GLOBE Thailand Report 2017

The Institute for the Promotion of Teaching Science and Technology (IPST) Ministry of Education

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## Contents

**GLOBE Thailand Report 2017**

- Climate Change Supplementary Materials Development 1
- Cooperation with Universities in Promoting Environmental Science Research Based on STEM Education Concept 2
- Promotion of Environmental Science Research in Thailand 9
- Thailand Environmental Science Research Competition 2017 10
- Student Exchange Program 13
- GLOBE Annual Conference 2017 15
- GLOBE Asia-Pacific Regional Meeting 2017 15
- GLOBE Train-The-Trainer Workshop 2017 16
1. Climate Change Supplementary Materials Development

IPST had developed the climate change supplementary into school in English version for upper primary level (Grade 4-6) and Lower secondary level (Grade 7-9). These activities aim at giving the students practical experience in Climate Change education such as Weather and Climate, Impact, Mitigation and Adaptation of Climate Change. To increase students’ awareness of sustained natural resource and environmental conservation, the learning activities have been designed to motivate them to continue their exploration, investigation and search for knowledge.

IPST invited Dr. Dev S. Niyogi, Professor of Agronomy and Indiana State Climatologist, reviewed the supplementary books. These materials will be distributed by IPST website.
2. 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 2017 (1 October 2016 - 30 September 2017), IPST provided operational budget for this purpose to Thaksin University, Walailak University, Prince of Songkla University Surat Thani Campus, Loei Rajabhat University, Burapha University, Srinakharinwirot University, Kasetsart University Kamphaengsaen Campus, Sirindhorn International Institute of Technology of Thammasat University, Mae Fah Luang University, Suratthani Rajabhat University and Rajamangala University of Technology Isan. In all, 72 schools took part in different activities organized by the universities as follows:

1. Thaksin University

Thaksin University arranged TSU Earth System Science Training: training Atmosphere, Soil, LandCover, Mosquito protocol and STEM education for 92 students and 21 teachers from 10 schools in Pattalung Province.
2. Walailak University

The two projects undertaken this year were;

1) Innovations and Inventions in water conservation workshop

The 4 teachers and 10 students from 4 schools developed Innovations and Inventions in water conservation by using STEM Education.

2) Mosquito Workshop

The 5 teachers and 15 Students from 5 schools surveyed and collected mosquito larvae in their area to identify type of mosquito and data entry via mosquito data application.
3. **Prince of Songkla University, Surat Thani Campus**

   PSU, Surat Thani Campus developed two projects are;
   
   1) Study on environmental sciences in local agricultural crops.
   
   The 12 students from 5 schools developed 5 researches to study local agricultural crops in Songkla Province by measure Soil, Hydrology, Atmosphere and Biology.

   2) Innovations and Inventions in water conservation workshop

   The 4 teachers and 12 students from 4 schools developed Innovations and Inventions in water conservation by using STEM Education.

4. **Suratthani Rajabhat University**

   SRU conducted the project which aimed at supporting potential of GLOBE Alumni Thailand. Former GLOBE students opened LINE group and Facebook page to communicate among alumni. Activities in each region were also publicized and updates provided through online channel. GLOBE Alumni set up environmental science camp for 60 students to promote GLOBE protocol to new schools.
5. Loei Rajabhat University
   1) SRU arranged Earth system science training workshop for 16 students 2 teachers by collecting data on Soil, Hydrology, Atmosphere and Land Cover.

2) GLOBE STEM Activity in Pre-service Education
   Establish GLOBE STEM Pre-service trained GLOBE Protocol Continuously for 30 teachers.

6. Burapha University
   A collaborative environmental research development project cooperated among scientists and 6 teachers and 34 students from 5 schools and developed 6 researches.
7. Srinakharinwirot University
A training workshop on innovations and inventions in water conservation conducted with a view to apply Intel Galileo Board and environmental sensor such as temperature, humidity to monitor weather in school and create own database. The 20 students and 3 teachers developed 5 researches.

8. Kasetsart University Kamphaeng Saen Campus
The Kamphaeng Saen Campus of Kasetsart University implemented a soil science research development project base on joint collaboration between scientists and teachers and students. The 21 students from 4 schools developed soil science education researches within the context of STEM education.
Furthermore, GLOBE Protocol workshop was held on with 214 students and 20 teachers from 5 schools.

9. Sirindhorn International Institute of Technology - SIIT
SIIT conducted the project for the promotion of environmental learning through application of micro-controller and smart phone to monitor and control cloud Soil moisture sensor and humidity and temperature sensor. The 38 students and 7 teachers from 7 schools developed 6 researches.
10. Mae Fah Luang University

Mae Fah Luang University developed Simple titration kit using natural identifiers and train the GLOBE Protocol. There were 11 students and 8 teachers from 5 schools involved in this project.

![Mae Fah Luang University](image1)

11. Rajamangala University of Technology Isan

Rajamangala University of Technology Isan trained Atmosphere, Soil, LandCover, Mosquito protocol and STEM education for 12 students and 5 teachers from 5 schools.

![Rajamangala University of Technology Isan](image2)
3. Promotion of Environmental Science Research in Thailand

3.1 Meet GLOBE Earth Science Educator

IPST hosted the GLOBE Earth Science Educators meeting on 23 January, 2017 at Sukhum Srithanyaratana meeting room, IPST Administrative Building. Ms. Dorian M. Janney, Formal Education Specialist for Global Precipitation Measurement and Peter C. Falcon, Earth Science Outreach Coordinator shared their experience on NASA education mission with IPST staffs to inspire kids to investigate precipitation, observe cloud and interpret NASA satellite image. They also provided NASA resources link for Earth Science Education.

3.2 Special Talk

IPST arranged the special talk "Earth As a System: why should we do GLOBE?" by Dr. Dixon M. Butler on 19 December, 2017 at Chonradsadornumrung, Chonburi Province. There were 1,149 participants from 13 schools.

3.3 World Soil Day

IPST conducted the World Soil Day campaign on 5 December, 2017. There were 123 postcards from all regions of Thailand and 32 postcards were selected and awarded. The campaign aimed to celebrate the World Soil Day and continue our royal initiative of King Rama IX for soil conservation and improvement.
4. Thailand Environmental Science Research Competition 2017

4.1 GLOBE Student Research Competition 2017

GLOBE Student Research Competition 2017 was opened to primary and secondary school students during 8 – 10 June 2017. There were 24 oral presentation and 40 poster presentation 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 Factors Affecting the Amount of Fine Particulate Matter (PM) in Chiang Mai Municipality
Second prize: Dara Academy, Chiang Mai Province
Title: Light pollution measurement in Chiang Mai Province by observing the brightness of Orion compare with apparent magnitude
Third prize: Jatukhamwittaya School, Nakhon Ratchasima Province
Title: The Effect of environmental parameters on the density of firefly at Ban Phrao, Don sub district, Pakthongchai district, Nakhon Ratchasima

**Lower Secondary school category:**
First prize: Princess Chulabhorn Science High School Nakhon Si Thammarat, Nakhon Si Thammarat Province
Title: The effect of weather factors and the number of Aedes larvae to Occurrence of Dengue fever in Nakhon Si Thammarat, Thailand. (Study Area : Princess Chulabhorn Science High School Nakhon Si Thammarat)
Second prize: Lampang Kalayanee School, Lampang Province
Title: Study of Drought Endurance Rice Varieties by Controlling Soil Temperature and the Change of Leaf Color
Third prize: Chum Phae Suksa School, Khon Kaen province
Title: Study of the Soil Depth and Optimal Condition for Growing Tabtim Chumpare Rice Variety Using Dry seeds

**Higher Secondary school category:**
First prize: Donchanwitthayakhom school, Kalasin province
Title: The study of plant pot product made by Legumes leaves to nursery the Bird Chili (Capsicum frutescens Linn.)
Second prize: Princess Chulabhorn Science High School Trang, Trang province
Title: Effects of Container Types and Water Qualities on the Density of Aedes Larvae in Trang Province, Thailand
Third prize: Triam Udom Suksa School, Bangkok
Title: Effects of Weather and Breeding sites on the Number of Aedes spp. and Culex spp. Larvae in Triam Udom Suksa School
Poster Presentation awards:

Best Poster Presentation prize: Sa-Nguan Ying School, Suphan Buri province
Title: Study of Cracks and Physical Characteristics in Soil under Different Environmental Conditions"

Best Popular Vote Poster Presentation prize: Assumption College, Bangkok
Titled: Comparison of Vermicompost from Egg Shell and Soybean meal by measuring growth of Chinese broccoli"

Consolation Poster Presentation Prize (2 awards):
Phanom Sarakham Phanom Adun Witthaya School, Chachoengsao Province
Title: Study of water quality using water treatment kit in small Dye industry in Chachoengsao Province
Bunyawat Witthayalai School, Lampang Province
4.2 Thailand Junior Water Prize 2017 (TJWP2017)

IPST has signed 2\textsuperscript{nd} 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 2017 competition on 1 May 2017 with an objective to encourage students to learn about, care for, and conserve water resources. The winner was the research Titled “A Remote Water Quality Monitoring System in Bang Pood Canal and Chao Phraya River, Nonthaburi Province” from Suankularb Wittayalai Nonthaburi School, Nonthaburi province.
In this year, IPST received the partial grant by Government Savings Bank, Metropolitan Waterworks Authority, Nestlé (Thai) Ltd. and Siam Piwat Co., Ltd. The winner of TJWP2017 was invited to submit their innovative water conservation methods to Stockholm Junior Water Prize 2017, Sweden on 26 – 30 August, 2017.

5. Student Exchange Program

5.1 India – Thailand– Taiwan Student Exchange Program 2017 in India
Eleven students, teachers and scientists from St. Joseph Thiphawan school and Silacharaphiphat School took part in the India – Thailand– Taiwan Student Exchange Program on January 31 – February 4, 2017 at Bhubaneswar, India. The participants with opportunities to share and exchange experiences via presentation of their research.

5.2 Sunburst Environment Programme 2017
The Sunburst Environment Programme 2017 was held from 12 November to 18 November. Five participants namely, Chayapol Huang, Intouch Pathanasap from Assumption College, Bangkok, Natacha Methan and Orthai Manathaworn from St.Joseph Thiphawan School, Samut Prakarn. Mr. Charoensak Mueangkaew IPST
attended this Programme. The students presented their research project “The Impact of human activities that affect the mangrove forest” in oral and poster presentation sessions.

5.3 Student Exchange Program 2017 in Taiwan
Fourteen students, teachers and scientists from Montfort College Primary Section, Princess Chulabhorn Science High School Nakhon Si Thammarat and Donchanwitthayakhom school took part in the GLOBE Asia-Pacific Science Festival on July 10 – 15, 2017 at Songshan Cultural and Creative Park, Taiwan. The participants with opportunities to share and exchange experiences via presentation of their research.

5.4 Regional GLOBE Learning Expedition
Ten students, teachers and scientists from Triam Udom Suksa school, Princess Chulabhorn Science High School Trang took part in Regional GLOBE Learning Expedition on September 10 – 16, 2017 at Pokhara, Kathmandu. The expedition is unique GLOBE activity which provided opportunity to the students and teachers to learn lake and mountain ecology.
6. GLOBE Annual Conference 2017

GLOBE Thailand joined the 21st GLOBE Annual Meeting on July 31 – 3 August, 2017 at New Haven, Connecticut, USA. There were 20 participants from Thailand, 2 GLOBE working group members, 3 IPST staffs, 5 teachers, and 10 students.

7. GLOBE Asia-Pacific Regional Meeting 2017

Two representatives from IPST attended the GLOBE Asia-Pacific Regional Meeting 2017 in Philippines from May 22-24, 2017. The meeting activities not only followed up the results from the Country coordinator from different countries but also explained the next-year strategy of GLOBE Implementation Office (GIO) so that the GLOBE Thailand could be able to improve its programs in accordance with GIO. In addition, Cornell Lewis, GIO introduced GLOBE Data Entry App, GLOBE Website and new features on Website and done mini GLOBE Protocol workshop.
8. GLOBE Train-The-Trainer Workshop 2017

IPST and Burapha university arranged the GLOBE Train-The-Trainer Workshop on December 17th – 23rd, 2017 at Burapha University, Chon Buri, Thailand. There were 42 participants from 13 school teachers, 22 university lecturers, 2 participants from National Science and Technology Development Agency, and 5 participants from IPST. There were special lecture “Overview of Earth as a System, a new perspective for GLOBE communities” and “Soil Moisture Active Passive (SMAP) GLOBE program” by Dr. Dixon Butler. GLOBE Thailand had the honor of welcoming Dr. Tony Murphy, Director of the GLOBE Implementation Office, Dr. Elena Sparrow, Education Outreach Director and Research Professor, University of Alaska Fairbanks, and Dr. Pay-Liam Lin, GLOBE Country Coordinator of Taiwan and National Central University, and 14 GLOBE Trainers from 3 countries (USA, Taiwan and Thailand).
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