

■ GOOD SCHOOLS GUIDE ■

STEM COMPETITION WINNER

PUPIL, 16, EARNS PRIZE FOR CLIMATE CHANGE RESEARCH

THS pupil Nikki Wong loves the sea, a passion that has placed her among the leading students in Hong Kong by investigating the impact of rising ocean temperatures, writes **Ben Young**

In what could be described as a beautiful irony, a pupil from The Harbour School (THS) has won a prestigious Science Technology Engineering Mathematics (STEM) competition with her research on Hong Kong's oceans and how climate change is affecting them.

Three months of research, data collection and laboratory work in THS' state-of-the-art Marine Science Centre resulted in a 50-page report that proved enough to earn Nikki Wong a coveted first-place prize at the annual Hong Kong Youth Science and Technology Innovation Competition – the largest and most popular science competition in Hong Kong with more than 4,000 applicants from over 400 schools.

"I always liked STEM subjects, but it wasn't until 9th

grade that I realised just how much I enjoyed them, and that this is what I want to do in future," says 16-year-old Wong, who also enjoys the ocean as a windsurfer and scuba diver. "As my school's Marine Science Centre offers students unique research opportunities marine science, I thought it would be interesting to enter, and went for it."

For the competition, which was organised by the Hong Kong Youth Science and Technology Innovation Centre, Wong's report demonstrated that a particularly durable species of local Hong Kong coral known as *Goniastrea aspera* is showing surprising resistance to climate change. However, the world's oceans continue to heat up at alarming rates, while 20 per cent of ocean corals have died in the past three years alone.

Wong hopes that her research may potentially help other coral communities. Unfortunately, her study also shows that if the temperature of Hong Kong's ocean waters rises by 1 or 2 degrees Celsius for 30 days – which is projected to happen in the next few years – even this hardy coral species will perish. Wong and THS hope to inspire more people to take problems like climate change more seriously, and to dedicate more effort to solving them.

"I definitely think Hong Kong students need to be doing more research in these fields, and that all students should learn at least some marine and environmental science," says Wong, who took data on her coral samples at the Marine Science Centre several times a week during her research period.

The Harbour School student Nikki Wong, 16, at the school's marine lab in Ap Lei Chau.
Photos by Xiaomi Chen



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Nikki Wong (left) and her STEM mentor, marine science specialist Maxine Cutracci.

The humble young scientist says she was “shocked” to discover she had actually won the competition.

“I was very surprised, to the point that I couldn’t stop laughing,” she says. “It was so unexpected since many of my competitors were studying advanced science with hi-tech equipment while I used a calliper, microscope, my phone for photos, and the tanks and corals in the lab.”

“I didn’t even expect to make it into the competition, so it was surprising to receive the honour. It’s good to know that [the judges] seem to be passionate about climate change.”

THS’ marine science specialist, Maxine Cutracci, who assisted Wong with her lab work, was especially proud of the young star and the affect her work will have on THS and Hong Kong’s wider community.

“The school is very proud of Nikki’s achievement, and a very positive outcome is that other students are following Nikki’s example and becoming more interested in science,” Cutracci says. “The Marine Science Centre lets students learn science and conduct research in a practical and hands-on method which engages students in a very powerful way, and hence allows us teachers to push them further with their learning.”

Still a relatively new school, THS opened 11 years ago and has grown rapidly into a leading STEM school in the city – which is considered an important barometer when it comes to preparing students for the 21st century.

“As a school that started with just seven students at its inception and now counts nearly 400 pupils, THS is growing up with its students to prepare them for a bright future,” Cutracci says.

“Every year, new STEM courses are added to the school curriculum... In the process [of working on projects], our students learn many skills that they will need in real-life situations; from planning and organising to communication for effective team work, as well as practical skills like learning programming languages like Python and JavaScript.”

As for Wong and her achievement, few people are prouder than THS’ high school principal, Dr Elizabeth Micci, a former marine biologist who joined the school in 2018. Micci followed and assisted Wong closely along her journey and was overjoyed to find out she won.

“As a teacher and a marine biologist, it was deeply



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DR ELIZABETH MICCI, PRINCIPAL, THE HARBOUR SCHOOL

rewarding to follow Nikki during her research process as she became more and more passionate about her research topic,” Micci says. “I am pleased and proud of her, not only because she won the competition, but because of the resilience, self-determination and passion she has shown in achieving her goals. These are qualities we hope to foster at THS.”

While Wong may have won one of the most coveted youth STEM prizes in Hong Kong, Micci points out that THS has seen much success in STEM-related competitions since she came on board.

For example, this year alone, a team of Grade 9 and 11 students finished third in the City University of Hong Kong’s annual Computer Science Challenge, and a team of middle school girls won “Best Presentation” at Technovation, a girls-only app invention challenge. Finally, a team of primary school students won Dr Jane Goodall’s Outstanding Roots and Shoots Project by inventing an ocean plastic sensor prototype.

“What I’ve learned about THS since joining is that it is extremely student-centred,” Micci says. “Students learn most when they are learning about things that are relevant, interesting and important to them, and we allow them to do that. Our role as THS educators is to support, facilitate, encourage and foster our students’ individual interests and passions.”



THS operates on three premises split across three office buildings in Kennedy Town. Pictured above is a general shot of the main campus.

Whether it’s because of the school’s location or reputation, Micci says she has noticed a particularly high number of THS students taking an interest in STEM subjects.

“Currently, we have a number of high school students who show a strong interest in STEM-related topics and as a result, we have tailored our high school course catalogue to meet this interest,” she says.

“As part of the course, we arranged a KPMG workshop for our STEM students on the future of work. As one of the top [auditor] firms in the world, their research was illuminating and showed that our model of being a progressive school puts our students on the right track in preparing them for the future, be it for university or the workplace.”

But Micci insists that while THS is developing a reputation as an elite STEM school, it is actually an exceptionally well-rounded educational institution whose students excel at everything ranging from history to drama and sport.

“We do not have priorities or place a special emphasis on STEM or STEAM [STEM + Art] subjects as more important than the humanities,” Micci explains. “Rather, our emphasis is to create a ‘can do’ culture of pupil self-efficacy, innovation and empowerment because we believe in them.”

She says that despite the recent STEM craze within the education community, it is a myth that pupils must be interested in these subjects to become productive 21st century citizens.

“Everyone can become a productive 21st century citizen with or without STEM or STEAM skills,” Micci insists. “To become responsible citizens today means not sitting on the sidelines, not being passive or turning a blind eye to acknowledging or trying to understand and solve big problems and issues that plague our world – whether it be climate change or something else.”

“We understand that some students may struggle with certain aspects of curriculum, like STEM, but be brilliant at others,” Micci says.

“That’s why we believe in human ingenuity and compassion. We believe supporting a diversity of learning styles, personalities and abilities enriches everyone’s experience, from the students to the teachers.”