LAB
Learning Across Borders

2019 LAB Theme

WATER

THE SOURCE OF LIFE

For this year's LAB annual theme, we have chosen something that is so common you use it every day: **water**. Learning Across Borders brings students and teachers together from various countries with different and distinct ecosystems to think, present, and discuss environmental issues. But regardless of whether you are from a tropical island surrounded by ocean or a country that in winter becomes frozen with ice, water is always of utmost importance. But water is also a scarce resource and human activity has led to more complex relationships with water. Throughout the world, there are many examples of humans overfishing, commercial farming redirecting water sources for irrigation, and pollution. If water gets too dirty, it will harm plants, animals, the overall environment, and us. So it's important for us to understand deeply the amazing properties and relationships between us, the world, and water. **Water is not only necessary for humans to live; it is essential for all of life.**

This year, our Global Finals will be held in Siem Reap, Cambodia, a city near Tonle Sap – the largest freshwater lake in Southeast Asia during the "wet season". Following the heavy rains, Tonle Sap can expand to reach the cities of Phnom Penh and Angkor Wat. It is a vital resource to the local community, providing half of the water for local crops, fish that feed much of the country, and the base for an entire community of floating villages. At the Global Finals, we will not only be exploring the concept of water through your projects but also by observing the practices of those who live in or around Tonle Sap.

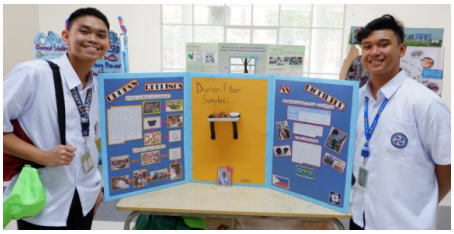
So with the Global Finals in mind, let's get started! To help demonstrate the variety of projects that are possible with this theme, here are three different project examples taken from past LAB projects:

Team A: Our project came as a result of two unrelated observations: the pond at our school was becoming increasingly dirty, harming the fish inside and the husk of one of the most popular tropical fruits in our country littered the roadside. We began to experiment with these durian peelings to find an alternative use for this constantly thrown-away material. We soon realized that perhaps these peelings could, in fact, help to address the problem of our school's dirty pond. As we dried the husk and started experimenting, our hypothesis became more conclusive and the results showed we were correct. Although more testing is needed, we can show that durian peelings can indeed improve water quality!

Team B: My partner and I are from Southeast Asia and live near a river that used to have large mangrove forests. Mangrove forests are almost like small islands that are formed by mangroves trees that grow densely together in shallow, brackish water. Mangrove forests have been gradually disappearing and we wanted to know whether this would cause problems in the future. We met with local scientists who told us that as mangrove forests disappear, the river ecosystem and wildlife will be negatively affected. We hope to meet with fishermen from a nearby village and ask if they have seen any changes. We also plan on conducting experiments with water taken from different sections of the river to understand how mangroves grow in the sections of the river near human villages and the areas farther away.

Team C: In Hawaii, a recent law was passed that banned the use of certain sunscreens because of their negative effect on local corals. They recommended that people use sunscreen that contains a different chemical compound – zinc oxide. After reviewing the literature on the relationship between sunscreens and coral bleaching, I found that there was a definitive study showing the negative effect of oxybenzone on corals but none on zinc oxide. I designed an experiment where I exposed corals to either seawater with oxybenzone, seawater with zinc oxide, or plain seawater. I found no difference between the control tank and the tank with zinc oxide, even when the concentration of zinc oxide was increased by a concentration of 10x. It appears that zinc oxide does not have a negative effect on corals, making me more confident that the law in Hawaii will help to negate the problem of coral bleaching.

For more information on the projects below, please visit our website!



Project Title: 'Durian Peelings As Biofilter'
Students: Mohammad Bin Abdulaziz Usman, Jr and Mark Chiron Cortez

Project Title: 'The study of the relationship that affects the roles of rice field crab and humans in the rice field'
Students: Sirapop Tangvorakasem and Payramin Lerdpong

Each of these three projects are on very different topics and take different methodologies to understand their topic. But what makes each of them successful is their attempt to move beyond information that can be found in books or online and access the wealth of information around them. This can be done by doing your own experiments or meeting with local experts or with the people directly involved with your topic. So much can be learned from the people around you.

Now that you know the theme for this year, it's time to start! When approaching a topic this broad, it's always good to start with yourself. What are issues that you're interested in? What are you confused by? What do you see around you? Choose a topic that you're interested in and want to learn more about. Then, after conducting basic background research, go outdoors! Meet with local scientists, people in your community who know about the issue, and gain as much knowledge as you can. Conduct your own experiments and discover information on your own. The important thing is that you take a critical approach and use primary research methods in approaching and addressing your research project. Have fun learning about the world around you and the role of water. If you or your teacher have questions, please consult the LAB Guidebook and Rule Book. We look forward to seeing all of your projects!