

Taking The Ice Into The Classroom

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This past year as part of the PolarTREC project I was a middle school science teacher who partnered with the UW-Madison AWS group. PolarTREC (Teachers and Researchers Exploring and Collaborating in the Arctic and Antarctic) is a program of the Arctic Research Consortium of the United States (ARCUS), funded by the National Science Foundation (NSF) in which K-12 teachers participate in polar research, working closely with scientists as a pathway to improving science education.

PolarTREC is one of a number of research experiences for teachers (RETs) which partner classroom teachers with researchers. Some of these RETs place the teacher in the field but others may work in the “lab”. In my experience these partnerships greatly enhance teacher understanding of science content and process and allows the teacher(s) to bring real science into the classroom producing more engaged students. In addition the impacts of a teacher’s involvement expand outside of the classroom, exciting and encouraging other teachers and into informing the general public. RETs can be an important part of a research project’s outreach.

From this teacher’s perspective an effective RET should have a number of qualities; these can be grouped into pre-deployment, deployment and post-deployment.

Prior to deployment there should be contact between the researchers and the teacher. This should be more than just a few emails. In our case, I was able to travel to Madison to meet the AWS/AMRC group; see their equipment, their facilities, receive some explanation of the project and the field season, plus discussing my role in the program. The AWS group sent my classes pictures of themselves and short bios, these were posted in the classroom. Even during the last week of school, students were still going over to look at the pictures and read the bios. Just prior to our deployment, Shelley traveled to my school in Texas and spent two days talking to all of the students about Antarctica and her research. This allowed the students to have a more personal connection to the group when I was reporting back to them from the Ice.

During deployment, in my opinion and experience there are two somewhat dichotomous roles for the teacher. First the teacher needs to be part of the field team and have specific tasks which help the team. However, it is important for the teacher to have time to communicate with their students and others, plus it is advantageous if time can be given for the teacher to visit with other research teams. Besides just allowing the teacher to increase their knowledge beyond their specific research project, this can provide an opportunity to make broader connections and see the “bigger picture” of research in Antarctica. George and the others introduced me to a number of researchers who made themselves available to me to discuss their specific project, both formally and informally. Flexibility is important for both the teacher and the researchers as all situations are different. To increase outreach potential, PolarTREC has a very well managed website

and has built in specific outreach projects for the teacher. I posted daily pictures and journal reports and maintained a blog with many students and the general public from around the country. George and I also hosted a live webcast/webinar from McMurdo. For the web based part of the outreach to be most effective it should be as interactive as possible, this of course can take a large amount of the teacher's time. Although I spent many hours corresponding back and forth with numerous classrooms this two way communication developed an interest in many students.

Post-deployment-

For a RET to reach its full potential the relationship should not be over after the field season. It is beneficial to maintain the connection between the teacher and the science team. Generally though, it is up to the teacher and the scientists to maintain and develop this contact and usually is not part of the formal RET. This can be difficult because of time constraints and monetary realities. The AWS group continues to be a resource for my students and me. Being invited to participate in meetings such as these certainly enhances the experience for the teacher, and hopefully for the researchers. Additional possibilities for future cooperation include; researchers helping students on research assignments, teacher and researchers developing lessons together based on the research project, and co-authored papers for the science education community.

In conclusion, science teachers and students benefit immensely from the knowledge and experiences gained from a teacher participating in research experiences, such as my participation with the UW-Madison AWS group. The benefits include increasing the teacher's content knowledge but, possibly more important, students becoming excited about science (one of the great challenges of a middle school teacher) and students realizing that science is done by real people. This excitement comes, at least partly, from bringing real science from The Ice into the classroom and with the students being associated with the researchers and teacher(s) involved. The enthusiasm and participation that resulted from my participation extended well beyond my own classes. Students and teachers from many classrooms around the country became involved in Antarctic science by following my PolarTREC on-line journals, asking questions of myself and the researchers and by participating in a live webinar from McMurdo. If scientists chose to bring a teacher onboard, flexibility coupled with specific planning can make the partnership most successful.