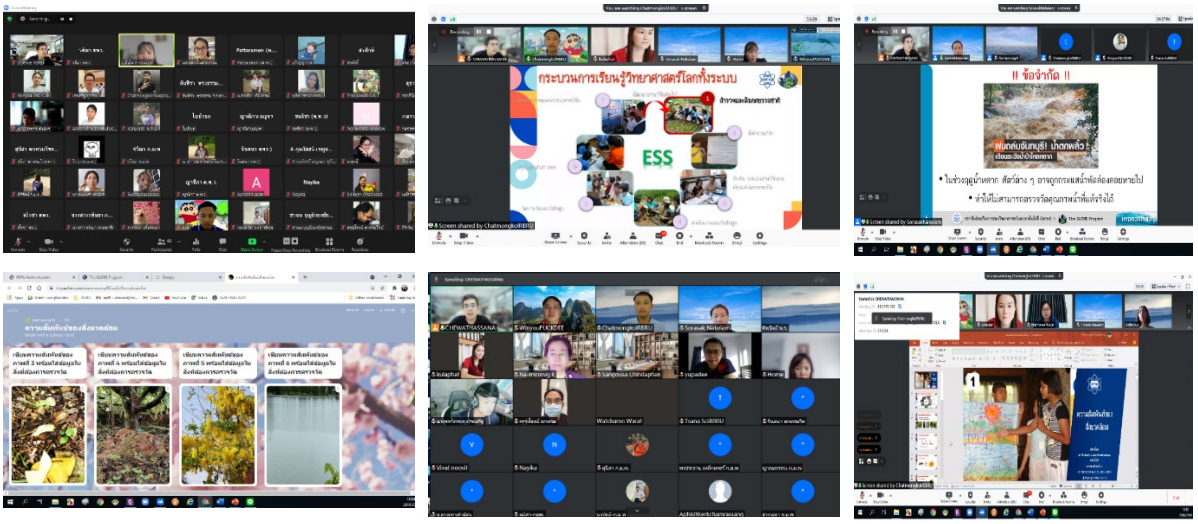




15. Rambhai Barni Rajabhat University

GLOBE STEM workshop was trained by Rambhai Barni Rajabhat University through an online workshop for 97 students and 7 teachers from 6 schools by gathering data on the Atmosphere, Pedosphere, Hydrosphere, and Biosphere. The students developed seven projects.



16. Lampang Rajabhat University

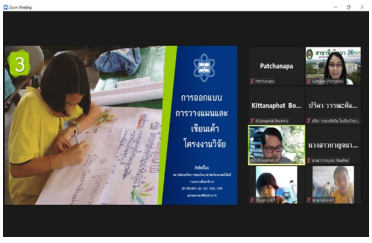
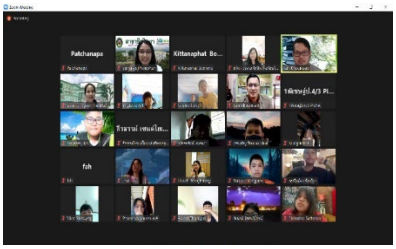
Lampang Rajabhat University conducted an online GLOBE STEM workshop for 36 students and 23 teachers from 12 schools, gathering data on the Atmosphere, Pedosphere, Hydrosphere, Biosphere, and Mosquito. The students created twelve projects.

17. Rajamangala University of Technology Suvarnabhumi

Rajamangala University of Technology Suvarnabhumi conducted a GLOBE STEM workshop for 616 students and 25 teachers from 5 schools, gathering data on the hydrosphere, pedosphere, and tree height. The students created five projects.

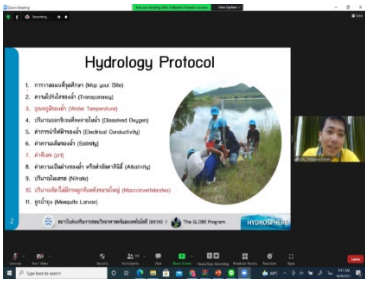
18. Phetchabun Rajabhat University

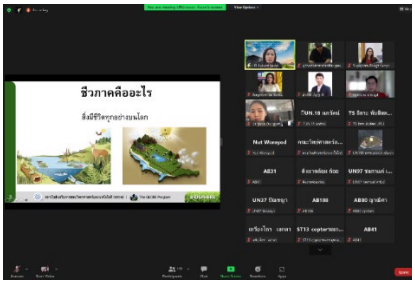
Phetchabun Rajabhat University trained 75 students and 25 teachers from 25 schools in the GLOBE STEM program by gathering data on the Atmosphere, Biosphere, Pedosphere, and Hydrosphere, and the students created 19 projects.


19. Uttaradit Rajabhat University

Uttaradit Rajabhat University conducted an online workshop for 493 students and 63 teachers from seven schools, gathering data on the Biosphere, Atmosphere, Hydrosphere, and Pedosphere. Students created five projects.

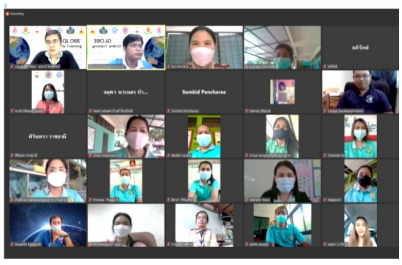






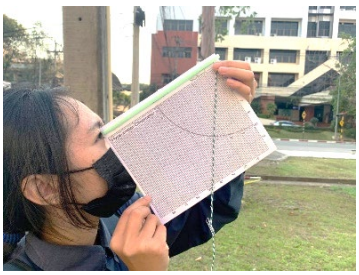
20. Ubon Ratchathani University

Ubon Ratchathani University conducted a face-to-face and online GLOBE STEM workshop for 27 students and 43 teachers from four schools, gathering data on the Biosphere, Atmosphere, Hydrosphere, and Pedosphere. The students created four projects.



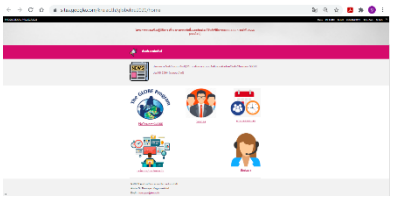

21. Maejo University

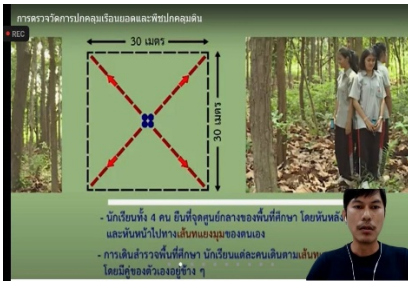
Maejo University provided a GLOBE STEM preparation program for three schools via an online workshop on the Biosphere, Atmosphere, and Pedosphere.

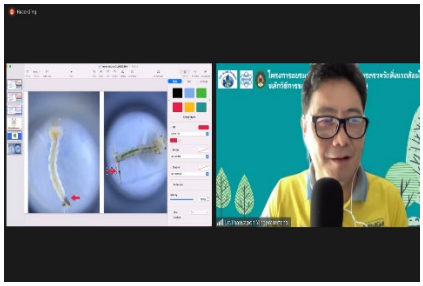
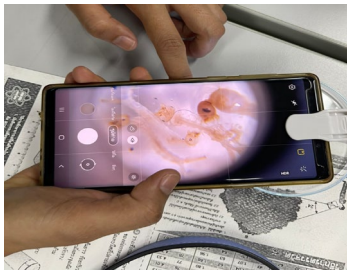



22. Kanchanaburi Rajabhat University

Kanchanaburi Rajabhat University conducted an online workshop for 220 students and three professors from three schools on the Biosphere, Atmosphere, Hydrosphere, Pedosphere, and Mosquito. Students created three projects.





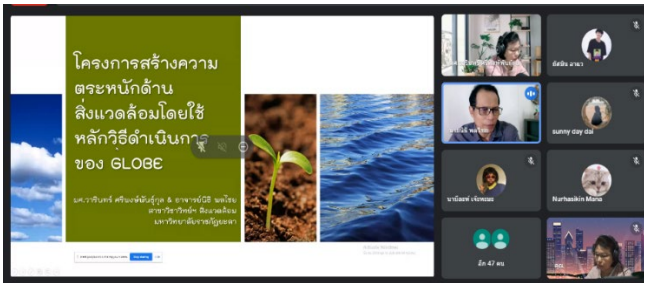



23. Mahidol University

Mahidol University provided a GLOBE STEM preparation course for three schools via an online workshop on the Biosphere, Atmosphere, and Pedosphere.

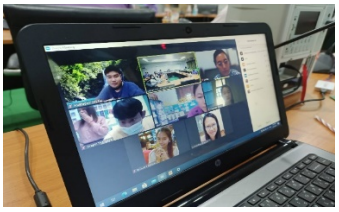
24. Yala Rajabhat University

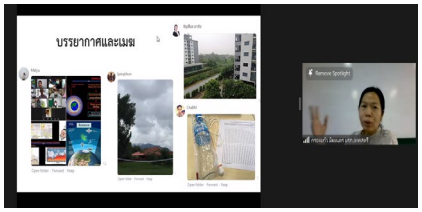
Yala Rajabhat University conducted an online workshop for 254 students and 6 teachers from three schools in order to collect data on the Biosphere and Atmosphere. The students created three projects.



25. Thepsatri Rajabhat University

Thepsatri Rajabhat University conducted an online program for 85 students and 6 teachers from 5 schools, gathering data on the Atmosphere, Hydrosphere, and Pedosphere. The students created five projects.





2. Enhancement of Teacher and Student Potential on Environmental Science Research and Innovation for Environmental Science Education 2021

2.1 GLOBE Student Research Competition 2021

GLOBE Student Research Competition 2021 (GLOBE SRC 2021) was opened to primary and secondary school students and was held online during 26 – 27 April 2021. There were 76 oral presentations and 76 poster presentations participating in this competition. The winners are as follows:

Oral Presentation awards:

Primary school category:

First prize: Varee Chiangmai School, Chiang Mai Province

Title: The effect of cloud cover on the different air temperature during day and night time.

Second prize: Wat Mai Siew School, Nakhon Ratchasima Province.

Title: The study of relationship between physical and chemical quality on the growth of cassava at cassava cultivation area, Ban Mai Siew, Don Sub-district, Pakthongchai District, Nakhon Ratchasima Province.

Third prize: Montfort College Primary Section, Chiang Mai Province

Title: The Comparison of soil properties and soil improvement at residential area with agricultural area and organic farming area.

Honorable mention: Dara Academy, Chiang Mai Province

Title: The study of 22 study points of land use in Chiang Mai Province, Thailand.

Honorable mention: Anubanlampang (Khelangrat-anusorn), Lampang Province

Title: The study of PM2.5 reduction ability by using plant at Anubanlampang (Khelangrat-anusorn), Lampang Province

Honorable mention: Bandon School (Saharat-Ratuthit), Nakhon Ratchasima Province

Title: Study of factors of Red water lily blooming at Bandon School pond, Don Sub-district, Pakthongchai District, Nakhon Ratchasima Province.

Lower Secondary school category:

First prize: Sawang Daen Din School, Sakon Nakhon Province

Title: The study of physical factors that affect the growth of Dung beetle (*Cassolus pongchaii*) for autonomous artificial nest development

Second prize: Chum Phae Suksa School, Khon Kaen Province

Title: Study of relationship between rainfall, air temperature and relative humidity on species and amount of natural enemies of rice insect pest

Third prize: Suksasongkraojitaree under the patronage of the Princess The Princess mother, Lampang Province

Title: Diversity of freshwater algae, aquatic insects and some water quality parameters in Wang River, Muang District, Lampang Province.

Honorable mention: Princess Chulabhorn Science High school Trang, Trang Province

Title: Terrestrial cloud studies on cloud data from position and condition changes at Muang District, Trang Province.

Honorable mention: Phimai Wittaya School, Nakhon Ratchasima Province

Title: Study of suitable physical factors of Lichen growth and use of Lichen as an air pollution indicator at Phimai Wittaya School, Phimai District, Nakhon Ratchasima Province.

Honorable mention: Mae Sariang “Boripat suksa” School, Mae Hong Son Province

Title: Diversity of aquatic insects as a water quality indicator at Yuam River, Mae Sariang District, Mae Hong Son Province.

Upper Secondary school category:

First prize: Donchanwittayakom School, Kalasin Province

Title: Technique to increase yield of Pan Phichit lime (*Citrus aurantifolia* Swingle) by applying soil properties data together with automation system.

Second prize: Princess Chulabhorn Science High School Trang, Trang Province

Title: Effect of population density on burrow characteristics in the fiddler crab (*Uca bengali*)

Third prize: Kalasinpittayasan School, Kalasin Province

Title: Study of chemical and physical factors of *Macrobrachium rosenbergii* De Man pond water for the development of the notification system automatic, together with quality improvement equipment, solve the problem of early mortality syndrome.

Honorable mention: Varee Chiangmai School, Chiang Mai Province

Title: The study of efficiency in remediating air quality of tree plant in the green areas of Chiang Mai

Honorable mention: Princess Ubolratana Rajakanya's College Phatthalung, Phatthalung Province

Title: Food and feeding habit of *Arius Maculatus* from the local fishery communities in Phatthalung Province

Honorable mention: Laemratbumrung School, Nakhon Si Thammarat Province

Title: Effects of water and air quality on mold infection in rice strains RD41 in Nong Mai Kaen Village, Khuan Chalik Sub-district, Hua Sai District, Nakhon Si Thammarat Province.

Poster Presentation awards:

Best Popular Vote Poster Presentation prize (Primary school): Tedsaban Bankuhasawan School, Phattalung Province

Title: The study of the factors affected to the number of mosquito larvae in the temple near schools around Phattalung municipality, Phattalung Province.

Best Popular Vote Poster Presentation prize (Lower Secondary school): Kalasinpittayasan School, Kalasin Province

Title: Study of diversity phytoplankton and water quality at *Macrobrachium rosenbergii* De Man farming pond in Lam Pao dam, Kalasin Province for finding suitable condition *Macrobrachium rosenbergii* De Man growth.

Best Popular Vote Poster Presentation prize (Upper Secondary school): Kalasinpittayasan School, Kalasin Province

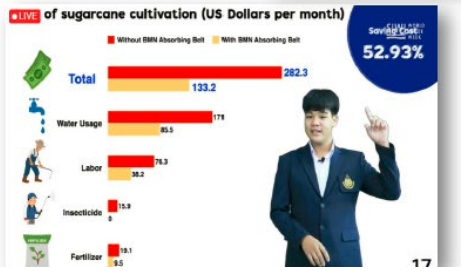
Title: Study of chemical and physical factors of *Macrobrachium rosenbergii* De Man pond water for the development of the notification system automatic, together with quality improvement equipment, solve the problem of early mortality syndrome.

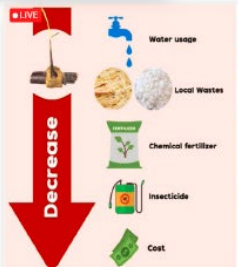
2.2 Thailand Junior Water Prize 2021 (TJWP 2021)

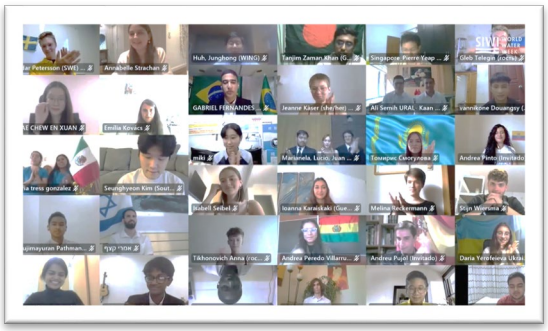
The Thailand Junior Water Prize 2021 competition was held online on May 6-7, 2021, with the goal of encouraging students to learn about, care for, and protect water resources. The research project **"Bio-Moisture-Nutrient Absorbing Belt for Promoting Sugarcane Seedling Growth from Local Waste"** from Damrongratsongkroh School in Chiang Rai Province won the winner.

On August 25, 2021, the winner of TJWP2021 was joined their innovative water saving strategies to the Virtual Stockholm Junior Water Prize 2021 in Sweden. The Winner of the Diploma of Excellence has been awarded to the Thai Finalists. The Prime Minister, the Deputy Minister of Education, and President of IPST congratulated and admired the winner.

VDO Presentation
https://www.youtube.com
/watch?v=zZNlj9hxLCM







2.3 GLOBE Thailand Teacher Shining Star 2021

GLOBE Thailand initiated the GLOBE Thailand Teacher Shining Star (GLOBE TSS) to admire teachers who implement GLOBE learning resources such as Earth system science book, GLOBE Protocols in school. The GLOBE TSS including 3 themes:

1) GLOBE Young Scientist Inspiration
   There is no award for this year
2) ESS Curriculum Implementation in School
   The award presented to Mr. Apiwat Srikanha, Chum Phae Suksa School, Khon Kaen Province
3) Climate Change Learning - Activities in School
   The award presented to Miss Siriwan Tripetch, Kuiburiwittaya School, Prachuap Khiri Khan Province


สถาบันส่งเสริมการสอนวิทยาศาสตร์และเทคโนโลยี (สสวท.)
GLOBE THAILAND AWARDS 2021
ขอแสดงความยินดี
GLOBE THAILAND TEACHER SHINING STAR
GLOBE THAILAND TEACHER SHINING STAR

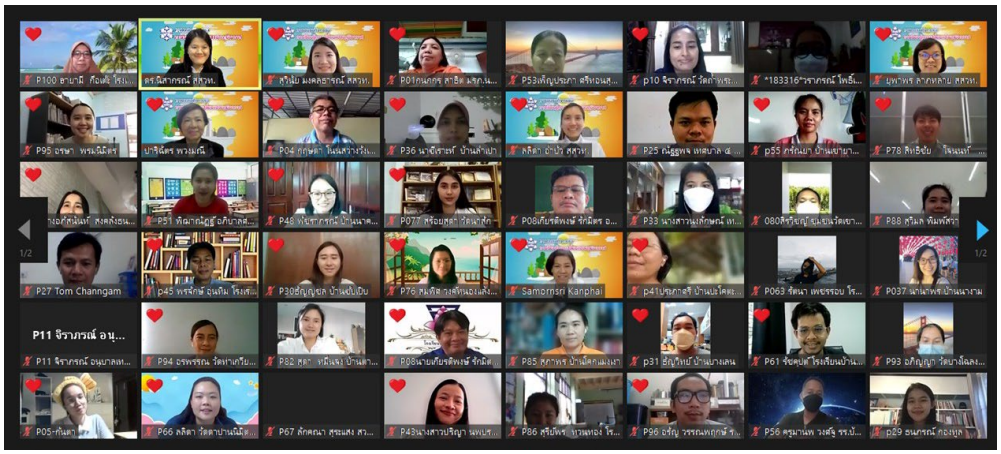

สถาบันส่งเสริมการสอนวิทยาศาสตร์และเทคโนโลยี (สสวท.)
GLOBE THAILAND AWARDS 2021
ขอแสดงความยินดี
GLOBE THAILAND TEACHER SHINING STAR
GLOBE THAILAND TEACHER SHINING STAR


กิจกรรมส่งเสริมความเป็นเลิศด้านวิทยาศาสตร์สิ่งแวดล้อม โดยใช้ GLO model
จากการจัดกิจกรรมการเรียนการสอนหลักสูตรรายวิชาวิทยาศาสตร์โลกทั้งระบบ สำหรับ
นักเรียนระดับชั้นมัธยมศึกษาปีที่ 2 ด้วยการบูรณาการกับหลักสะเต็มศึกษาร่วมกับ
การจัดการเรียนรู้โดยใช้โครงงานเป็นฐาน STEM PBL
ชื่อครูผู้สอน : นายอภิวัฒน์ ศรีกัณหา ตำแหน่ง ครู วิทยฐานะครูชำนาญการพิเศษ
ระดับชั้นที่จัดกิจกรรม : มัธยมศึกษาปีที่ 2
โรงเรียน : ชุมแพศึกษา 167 ม.18 ตำบลชุมแพ อำเภอชุมแพ จังหวัดขอนแก่น สังกัด สพม.ขอนแก่น
วัตถุประสงค์ของการจัดกิจกรรมการเรียนรู้
วัตถุอุปกรณ์ สื่อ ใบบันทึกกิจกรรม หรือ นวัตกรรมที่ใช้ในการจัดกิจกรรม
พัฒนาทักษะกระบวนการทางวิทยาศาสตร์
พัฒนาทักษะการเรียนรู้ในศตวรรษที่ 21
ส่งเสริมความเป็นเลิศทางด้านงานวิจัย วิทยาศาสตร์สิ่งแวดล้อมของนักเรียน
กระบวนการจัดกิจกรรม


Climate change
learning- activities in school
การจัดกิจกรรมการเรียนรู้การเปลี่ยนแปลงภูมิอากาศ ในรูปแบบรายวิชาเพิ่มเติม
รายวิชา การเปลี่ยนแปลงภูมิอากาศ รหัสวิชา ว21204

3. Training on Climate Change Learning

IPST organized the Climate Change Online Teacher Training workshop via ZOOM Video Conference Application for primary level on September 1-3, 2021 and for Secondary level on September 13-15, 2021. There were 147 teachers from 138 schools. The participants consisted of 79 primary school and 68 secondary school teachers. The second workshop was conducted on December 1-3, 2021 for primary level and on December 13-15, 2021 for secondary level. The 146 participants consisted of 31 primary level and 115 secondary level teachers. The next workshop will be held in April 2022.



4. GLOBE Media

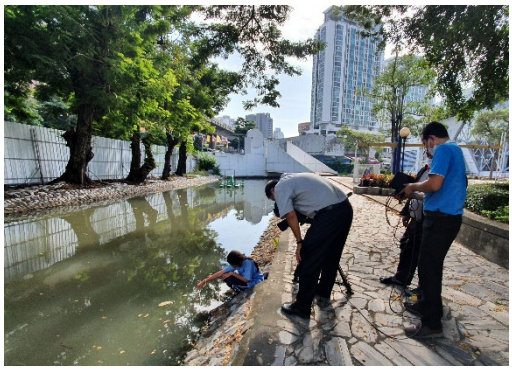
4.1 Improvement of Earth System Science Curriculum

GLOBE Thailand created the Earth System Science Curriculum in 2010, which comprises of student books and teacher's guidebooks in Thai and English for students in two grades: 4th to 6th and 7th to 9th. The curriculum has been applied in regular schools and enrichment science classroom schools around the country for more than ten years. GLOBE Thailand has upgraded and art worked Earth System Science Curriculum in 2021 to update environmental information and situation.

4.2 Online Instructional GLOBE Media

IPST developed online instructional GLOBE media for teachers and students to do the GLOBE protocol and also Climate Change media. This digital learning provides connectivity and increasing opportunities and equality of access to learning media as well as more efficient learning environment. These media are available on YouTube, GLOBE Thailand channel. The media compose of Water temperature protocol, “How does

global temperature change?” Activity, and “Who is responsible for global temperature fluctuation?” Activity.



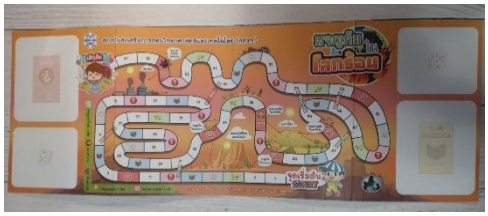
4.3 Improvement of Supplementary Manual for Learning of Climate Change

IPST revised and improved supplementary manual for learning of Climate Change which launched in 2016. The supplementary manuals consist of Student books and Teacher's guide books for Grade 4-6 and Grade 7-9 in Thai version.

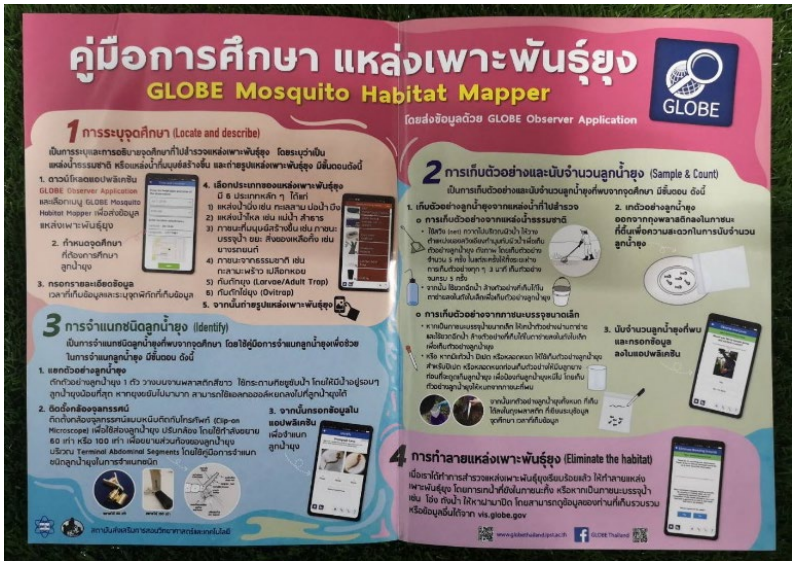
4.4 Development Instructional Media for Learning of Climate Change

IPST developed 3 instructional medias for Learning of Climate Change for Grade 4-6 and Grade 7-9 in Thai version. There are board game and field guide manual, namely: Adventure in the warming globe, Mosquito field guide manual and Threatening Agriculture and Fisheries in Changing Climate.

"Adventure in the warming globe" for Primary level



“Mosquito field guide manual” for Primary level and Secondary level



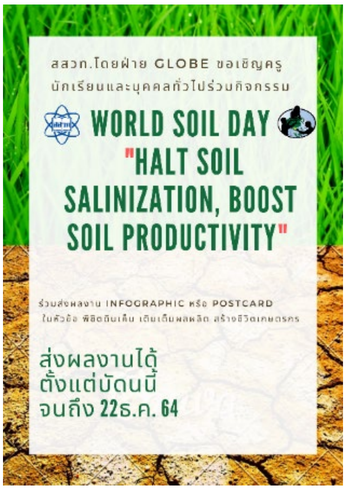
“Threatening Agriculture and Fisheries in Changing Climate” for Secondary level

5. GLOBE Activities Promotion in Thailand and Enhancing Environmental Awareness

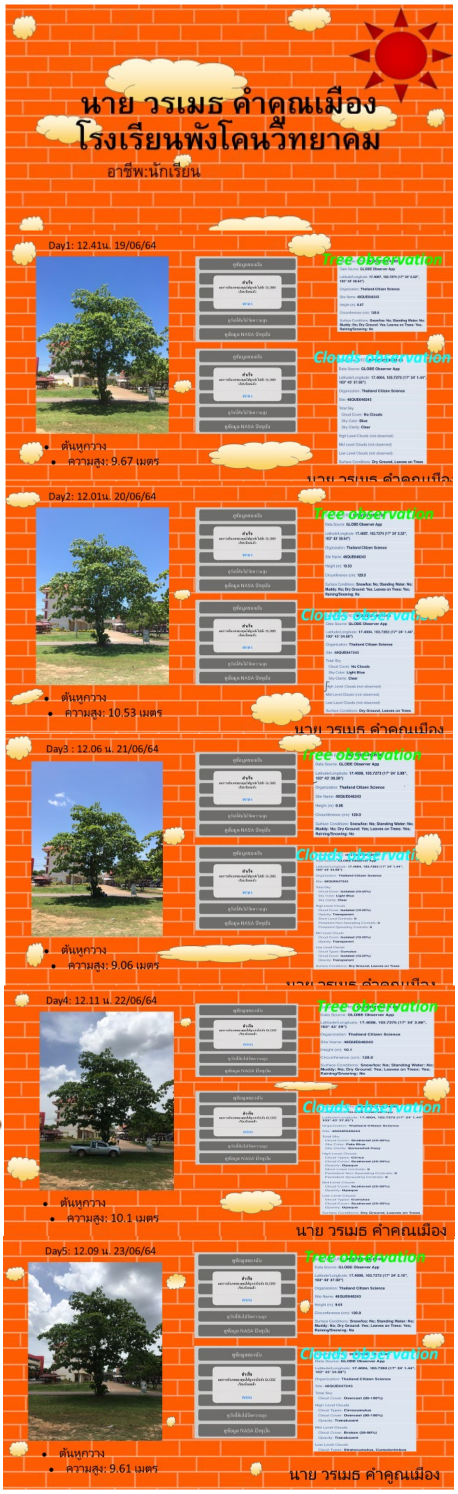
5.1 GLOBE Campaign

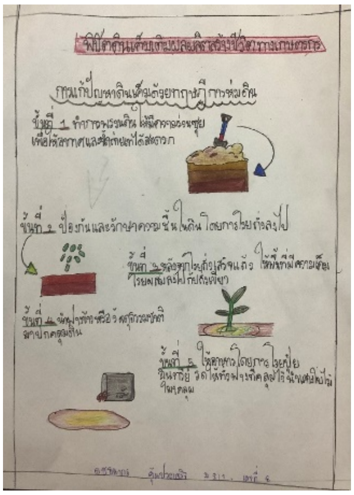
IPST has promoted the teaching and learning of science, enhance environmental literacy, and promoted GLOBE activity. Students, teachers and general public were invited to participate the campaigned. There were 4 campaigns as detailed below.

No.	Campaign	Theme	Activity Period	Number of participants
1	World Water Day	Valuing Water	February – March 2021	18
2	Earth Day	Writing to the earth in the theme “Restore Our Earth”	April – May 2021	19
3	Data Entry	Tree Height by using GLOBE Observer application	May – June 2021	44
4	World Soil Day	Halt soil salinization, boost soil productivity	November – December 2021	81


สสวท.โดยฝ่าย GLOBE ขอเชิญครู นักเรียนและบุคคลทั่วไปร่วมกิจกรรม
WORLD SOIL DAY
"HALT SOIL SALINIZATION, BOOST SOIL PRODUCTIVITY"
ส่งผลงานได้ ตั้งแต่บัดนี้ จนถึง 22ธ.ค. 64


Clouds & Trees Observation
สสวท. โดยฝ่าย GLOBE ขอเชิญชวนบุคคลทั่วไป ครู และนักเรียนร่วม"กิจกรรมการส่งเสริมการดำเนินกิจกรรม Data Entry และการตรวจวัดสิ่งแวดล้อม"
โดยส่งข้อมูล Cloud และ Trees ผ่าน GLOBE Observer Application ต่อเนื่อง เป็นเวลา 5 วัน
ส่งผลงาน 5 - 25 มิถุนายน 2564


นาย วรเมธ คำคุณเมือง
โรงเรียนพังโคนวิทยาคม
อาชีพ:นักเรียน
Day1: 12.41น. 19/06/64
Tree observation
Clouds observation
ต้นหูกวาง
ความสูง: 9.67 เมตร
Day2: 12.01น. 20/06/64
Tree observation
ต้นหูกวาง
ความสูง: 10.53 เมตร
นาย วรเมธ คำคุณเมือง
Day3 : 12.06 น. 21/06/64
Tree observation
ต้นหูกวาง
ความสูง: 9.06 เมตร
Day4: 12.11 น. 22/06/64
Tree observation
Clouds observation
ต้นหูกวาง
ความสูง: 10.1 เมตร
นาย วรเมธ คำคุณเมือง
Day5: 12.09 น. 23/06/64
Tree observation
Clouds observation
ต้นหูกวาง
ความสูง: 9.61 เมตร
นาย วรเมธ คำคุณเมือง




พิชิตดินเค็ม เติมเต็มผลผลิต สร้างชีวิตเกษตรกร
การแก้ปัญหาดินเค็ม
ขั้นที่ 1
ขั้นที่ 2
ขั้นที่ 3
ขั้นที่ 4
ดินเค็ม
ดินปกติ
ปลูกผักได้
ได้รับเงินจากการขาย

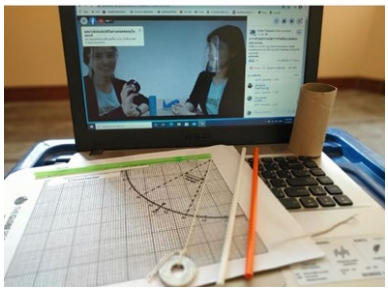

พิชิตดินเค็ม เติมเต็มผลผลิต สร้างชีวิตเกษตรกร
S-MAP
คืออะไร
วิธีแก้
ผลที่เกิดขึ้น

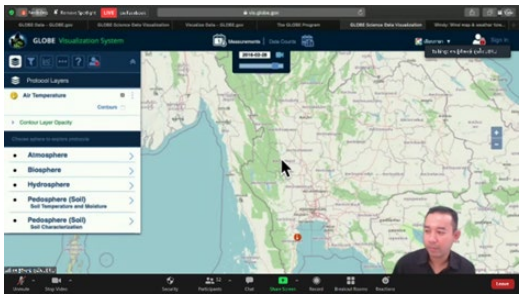

"พิชิตดินเค็ม"
เติมเต็มผลผลิต สร้างชีวิตเกษตรกร
ดินเค็ม
วิธีแก้ดินเค็ม
วิธีการปลูกพืช

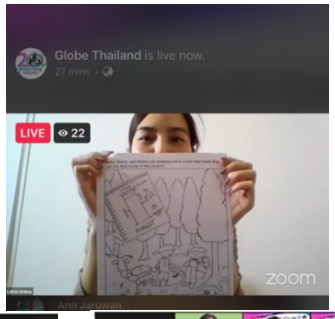
5.2 Promotion of Environmental Science Research Seminars

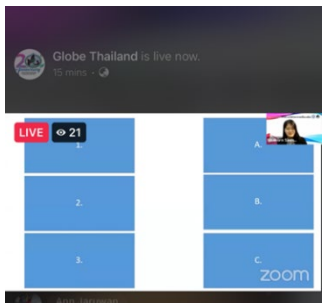
GLOBE Thailand has been hosting the promotion of environmental science research seminars for 13 times in 2021. The purpose of this seminar is to promote the creativity of student in environmental science research. This seminar also aims to promote environmental science skills and knowledge for students and teachers. There are 1,282 participants including 496 teachers, 761 students, and 25 general pubic participated this seminars.

No.	Topics	Event Date/time
1	Creating a Simple Environmental Monitoring Device (Live on Facebook)	13 January 2021 12:20 AM
2	Introduction to GLOBE Game (Live on Facebook)	23 April 2021 12:20 AM
3	GLOBE Teacher Account and Data Entry	24 February 2021 09:00-12:00 AM
4	Data management, summaries, and presentations	26 March 2021 09:00-12:00 AM
5	Environmental Survey and Analysis Research Question	2 July 2021 09:00-12:00 AM
6	Writing Proposal (5W1H)	16 July 2021 09:00-12:00 AM
7	GLOBE International Virtual Science Symposium (IVSS) and IVSS Success Case	12 November 2021 09:00-12:00 am
8	Thailand Junior Water Prize (TJWP) and GLOBE Student Research Competition (GLOBE SRC) Success Case	12 November 2021 01:30-04:30 pm
9	3 Minute Presentation Tips and Story Telling	18 November 2021 01:30-04:30 pm
10	Technique for Poster and Power Point Design	24 November 2021 01:30-04:30 pm
11	Mosquitos	22 December 2021 09:00-12:00 am
12	Learn to Search	22 December 2021 01:30-04:30 pm
13	From Local Problem to Research Topic	27 December 2021 09:00-12:00 am

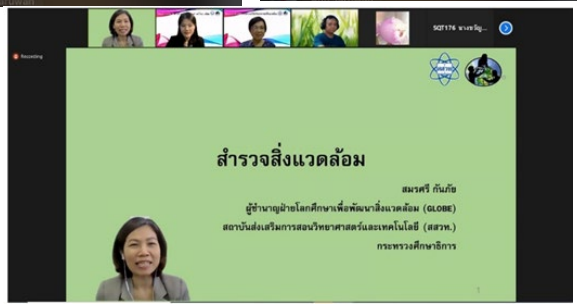



GLOBE Visualization System
Atmosphere
Biosphere
Hydrosphere
Pedosphere (Soil)
Pedosphere (Soil)


Globe Thailand is live now.
27 mins
LIVE 22
zoom


Globe Thailand is live now.
15 mins
LIVE 21
zoom


ทัศนียภาพ กรุงเทพมหานคร


สำรวจสิ่งแวดล้อม
สมศรี กันภัย
ผู้อำนวยการโครงการโลกศึกษาเพื่อพัฒนาสิ่งแวดล้อม (GLOBE)
สถาบันส่งเสริมการสอนวิทยาศาสตร์และเทคโนโลยี (สสวท.)
กระทรวงศึกษาธิการ


Data Management
Data Summary
Data Visualization
2,711
154
ไปร่วมโพสต์


GLOBE Thailand
THE GLOBE PROGRAM
903
114
ไปร่วมโพสต์

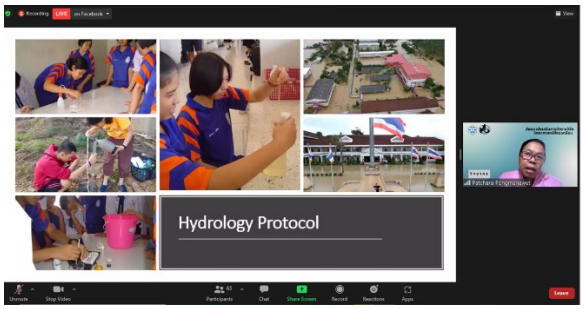

กระบวนการเรียนรู้วิทยาศาสตร์โลกทั้งระบบ
ESS


WELCOME BACK!
สสวท. โดยฝ่าย GLOBE ขอเชิญชวน ครู นักเรียน และบุคคลทั่วไป
สมัครเข้าร่วมสัมมนาส่งเสริมการทำงานวิจัยวิทยาศาสตร์สิ่งแวดล้อม
ประจำปี งบประมาณ 2565
คู่มือสัมมนา
02-3924021 ต่อ 1124 หรือ 1128

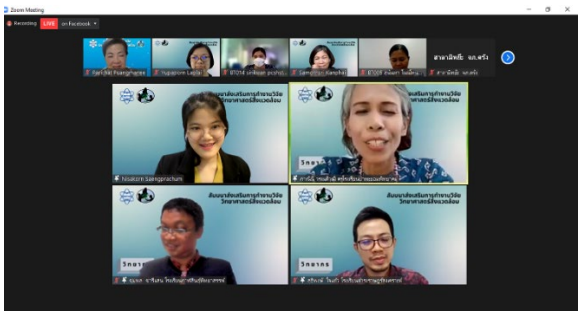

พฤศจิกายน 64
วันที่ 12 09:00-12:00 น.
วันที่ 12 13:30-16:30 น.
วันที่ 18 13:30-16:30 น.
วันที่ 24 13:30-16:30 น.
ท่านสามารถเลือกสมัครเข้าร่วมสัมมนาโดยแสกน QR CODE ตามหัวข้อที่ท่านสนใจ

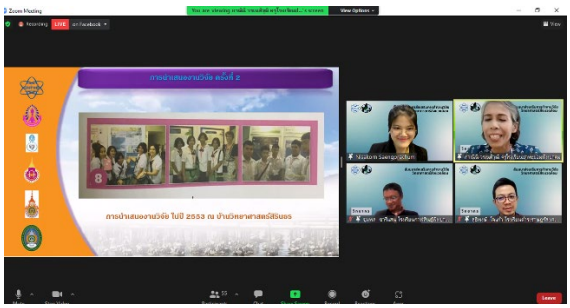

ธันวาคม 64
วันที่ 22 09:00-12:00 น.
วันที่ 22 13:30-16:30 น.
วันที่ 27 09:00-12:00 น.
ยุง ร้ายกว่าเสือ
Learn to search
การสร้างโอกาสวิจัยจากปัญหาในท้องถิ่น
ท่านสามารถเลือกสมัครเข้าร่วมสัมมนาโดยแสกน QR CODE ตามหัวข้อที่ท่านสนใจ

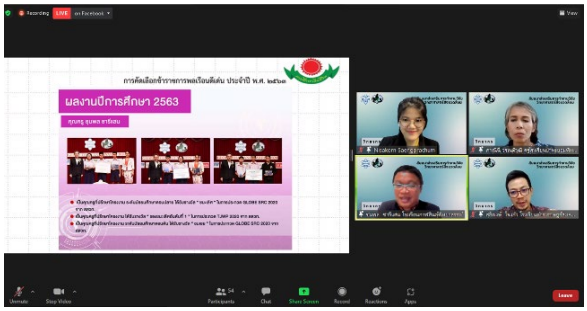

OPTIONAL BADGES
I AM A COLLABORATOR
I AM AN ENGINEER
I MAJE AN IMPACT
I AM A DATA SCIENTIST
I AM A STEM PROFESSIONAL
I AM A STEM STORYTELLER

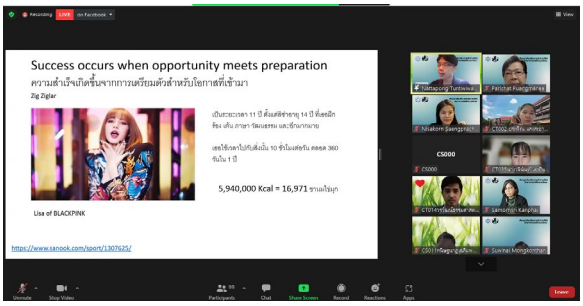

Hydrology Protocol

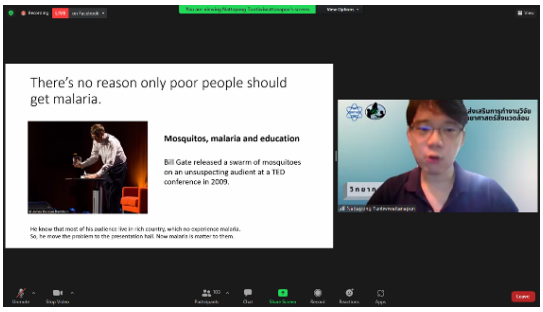

17th GLOBE Annual Meeting
ระหว่างวันที่ 12-16 สิงหาคม 2556 ณ วอชิงตันดีซี รัฐแมรี่แลนด์ ประเทศสหรัฐอเมริกา

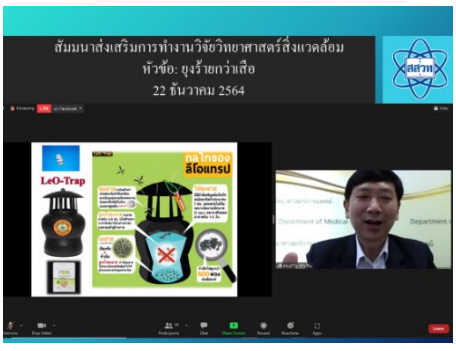


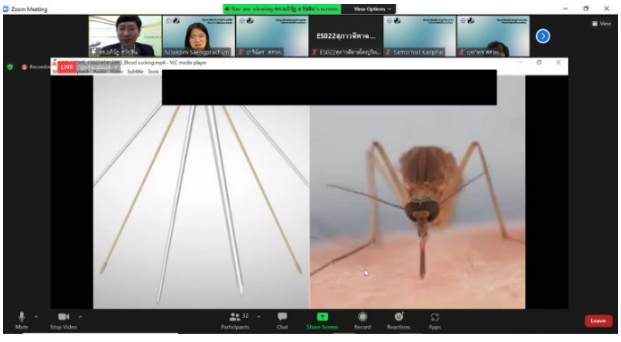



ผลงานปีการศึกษา 2563

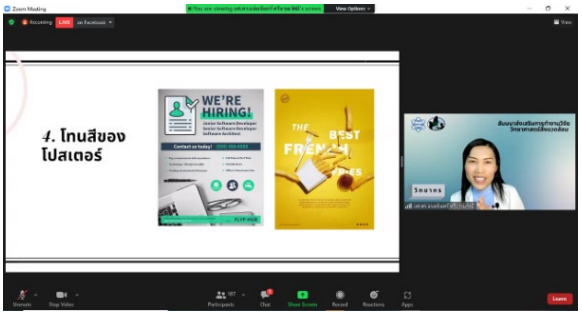

Success occurs when opportunity meets preparation
ความสำเร็จเกิดขึ้นจากการเตรียมตัวสำหรับโอกาสที่เข้ามา
Zig Ziglar
5,940,000 Kcal = 16,971 ขวดน้ำอัดลม
Lisa of BLACKPINK
https://www.sanook.com/sport/1307625/

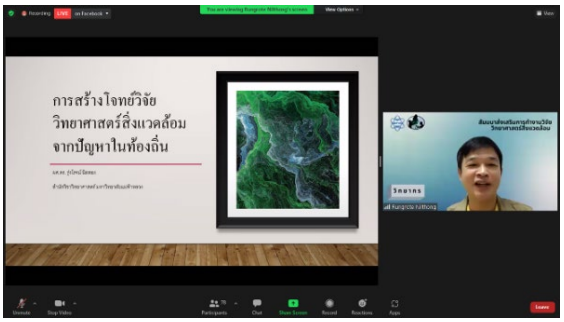

There's no reason only poor people should get malaria.
Mosquitos, malaria and education
Bill Gate released a swarm of mosquitoes on an unsuspecting audient at a TED conference in 2009.

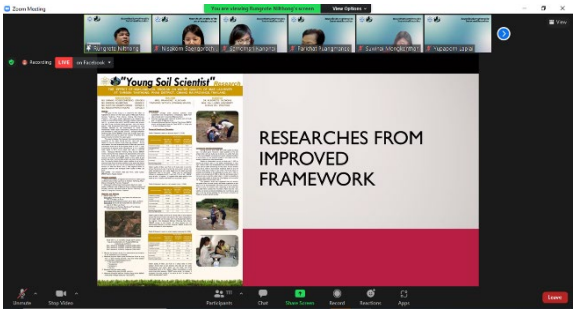

สัมมนาส่งเสริมการทำงานวิจัยวิทยาศาสตร์สิ่งแวดล้อม
หัวข้อ: ยุงร้ายกว่าเสือ
22 ธันวาคม 2564
LeO-Trap

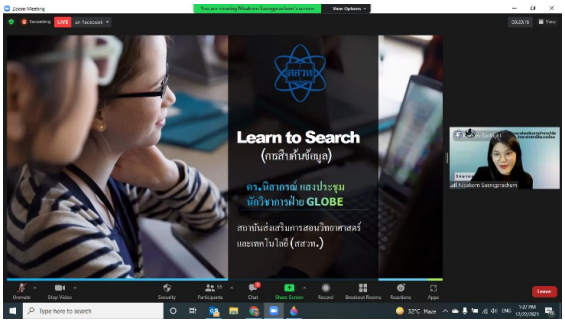


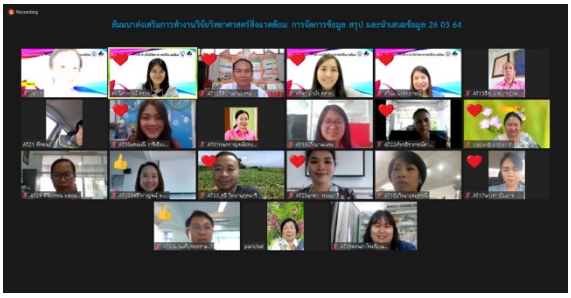

00:00
PC
พิมพ์ 1
NOTEBOOK
พิมพ์ 2
TABLET
พิมพ์ 3
MOBILE
พิมพ์ 4


4. โทนสีของโปสเตอร์
WE'RE HIRING!


การสร้างโจทย์วิจัย
วิทยาศาสตร์สิ่งแวดล้อม
จากปัญหาในท้องถิ่น


"Young Soil Scientist"
RESEARCHES FROM
IMPROVED
FRAMEWORK


Learn to Search
(กลยุทธ์การค้นหาข้อมูล)



6. GLOBE Thailand Awards 2021

IPST conducted Virtual GLOBE Thailand Awards 2021 on August 10, 2021. This event aim to present awards for students and teachers in three GLOBE Thailand Competition platforms. There are 141 participants including 42 teachers, 71 students, and 28 scientists/educators participated the event.Twenty nine awards were presented to the winner, as follows:

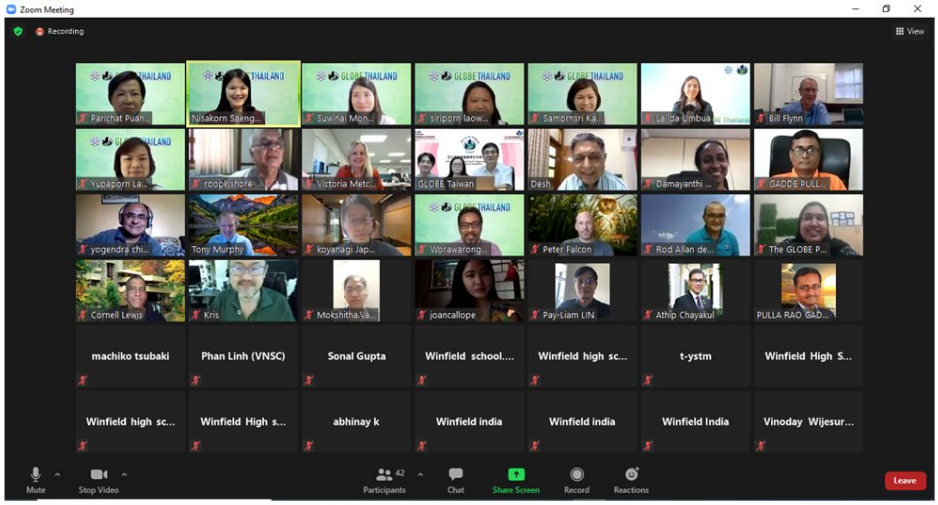
1. GLOBE Student Research Competition 2021, 21 awards.
2. Thailand Junior Water Prize 2021, 6 awards.
3. GLOBE Thailand Teacher Shining Star 2021, 2 awards.

7. GLOBE Asia-Pacific Regional Meeting 2021

During 3 – 4 May 2021, ten Thailand representatives attended the 2021 GLOBE Virtual Asia-Pacific Regional Meeting. There were country coordinator from 13 countries: United States, India, Nepal, Vietnam, Japan, Thailand, Taiwan, Sri Lanka, New Zealand, Philippines, Micronesia, Maldives and Australia. Thailand participants as detailed below.

1.	Prof.Dr. Sukit Limpijumnong	President of IPST and GLOBE Country Coordinator
2.	Dr.Worawarong Rakreungdet	Vice President of IPST
3.	Mrs. Parichat Puangmanee	IPST
4.	Mrs. Yupaporn Laplai	IPST
5.	Miss Samornsri Kanphai	IPST
6.	Miss Suwinai Mongkonthan	IPST
7.	Miss Lalida Umbua	IPST
8.	Dr.Nisakorn Saengprachum	IPST
9.	Miss Siriporn Laowanich	IPST
10.	Mr.Athip Chayakul	IPST

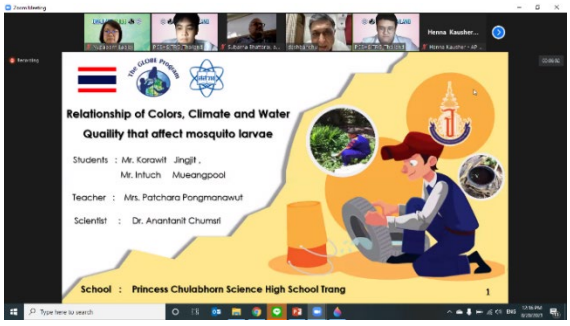
2021 GLOBE Virtual Regional Meeting for Asia and Pacific
May 03 – 04, 2021
Theme: Challenges & Achievements of "Doing GLOBE Virtually"

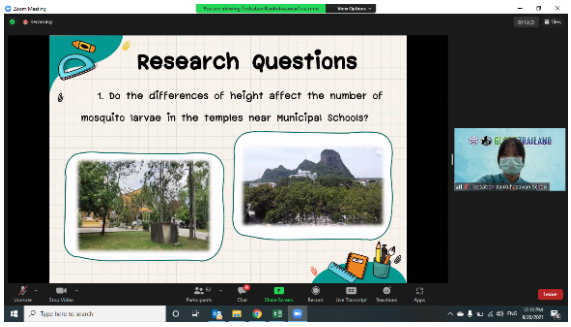


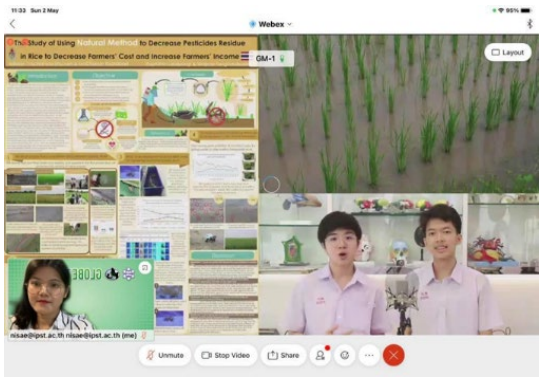
8. GLOBE Asia-Pacific Student Exchange Program

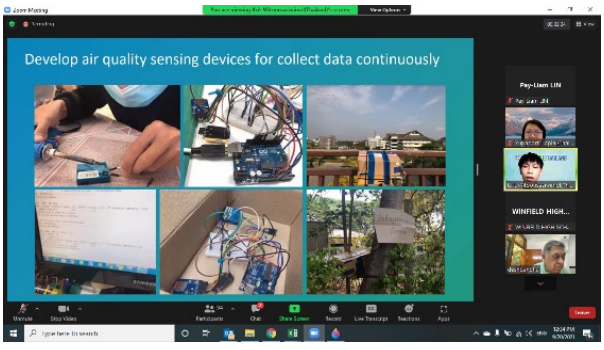
GLOBE Thailand attended the online GLOBE Asia-Pacific Webinar. There are 4 times including 8 student researches presented in this event. The webinar as detailed below.

- Symposium on Water Collaboration Project on February 2, 2021, 2 researches
- 2021 Regional GLOBE Learning Expedition on May 2, 2021, 3 researches
- Mosquito Awareness Campaign on August 20, 2021, 1 research
- Tree Protocol Awareness on September 20, 2021, 2 researches









9. The Extension of GLOBE Research Program and Network to Strengthen Local Wisdoms in Rural Areas of Thailand

Since the meeting between GLOBE Thailand and the Embassy of the United States of America on April 5th 2021, The Institute for the Promotion of Teaching Science and Technology (IPST) proposed The Extension of GLOBE Research Program and Network to Strengthen Local Wisdoms in Rural Areas of Thailand project to the U.S. Government. In 2022, IPST will collaborate with universities and science high school; Mae Fah Luang University, Rajamangala University of Technology Isan, Ubon Ratchathani Rajabhat University, and Princess Chulabhorn Science High School Trang and Walailak University to extend GLOBE program in four disadvantage schools. The schools include Banpotwittaya School in the northern, Bandon (Saharat- Ratuthit) School and Ban Pongpao School in northeastern, Banmodtanoy School in southern parts of Thailand. The proposal aimed to strengthen knowledge and practices of next-generation agriculture and tourism, especially those based on local wisdoms of Thais' way of life. The project plan will utilize GLOBE protocols and research network in collecting measurements and data in order to understand science behind local wisdoms, and thus benefit the studied communities. The equipment for those disadvantaged schools will be supported by Youth Learning As Citizen Environmental Scientists (YLACES).

Authors

Advisory board

Prof. Sukit Limpijumnong, Ph.D.	President of The Institute for the Promotion of Teaching Science and Technology (IPST), GLOBE Country Coordinator, Thailand
Dr. Worawarong Rakreungdet	Vice President of The Institute for the Promotion of Teaching Science and Technology (IPST)

Working Team

1. Mrs. Parichat Puangmanee	IPST
2. Mrs. Yupaporn Laplai	IPST
3. Miss Samornsri Kanphai	IPST
4. Miss Suwinai Mongkonthan	IPST
5. Dr. Nisakorn Saengprachum	IPST
6. Miss Lalida Umbua	IPST
7. Miss Siriporn Laowanich	IPST

http://globethailand.ipst.ac.th
Email: globethailand2020@gmail.com,
globeproject@ipst.ac.th

VIETNAM

Insert photo of CC

Name: ***Phan Ngoc Phuong Linh***

Function: Country Coordinator (CC)

Organization: Vietnam National Space Center – Vietnam Academy of Science and Technology

E-mail: pnplinh@vnsc.org.vn

Tel: +84 903511818

Skype:

Website: https://vnsc.org.vn/en

Cooperating organizations: Center for Education and Development

Participating schools: Experimental lower and upper secondary school

Funding by: Vietnam Academy of Science and Technology

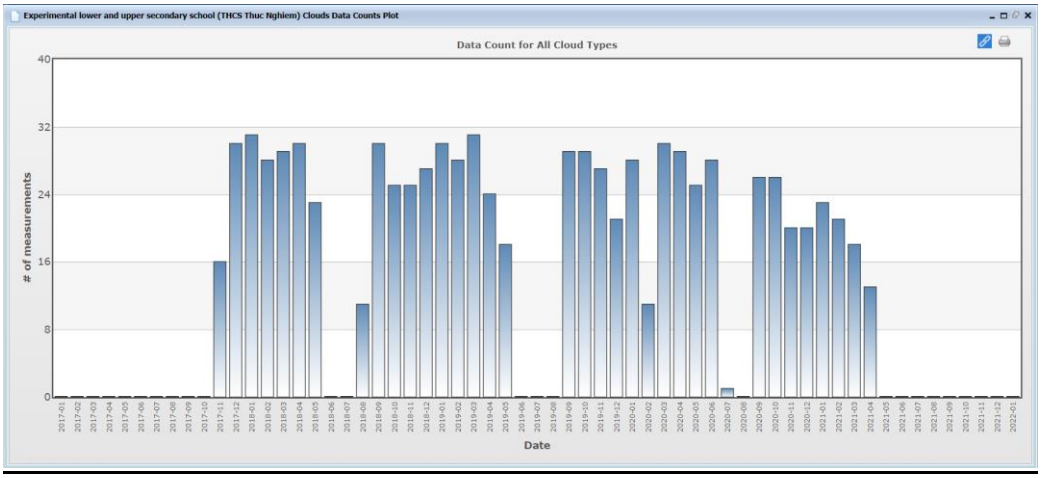
GLOBE protocols used in country: Clouds; Mosquito Habitat Mapper.

Number of schools currently reporting data (2021): 1

Description of the program in your country and recent activities in 2021:
Due to the spread out of the third wave of the pandemic, the government has restricted and banned students go to school in most schools across the country from 1st, May 2021 to the present. Therefore, the GLOBE activities have to postpone or cancel. However, from January to April, 01 school and several Vietnam Citizen Science conducted measuring and observing data related to Sky conditions and Mosquito Habitat Mapper protocols. In detail, the Experimental lower and upper secondary school ran 79 observations of Sky Conditions, 8 Vietnam Citizen Science organized 25 data of Mosquito Habitat Mapper. Please see the attached file to reach further information.

☐ Include citizen science sites

Site Name	Investigation Area	# Observations	Created	Last Used
THCS Thuc Nghiem	Atmosphere	1835	11/13/2017	04/20/2021


Experimental lower and upper secondary school (THCS Thuc Nghiem) Clouds Data Counts Plot
Data Count for All Cloud Types
# of measurements
Date