



# Sharing Technical Skills for the **Blue** Economy

An International  
Learning Experience

by Marlene Power and Chris Batten



Figure 1: Marine Institute students in Barbados learn about habitat restoration and share their knowledge of ROV usage for ocean resource management.

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*A key component of Marine Institute's (MI) Internationalization Strategy is creating innovative globalized learning opportunities for MI students. A central mechanism supporting its students' success in their academic journey is to better prepare them to succeed in a diverse and a more interconnected globalized work environment. Through Employment and Social Development Canada's [Global Skills Opportunity \(GSO\)](#) funding, MI enhances students' global competencies, both through virtual programming and through meaningful experiential immersion in the Blue Economy.*

## **Introduction**

In October 2022, eight students (Figure 1) from MI travelled to Barbados to discuss the deployment and use of ROVs with youth in Barbados. Engineering students from Barbados Community College and Sea Cadets attached to the Barbados Coast Guard had previously assembled ROV kits provided by MI by following instructional videos as the COVID-19 pandemic made travel impossible. This trip was an opportunity for MI students to discuss the assembly process and demonstrate the operation these ROVs in water, resulting in enhanced and transferrable skills for the



Figure 2: Chris Batten from the Marine Institute speaks with Barbados Community College mechanical and electronic engineering students about ROV assembly and usage.

engineering students and Sea Cadets and expanded knowledge on how ROVs can be used for different ocean-related projects, such as habitat restoration. In turn, MI students learned about climate change impacts and mitigation efforts in Barbados as well as new contexts for the use of ocean technology.

Prior to departure, the eight students attended a series of information sessions and completed an online course on global competencies developed by MI that included cross-cultural effectiveness, safety, health, logistics, career supports, and information specific to Barbados. Under this GSO program, students received face-to-face mentorship with staff and faculty members and reviewed potential career and professional development opportunities. They participated in meetings with stakeholders

and professionals within the Blue Economy, and learned to apply practical sectoral and technical skills in an international location.

### On the Ground

During their time in Barbados, the students visited MI's partner college – Barbados Community College (BCC) – to speak with its mechanical and electronic engineering students about ROV assembly and usage (Figure 2). Videos demonstrating ROV assembly were provided to BCC to assist with assembly of ROV kits, which MI provided in 2019 along with a smart board and a 3D printer.

The students also met with the Barbados Coast Guard where they assisted young Sea Cadets (secondary and post-secondary students) to deploy an ROV that they had assembled and provide guidance on required skills for



**Figure 3: Barbados Coast Guard Sea Cadets (secondary and post-secondary students) and Marine Institute students deploy an ROV assembled by the Sea Cadets with support from Barbados Community College.**



ROV assembly and deployment (Figure 3). A number of tablets were presented to the Coast Guard to assist the Sea Cadets with further development of their technical skills.

Meetings were held at the Barbados [Coastal Zone Management Unit](#) to discuss the potential use of ROVs for coral reef protection and restoration; and with Dr. Shelly-Ann Cox of [Blue Shell Productions](#) to discuss the fisheries industry in Barbados, challenges faced by the industry, and the DigiFish project. This project uses digital

technologies and innovative data analytical methods to support the application of the ecosystem approach to fisheries in Barbados.

A visit was arranged to the [Walkers Institute for Regenerative Research, Education, and Design](#); and tours were organized of [Walkers Reserve](#), a rehabilitated quarry that has been regenerated to increase biodiversity and co-create self-sustaining systems, and of the [Folkestone Marine Reserve](#), which was established in 1981 and is the only legislated marine protected area in Barbados.



Figure 4: Barbados Community College and Marine Institute students discuss aspects of their programs and their relevance to ocean initiatives.

Under this project, MI students were encouraged to consider the impacts of global issues such as climate change and how their career paths can contribute to Canada’s role in supporting climate resilience in a globally collaborative manner.

### The Future

MI will continue to work with BCC to build the competence of students at both institutions to utilize ROVs and ocean technology in general to promote international cooperation, the technical skills of youth, and advance occupations related to the Blue Economy and the diversification of employment and economy in the region (Figure 4). The long-term objective is to explore the use of ROVs for the rehabilitation of coral reef ecosystems, fragile ecological systems that include both hard and soft corals as well as sponges, starfish, crabs, squid, octopus, sea urchins, and reef fish and which are essential to the Caribbean region. Through this project, it is hoped that students will gain a better

understanding of reef rehabilitation initiatives by surveying new and existing sites and deploying reef balls – prefabricated, artificial reef structures used to create or restore marine habitat – using ROVs. ~



Marlene Power is an international program officer with MI International. A certified project management professional, she is currently focused on the acquisition and management of partnerships, projects, and consultancies in the Caribbean and Latin America. Since joining MI

International, she has supported business development, international mobility, and quality management initiatives, and has managed projects in Asia, Africa, and Europe. Ms. Power began her career in the humanitarian sector, having worked with Doctors Without Borders for three years in the Democratic Republic of Congo, with the United Nations High Commission for Refugees in Turkey, and as a consultant with Citizenship and Immigration Canada. She has also taught English as a second language in South Korea, Japan, and Quebec. She holds a bachelor of arts (honours) in political science from St. Francis Xavier University, a master of arts in political studies (international relations) from Queen’s University, and a master of philosophy in humanities from Memorial University. She is currently pursuing an interdisciplinary PhD in business, education, and political science at Memorial University.



Chris Batten is chair of the [Remotely Operated Vehicles](#) and [Underwater Vehicles](#) programs and a laboratory demonstrator/instructor with Marine Institute’s (MI) School of Ocean Technology. He has a diploma in electronics engineering technology (computers and IT) from the College

of the North Atlantic, a bachelor of technology from MI, and a bachelor of education from Memorial University. His previous work experience includes various research and development projects through C-CORE’s centrifuge facility, Memorial University, and the Centre for Sustainable Aquatic Resources (CASD) at MI. The most notable projects are the biodegradable twine project conducted through CASD, vortex-induced vibration testing with Memorial University Engineering, and skewed rotor design at MI. Mr. Batten’s specialties include data acquisition, electronics and circuit board design and fabrication, computer-aided design and fabrication, 3D printing, CNC milling, computer networking, programming, and microcontrollers.