

Executive Summary

In February 2014, three U.S. students and their teacher from Monona Grove High School, in Wisconsin, embarked on a joint expedition where they met up with eleven Chilean students and five teachers in a scientific and cultural exchange. The Chilean students were winners of an Antarctica Science Fair competition called, “Feria Antartica Escolar”, and they shared their projects with the U.S. team. The U.S. students brought a science project of their own to share with the Chileans. The project is called, “IceCube”, and focuses on neutrino detection. The evaluation shows that all Joint Antarctic School Expedition (JASE) participants benefitted greatly from the exchange of ideas and learning that occurred through the sharing of these projects. The U.S. students who were immersed into different cultural experiences in Punta Arenas, Chile rated their experiences as highly valuable, and they all came away motivated to pursue additional science knowledge through STEM careers and research, possibly in the Polar Regions.

There were several goals of the project, and all were met to some extent. While the group did not make it to Antarctica due to a combination of windy weather and illness, the experience allowed them to work in the Chilean National Antarctic Institute (Instituto Antartico Chileno, or INACH) laboratories alongside scientists, learn about the geology of the area, and visit penguins at Isla Magdalena. The teams developed cultural understanding and built relationships despite some language challenges. Several of the many valuable activities that were completed during the project were: use of the PolarTREC – Teachers and Researchers Exploring and Collaborating (PolarTREC) website where JASE team members regularly contributed to an online journal; and the visit to the INACH lab in Punta Arenas to participate side by side with scientists doing real world research regarding the protectant nature of plant bacteria. Participants also mentioned the welcoming attitude of the Chilean hosts that set the U.S. team at ease; the proximity of the students to their Chilean peers who stayed at the same hostel in Punta Arenas, thus enabling the students to get to know one another and develop friendships; and flexibility with moving to Plan B when the trip to Antarctica was cancelled. As reflected in their journal entries, the disappointment they felt did not overshadow their enthusiasm for the trip, as they went on to explore the beauty of Patagonia, the wildlife, birds, rock formations created by plate tectonics, and more. In addition to science knowledge, the U.S. team explored area and expanded their historical and cultural knowledge.

Students learned how to navigate in the public eye, through TV and newspaper interviews, through the website journaling, and while presenting about the project to different groups, ranging from an 8th grade class at an American school in Chile, at the U.S. Embassy, or during a live webinar event. All of these experiences resulted in the students growing in scientific knowledge, in cultural connections, and in confidence.

There were several key factors that contributed to the success of the expedition. First, the pre-expedition preparation that had occurred, including weekly meetings helped the group develop into a cohesive team. Having the IceCube project to share with the Chileans was extremely

important, since the Chilean student teams had their science projects to present. Teachers and students from the U.S. team expressed their belief that sharing their project with the Chileans was critically important to show that the U.S. team was there to contribute meaningful science and not just tourists in Chile.

Another key factor that contributed to the success of JASE was that the mentor teacher, Juan Botella, is fluent in both Spanish and English and helped the teams learn from one another. While two of the three U.S. students could communicate a certain amount in Spanish, the sometimes challenging environments of a science lab and scientific concepts required assistance to overcome language issues.

The JASE teams acknowledge it takes an enormous amount of planning, collaboration, coordinating with scientists and researchers in Chile and at base stations in Antarctica, to put together an itinerary for an international joint expedition for high school students. The collaboration between the National Science Foundation (NSF) Division of Polar Programs, the Arctic Research Consortium of the U.S. (ARCUS), and ARCUS' PolarTREC staff all provided support to turn the idea of an expedition into a reality. The two U.S. teachers had prior Antarctica experience through PolarTREC, and each acknowledged how incredibly useful those past experiences had been to the success of JASE. The logistical assistance and hospitality of the Chilean hosts, and the sponsorship of the INACH that encourages high school students to pursue Antarctica research, all helped to create an experience upon which the U.S. students can build as they develop their plans for careers in science and in research.