



The MATE Center's newest educational partner is the Ocean Institute, a non-profit ocean education organization that serves as a hands-on marine science lab for K-12 students. Founded in 1977 in Dana Point, California, the Ocean Institute is dedicated to ocean preservation through education.

In 2002, the institute opened the Ocean Education Center, a \$16.5 million marine education and research facility that includes an at-sea learning center, an ecology learning center, a center for technology and communication, a center for cooperative research and education, and a multi-purpose center/conference hall. The Ocean Institute even has a surf-science learning center, which focuses on the science of the surf zone and features equipment such as three-meter wave tank; an observation pool for sharks, skates, and rays; and a sand and sediments lab.

More than 100,000 students participate annually in approximately 60 educational programs that are held at the facility during the week. The curriculum draws heavily from the sciences, history, and literature and strongly emphasizes immersion-based learning. For example, students can take voyages on one of the institute's three seagoing vessels; sort through live specimens of ocean life; observe migrating whales; and collect and present scientific data. On the weekends, the institute opens its doors to the public, giving parents and children the opportunity to participate in hands-on exhibits and attend educational cruises.

"Communicating science to the public is an emerging issue of national interest," said Harry Helling, the Ocean Institute's vice president of education and research. "For example, how do you create and sustain pipelines for students to advance into science careers? And when you identify the obstacles and problems in the pipeline, how do you solve them systematically? The

MATE Center and the Ocean Institute are two organizations that understand and address these issues."

### Collaboration with the MATE Center

Currently the Center is collaborating with the Ocean Institute on two of the institute's major initiatives—ROVs and career education for high school students.

The Ocean Institute uses ROVs in Sea Floor Science, a program funded by the National Science Foundation (NSF). Exhibits in Sea Floor Science are intended to be convertible—used in both weekday student and weekend public programs. "ROVs are perfect convertible exhibits because they can accommodate a range of learning activities," Helling said. "Students and weekend visitors use ROVs to learn research applications for underwater archeology and geology and even space science."

In addition, ROVs are used in the Sea Floor Explorers course, an over night program that familiarizes middle school students with oceanography research. Students learn how to design instrumentation; use authentic research procedures and equipment; and present their findings before their peers in a scientific conference setting. "It's not only about data and engineering," said Helling. "Students learn presentation and leadership skills as well."

Helling hopes that the Ocean Institute's use of ROVs in convertible exhibits will serve as an example for science centers throughout the country. Scientists at the institute are working with the MATE Center to create ROVs that are more reliable and less expensive to build. For example, Ocean Institute staff members have studied how to implement ROV design and building curriculum at the MATE Summer Institutes for Faculty Development. "Our staff members came back from the MATE summer institutes with even better ideas on how to expand our

ROV program," Helling explained. "The Center brought us into a network of other people who are interested in ROVs and helped us to grow as technicians."

In addition to their collaboration in ROV-related programs, the Center is helping the Ocean Institute develop a sophisticated program called SeaTech that teaches technology and workplace skills by involving underrepresented high school students directly in current oceanographic projects. Helling explained, "High school students are often intimidated by labels like engineering and design, but they can perform beautifully when appropriately challenged."

"We can better engage these students using well-designed curriculum with relevant challenges, trained staff, and working equipment," Helling added. "If we give students appropriate tools and reasonable direction, they can emerge with some pretty cool solutions. They become engineers without even knowing it."

With SeaTech, the Ocean Institute will follow this same approach in providing high school students with guidance and orientation about marine science and technology careers. "SeaTech is a model for organizations trying to increase the

participation of underrepresented students in science fields," Helling said.

The Center is a technology partner to the Ocean Institute in the SeaTech endeavor. As the program is developed, the Center will advise and assist the Ocean Institute in creating training programs for teachers and students and will be a partner in launching the program, which recently completed its pilot run. "Because of the MATE Center's work with high school and college students and their interest in marine technology careers and career training, both organizations felt it was a good collaboration," said Helling.

### The Rewards of Collaboration

The collaborative effort between the Ocean Institute and the Center will reap rewards on a variety of levels. "Collaborations are highly regarded by a lot of funding entities," said Helling. "They also happen to provide the most interesting results."

The collaborative effort between the two organizations is just beginning. Helling and his colleagues at the Ocean Institute look forward to "rolling up our sleeves and tackling even bigger, more interesting projects" with the MATE Center.

### Stolt Offshore (continued from page 5)

Other challenges include safety and environmental regulations. "Deep water work by nature can bring risks to the equipment and the environment," explains DeCourt. "You have to understand the risks when you're putting subsea equipment together and sending a vessel five thousand feet down."

On-site training to help employees keep up with technology, gain additional skills, and understand safety challenges is provided on a regular basis. Multi-day classes such as hydraulics, electrical safety, or electronics are common. "We're really big on safety and we have a very active employee safety education program," DeCourt says.

Stolt Offshore has been a staunch supporter of the MATE Center's ROV competitions, usually providing funds for scholarship prizes or team travel expenses. A previous judge of the ROV competitions, DeCourt was impressed by the ingenuity of ROV contestants. He recalls students who took apart their Nintendo to use the parts to build an ROV. "It's valuable to the industry that MATE provides students with hands-on technology skills," he says. "Kids who will tear up their toys to make an ROV will become the employees that will do whatever is necessary to get the job done. Those are the people who I love to hire!"