Geophysical Research Abstracts
Vol. 14, EGU2012-3189, 2012
EGU General Assembly 2012

Bringing Real World Underwater Science, Engineering and Technology in Tomorrow's Classroom

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What do Remotely Operated Vehicles (ROVs), Ocean Science, Engineering and Technology have in common with science education in today's classroom? They all meet the growing demand for science, technology, engineering, and mathematics (STEM) professionals in tomorrow's U.S. workforce. Engaging students in real world science experiences will help them develop skills such as critical thinking, problem solving, collaboration, communication, innovation, and creativity. These skills are crucial to building a strong, competitive workforce in an integrated global economy. Fifth grade students from St. Andrew's School of Math and Science in Charleston, SC, USA science classes were introduced to engineering and robotics by using a combination of two underwater ROVs programs from the Office of Naval Research (SeaPerch) and Marine Advanced Technology Education (MATE). Students were grouped in teams as "real scientists" to design and construct a ROV. Students selected their role from a list of engineering positions, and researched how to construct the best ROV. Students created blueprints and models of their ROV design. Scientists/engineers from various local agencies were scheduled to come and share their expertise with the students. On World Ocean Day, a presentation was planned for fifth grade students to work closely with kindergarten through fourth grade students. The purpose of the day was two-fold; it provided students the opportunity to peer teach and the opportunity to present their experiences to a wide audience. All students presented their designs and demonstrated their ROV's movement capabilities in child size pools. They also modeled how submersible pilots communicate with scientists and other researchers while operating their newly designed ROV. As a culminating event, students visited a local marine science high school class with similar ROVs and evaluated their engineering designs in a fresh water pond.