

The MARE Summer Institute

Since its inception in the early 1990's, the Institute of Marine & Coastal Sciences (IMCS) at Rutgers University has been committed to offering quality education programs focused on the marine environment. The mission of our program is to bring current science research to the K-12 classroom and the broader community in a manner that utilizes effective practices in science education and promotes stewardship of our ocean resources. IMCS, together with our partners the Geraldine R Dodge Foundation, and the Jacques Cousteau National Estuarine Research Reserve have been offering the Marine Activities Resources & Education or MARE program to more than 55 schools in New Jersey, Virginia, Ohio, and Oregon, training thousands of teachers and impacting more than 10,000 students.

In 2008, we are entering a new growth phase with three key objectives:

- 1) Using student prior knowledge (ie. moving from where we know teachers/students are in content knowledge and ability to a new level of ocean awareness and literacy about the ocean environment (von Glasersfeld 1995)
- 2) Building new content/experiences for the MARE by extending and improving connections between scientists at Rutgers and the MARE students and teachers (Alberts 1991).
- 3) Aligning with new national ocean literacy standards and local interest/issues (Cava et. al. 2005)

Report Card 2008

Summer 2008 brought twenty-five educators from six schools to our Jacques Cousteau Coastal Education Center in Tuckerton, NJ. Of the six schools participating, three were new schools, including Hope Academy School in Asbury Park, Academy I School in Jersey City, and Neptune Middle School in Neptune, NJ. We focused on an array of hands-on activities from the MARE curriculum and leadership activities delivered by a talented group of educators, scientists, and storytellers and artists. Ane Carla Rovetta from the San Francisco Bay area spent the week with our MARE participants as our Artist in Residence. Ane engaged the participants in exploring native story-telling, making and painting with pigments from the marsh. Ane who is a veteran of the California MARE Summer Institute, offered at the Lawrence Hall of Science, brought a bicoastal perspective that helped link our NJ MARE educators with their west coast counterparts. We also had a Scientist in Residence, Dr. Paul Jivoff from Rider University, who worked with the educators on ocean literacy concept and Dr. Josh Kohut from Rutgers Marine Sciences and the Department of Cooperative Extension at Rutgers University.

As a new innovation in the program, we introduced a technology session with movie maker software as a compliment to an inquiry-based investigation of the marine habitat at Island Beach State Park. We engaged the educators in collaborative projects with movie maker to help build community and teach valuable skills that could be brought back to the classroom. As always, each participant left with grade-level specific curriculum packages (estimated value \$600) including guides as well as trade books, tapes, DVDs, posters and other classroom materials to compliment their new habitat specific lesson plans.

Preliminary Evaluation Results

We conducted pre and post survey to collect formative teacher satisfaction data on the MARE Summer Institute participants. Preliminary results indicate positive shifts in teacher confidence in teaching marine science themes and concepts to their students.

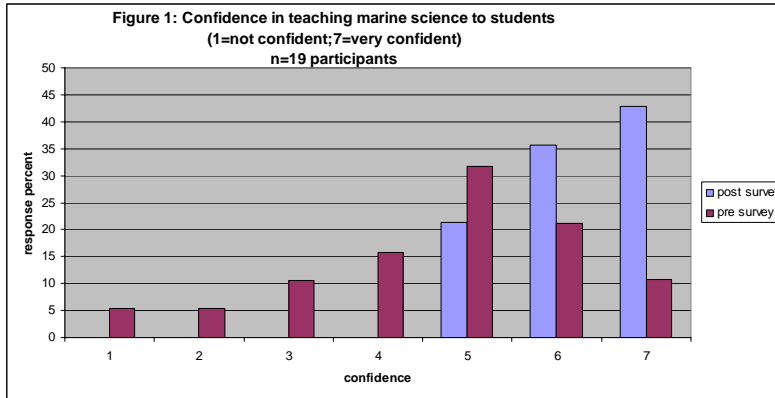
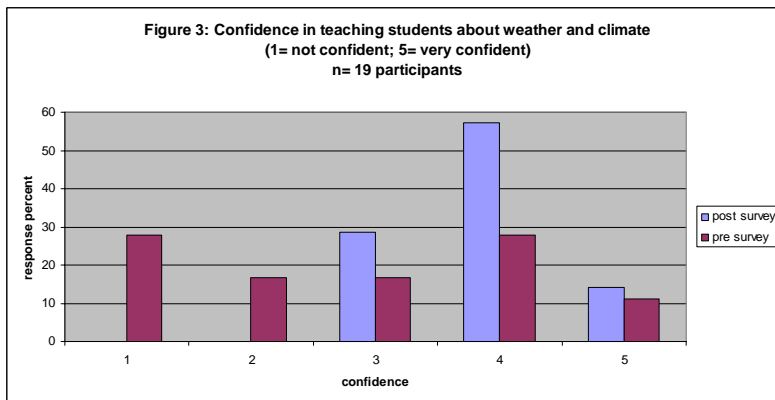
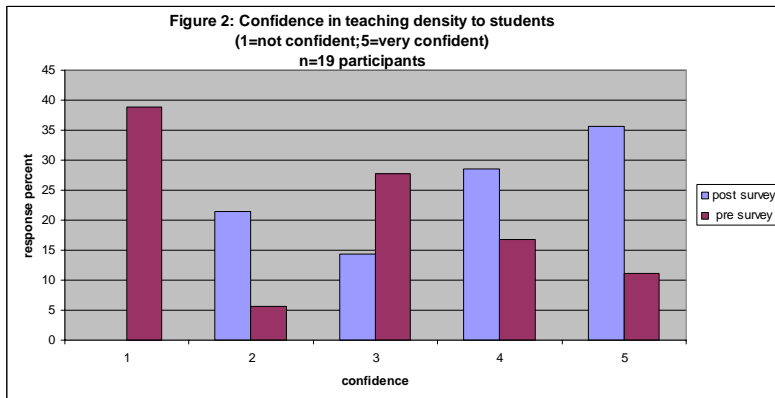


Figure 1 show overall confidence increased from pre institute results. Participants reported increased confidence in teaching core concepts such as density (figure 2) and weather and climate content (figure 3) respectively. In addition, teachers expressed typical concerns both pre and

post about funding for materials, field trips, and transportation. We have used our resources to assist the Abbott schools with these concerns to increase their comfort with the program. Ocean Weeks will occur in the spring 2009 where Rutgers University scientists will visit and assist schools.



Conclusion

An important goal of our MARE program is the enhancement of ocean literacy. The ocean affects us in countless ways with its condition intimately related to our economical wellbeing and the health of our planet. There is no doubt that much needs to be done to improve understandings of and appreciation for the oceans of our planet. Our goal is to enhance ocean literacy through the design of inquiry-based materials and professional development around ocean issues. We are investigating: (a) What are the core ideas in ocean sciences (ocean literacy principles) that our educators and students should know and how can they be used to increase scientific literacy in general? (b) How can educators use the ocean science context to teach science, technology, engineering, and math (STEM) concepts? (c) How can we develop inquiry-based curriculum materials through collaborative design teams that capitalize on the expertise of scientists, science education researchers, and educators? (d) What are the ways in which experiential professional development opportunities, that involve interaction with scientists and authentic scientific inquiry, can enhance educators' understanding of oceans sciences and their ability to incorporate ocean sciences into their curriculum?

References

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