

Sea Grant and Water Resources – Marine Science Education– 2007-2011 POW Worksheet

Situation:

The recent reports of two national commissions on the status of the oceans emphasize the important role of education in the future of the oceans. Both commissions, the PEW Oceans Commission and the United States Commission on Ocean Policy, stress that successful management of our ocean resources is dependent upon the development of a citizenry literate in marine and aquatic science.

The heightened urgency to increase marine literacy identified by the Commissions joins the on-going efforts in public schools throughout the country to significantly improve student performance in mathematics and science. This effort can benefit greatly from the utilization of marine and aquatic science as an engaging context for the teaching of core mathematics and science content. Programs like Sea Grant are well positioned to help provide the curriculum resources and teacher professional development necessary to succeed.

Assumptions:

Improving student performance in science is a priority for the state and nation's educators and communities

Engaging students in the study of the marine environment will help improve their performance in science overall

An improved understanding of the marine environment will increase decision-makers capacity to make wise, informed decisions at the local, state and national level

External Factors:

Two major external factors have helped mold this plan. First, the imminent inclusion of science in high accountability assessments in public education has heightened the need for effective science education. This focus on improving student performance in science will require significant professional development for science teachers at all grades, and will lead to an increased interest in contexts and topics that engage students. The second external factor is the recognition by the two ocean commissions that the education of students and the general public must become a high priority. The bulk of that education process will fall to extension and informal educators around the country.

Outputs/Activities	Outcomes/Impact		
	Learning Outcomes	Action Outcomes	Condition Outcomes
<p>Provide new marine education K-12 Sea Trek programs that reflect emerging national scientific issues and address prioritized education standards</p> <p>Provide marine science education programs focused on high school level teachers and students that provide exposure to marine research and encourage students to pursue marine fields in college and beyond Marine Docent and the Great Bay Coast Watch programs targeted to home-school and other under-represented audiences</p> <p>Assist teachers in measuring the improvement in student performance as a result of participation in programs</p>	<p>Participating teachers will utilize marine science to support teaching core science and other content standards - student performance in these content areas will improve</p> <p>Student and adult participants in planned programs will gain measurable increases in marine literacy</p>	<p>Participants will engage in the professional development programs provided and utilize the information gained to support teaching</p> <p>Participants will engage in the programs provided and utilize the information gained to for decision-making and increased marine literacy</p>	<p>Create and sustain effective marine and aquatic science-based educational programs for both formal K-12 audiences and informal family and adult audiences</p>
<p>Develop guides to existing curricular and program materials that identify how the marine context can be used to address core content standards</p> <p>Develop and provide convenient and effective teacher training programs held in conjunction with all boat-based and field programs utilizing both face-to-face and remote methods</p> <p>Develop new programs in partnership with schools and UNH that engage in-service and pre-service teachers directly with researchers, faculty, and graduate students</p> <p>Develop credit and non-credit marine science programs in collaboration with UNH's Leitzel Center, the Education Department, and Marine Program faculty for middle and high school teachers</p>	<p>SGWR35 - 100 K-12 teachers will adopt marine science concepts and contexts learned through Sea Grant /UNHCE programs that support teaching of core sciences and other content standards</p> <p>SGWR45 - By 2111 measurably increase the marine science literacy of 25,000 adults and children through specialist and volunteer delivered outcome-based, formal and informal education programs</p> <p>SGWR46 - 150 teachers will learn to utilize marine science concepts and contexts to support teaching core science and other content standards</p>		

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<p>Develop and provide convenient and effective teacher training programs held in conjunction with all boat-based and field programs utilizing both face-to-face and remote methods</p> <p>Develop new programs in partnership with schools and UNH that engage in-service and pre-service teachers directly with researchers, faculty, and graduate students</p> <p>Develop credit and non-credit marine science programs in collaboration with UNH's Leitzel Center, the Education Department, and Marine Program faculty for middle and high school teachers</p> <p>Take a leadership role in the revitalization of the Gulf of Maine Marine Education Association and the National Marine Education Association in pursuit of improved teaching and learning through the context of marine science</p>	<p>SGWR36 - 50 new members per year will join the Gulf of Maine Marine Education Association (GOMMEA)</p> <p>SGWR37 - GOMMEA will offer at least six professional development events per year for its membership and develop four new educational products/activities</p> <p>SGWR38 - At least 500 K-12 students will improve performance in content areas as a result of teachers incorporating marine science into their lesson plans</p> <p>SGWR39 - At least 500 marine docents, educators, students and the general public per year will utilize marine science educational resources gleaned from the updated Sea Grant/marine education web-site</p> <p>SGWR47 - 100 marine science educators and teachers per year will learn about the benefits of belonging to the Gulf of Maine Marine Education Association</p> <p>SGWR48 - 5,000 marine docents, educators, students and the general public per year will gain knowledge of a web-based site containing marine science educational activities, programs, images and research results</p>		