



JOIDES Resolution Education Officers Three Year Review

REVISED: November 20, 2012

Deep Earth Academy (DEA) is the education department of the Integrated Ocean Drilling Program (IODP) in the United States. It hires educators to sail aboard the *JOIDES Resolution* as Education Officers for almost every expedition. Deep Earth Academy relies on these individuals to conduct and coordinate all educational and outreach activities related to the expedition while on board. Each educator uses www.joidesresolution.org as a vehicle for communications to students, educators, families and the general public. He/she also coordinates a schedule of live video broadcasts from the ship, using Skype. Educators are selected based on nationwide searches and application reviews by program and expedition staff, with attention paid to the particular topics and partners of a given expedition.

After three years and 14 expeditions with Education Officers on board, Deep Earth Academy felt it was time for an overall review of this program. For this review, Deep Earth Academy sent questionnaires to all of the past Education Officers and held two focus groups on the phone to discuss the questions. This report is a summary of these responses, from 11 Education Officers. In addition, data were collected from co-chief scientists and staff scientists of the expeditions on which an Education Officer was placed. This data will be available in a separate document.

This chart shows the Education Officers on every expedition on which there was one (with the exception of the first PEAT expedition, on which program staff sailed).

Expedition	Education Officer	Grade Level
323: Bering Sea	Doug LaVigne	High school
324: Shatsky Rise	Naseer Idrisi	University
317: Canterbury Basin	Julie Pollard	Middle school
327: Juan de Fuca	Jackie Kane	High school
329: South Pacific Gyre	Joe Monaco	High school
330: Louisville Seamount	Kevin Kurtz/Lisa Strong	Informal/videographer
334: CRISP A	Jenny Saltzman	University
335: Superfast Spreading Rate	Sarah Saunders	Ocean Leadership staff
336: Mid-Atlantic Microbiology	Jennifer Magnusson	Elementary
339: Mediterranean Outflow	Helder Pereira	High school
340: Lesser Antilles	Teresa Greely	University

The education officers were universally enthusiastic in their response to how this experience has affected them personally and changed their lives. On a surface level, most have gone on to give a number of presentations and workshops, sharing their stories with colleagues. Going deeper, many felt that the experience gave them renewed confidence and additional skills. Almost everyone mentioned gaining a new perspective on the actual process of real science and an appreciation of the tremendous efforts required to do big, extreme science like that done on the JR. If they had been involved in science before, they felt re-energized. Several said they learned to appreciate the tremendous value and power of social media as a learning tool and have since incorporated these methods into their own teaching back in the classroom or informal learning settings. One even mentioned that the model of Skype conferences from sea will be immediately used at her university and in starting a whole new program there. Some representative quotes are below:

More than ever my philosophy in education includes using hands-on and inquiry activities to help my students in their quest of understanding science. I had previous experiences as an educator at sea both at an international and national level, but being aboard the JR as Education Officer was the pinnacle of all of them. It was an outstanding experience thanks to all the support I got not only from the people directly involved in the expedition, but also from the Deep Earth Academy staff. – Helder Pereira, Exp 339, 2012

It has to be the best [educational experience] ever, because I learned a great deal, but did so through the life experience of actually participating in what I was learning about. – Kevin Kurtz, Exp. 330, 2010

The experience has given me a whole new appreciation for what goes into research and an awareness of the variety of careers that are available in oceanographic research. For me, the expedition is still continuing as people ask me about my experience and what life is like being out on the ocean for such an extended period of time. – Joe Monaco, Exp 329, 2010

The experience as Education Officer on the JR changed me at the core of my existence, both subtly and dramatically. For example, I now am more independent and tackle things myself when I would have had others help me before I went on the ship. I am also more sensitive to communicating science to others and understand the communication gap between scientists and the public. My science has been impacted too. I am more eager to experiment with ideas that

haven't been tried before and realize real science takes longer and is often more complicated than is presented in school. I believe my experience has impacted my students through my attitude and because I have been able to help them expand their horizons for career opportunities and helped them see science differently. – Jackie Kane, Exp 327, 2010

In asked to describe their role on the JR, educators said they were communicators and facilitators of the story of the expedition to the shore-based public. They saw themselves as the liaison between the “real world” and what was happening on the ship, making students feel as if they were a part of the expedition. Education officers additionally saw themselves as translators of the science into everyday language that people could understand, investigative reporters, explainers of why this science is important and why they should care about it. They felt that they could de-mystify science and dispel pre-conceived notions of how science really works. They also learned to appreciate the value of what they were doing for the friends and family of crew members back home.

Education officers mentioned the experiences below as top aspects of their job:

- The chance to observe and interact with scientists from all over the world, and get to know their stories
 - Conducting live events: seeing the enthusiasm of audiences and knowing you are making a difference to K-12 students around the world
 - Making contacts that continue on to this day
 - Total immersion in the science research process; the opportunity to be an integral part of a real research cruise
 - The challenges of being in an extreme environment
 - Cooperation and comradeship of everyone on board
 - Gaining pedagogical experience using on-line methods
 - Sharing the discovery of something new each time a core came on board
 - Being able to use creativity in on-line media to engage the public
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The videoconference interactions were such a unique and rewarding experience, and were the most memorable part of my experience as an education officer. I haven't been out to sea with any other organizations, but I don't think any other experiences offer the depth and extent of contact with classrooms on shore.

The positive impact on the students I reached during my expedition could plainly be seen in their faces and heard in their questions and comments during our videoconferences. These students were excited to be talking with staff and scientists on board a working research vessel that was doing such cool research at the time. Teachers reported that students had a lot of fun preparing

for and participating in the live interaction, and they were grateful for the opportunity. I was very happy to be able to organize and facilitate this experience for so many students, teachers and other groups while I was onboard. – Jennifer Magnusson, Exp 336, 2011

I invariably bring my experiences to every class I teach. Sometimes in the direct context of where the information in the text book/video/website comes from. Sometimes in my conversations about my experience of “doing” science. I think my students (and ones that I interact with from other teacher’s classes) enjoy hearing about my journey and the connection to the science improves my ability to sell them on the ideas. I have lived the process and can show them what I have learned directly. – Doug LaVigne, Exp 323, 2009

As with anyone on a long expedition, the Education Officers experienced challenges as well. These were things they listed as their greatest challenges, though all mentioned that these were not insurmountable and were, in fact, often met after the first couple of weeks of the cruise:

- Balancing their own schedule and fitting into scientists’ schedules
- Prioritizing their time
- Staying focused
- Keeping up with time zones for scheduling
- Coordinating with large numbers of educators for the video broadcast schedule
- Social media new to several educators; they had a steep learning curve the first couple of weeks
- Technological challenges with internet or web site
- Not having someone else to handle the camera during video broadcasts (i.e., doing it alone)
- Engaging HBCUs (one EO only)
- Outreach efforts with media – took a lot longer than expected (one EO only)
- Meat-heavy food (one EO only)
- Dealing with an inexperienced staff scientist (one EO only)
- Homesickness after 5-6 weeks

In terms of the preparation that Deep Earth Academy gave them, for the most part, they all agreed that they felt as prepared as could be, given that they couldn’t actually get on the ship prior to their expedition.

The before expedition visit to Ocean Leadership and training on web-based resources was very helpful, I think Deep Earth Academy did a great job in prepping, and during the expedition communication was also excellent. – Naseer Idrisi, Exp 324, 2009

Additional training Education Officers would have liked:

- A list of pre-expedition training materials to read and watch
- Connecting with prior Education Officers; maybe even have a prior Ed Officer at a port call
- Read previous education plans
- Multi-media resources easily accessible on the ship's Education computer
- A little more experience with video editing (one EO only)

Deep Earth Academy asked the Education Officers if they were comfortable with the balance between lab work and their outreach tasks. All but one said that they were comfortable making their own balance and happy to have the flexibility to do so. Though the amount of time available to them in the labs varied by day and week and by expedition, almost everyone expressed satisfaction with the balance they were able to create.

Education Officers had a lot of opinions regarding what qualities make an ideal Education Officer:

- Flexibility!
- Energetic, enthusiastic
- Assertiveness
- Positive attitude
- Creative/Resourceful
- Curious
- Organized
- Tech-savvy
- Patient
- Willingness to ask for help
- Independence
- Easy going and able to get along with all types of people
- Being a team player
- Interested in science and communication
- Good science background
- Good sense of humor
- Teaching experience at several grade levels

They had a number of helpful overall recommendations for the Education Officer program:

- Match Education Officers with specific scientists

- Provide more preparatory materials and information packages, written guide all in one place
- Increase post-cruise follow-up; organize meetings with all former Education Officers
- Involve educator in post-cruise meetings
- Match up with mentors from past cruises
- Don't schedule video broadcasts during the first week of the expedition
- Create some visual aids (e.g., maps, images, core liner, props, etc.) to show during broadcasts
- Get younger teachers involved early in career, to have bigger impact
- More publicity, advertising, PR, develop relationships with media outlets
- Keep up with technology, like iPad use, etc.
- Put all videos on hard drive on ship
- Per funding, always try to send two people instead of one
- Use School of Rock as training for Education Officers
- Increased internet bandwidth
- Coordinate video broadcast schedule as much as possible prior to the expedition
- Provide correlation with standards
- Make sure Ed Officer practices ahead of time
- Keep it going!

Keep doing this. It invigorates and inspires teachers. It motivates us to love our content in a way that is hard to describe. Keep us on as advocates of the program. Let us speak for you. Don't be afraid to ask for more from us. – Doug LaVigne, Exp 323, 2009

The immersive aspect of the JR experience is so valuable in promoting understanding of the deep-sea drilling process and earth sciences in general. Being involved on the ship 24/7 provides the opportunity to take the time to meet with and work with people in different disciplines and jobs that teachers would not have access to otherwise. Keep it up! This program is such a unique and valuable way to communicate the content and processes of deep earth science to audiences on shore. – Jennifer Magnusson, Exp 336, 2011

Overall, Deep Earth Academy's review of Education Officers' comments and conversations with them was a solid endorsement of the program. They were overwhelmingly positive and encouraging. These alumni of the program also provided us with some very useful feedback and suggestions for improving the overall experience, some of which is already being implemented with the current cohort of Education Officers. To address the feedback we have received, we implemented a group training in College Station, TX, so that Education Officers for the whole year can meet staff with whom they'll be sailing, and meet each other to bond and support one another throughout their expeditions. During and

after this training, we connect them with past education officers, give them contact information so they can ask questions, and send them previous education plans for reference. We have further developed our training manual so that all documents are together in one place for easy reference. We have streamlined our video sign-ups and encouraged education officers to create their schedules in advance and leave the first week free for their own learning curve and sanity. We have created a pre-expedition check-list so that education officers are sure to practice many of their tasks ahead of time. We keep an eye on the list of necessary qualities for our Ed Officers when staffing, and make an effort to balance early/middle and later career people over the course of a year. And we are constantly implementing new technologies as they become available; for example, we now use an iPad and Bluetooth headset for the video broadcasts, which has made managing the equipment much easier for our Education Officers.