

Hong Kong teens dive deep to safeguard global shipping lanes

Students from Canadian International School of Hong Kong take home second place and special awards at the Conrad Challenge in Houston

A group of Grade 8 students from Canadian International School of Hong Kong (CDNIS) has made waves on the global innovation stage, returning from the Conrad Challenge Global Innovation Summit in Houston with multiple top honours. The team captured the coveted Innovation Summit Power Pitch Award and the Equinor Searching for Better Award – achievements that also earned them a sponsored educational trip to Boston, including hands-on workshops and a visit to the Massachusetts Institute of Technology (MIT).

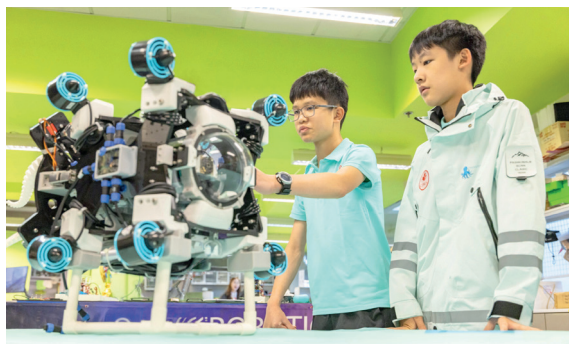
The five students, aged 13 to 14, spent months designing and building OctoScope, an autonomous underwater vehicle developed to monitor busy canals and remove debris before it can disrupt global shipping routes. The project tackles a high-stakes real-world problem: major maritime chokepoints are vulnerable to trade blockages that can paralyse trade, as seen in the 2021 grounding of the Ever Given in the Suez Canal, which triggered billions of dollars in losses and widespread supply-chain disruption.

Lucas, the team's chief technology officer, said OctoScope was engineered with flexibility and real-time responsiveness in mind. The vehicle features a modular design with interchangeable components, including sensors that monitor water conditions, sonar and onboard cameras to detect underwater obstacles, and an AI-powered processor analyses incoming data on the fly. Multi-directional thrusters allow for precise maneuvering in tight spaces, while an octopus-inspired gripper enables the robot to remove debris efficiently beneath the surface.

To bring their concept to life for judges, the team focused on showing how the technology would work in real conditions. "We wanted to make sure the system was easy to understand, even for people without a technical background," said Max, the team's chief operating officer. During the expo, the students demonstrated their prototype using a mix of live sensor data, underwater testing footage and visual simulations to clearly illustrate OctoScope's capabilities.

Beyond the technical build, the students also considered the project's long-term potential. "We aimed to design a practical and scalable solution to improve monitoring of global waterways," said Shou Jeng, the team's chief executive officer. He added, "We're not going to just stop here. The global summit provided us with an opportunity to engage with industry experts, receive professional feedback, and explore how our solution could be applied in the real world."

Commercialisation was another key focus. Chief financial officer Caden said "we identified three primary target markets, shipping companies, canal authorities and marine insurers." When judges raised concerns about market size, he pointed to strong near-term applications in major waterways, with additional uses in areas such as fisheries management and water-quality monitoring.



According to Lucas (left), the team's chief technology officer, OctoScope is a modular autonomous underwater vehicle with interchangeable sensors and an octopus-inspired gripper.



The OctoScope team with their teachers. From left: Kenneth Tang, Shou Jeng (CEO), Max (COO), Lucas (CTO), Caden (CFO), Season (CMO) and Vivian Fung with their underwater robot at Canadian International School of Hong Kong.

As finalists, the team also had the chance to exchange ideas with a team from Panama, home to one of the world's most important canals. "Discussions with the Panamanian students helped validate the importance and relevance of our solution. We will continue to refine the prototype and explore the potential for future collaboration with real-life users," said Season, the team's chief marketing officer.

The CDNIS team advanced to the global summit after winning their category at the China national stage, earning a place among just 31 finalists teams selected from thousands of entries worldwide. Team OctoScope stood out as one of the youngest groups of innovators at the competition, and their success marked the second consecutive year the school has claimed the Innovation Summit Power Pitch Award – underscoring its growing presence on the international innovation circuit.

The students were supported throughout the project by teachers Vivian Fung and Kenneth Tang, who have more than a decade of experience in the school's robotics and business programmes respectively. Their combined expertise played a pivotal role in guiding the team from concept development to international competition, continuing a track record of mentoring students for success on the global stage.



In the same makerspace, younger students regularly build their own robots as they look up to OctoScope as a role model in an environment that nurtures curiosity.



Team OctoScope at the Conrad Challenge Global Innovation Summit, recipients of the Innovation Summit Power Pitch Award and the Equinor Searching for Better Award.

At CDNIS, innovation is deeply rooted in a culture of hands-on learning. Within the school's makerspace, students are encouraged from an early age to design, build and experiment, often taking inspiration from older peers working on advanced projects such as OctoScope. This collaborative environment nurtures curiosity, confidence and problem-solving skills, equipping students to engage with real-world challenges and develop solutions during their formative years. The success of teams like OctoScope reflects a learning culture that goes beyond celebrating results, placing equal emphasis on exploration, persistence and creativity.

Hong Kong's international school sector operates in a competitive environment, attracting students from a wide range of cultural and national backgrounds. At Canadian International School, the student body represents more than 40 nationalities, reflecting the city's global character and the diverse perspectives that help shape collaborative, future-focussed learning communities.

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