

GLOBE Thailand Report 2019

**GLOBE Thailand,
The Institute for the Promotion of Teaching Science and
Technology (IPST),
Ministry of Education, Thailand**



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GLOBE THAILAND REPORT 2019

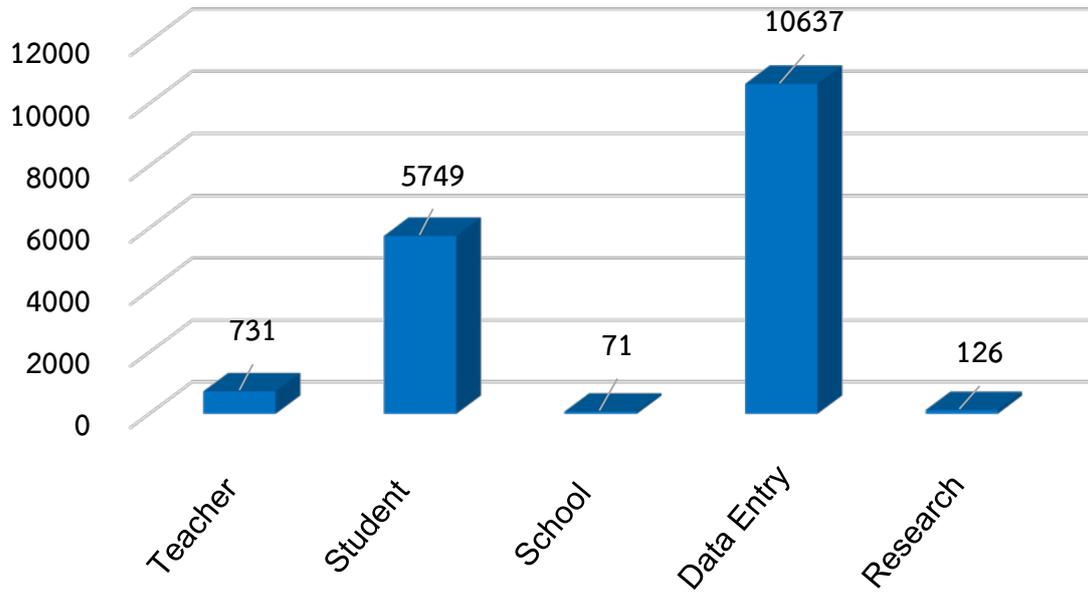
1. Cooperation with Universities in Promoting Environmental Science Research Based on STEM Education Concept

IPST cooperates with universities in the GLOBE network to systematically multiply the results of environmental education so as to build GLOBE Thailand's cooperative academic network at both national and international level as well as to develop students' knowledge and competence in undertaking environmental science research within the context of STEM education. In this fiscal year 2019 (1 October 2018 - 30 September 2019), IPST provided operational budget for this purpose to 13 universities; Thaksin University, Walailak University, Prince of Songkla University Surat Thani Campus, Loei Rajabhat University, Srinakharinwirot University, Kasetsart University Kamphaengsaen Campus, Surat Thani University, Udon Thani Rajabhat University, Ubon Ratchathani Rajabhat University, Surin Rajabhat University, Mae Fah Luang University, Suranaree University of Technology and Rajamangala University of Technology Isan. In all, 5,749 students, 731 teachers, 10,637 Data entry and 126 projects from 71 schools took part in different activities organized by the universities as follows:



No	University	Teacher	Student	School	Data Entry	Research Project
1	Srinakharinwirot University	13	265	5	125	4
2	Walailak University	58	409	5	5,146	5
3	Kasetsart University Kamphaeng Saen Campus	56	342	5	724	7
4	Prince of Songkla University, Surat Thani Campus	51	349	5	416	5
5	Thaksin University	74	568	8	325	24
6	Loei Rajabhat University	20	513	5	119	18
7	Udon Thani Rajabhat University	54	475	9	335	9
8	Ubon Ratchathani Rajabhat University	126	770	5	404	16
9	Rajamangala University of Technology Isan	42	435	5	597	9
10	Mae Fah Luang University	49	360	5	495	0
11	Surat Thani Rajabhat university	71	552	6	125	11
12	Surin Rajabhat University	51	255	3	197	3
13	Suranaree University of Technology	66	456	5	1,629	15
Total		731	5,749	71	10,637	126

Overall Result of Cooperation with Universities 2019



1. Srinakharinwirot University

A training workshop on Earth System Science GLOBE STEM Training workshop with a view to apply Geo-information technology and Internet of Things (IoT) to monitor the environment. The 265 students and 13 teachers developed 4 projects 125 data entry from 5 schools.



2. Walailak University

Walailak University arranged Earth System Science GLOBE STEM Training: training Atmosphere by using IoT and Drone, Hydrology, Biosphere, Mosquito protocol, GLOBE Data Entry via mobile application and STEM education for 409 students and 58 teachers developed 5 projects 5,146 data entry from 5 schools.



3. Kasetsart University Kamphaeng Saen Campus

The Kamphaeng Saen Campus of Kasetsart University implemented a Pedosphere science research development project base on joint collaboration between scientists and teachers and students. The 342 students and 56 teachers from 5 schools developed 7 Pedosphere science education projects within 724 data entry.



4. Prince of Songkla University, Surat Thani Campus

Prince of Songkla University, Surat Thani Campus arranged Earth System Science GLOBE STEM Training in local agricultural crops: training Atmosphere, Hydrology, Mosquito protocol, GLOBE Data Entry via mobile application for 349 students and 51 teachers from 5 schools. Students developed 5 projects and sent 416 data entry.



5. Thaksin University

Thaksin University arranged Earth System Science GLOBE STEM Training: training Atmosphere, Hydrology, Pedosphere, Biosphere, Mosquito protocol, GLOBE Data Entry via mobile application for 568 students and 74 teachers from 14 schools. After the workshop, students developed 24 Earth System Science projects and sent 325 data entry.



6. Loei Rajabhat University

Loei Rajabhat University arranged Earth System Science GLOBE STEM Training workshop by collecting data on Hydrology, Atmosphere, Mosquito, GLOBE Data Entry via mobile application for 513 students and 20 teachers from 5 schools. After the workshop, students developed 18 projects and sent 119 data entry.



7. Udon Thani Rajabhat University

Udon Thani Rajabhat University arranged Earth System Science GLOBE STEM Training workshop for 475 students 54 teachers from 9 schools by collecting data on Hydrology, Pedosphere, Atmosphere and Mosquito, GLOBE Data Entry via mobile application 335 data entry and developed 9 projects.



8. Ubon Ratchathani Rajabhat University

Ubon Ratchathani Rajabhat University arranged Earth System Science GLOBE STEM Training workshop for 770 students 126 teachers from 5 schools by collecting data on Pedosphere, Hydrology, Atmosphere and Biosphere, GLOBE Data Entry via mobile application 404 data entry and developed 61 projects.



9. Rajamangala University of Technology Isan

Rajamangala University of Technology Isan trained Atmosphere, Pedosphere, Hydrology, Atmosphere, Mosquito protocol and STEM education for 435 students and 42 teachers from 5 schools. Final project, students sent 597 data entry and developed 9 projects.



10. Mae Fah Luang University

Mae Fah Luang University trained Earth System Science GLOBE STEM workshop for 360 students 49 teachers from 5 schools by collecting data on Hydrology, Pedosphere and Mosquito, GLOBE Data Entry via mobile application 495 data entry.



11. Surat Thani Rajabhat university

Surat Thani Rajabhat university trained Earth System Science GLOBE STEM workshop for 552 students 71 teachers from 6 schools by collecting data on Hydrology, Pedosphere and Mosquito, GLOBE Data Entry via mobile application 125 data entry. After the workshop, students developed 11 projects.



12. Surin Rajabhat University

Surin Rajabhat University trained Earth System Science GLOBE STEM workshop for 255 students 51 teachers from 3 schools by collecting data on Hydrology, Pedosphere, Atmosphere and Mosquito, GLOBE Data Entry via mobile application 197 data entry. After the workshop, students developed 3 projects.



13. Suranaree University of Technology

Suranaree University of Technology trained Earth System Science GLOBE STEM workshop for 456 students 66 teachers from 5 schools by collecting data on Hydrology, Biosphere and Mosquito, GLOBE Data Entry via mobile application 1,629 data entry and students developed 15 projects.



2. Thailand Environmental Science Research Competition 2019

2.1 GLOBE Student Research Competition 2019

GLOBE Student Research Competition 2019 (GLOBE SRC 2019) was opened to primary and secondary school students during 26 – 28 March 2019. There were 26 oral presentations and 55 poster presentations participating in this competition. The winners are as follows:

Oral Presentation awards:

Primary school category:

First prize: Montfort College Primary Section, Chiang Mai Province

Title: The effect of different environmental and ecology in the different district on Dengue situation in Chiang Mai Province, Thailand.

Second prize: Dara Academy, Chiang Mai Province

Title: The study of weather to explain the relation of temperature, relative humidity, and rainfall of 3 studied sites in Thailand: Dara Academy in Chiang Mai province, St. Joseph Thipawan School in Samut Prakan province and Walailak University, Nakhon Si thammarat province.

Third prize: Anubansisamrong School, Sukhothai Province

Title: Water quality and sediment on the growth of periwinkle.

Lower Secondary school category:

First prize: Bangkok Christian College, Bangkok

Title: The study of physical factors that affect the growth of mussels. (*Perna viridis*) at the gulf of Thailand to create the patterns of simulated pole raising shellfish that can affect the flow rate in the growth of the mussels.

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

Title: The study of ability to eliminate mosquito larvae of larvicide predators.

Third prize: Donchanwitthayakhom School, Kalasin Province

Title: The study of water quality of pond dug in the fish farm of farmers and using the water from fish farm as an electrolyte to invent a lure insect's device with water evaporation prevention

Higher Secondary school category:

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

Title: The study of relationship between the quality of water and soil on the covering of varied species of seagrass around varied distance of the shore at

Pak Khlong beach, Bo stone Sub-District, Sikao District, Trang Province

Second prize: Phlu Ta Luang Witthaya School, Chonburi Province

Title: The study of coral propagation by using the “Ruan Wan 3” model

Third prize: Khuruprachasan School, Chainat

Title: The study of relationship between soil moisture on the harvest season with the sweetness of pomelo (White Grapefruit Cucumber)



Poster Presentation awards:

Best Poster Presentation prize (Primary school): Municipality School 2 Samakkee Wattana, Yasothon province

Title: The efficiency of the fermented cow manure and *Thunbergia Laurifolia* water towards the acidity of soil removal

Best Poster Presentation prize (Lower Secondary school): Paphayom Pittayakom School, Phatthalung province

Title: The effect of heavy metal in water to water quality plankton and fish in the Pakpra Canal at Khuan Khanun District, Phatthalung Province

Best Popular Vote Poster Presentation prize: Montfort College Primary Section, Chiang Mai Province

Titled: Situation of Dengue fever in different environmental and ecology factors of the different district, Chiang Mai Province



2.2 Thailand Junior Water Prize 2019 (TJWP2019)

IPST has signed 2th agreement of cooperation with Stockholm International Water Institute (SIWI) on 12 December 2017 to send the winner team in Thailand to Stockholm Junior Water Prize 2019-2021.

IPST organized the Thailand Junior Water Prize 2019 competition on 3 May 2019 with an objective to encourage students to learn about, care for, and conserve water resources. The winner was the research title **“The study of inhibition the decay of mosquito’s shell along with water improvement”** from Sa-Nguanying school, Suphan Buri province. In this year, IPST received the partial grant by Foundation of Development and Promotion of Science and Technology, Government Savings Bank,

Electricity Generating Authority of Thailand and Metropolitan Waterworks Authority. The winner of TJWP2019 was invited to submit their innovative water conservation methods to Stockholm Junior Water Prize 2019, Sweden on 25 – 30 August, 2019.



3. Student Exchange Program

3.1 Expedition to the Sea at Maldives

Five students, teachers from Princess Chulabhorn Science High School Trang and IPST participated in the GLOBE Asia-Pacific Science Festival on April 1 – 5, 2019 at Ministry of environment, Maldives. The participants learn new protocol on Ocean Bundle Protocol and also visit Malè City



3.2 2019 GLOBE Taiwan Science Festival

Sixteen students, teachers from 4 schools, scientists and IPST participated in the 2019 GLOBE Taiwan Science Festival on July 9 – 13, 2019 at Pingtung, Taiwan. The participants with opportunities to share and exchange experiences via presentation of their researches and also visited National Science and Technology Museum.



3.3 GLOBE Student Exchange Program in Thailand 2019

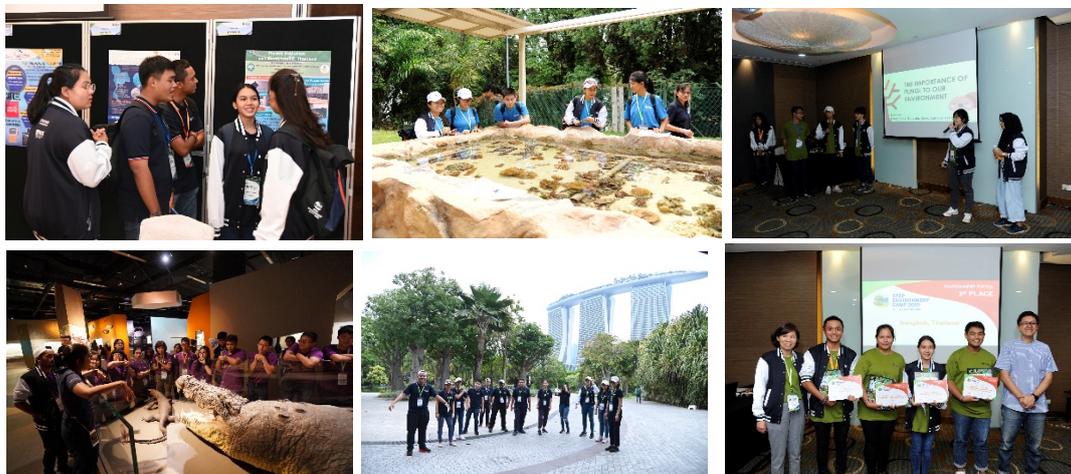
Eleven schools from Thailand, three schools from Taiwan, two schools from Philippines, one school from Japan, two schools from Nepal and 2 participants from RCO India took part in GLOBE Student Exchange Program in Thailand 2019 on November 1 – 5, 2019. The GLOBE Student Exchange Program in Thailand 2019 activity which provided opportunity to the students and teachers to participate in “GLOBE Youth camp” at The King’s Royally Initiated Laem Phak Bia Environmental Research and Development Project (LERD), Phetchaburi province. They shared and

exchanged GLOBE research in World Environment Education Congress 2019 (WEEC2019) at BITEC, Bangkok.



3.4 TFI-NUS STEP Environment Camp 2019

Four students and IPST staff participated in TFI-NUS STEP Environment Camp 2019, Singapore on November 10 – 16, 2019. The participants with opportunities to share and exchange experiences with participants from 12 countries in South East Asia, China and India. They won the 1st Place of Environment Poster presentation.



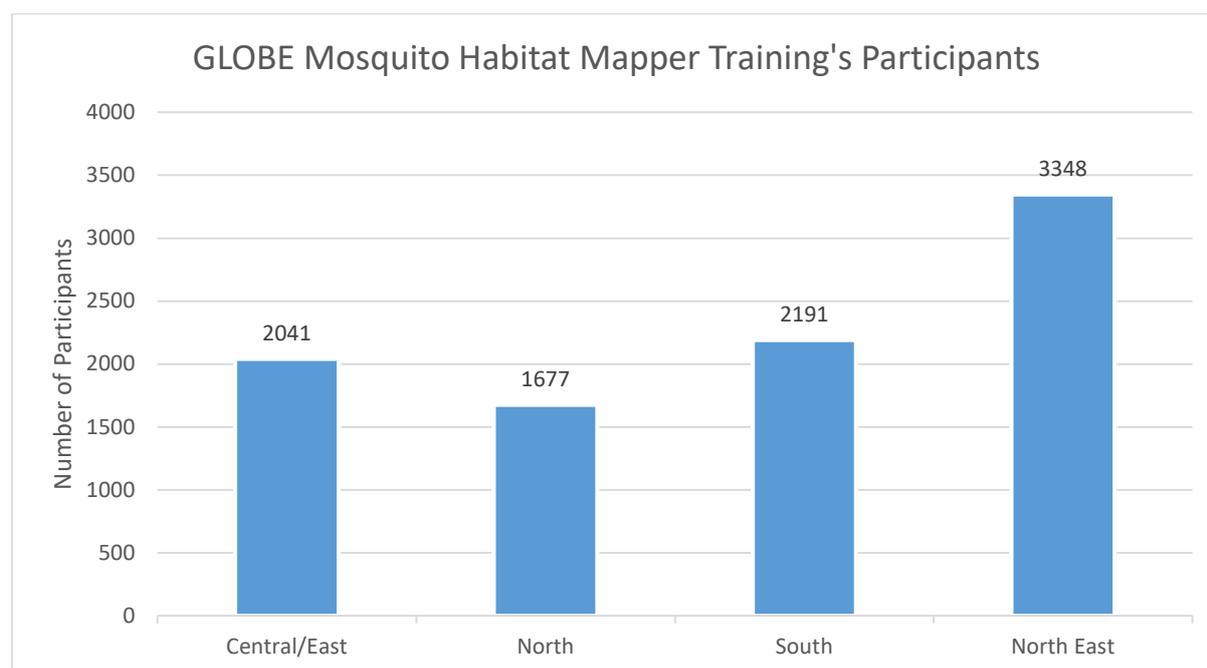
4. Earth System Science Workshop for Enrichment Science Classroom Teacher

Office of the Basic Education Commission (OBEC) cooperated with GLOBE, IPST arranged Earth System Science Workshop for Enrichment Science Classroom Teacher to learn about environment by using scientific process and problem based learning. Four protocols (Hydrosphere, Pedosphere Atmosphere and Biosphere) and also Mosquito has been trained in the workshop. There were two workshops in the north and central of Thailand with 180 teachers 88 schools from 38 provinces.



5. GLOBE Mosquito Habitat Mapper Workshop

GLOBE Thailand developed the tutorial book in Thai version that contain process of doing pre-training survey, post- training survey, GLOBE Mosquito habitat mapper application and Mosquito Training course. In June 2018 – September 2019, GLOBE Thailand trained 9,257 participants of teachers, students, and citizen scientists in every region of Thailand.



Country Mosquito Training (CMT)

No.	Place	Date	Participant (Person)
1	The Ambassador Hotel, Bangkok	June 24, 2018	74
2	Windsor Suites Hotel, Bangkok	September 6-7, 2018.	44
3	Cha-roenthani Hotel, Khon kaen province	September 22-23, 2018	49
4	BP Samila Beach Hotel & Resort, Songkhla province	September 29-30, 2018	59
Total			226

Local Mosquito workshops (LMWs)

LMWs were organized by IPST and 13 universities. Total number of participants were 9,031 participants, most of them were students and teachers. IPST arranged 10 workshops and trained 2,551 participants in this LMWs. For the cooperation with university, 13 universities conducted LMWs and trained 5,749 students, 731 teachers from 71 schools. The detail of LMWs that conducted by IPST show as below:

No.	Place	Date	Participant (Person)
1	Chonradsadornumrung School, Chon buri province	November 20, 2018	516
2	Baan platubtim resort, Samut Songkhram province	December 14, 2018	58
3	Kanjanapisek Wittayalai Nakhon Pathom School, Nakorn Pathom province	January 17, 2019	483
4	Dara academy, Chiang Mai province	January 29, 2019	666
5	Mortfort college, Chiang Mai province	January 30, 2019	534
6	Baan Taihad resort, Samut Songkhram province	February 10, 2019	59
7	Khon Kaen University Nong khai Campus, Nong khai province	April 5, 2019	36
8	Jirasart Witthaya School, Phra Nakhon Si Ayutthaya province	April 26, 2019	19
9	Chiang Mai Orchid Hotel, Chiang Mai province	September 1-2, 2019	68
10	Home and Hill Resort, Nakhon Nayok Province	September 14-15, 2019	112
Total			2,551



6. GLOBE Media

GLOBE Thailand developed online instructional GLOBE media for teachers and students to do the GLOBE protocol and also Climate change media. There were 10 medias; Soil Salinity, Water Salinity, Soil Slope Measurement, Precipitation, Tree Height Measurement, Canopy cover Measurement, Portable microscope guide, GLOBE Overview, Share Your GLOBE Story (GLOBE student interviews), VTR “20th Anniversary of GLOBE Thailand”.



7. GLOBE activities promotion in Thailand and enhancing environmental awareness

GLOBE Thailand promoted GLOBE activity and enhanced environment awareness by conducting the GLOBE campaigns and the “Envi Youth camp”. For this year, there were 8 campaigns;

1. Share your GLOBE story, November 2018
2. World Soil Day in the theme “Be the solution to soil pollution”, December 2018
3. PM2.5 in the theme “PM 2.5-life threatening danger”, January – February 2019
4. World Water Day, March 2019
5. 2019 Mosquitoes Short film, February - March 2019
6. Earth Day, April – May 2019
7. Measure trees around your school, May – June 2019
8. How to reduce plastic waste?, August – September 2019

Share Your GLOBE Story
 GLOBE Thailand ขอเชิญส่งคลิปความยาวประมาณ 1 นาที ถ้าประกวดในหัวข้อ “ประสบการณ์ที่ได้จากการทำกิจกรรมของ GLOBE” ผู้ชนะจะได้รับเกียรติให้เป็นตัวแทนประเทศไทย ถ่ายทำสื่อประชาสัมพันธ์ โดยทาง GLOBE Thailand
 ส่งมาได้จนถึงวันจันทร์ที่ 19 พ.ย 2561
 รายละเอียด: <https://www.facebook.com/globethailand2015@gmail.com>
 02-392 4021 ex.1124
 ประกาศผลการคัดเลือก 21 พ.ย 2561

World Soil Day December 5
 Be the Solution to Soil Pollution
 สสวท. ขอเชิญชวน ส่งผลงาน Infographic สดสวย ง่ายเข้าใจเกี่ยวกับผลกระทบจากดินที่ปนเปื้อนหรือทรัพยากรดินของ ร.9 จำนวน 1 เรื่อง เข้าร่วมกิจกรรมวันดินโลก (world soil day).
 กำหนดการส่งผลงาน วันที่จนถึงวันที่ 7 ธันวาคม 2567
 ส่งผลงานที่ globethailand2015@gmail.com และ <https://www.facebook.com/globethailand2015>
 ประกาศผลวันที่ 72 ธันวาคม 2567

MEASURE TREES AROUND YOUR SCHOOL
 ประกาศผล 28 มิถุนายน 62

2019 World Water Day March 22
 สสวท. โดยฝ่ายวิทยาศาสตร์เพื่อพัฒนาสิ่งแวดล้อม GLOBE ขอเชิญชวนประชาชนทั่วไปเขียนบอกวิธี การใช้น้ำอย่างรู้คุณค่าในแบบฉบับของตัวเอง หัวข้อ “ประหยัดน้ำ เพื่อเราเพื่อโลกที่ยั่งยืน”
 “Leaving no one behind”
 ประกาศผล 29 มีนาคม 2562
 ติดต่อสอบถาม Tel 02 - 392 4021 ต่อ 1124 FB <https://www.facebook.com/globethailand2015>

EARTH DAY April 22
 In nature, nothing exists alone
 สสวท. โดย ฝ่ายศึกษาเพื่อพัฒนาสิ่งแวดล้อม (GLOBE) ขอเชิญชวนนักเรียน ครู และประชาชนทั่วไป ร่วมกิจกรรม “วันคุ้มครองโลก”
 โดยส่งภาพถ่ายเกี่ยวกับการอนุรักษ์ธรรมชาติและสิ่งแวดล้อม พร้อมใส่ Caption 5 คำ และติดแฮชแท็ก #GLOBETheEarthDay2019 และแฮชแท็กใน Facebook ของท่านเอง เปิดให้เป็นสาธารณะ
 ประกาศผล 5 พ.ค. 62
 ติดต่อสอบถาม โทร.02-392-4021 ต่อ 1124 [globethailand2015](https://www.facebook.com/globethailand2015)
 #GLOBETheEarthDay2019

Plastic Waste Reduction
 สสวท. โดยฝ่าย GLOBE ขอเชิญชวนครู นักเรียน และผู้สนใจทุกท่าน ร่วมเสนอ “วิธีการลดขยะพลาสติกในชีวิตประจำวัน”
 กติกา
 1. โปสต์ข้อความ วิธีการลดขยะพลาสติกในชีวิตประจำวัน ลงในช่องแสดงความคิดเห็น พร้อมระบุชื่อและโรงเรียน/หน่วยงาน
 2. ติด #GLOBETHลดขยะพลาสติก ตั้งแต่วันนี้ถึง 20 กันยายน 2562



GLOBE Thailand conducted the “Envi Youth Camp” on July 5 – 7, 2019 at Health Land Resort & Spa, Chonburi province. There were 111 participants; 37 teachers, 74 Students from 37 schools. They did the Climate Change learning activities such as What do you know about disaster?, Trees around us, Carbon footprints, Carbon cycle, Mosquito larvae hunter etc. These activities enhanced environment awareness of students and teachers could apply these activities in their classroom.



8. 20th Anniversary of GLOBE Thailand

GLOBE Thailand celebrated 20th Anniversary of GLOBE Thailand presided over this ceremony by Dr. Khunying Kalaya Sophonpanich, Deputy Minister of Education on September 30, 2019 at S31 Hotel, Bangkok. For 20 years, IPST has successfully strengthened GLOBE Thailand by encouraging students to conduct environmental measurements and share the information online with GLOBE members as well as promoting Science, Mathematics, and Technology learning, critical thinking and problem solving skills through research projects on environmental issues in their local areas.

The 20th Anniversary of GLOBE Thailand included the exhibition of “20 years of GLOBE Thailand”, the presentation of research projects conducted by students, GLOBE implementation in schools and university network in GLOBE community, and the presentation of GLOBE Star Awards 2019 to partner universities and schools for their continued contribution. The GLOBE star awards 2019 presented to 9 teachers, 8 scientists, 15 schools and 6 universities. 184 participants joined this special activity.



9. 23rd GLOBE Annual Meeting

Nineteen participants joined the 23rd GLOBE Annual Meeting on July 14 – 18, 2019 at Detroit, Michigan, USA. There were 2 participants from IPST (Prof.Dr. Sukit Limpijumnong, Country Coordinator and Miss Lalida Umbua), 2 Scientists (GLOBE Working group) and 15 GLOBE teachers and students in 4 schools: Montfort college, Paphayomphittayakom school, Princess Chulabhorn Science High School Nakhon Si Thammarat and Princess Chulabhorn Science High School Trang joined and presented their research in the GLOBE Annual meeting. Montfort college and Paphayomphittayakom school received a four-star student research badge and at least two other optional badges and won stipends for supporting the cost of the meeting.



10. GLOBE Asia-Pacific Regional Meeting 2019

Two participants (Mrs. Yupaporn Laplai, Representative Country coordinator and Miss Suwinai Mongkonthan) joined the GLOBE Asia-Pacific Regional Meeting 2019 on May 20 – 24, 2019 at Seoul, Republic of Korea. There were country coordinators from 14 countries joined this meeting.



11. GLOBE Website

GLOBE Thailand developed new look GLOBE website available at <http://globethailand.ipst.ac.th/>

โครงการวิทยาศาสตร์สิ่งแวดล้อมโลก (GLOBE)
สถาบันส่งเสริมการสอนวิทยาศาสตร์และเทคโนโลยี

HOME ABOUT US NEWS & EVENT MEDIA STUDENT RESEARCH GLOBE NETWORK THAI

GLOBE THAILAND 20th Anniversary

THE GLOBE THAILAND
September 30, 1999 - 2019

GLOBE THAILAND NETWORK

2562

4 ภาค

11 จังหวัด

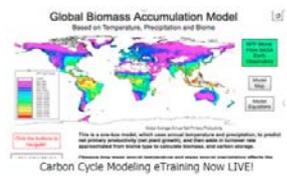
13 มหาลัย

0 โรงเรียน

ค้นหา ดูรายละเอียด เริ่มใหม่

GLOBE TRAINER

VISITORS
281639
PERSONS





October 2019						
Sun	Jan	Feb	Web	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

VIDEO

VDO ANIMATION
เรื่อง ต้นไม้

VDO ANIMATION
เรื่อง ผู้สำรวจดิน

VDO ANIMATION
เรื่อง สุนัข

VDO ANIMATION
เรื่อง เมฆ

VDO ANIMATION
เรื่อง แมงหิ่งห้อย

VDO ANIMATION
เรื่อง สัตว์

CARTOON BOOK

ผู้สำรวจดิน

ต้นไม้กำลังหลับ

มาทำแผนกันเถอะ

วันแห่งฟ้า

ทำไมร้อนอย่างนี้

สัตว์ที่อยู่ที่ไหน

HOME ► STUDENT RESEARCH

RESEARCH | GLOBE SRC | TJWP



ปี พ.ศ.

ชื่อโรงเรียน

งานวิจัย

ลำดับ	ชื่อสถาบัน	ที่อยู่	งานวิจัย	ครู	นักเรียน	ดาวน์โหลด
1	โรงเรียน มอ.วิทยานุสรณ์ สุราษฎร์ธานี		การประเมินและเปรียบเทียบคุณภาพน้ำชายฝั่งในบริเวณพื้นที่อำเภอบ้านดอน อำเภอไชยา จังหวัดสุราษฎร์ธานี	นายเดชาพัชร สมหมาย	นายรัชชัย ชินทนต์ นายธาดา ฉายสินสอน นายฉัตร กองประดิษฐ์	
2	โรงเรียน แหลมราษฎร์บำรุง		ศึกษาความหลากหลายของสิ่งมีชีวิตบริเวณชายหาดที่มีเขื่อนกั้นคลื่นนอกฝั่ง และไม่มีเขื่อนกั้นคลื่นนอกฝั่ง อำเภอหัวไทร จังหวัดนครศรีธรรมราช	นางสาวเพ็ญกมล ชัยพันธ์	นายณัฐพงศ์ สุวรรณโณ นางสาวปติมา ชุมทอง นางสาวลดาบุษ เขียวน้อย	
3	โรงเรียนกุศลศึกษาลัย จังหวัดสุพรรณบุรี	134 ประชาธิปไตย ค.ท่าพี่เลี้ยง อ.เมืองสุพรรณบุรี จ.สุพรรณบุรี	ทบทวนด้านสิ่งแวดล้อมส่งผลกระทบต่อระบบนิเวศจากดวงอาทิตย์	นายปิติภูมิ นานแก้ว	นางสาวกัญญาพัชร หนูทอง นางสาวพิมพ์กมล จันทร์เพชร	
4	โรงเรียนกุศลศึกษาลัย วิทยาลัย		การศึกษาปัจจัยทางกายภาพที่ส่งผลต่อการเจริญเติบโตของแมลงกึ่ง Perma viridis บนเสาคอนกรีตเสียงหอยบริเวณปากอ่าวไทย เพื่อสร้างรูปแบบจำลองการบริโภคเสาคอนกรีตของแมลงกึ่ง Perma viridis ในการเพิ่มการเจริญเติบโต	นายชนันท์ เกียรติสิริสาสน์ นางสาวปติมา ภูเวียน	เด็กชายธนกร วงอารีย์ เด็กชายอดิระ พิพัฒน์ธรราสกุล	

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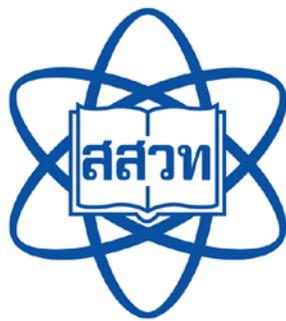
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