

GLOBE Country Reports

Asia-Pacific Region



Compiled By

GLOBE Asia-Pacific Regional Coordination Office

Submitted To

GLOBE Implementation Office, USA

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COUNTRY: INDIA

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Cooperating organizations:

- Ministry of Environment, Forest and Climate Change, Govt. of India
- Department of Environment, Govt. of NCT of Delhi
- American Center, American Embassy in New Delhi
- Ministry of Earth Sciences, Govt. of India
- UNESCO New Delhi

Participating schools:

There are around 2000 schools from 22 states in the country and the list is uploaded to the country website www.globeindia.org

Funding by:

We have been raising fund from various organization those have common interest with the GLOBE Program. List of these organizations from we have been taking the financial or technical support are given below;

- Ministry of Earth Sciences, govt. of NCT of Delhi
- Department of Science and Technology, Govt. of India
- Ministry of Environment, Forests and Climate Change, Govt. of India
- Public Affairs Section of American Embassy in New Delhi
- UNESCO New Delhi

GLOBE protocols used in country:

- Atmosphere (cloud, Aerosol, Water vapor, Barometric pressure etc.)
- Soil (Soil Characterization, Soil Temperature, Bulk Density, Soil Particle Density etc.)
- Hydrology (Water Transparency, Water Temperature, Dissolved Oxygen, Salinity, electrical Conductivity etc.)

- Earth as a System (Budburst, Green-up, Green-down, Ruby-throated Hummingbird, Phenological Gardens etc.)
- Land cover/Biology (Land Cover Sample Site, Biometry, Manual land Cove Mapping etc.)

Number of schools currently reporting data (2014):

Out of 1,373 schools and 158 teachers, there were 23,155 total observations		
1,242 schools not yet reporting	130 schools have reported in the past	1 school currently reporting (past 3 months)

Description of the program in your country and recent activities in 2014:

Following activities are carried out during the year 2014;

1. Celebration of Earth Day 2014 with the GLOBE school students, teachers and community people in Udaipur, Rajasthan

The Society received a grant from the Ministry of Earth Sciences, Govt. of India to celebrate Earth Day 2014 with the GLOBE School students, teachers and community people in Udaipur, Rajasthan. The event was organized during April 21- 22, 2014 and following activities were carried out during the event;

• Nature Trail on April 21, 2014:

Students, teachers and community people were invited to go on a nature trail to study the climate, wetlands and biodiversity. The trail was guided by few environmental/ biodiversity experts. The GLOBE students and teachers along with the community people observe the nature and try to explore the reason for their observations. They have identified various critical issues like habitat degradation due to human interference and impact of climate change on the biodiversity. They also noticed the human impact on the lakes in the city.



- **Poster Competition**

Poster competition is one of the best methodologies for bringing out the innovative ideas from students mind. There are several environmental issues on which the students are aware sufficiently. They have been doing hands on activities on Water quality monitoring of the Udaipur lakes since a long time and has been analyzing the collected data with the help of their teachers. They have understood the problem for the local biodiversity and also have knowledge on the impact of climate change and manmade activities on the local environment and biodiversity. Thus a poster competition was organized on the occasion of the Earth Day 2014. GLOBE Students participated and prepared posters on EARTH. It was very encouraging to observe the competitive spirit among the young masses to translate their innovative thoughts in the form of posters.



- **Essay writing competition**

Like poster competition, Essay competition was also very effective to understand what is going on students mind on a particular topic. An essay competition was also organized on the occasion of the earth day 2014.



- **Project presentation competition among Students**

A seminar was organized on April 22, 2014 in which students and teachers from the GLOBE Schools and wetland club schools in the city of Udaipur, Govt. officials, community peoples, representatives from the voluntary organizations were participated. In this seminar environmental experts, biodiversity experts etc. delivered lecture on issues related to Mother earth and its components. Following the lecture, students presented their research presentation on earth system science. The presentations were appreciated by the experts and the experts suggested the students as per their observation to improve the technical research capabilities of the students. There was an open session for the interaction with the students, teachers, other participants including experts. The event was very fruitful and around 70 participants were there during the program.



2. GLOBE India students and teachers exchange program to GLOBE Thailand
(November 6-11, 2014 in Bangkok- Thailand)

GLOBE Students and teachers from India visited Thailand to attend the conference organized by GLOBE Thailand. It was organized under the Indo- Thai Annual Exchange program. The program was organized during November 6-11, 2014.

3. GLOBE Learning Expedition 2014 (August 3-8, 2014 in New Delhi- India)

GLE 2014 was organized in New Delhi during August 3-8, 2014. There were 319 participants from 29 countries. Various activities such as lectures, poster presentations, project presentation, cultural activities, Eco-Engineering product display, hands on field activities etc were organized during the event.



Poster set up by students



Parade of Nations



Visit in the Exhibition Area



Inaugural Session





Eco- Fashion Show, Eco- Engineering Product display and Cultural Activities



GLOBE Student's Research Project Presentation

COUNTRY: JAPAN

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Cooperating organizations:

Ministry of Education, Culture, Sports, Science and Technology

Participating schools:

- Hokkaido shibecha high school, Takata High school, Kanaashi Agricultural Senior High School,
- Tokyo Gakugei University Senior High School, Nagatadai Elementary school, Excellent High School,
- Tara Elementary School, Nanzan Girls' Junior & Senior High School, Hachiman Technical High School,
- Prefectural Ayabe HighSchool,East Branch,, Kyoto Kaiyou High -school, Kasumi High School,
- Mitaka Elementary School, Kagoshima Fishery High-School

Funding by:

Ministry of Education, Culture, Sports, Science and Technology

GLOBE protocols used in country:

- Atmosphere (cloud, Aerosol, Water vapor, Barometric pressure etc.)
- Soil (Soil Characterization, Soil Temperature, Bulk Density, Soil Particle Density etc.)
- Hydrology (Water Transparency, Water Temperature, Dissolved Oxygen, Salinity, electrical Conductivity etc.)
- Earth as a System (Budburst, Green-up, Green-down, Ruby-throated Hummingbird, Phenological Gardens etc.)
- Land cover/Biology (Land Cover Sample Site, Biometry, Manual land Cove Mapping etc.)

Number of schools currently reporting data (2014):

16 schools (3 elementary schools, 1 junior high school and 12 high schools)

Description of the program in your country and recent activities in 2014:

GLOBE Japan Student Conference Held in Tokyo

The 8th GLOBE Japan Student Conference was held from 12 -14 December 2014 at the National Olympics Memorial Youth Center in Tokyo. Students from sixteen GLOBE schools took part in this event supported by the Japanese Ministry of Education, Culture, Sport, Science and Technology (MEXT).

During the opening ceremony, participants were greeted by Mr. Hideki Fujieda, a School Inspector of MEXT, Prof. Toshisada Deguchi, President of Tokyo Gakugei University, and Dr. Shuji Yamashita, GLOBE Japan Country Coordinator. In addition, Mr. Seiya Shimizu, a student of Hachiman Technical High School, and his teacher, Mr. Shigenari Akiyama reported on their participation in the GLOBE Learning Expedition (GLE) in Delhi this summer.

Student representatives from each school reported on investigative activities into research in their local and regional environment using GLOBE protocols. They shared ideas about their methods, experiences and challenges. Following the student research presentations, junior and senior high school students also demonstrated scientific experiments and craft work to participants.

An evening highlight was a GLOBE Alumni Presentation by Ms. Reina Sugiura, a student of Tokyo Gakugei University. She spoke about her early involvement with GLOBE, and in particular with phenology studies, during her junior and senior high school days, and how those studies influenced her career path. Ms. Sugiura is presently studying environmental education at the university. Following Ms. Sugiura's presentation, a GLOBE staff and a specialist at the National Astronomical Observatory of Japan spoke about GLOBE at Night an international citizen-science campaign to raise public awareness of the impact of light pollution.

On the final day, Tokyo Gakugei University faculty members shared insights into their particular scientific specialities. Soil explorations were held at near the Meiji Shrine area and at Yoyogi Park. Other programs included fish scale art, heat island phenomenon, tree weight measurement, tree buds in winter, optics experiment, and other investigation areas. The conference provided a wonderful opportunity for all the students to share the results of their research activities and to realize how students at other schools are similarly involved in GLOBE. Students who have an interest in environmental conservation realized their opportunities to expand beyond the scope and reach of their research, and they were encouraged to continue their daily observations and measurements.

COUNTRY: MALDIVES

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Cooperating organizations:

GLOBE program is implemented by Environment Protection Agency (on behalf of Ministry of Environment and Energy)

Participating schools: In 2003 6 schools have been identified as GLOBE schools

Funding by: Government of Maldives

GLOBE protocols used in country: No protocols are practiced at globe school at the moment.

Number of schools currently reporting data (2014): No data reporting at the moment

Description of the program in your country and recent activities in 2014:

Environment protection Agency is working to get more school interested in the globe programs. Several head teachers from different schools have been approached by EPA. Several schools have shown interest in becoming Globe schools and TOT for the teachers have been plain for 2015. Schools in island of Hulhumeedhoo (Addu atoll will be starting the globe program in the coming months)

COUNTRY: MARSHAL ISLAND

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Insert photo

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Cooperating organizations:

- Ministry of Education
- Environmental Protection Authority
- Marshall Islands Whether Services

Participating schools:

- Majuro Middle School
- Delap Elementary School
- Assumption Schools

Funding by:

GLOBE protocols used in country:

Number of schools currently reporting data (2014): No data received in 2014

Description of the program in your country and recent activities in 2014:

At the moment the Marshall Islands GLOBE Program has not really kicked off due to limited funding made available to implement the GLOBE Program protocols in the school systems, both public and private institutions.

There are plans to incorporate the activities of the GLOBE Program into the Fiscal Year Budget 2016.

COUNTRY: MICRONESIA

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Cooperating organizations: State Education Departments in the FSM

Participating schools: to be selected

Funding by: FSM and U.S. Compact

GLOBE protocols used in country: to be developed

Number of schools currently reporting data (2014): 187

Description of the program in your country and recent activities in 2014:

The GLOBE program in the FSM has not been activated because no orientation and/or training have been provided. The country was not able to attend previous conferences and therefore, there is no working document or guide to assist our office to implement GLOBE programs in the education system. This meeting is one opportunity where our country hopes to capture the details on the development and implementation of GLOBE initiatives and to begin GLOBE activities in the FSM Education System.

COUNTRY: NEPAL

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Cooperating organizations:

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

Participating schools:

- Yashodhara Baudha Secondary School, Thaina, Lalitpur
- Prabhat Higher Secondary School, Tyagal, Lalitpur
- Kitini Secondary School, Godavari, Lalitpur
- Harisidhi Secondary School, Harisidhi, Lalitpur
- Tri Ratna Cooperative School, Bungmati, Lalitpur
- Jalpa Secondary School, Dhapakhel, Lalitpur
- Shree Krishna Higher Secondary School, Dhapakhel, Lalitpur
- Geeta Mata Higher Secondary School, Dallu, Kathmandu
- Jagat Sundar Bona Guthi, Dallu, Kathmandu
- Shree Mahendra Gram Secondary School, Tikathali Lalitpur
- Mahendra Adarsha Secondary School, Suryabinayak, Bhaktapur
- Kanya Co-Education Secondary School, Tekha Pukhu, Bhaktapur
- Mt. Kailash Sec School, Kathmandu

Funding by:

- ECCA - Self Funding

- Partial Support from fund raised from Global Giving (Online Fundraising Platform)
- Partial program implementation support through various projects being implemented in schools from various donors

GLOBE protocols used in country:

- Hydrology
- Atmosphere

Number of schools currently reporting data (2014):

- NA

Description of the program in your country and recent activities in 2014:

- Door to Door Campaign in community

To aware the community about various issues related with water, regular door to door campaign through mobilizing members of nature club are organized in in various communities. Also, to give continuity to the use of WATASOL in those areas, resale campaign was conducted at the interval of 2-3 weeks.



Door to Door Campaigns conducted were:

- | | |
|--|-------------|
| ➤ St. Paul Higher Secondary School | 8 Feb 2014 |
| ➤ Lali Gurash Bright Future English School | 9 Apr 2014 |
| ➤ Kitini Higher Secondary School | 30 May 2014 |
| ➤ Zing Boarding School, Khokana | 7 Jun 2014 |
| ➤ Geeta Mata Higher Secondary School | 14 Nov 2014 |
| ➤ Bishankhu Narayan Secondary School | 6 Dec 2014 |

- Water Quality Test

The general physico-chemical parameters testing of water samples were done with the field based water test kits. The objective of the water testing was to check the condition of drinking

water that was provided for the students. Water quality test is done at regular intervals. Water Quality test were done in following schools.

- Kitini Higher Secondary School
- Bishanku Narayan School
- St.Paul Higher Secondary School
- Kanchan English Boarding School
- Bal Binod Secondary School

- National Conference on Children Club – April 2014

Despite the recent introduction of the “One School – One Child Club” policy of the Government of Nepal, the importance of children clubs and the role of children as the agents of change is often neglected. Attempts have been made to create better platform and better opportunities for better exposure to children clubs by different organizations separately. But still, children are facing various difficulties to run clubs in their school. The school management committee, teachers and parents could not feel the importance of children clubs and are found not supporting children activities effectively. Success stories and examples are not shared; therefore, the dissemination of information remains incomplete and challenging.

So as to strengthen children clubs, to provide better scenario of children clubs to the school stakeholders, to expose the learning needs and possibilities and to develop a clear vision on children clubs in Nepal, ECCA organized Third National Conference of Children Clubs.



The conference was held at Laboratory Higher Secondary School, Kirtipur, Kathmandu (April 11-13, 2014). 116 club members of 12 -15 age group and 33 adults (teachers, parents) participated in the conference. Among them, 10 students were from ECCA/DFL Project area (Annex 2). The conference was facilitated by different facilitators to make it run smoothly and the combined effort of ECCA volunteers made this program a successful one.

- Knowledge Market Place

One of the attractions during national conference on child club was the knowledge market place (KMP), in which the best concept related with preservation of water source in school and community were awarded Rs. 25,000/- each to implement their concept. The KMP is a platform where all participating clubs and schools are invited to display their activities and proposals for future projects, in order to have the chance of gaining the funding needed to implement their ideas. It enables students to share their knowledge and display their talent for coming up with innovative solutions to problems in their schools or within the wider community.

- Orientation on Safe Drinking Water

On various dates, orientation program on safe Drinking water is made in various schools. It involved mobilization of students from nature club in all the schools and providing information in all the class regarding the need of safe drinking water in our day to day life.

Date	School
16-Jan 2014	Kitini Higher Secondary School
20-Feb 2014	Tika Bhairab English School
15-May 2014	Mt.Kailash Secondary School
17-May 2014	Bal Binod Secondary School
22-May 2014	Jagat Sundar School

- Using water jars and dispensers in schools

Among the many duties of nature club students, a group of students are responsible for providing safe drinking water in their classroom. Hence, student uses chlorination technique to treat their water for providing safe drinking water to students and staffs. Regular in the morning before the

classes start, the nature club students mix WATASOL in the water jar and place the jar at the specified locations inside the school premises where the students can have easy access.

- Documentary Show

To promote safe drinking water campaign, documentary show was organized in following school:

- | | |
|--|-------------|
| ➤ Zing Boarding School, Khokana | 20 Jun 2014 |
| ➤ St. Paul Higher Secondary School, Thecho | 16 Oct 2014 |
| ➤ Little Flower Public School, Alko | 7 Nov 2014 |

- Celebration of Global Hand Washing Day

To mark Global Hand Washing Day, nature club members organized various program in their school and community premises. In Kitini Higher Secondary School, the hand washing materials were handed over to the school by ECCA. The Nature Club also organized an orientation for the students of Primary level to demonstrate the steps of Hand Washing and to make them understand its importance for healthy living.

- One School One Heritage Campaign

ECCA initiated Once School One heritage Campaign in order to protect the local and national heritage sites. In order to support the campaign, the students from various nature clubs actively involved themselves in the clean-up and preservation campaign of different Stone water spouts located in Lalitpur district. The stone water spots located in various locations in lalitpur districts is very important in terms of preserving our heritage as well as equally important to preserve water resources where local people regular use it for fetching water for their daily use. The program also provided a good opportunity for students to interact and aware local people about importance of water source preservation, healthy sanitation and hand washing. ECCA provided face mask, gloves and hand washing materials for the participating students from the project schools.



- Street Drama for Water and Sanitation Awareness

To aware the community on various issues of water and sanitation, Kitini Nature Club in collaboration with community organization organized Street Drama in the community surrounding their school on 15th October 2014. Such activities have been very significant to bring positive changes in society as well as in the promotion of need of safe drinking water as well as sanitation issues.

- Competitions & Events

Below listed competitions were held in different schools to build up the capacity of the students and raise awareness regarding Water and Sanitation. The theme of all the competitions was related with water and sanitation.

Competition	Date	School
Speech Competition	14-Sep	Shree Buddha Secondary School
	10-Oct	Tika Bhairab English School
Poem Recitation and Dance Competition	16-Jul	Mt Kailash Secondary School
	26-Dec	Tika Bhairab English School

- Participation in GLOBE Learning Expedition, Delhi, India – October 2014

As an exposure visit for the students who are actively involving in GLOBE Program, 5 students from 5 different schools were provided an opportunity to participate in GLE being organized in New Delhi, India in October 2014.

COUNTRY: PALAU

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Cooperating organizations: Ministry of Health, Ministry of Resources & Development, Council of Chiefs, Environmental Quality Protection Board, National Weather Service, Palau Community College, Palau International Coral Reef Center, Palau Public Utilities Corporation, PREL Service Center, The Nature Conservancy and Palau Conservation Society.

Participating schools: Palau High School, Belau Modekngai High School, Bethania High School, Meyuns Elementary School, Airai Elementary School, Koror Elementary School, Melekeok Elementary School and Ngeremlengui Elementary School.

Funding by: Voluntary, No Funding

GLOBE protocols used in country: For the past two years we have not trained because we do not have any Globe materials. We do many science trainings for the teachers but not GLOBE trainings.

Number of schools currently reporting data (2014): None

Description of the program in your country and recent activities in 2014:

1. Science Curriculum Framework – Continued implementation of current curriculum framework for grades first to twelveth. Continued implementation of the ten standards:
1. Science as inquiry and attitudes, 2. Science, Technology and Society, 3. Diversity of Plants, 4. Diversity of Animals, 5. Interaction and Interdependence of Living and Nonliving Thing, 6. Earth's Features and Natural Resource, 7. Processes of Change on and within Earth, 8. Earth, Space, and Universe, 9. Nature of Matter, and 10. Motion and Energy.
2. Collaboration with Inter-agencies and Partners. Continued working collaboratively with the ministry of Education's partners with different projects that are related to the 10 standards that the schools are implementing:
 - a. Palau International Coral Reef Center Tour – Elementary schools are scheduled throughout the school year to tour and observe local scientist demonstrate and present marine studies done locally.
 - b. Palau Conservation Society – The Ridge to Reef Road Show is a scheduled project to all elementary schools' fifth and sixth grades. This project is a learning activity that enhances and strengthens science related issues that the students learned in the classroom. It helps students to experience science issues from the local experts and connect what they've learned to what is around them.
 - c. STEM Fair – Continued to encourage students to create science projects to showcase during Educational Awareness Week where parents and community can witness what students had learned and what they can do.

- d. Earth Day and Water Day - All partner agencies gathered to showcase to the public and community all environmental and water issues.
- e. Tree Planting Project – Only one school joined with the Bureau of Agriculture to plant trees around the school campus. They learned the science behind planting trees and the impact of having more trees around. Tree planting project was expanded to state government so each of the Palau state government had their tree planting projects.

COUNTRY: SRI LANKA

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Cooperating organizations: Provincial Departments of Education

Participating schools: School list will be attached later.

Funding by: The Ministry of Education, Sri Lanka

GLOBE protocols used in country: Hydrology, Atmosphere, Soil and Land Cover

Number of schools currently reporting data (2014): None. We have a problem in entering data after the construction of the new website. We should enter all the email addresses of the teachers and then only our schools can enter the data. We are now collecting all the past teachers email addresses. But our students are collecting data as in the past.

Description of the program in your country and recent activities in 2014:

We had 3 normal teacher trainings on the above 4 fields and a special teacher training on student research activities.

Funds are given to make climatological stations in 15 schools.

GLOBE equipment kits were procured to 15 schools which have received the teacher training.

COUNTRY: TAIWAN

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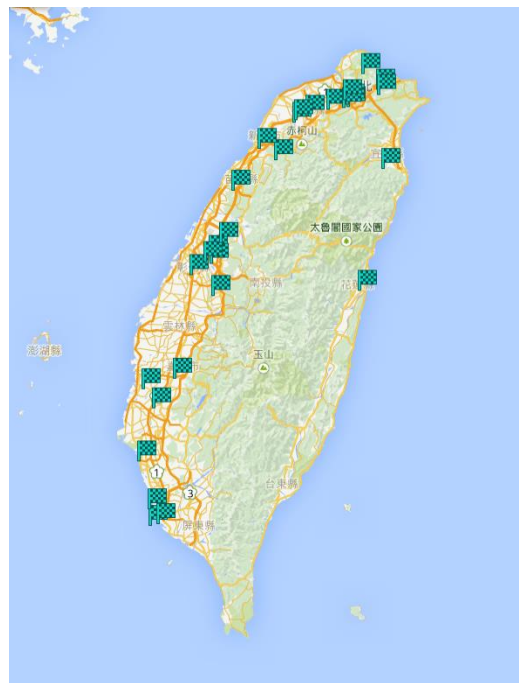
Website: *<http://globe.ncu.edu.tw>*

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. Songmay Elementary School, Chiayi County
28. Houjia Junior High School
29. Kaohsiung Municipal Youchang Junior High School



Funding by: Ministry of Science and Technology

GLOBE protocols used in country:

- Barometric Pressure Protocol
- Cloud Protocols

- Relative Humidity Protocol
- Precipitation Protocols
- Digital Multi-Day Max/Min/Current Air and Soil Temperature Protocol
- Surface Temperature Protocol
- Davis Weather Station Protocol
- Biometry Protocol

Number of schools currently reporting data (2014): 8

Description of the program in your country and recent activities in 2014:

The goals of GLOBE Program Taiwan in 2014 are cultivating trainers, teachers and students, promoting the international interaction, and expanding the GLOBE schools. As to the cultivation, we invited four master trainers from India and Thailand and held the Train-the-Trainer Workshop in Taiwan. The training fields included atmosphere, soil, hydrology and land cover. There were 43 participants, including people whose major was related to environmental fields and GLOBE teachers. In addition, we held the data entry workshop for GLOBE teachers in August. The purpose of this workshop was ensuring teachers were able to promote their schools, utilize the teaching materials and upload daily data through GLOBE website.

As to the interaction of students, we held the science fair for GLOBE students in Taiwan in June. There were 8 presentations about the environmental issues in Taiwan. Teachers and students in Taiwan discussed researches and shared experiences of observations with each other. In August, four teams of GLOBE Program Taiwan showed their research results in GLE in India. Their topics were all related to particular and local phenomena in Taiwan, including the heat island effect in southern Taiwan, the temperature and humidity of cold waves, the investigation of ponds, and the effect of acid solution on the soil.

As to the GLOBE schools expansion, we recruited 17 schools as our new GLOBE schools in November. Therefore, we have 29 GLOBE schools in Taiwan now. In order to enhance the quality of implementation of GLOBE Program, the training for new GLOBE teachers took place in December. We hoped that teachers could have a brief understanding of GLOBE Program and realize how to make use of the protocols of GLOBE Program before installing the observation stations. In 2015, we will hold the Asia and Pacific Regional Meeting. GLOBE Program Taiwan

officers have been planning it for couple of months. So far, the content of this meeting may include regional GLE, country coordinators meeting, GLOBE school visiting, etc. We are convinced that it definitely will be an opportunity for teachers and students in Taiwan to learn and share with each other.

GLOBE Program Taiwan Activities List of 2014			
Name of Activity	Date	Venue	Number of Participants
Davis Weather Station Installation	2014/01/08	National Wu-Ling Senior High School, Taoyuan County, Taiwan	10
Primary Atmospheric Observation Training	2014/02/12	Fon-Sheng Senior High School, Kaohsiung, Taiwan	40
Primary Atmospheric Observation Training	2014/03/08	National MiaoLi Senior High School, Miaoli County, Taiwan	40
Davis Weather Station Installation	2014/03/10	The Affiliated Jhongli Senior High School of National Central University, Taoyuan County, Taiwan	5
Primary Atmospheric Observation Training	2014/03/11	Ying-Pei Junior high school, Nantou County, Taiwan	40
Davis Weather Station Training	2014/03/18	The Affiliated Jhongli Senior High School of National Central University, Taoyuan County, Taiwan	16
GLOBE Experience Exchange Meeting	2014/03/30	National Central University, Taoyuan County, Taiwan	50
Primary Atmospheric Observation Training	2014/04/01	National Chutung Senior High School, Hsinchu County, Taiwan	40
Primary Atmospheric Observation Training	2014/04/08	New Taipei Municipal DanFeng High School, New Taipei City, Taiwan	40

GLOBE Program Taiwan Activities List of 2014			
Name of Activity	Date	Venue	Number of Participants
Train-The-Trainer Workshop	2014/04/19-21	National Central University, Taoyuan County, Taiwan	60
GLOBE Program Taiwan Student Science Fair	2014/06/14	National Central University, Taoyuan County, Taiwan	40
2014 GLE & 18 th Annual Meeting	2014/08/03-08	New Delhi, India	19 (Taiwan Team)
Data Entry Workshop	2014/08/25	National Central University, Taoyuan County, Taiwan	6
Data Entry Workshop	2014/08/28	National Central University, Taoyuan County, Taiwan	4
3 rd GLOBE Schools Recruitment Informational Meeting	2014/10/05	National Central University, Taoyuan County, Taiwan	25
ISMTEC 2014	2014/11/07-09	Bangkok, Thailand	3 (Taiwan Office)
Primary Atmospheric Observation Training	2014/11/14	Nan-Kwang Senior High School, Tainan City, Taiwan	29
3 rd GLOBE Schools Teachers Primary Observation Training	2014/12/27	National Central University, Taoyuan County, Taiwan	26



**2014/02/12_ Primary Atmospheric Observation
Training_ Fon-Sheng Senior High School**



**2014/03/08_ Primary Atmospheric Observation
Training_ National MiaoLi Senior High School**



**2014/03/11_ Primary Atmospheric Observation
Training_ Ying-Pei Junior high school**



**2014/03/18_ Davis Weather Station Training_ The
Affiliated Jhongli Senior High School of National
Central University**



2014/03/30_ GLOBE Experience Exchange Meeting



**2014/04/01_ Primary Atmospheric Observation
Training_ National Chutung Senior High School**



**2014/04/08_Primary Atmospheric Observation
Training_ New Taipei Municipal DanFeng High School**



2014/04/19|_ Train-The-Trainer Workshop



2014/04/20|_ Train-The-Trainer Workshop



2014/04/20|_ Train-The-Trainer Workshop



2014/04/21|_ Train-The-Trainer Workshop



2014/04/21|_ Train-The-Trainer Workshop



2014/06/14_ GLOBE Program Taiwan Student Science Fair



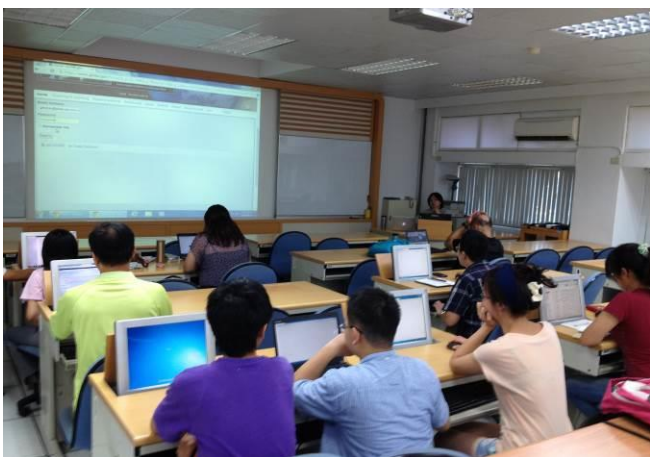
2014/08/03-08/08_2014 GLE & 18th Annual Meeting



2014/08/03-08/08_2014 GLE & 18th Annual Meeting



2014/08/03-08/08_2014 GLE & 18th Annual Meeting



2014/08/25_Data Entry Workshop



2014/08/28_Data Entry Workshop



**2014/10/05_3rd GLOBE Schools Recruitment
Informational Meeting**



**2014/10/05_3rd GLOBE Schools Recruitment
Informational Meeting**



2014/11/07-09_ISMTEC



**2014/11/14_ Primary Atmospheric Observation
Training_Nan-Kwang Senior High School**



**2014/12/27_3rd GLOBE Schools Teachers Primary
Observation Training**



**2014/12/27_3rd GLOBE Schools Teachers Primary
Observation Training**

COUNTRY: THAILAND

Name: Dr. Pornpun Waitayangkoon

Function: Country Coordinator (CC)

Organization: The Institute for the Promotion of Teaching Science and Technology (IPST)

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Cooperating organizations:

1. Mae Fah Luang University
2. Loei Rajabhat University
3. Thaksin University
4. Walailuk University
5. Burapha University
6. Srinakharinwirot University
7. Kasetsart University Kamphaeng Sean campus
8. TTW Public Company Limited

Participating schools: 281 schools.

Funding by:

- The Ministry of Education
- The U.S. Embassy
- Intel Microelectronics (Thailand) Ltd. (supported Girls in Environmental STEM Education Project)

GLOBE protocols used in country:

- Atmosphere protocol
- Hydrology protocol

- Soil Protocol
- Land cover protocol
- Mosquito Protocol

Number of schools currently reporting data (2014): 780 data

Description of the program in your country and recent activities in 2014:

In 2014, The GLOBE Program (Thailand) has conducted activities that follow the vision by the Institute for the Promotion of Teaching Science and Technology (IPST) in promoting integrative learning using the STEM (Science, Technology, Engineering and Mathematics) Education. GLOBE Thailand has developed the environmental education learning projects as follows.

1. The Environmental Education Network GLOBE-STEM

GLOBE Thailand has initiated this program by collaborating with 7 universities to promote local Environmental Education. Learning approaches should be scientific and systematic as suggested in the STEM Education protocol. The collaboration has also involved various stakeholders including students, teachers, scientists, and local communities. At present, there are 100 schools joining the GLOBE-STEM program. The activity details are the following.

1.1. Mae Fah Luang University (MFU)


MFU conducted 2 projects;

- a) The Impact of climate change on rice planting research in Chiang Rai Province Project.

The workshop training was on June 26, 2014, at School of Science, Mae Fah Luang University. Fifteen participants from 5 schools attended the workshop. The objectives were to promote student learning using GLOBE protocols and encourage students to carry out soil research.

- b) Developing Earth System Science in STEM Education Project. The objective was to promote student to do Environmental STEM education research. There were 15 participants from 5 schools in this project.




GLOBE_MFU

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 > โครงการวิจัยเปรียบเทียบผลของสภาวะแวดล้อมต่อการปลูกข้าวไร่ จ.เชียงราย

โครงการวิจัยเปรียบเทียบผลของสภาวะแวดล้อมต่อการปลูกข้าวไร่ จ.เชียงราย
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 สนับสนุนโดย สำนักวิทยาศาสตร์ มหาวิทยาลัยแม่ฟ้าหลวง และสถาบันส่งเสริมการสอนวิทยาศาสตร์และเทคโนโลยี (สสวท)
 ระยะเวลาโครงการ มิถุนายน 2557 – ธันวาคม 2557
หลักการและเหตุผล
 ตามที่ สสวท. มีแผนในการพัฒนาศักยภาพการคิดและการเรียนรู้สิ่งแวดล้อมของนักเรียน โดยบูรณาการวิทยาศาสตร์ เทคโนโลยี กระบวนการทางวิศวกรรมศาสตร์ และคณิตศาสตร์ ในรูปแบบสะเต็มศึกษา (STEM Education) ผ่านการทำงานวิจัยระดับนักเรียนให้มีประสิทธิภาพยิ่งขึ้นต่อไปอย่างยั่งยืน
 มหาวิทยาลัยแม่ฟ้าหลวง สำนักวิทยาศาสตร์ ได้ตระหนักถึงความสำคัญและเล็งเห็นความสำคัญของโรงเรียนและเยาวชนซึ่งเป็นผู้ที่มีบทบาทสำคัญในการจัดการสิ่งแวดล้อมในอนาคต จึงร่วมเป็นมหาวิทยาลัยเครือข่ายในการจัดทำโครงการส่งเสริมการเรียนรู้วิทยาศาสตร์โลกทั้งระบบและการทำงานวิจัยด้านสิ่งแวดล้อมในท้องถิ่นของนักเรียน ในปี 2557 นั้น ดังนั้น ในปีงบประมาณ 2557 นี้ มหาวิทยาลัยจึงขอคำเงินโครงการวิจัยเปรียบเทียบผลของสภาวะแวดล้อมต่อการปลูกข้าวไร่ จ.เชียงราย เพื่อให้ให้นักเรียนและครูในโรงเรียนระดับมัธยมศึกษามีความรู้และความเข้าใจ ในกระบวนการศึกษารายทางวิทยาศาสตร์ร่วมกับการใช้คณิตศาสตร์และเทคโนโลยีสารสนเทศ ตลอดจนวิธีการศึกษาทางสิ่งแวดล้อมของ GLOBE เพื่อให้สามารถเชื่อมโยงและเปรียบเทียบปัจจัยทางสิ่งแวดล้อมที่เกี่ยวข้องกับการปลูกข้าวไร่ในระยะยาว และเข้าใจสภาพปัญหาในท้องถิ่นเพื่อนำไปสู่การปรับปรุงเพื่อการอนุรักษ์พันธุ์ข้าวไร่ในท้องถิ่น
วัตถุประสงค์
 1. เพื่อสร้างเครือข่ายความร่วมมือระหว่าง สสวท. มหาวิทยาลัยและโรงเรียนในการในการวิจัยวิทยาศาสตร์โลกทั้งระบบในระดับท้องถิ่น
 2. เพื่อส่งเสริมกระบวนการเรียนรู้และสร้างความเข้มแข็ง โดยบูรณาการวิทยาศาสตร์ เทคโนโลยี กระบวนการทางวิศวกรรมศาสตร์ และคณิตศาสตร์ ในรูปแบบสะเต็มศึกษา (STEM Education) ในการวิจัยของนักเรียน โดยใช้ข้าวไร่เป็นกรณีศึกษา

1.2. Srinakharinwirot University (SWU)

SWU conducted 2 projects;

1. A workshop on developing research idea, using Geo-informatics technology, and applying knowledge in implementing research on climate and environment was conducted on July 4, 2014 at Ongkarak Campus. There were 24 participants from 6 schools. The workshop encouraged students to use Geo-informatics technology to improve their research on climate and environment.

2. A Training Earth System Science in STEM Education Project was held with the aim to promote learning in Environmental STEM Education. Thirty-four participants from 18 schools attended the training

1.3. Kasetsart University Kamphaeng Saen Campus (KU)

KU conducted a conference and workshop on soil science research under the STEM Education on April 9, 2014, at the Faculty of Agriculture, KU Kamphaeng Saen Campus. Twenty participants from 12 schools in the central area of Thailand (Nakhon Pathom, Kanchanaburi, Suphanburi, Ratchaburi, Singburi and Chainat province) attended the workshop.



1.4. Burapha University (BUU)

BUU organized a GLOBE teacher workshop following STEM Education during July 20-21, 2014 at the Faculty of Science, Burapha University. There were 33 participants from 23 schools attending. Another project was “Developing student research on Climate Change under STEM Education” with 12 researches from 12 schools.



1.5. Loei Rajabhat University (LRU)

LRU promoted the STEM Education by conducting a workshop and organizing student research presentations as part of the Earth System Science program. These activities were held from March 27-28, 2014, at Loei Rajabhat University. There were 48 participants from 25 schools attending. The objectives of these activities were to promote student learning using GLOBE protocols, to create simple scientific tools for environment research following GLOBE STEM, and to carry out scientific research on the concept of Earth System Science (ESS). Another project was “Developing Earth System Science research from the network student in year 2014” with 10 researches from 7 schools participating.



1.6. Walailak University (WU)

WU conducted two training workshops in order to provide instruction on the use of STEM Education to students and teachers.



- **Happy Coral Project** aimed to promote the research on coral restoration under climate change. This activity was held on May 24, 2014, at Koh Hae, Phuket Province, and again on June 28, 2014 at Koh Samui, Suratthani Province, with a total of 75 participants from 9 schools attending
- **Climate change study** aimed to emphasize the study on climate change following STEM Education. The activity required students to design constructions for larval clam attachments in Ao Baan Don. This activity was held on July 23, 2014 at Suratpittaya School, Surat Thani Province with participants from 10 schools.



1.7. Thaksin University (TSU)

TSU set up a workshop on ESS STEM from May 26-28, 2014, at Thaksin University, Phatthalung Campus. There were 14 participants from 14 schools attending. The objectives of this workshop were to promote student learning using GLOBE protocols and carry out ESS student research in order to understand and search for solutions to local environmental problems.



2. GLOBE-CloudSat STEM Teacher Training Workshop

IPST has collaborated with Walailak University and NASA in organizing a workshop for the learning of cloud, CloudSat satellite images, weather data collecting, and data entry to CEN website for students and teachers to use this knowledge in conducting their research. Dr. Todd Ellis, Director of CloudSat Education and Outreach program from NASA gave a lecture via the video conference from the USA on February 10-11, 2014 and was broadcasted at IPST Office with 23 participants from 12 schools attending the workshop. As

the result, 12 researches on atmospheric study was initiated by workshop participants in their communities.



3. The ESS Workshop for Enrichment Science Classroom

The workshop was held from April 3-5, 2014 at Ingarn Resort, Nakhonnayok Province. There were experts from university network and 111 participants from 111 schools attending the Enrichment Science Classroom.



4. The Thailand GLOBE Student Research Competition

The GLOBE Thailand arranged a student research competition for schools participating in GLOBE Network. The competition was held from March 24-25, 2014 with the objective to select outstanding student research projects that applied GLOBE STEM to solve problems and learn about their local environments. The preliminary screening selected 15 projects to advance into the 2nd round. The results were as follows.

- The first prize was awarded to the research from Plutaluangwittaya School, Chonburi Province, under to topic of **Abundance dominant phytoplankton relationship with seawater quality at Samaesan Cape, Sattahip District, Chonburi Province.**
- The second prize was awarded to Thatoomprachasermwit School, Surin Province. The research was about the evaluation of water quality using bio-indicators. **(Impact of Anthropogenic Activities on zooplankton diversity and water quality in Moon river, Thatum District, Surin Province, Thailand)**

- The third prize was awarded to Triamudomsuksa School, Bangkok. Their research was entitled **Impacts of environmental factors on the development of Terminalia catappa Linn leaves coloration.**
- The 1st consolation prize was awarded to the research from Donchanwittayakom School whose study originating from the questions: Can Beauveria bassiana Fungus Solution be used as House Fly Insecticide and What is the Suitable Conditions?
- The 2nd consolation prize was awarded to Krachaengwittaya School whose study was about the **Treatment of device dyeing wastewater by photocatalyst with the absorbent.**
- The best Oral Presentation was awarded to students from Anuban Lampang (Khelangrat-Anusorn) School who conducted research on soil entitled **Comparison of the soil moisture levels around Stone Dam, Earthen dam and Undammed areas at Wat Monphayachae, Lampang, Thailand.**



5. Girls in Environmental STEM Education Project

The GLOBE Thailand in collaboration with Intel Microelectronics (Thailand) Ltd., launched the first Girls in Environmental STEM Education Project with 37 students and 17 teachers from 12 schools participating in this project. The objectives were to inspire girls to learn science following STEM Education and form a team to study environmental problems in their communities. Students were encouraged to learn and use GLOBE protocol in planning and working on research based on their interests. In addition, a conference for students to exchange information and improve their learning ability using STEM was also organized.

6. The Thailand GLOBE Learning Expedition and GLOBE Thailand – India Students Exchange

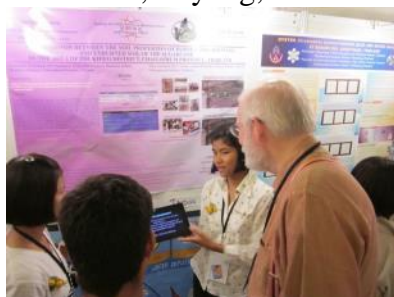
The GLOBE Thailand selected student research projects to present in the GLE 2014 in New Delhi, India. Forty-two students, teachers from 13 schools, 3 scientists from 2 universities, 3 educators from IPST and 1 GLOBE Alumni attended the conference from August 3-8, 2014.

All student research projects have been selected from schools nationwide. The awarded best project will be financially supported by IPST to present their work at the GLE 2014. The funding only covers the expense for 1 teacher and 2 students. This year's best prize has been given to students from Plutaluangwittaya School, Chonburi Province, whose research topic was the **Abundance dominant phytoplankton relationship with seawater quality at Samaesan Cape, Sattahip District, Chonburi Province**. In addition, other research topics were as follows:

- Impact of Anthropogenic Activities on zooplankton diversity and water quality in Moon river, Thatum District, Surin Province, Thailand from Thatoomprachasermwit School
- Impacts of environmental factors on the development of *Terminalia catappa* Linn leaves coloration from Triamudomsuksa School
- Can *Beauveria bassiana* Fungus Solution be used as House Fly Insecticide and What is the Suitable Conditions? from Donchanwittayakom School
- Treatment of device dyeing wastewater by photocatalyst with the absorbent from Krachaengwittaya School
- Comparison of the soil moisture levels around Stone Dam, Earthen dam and Undammed areas at Wat Monphayachae, Lampang, Thailand from Anuban Lampang (Khelangrat-Anusorn) School
- A comparison between the soil properties of burned soil (Biomass) and unburned soil of the sugarcane in the area of Phukhiew District, Chaiyaphum Province, Thailand from Phukhiew School
- Environmental factors affecting on the survival of *Paederus* sp. from Princess's Chulabhorn college Nakhon Si Thammarat
- Identification and investigation of the efficiency method for *Nepenthes* propagation in Phanomsarakham District, Chachoengsao, Thailand from Phanomsarakham "Phanom Adun Witthaya" School
- Oyster (*Crassostrea belcheri*) growth rate and water qualities at Bandon Bay, Suratthani, Thailand from Paphayomphittayakom School
- The relationship between soils properties and natural vegetation at Nong Bo area, Borabue District, Maha Sarakham Province, Thailand from Borabue Wittayakhan

School

- The study of the Ping River's Water quality at Scorpion tail river cruise (Hang Mang Pong), Chiang Mai, Thailand from Dara Academy
- A Study of Acid Rain Affecting the tree Leaves in Fruit Garden at Moo 7, Tambol Tubma, Amphur Muang, Rayong compare to Moo 4, Tambol Nongtaphan, Amphur Bankai, Rayong, Thailand



7. The GLOBE Asia-Pacific Regional Meeting 2014

Acting assistant to the president of IPST and academic specialist attended the GLOBE Asia-Pacific Regional Meeting 2014 in India from February 19-21, 2014. 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, 2 representatives from Thailand, Assoc. Prof. Krisanadej Jaroensutasinee and Assoc. Prof. Mullica Jaroensutasinee, were nominated to be the Master Trainers in Train-the-Trainer Workshop in Taiwan.



8. Hawaii-Thailand – Lao PDR STEM Education Project

IPST in collaboration with Office of Naval Research (ONR) and the U.S. Embassy in Thailand, held a project to try out the learning activity about renewable energy developed by the Maui Economic Development Board (MEDB). Participants included students and teachers from 4 schools in Thailand, 1 school in Lao PDR, and 3 schools in Hawaii, USA. Students learned about the renewable energy following STEM Education. Students also had

an opportunity to present their work and exchange knowledge regarding the renewable energy on April 2, 2014. Furthermore, Mr. W. Patrick Murphy, Deputy Chief of Mission U.S. Embassy to Thailand, kindly attended as the chairman of the conference.



9. Thai Tap Junior Water Prize 2014

IPST and TTW Public Company Limited held the Thai Tap Junior Water Prize 2014 with the objectives to encourage students to learn about, care for, and conserve water resources. Students



should be able to create innovation for water conservation. There were 122 projects submitted. The winner was the research on Residue wastewater from production of raw rubber sheet into GBC plastic by students from Suratpittaya School. The winning team was sponsored to attend the Stockholm Junior Water Prize 2014 in Sweden from August 30 to September 5, 2014. Their research project received the Diploma of Excellence. H.R.H. Crown Princess Victoria of Sweden presented the award at a ceremony during the World Water Week in Stockholm.

10. The Revision and Improvement of ESS curriculum and other supplements

IPST conducted a project to review and improve the ESS curriculum and other supplements to the international standard. The content increasingly emphasized the analyses and problem solving skills by providing lesson plans, exercises and tests corresponding to ESS curriculum for the Grade 4-6 and Grade 7-9. These additional contents should be able to increase the effectiveness and quality in environmental learning of students using a scientific system. In addition, ESS student book and teacher guide for the Grade 4-6 and



Grade 7-9 have been translated into English version and implemented in the ESS Curriculum in Thailand.

11. The Development of ESS e-Book for students and teachers in the Grade 4-6 and Grade 7-9

IPST has developed the ESS e-Book for students and teachers in the Grade 4-6 and Grade 7-9. The ESS e-Book will serve as a new learning technique for students and teachers to learn and understand the importance of ESS. This type of media can be distributed to wider groups of people in shorter amount of time.



12. The continuing project to train monks on soil and water conservation using science and technology

IPST collaborated with the Institute for the Study of Natural Resources and Environmental Management, Mae Fah Luang University, held a conference on soil and water conservation for monks from Dharma Schools in Chiang Rai, Phayao, and Lampang Provinces. The conference was on July 4-8, 2014, at Mae Fah Luang University and Highland Development Learning Center in Doi Mae Salong, Chiang Rai Province with the objective to train monks to realize and understand the concept of soil and water conservation.