



An aerial view of the ISF Academy showing the rooftop solar panels. Photos: Xiaonai Chen, Handouts

The class is greener

Two environmentally aware schools have been singled out for inspiring creative sustainable thinking and teaching ecological literacy with a hands-on approach

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It's midday on a hot spring day and the "traffic lights" in a Year Three classroom at the Independent Schools Foundation (ISF) Academy have turned from green to orange. Students at the Pok Fu Lam campus check which air conditioners are on and if any doors are left open in what could be one of most intensely energy-monitored schools on the planet.

"If the lights turn orange the students are prompted to think about how they are using energy in the classroom and how to save it," says Anthony Dixon, managing director of Helios Renewable Energy.

Dixon helped set up the school's Centre for Renewable Energy Education (CREE) in October, and the solar rooftop microgrid featuring wall-mounted panels and battery storage.

The school's Energybox traffic lights are part of 6,000 sensors pupils and staff use to monitor energy usage. Year Three children, for instance, signal when their classrooms go from being powered by renewable energy to being powered by the city's fossil-fuelled grid. They are part of a group of sustainability education projects established by former Silicon Valley engineer Diana Ibarra that make it a stand-out school in the region.

About 20km east in Siu Sai Wan is the Chinese Foundation Secondary School (CFSS). Unesco China singled out CFSS for its sustainable development. In every nook and cranny of the school there are homages to the environment.

At street level the school hosts a 600-metre "Environmental Trail". This includes Wi-fi-connected chilli plants grown from seeds that were sent to space and back, fruit trees and scented gardens, and a birdwatching

station. Upstairs there is a rooftop garden and coral corner, and hundreds of Chinese medicine herbs, each with its own QR code.

"With species disappearing, we were keen to promote biodiversity and let students realise why it is so important," says Au Kwong-wing, principal of CFSS.

We are promoting the regrowth of plants and it's a great opportunity for younger kids to engage

VANESSA LIEW, ISF ACADEMY PUPIL

The rooftop garden at CFSS in Siu Sai Wan.



But it was the ISF Academy and CFSS that were most commonly cited as pioneers in a city that has vast biodiversity but relies mostly on coal for energy and has a growing waste problem.

The prevailing consumer culture leads to more waste per capita every year, with falling recycling rates. Landfills in the city of 7.3 million people are close to bursting.

The three pillars of a leading green, sustainable or so-called eco-school are "campus, curriculum and community", says Jenny Quinton, who has worked in Hong Kong for 29 years.

Quinton helped develop the English Schools Foundation (ESF) sustainability group, chairing it for 11 years, but left to start Ark Eden, an eco-education community on Lantau Island that runs workshops and summer camps to expose children to nature.

Green schools aim for zero harmful impact, cutting down on as much energy, water and waste as possible on their campuses. Their curriculum teaches what has become known as "ecological literacy" and they do outreach in the community, Quinton says.

The best schools become leaders and form cluster hubs. For all of this to happen, sustainability needs to be supported by all stake-

holders, from the principal and the board to the janitors.

At the ISF Academy, the campus is set up not only to improve the ecological footprint of the school, but also to give learning opportunities to its 1,800 students. The school has a "rocket" composter that turns food waste into soil within two weeks for the school's organic and biodiversity gardens. In the first year the rocket churned through 27,000kg of food waste, working out at about 90 grams per school member per day. Meanwhile, an air pollution monitor lets students compare what they are breathing in at school to the air in Central.

"The projects can't be stand-alone show projects," says Ibarra, who runs the Shuyuan science and sustainability programme at the academy. "They must be integrated into the daily life and teaching of students."

To that end, Year 12 pupil Sunny Chen worked out how the size of the nozzle on the school's hydroelectric turbine affected its power output. After her research, the school changed the nozzle for one that produced maximum energy. And 16-year-old Vanessa Liew was part of a team that won seed funding to kick-start a Donut Waste project. Now they sell gardening kits around Hong Kong using compost from the rocket composter to grow discarded roots and seeds.

"We are promoting the regrowth of plants and it's a great opportunity for younger kids to engage," Liew says.

Ibarra works with Stanford University in California to introduce models of best practice in STEM education to Hong Kong.

"We believe if you can change the behaviour of school students, there's a multiplier effect."

In the Science and Sustainable Development Resource Centre at CFSS, students work with more than 200 types of traditional Chinese medicine and 250 specimens in the seed bank. One pupil used mint to show how, when combined with lime or lemon, it had more anti-oxidising power.

Meanwhile, the Geology and Climate Change Resource Centre houses a mineral, rock and



From left: CFSS deputy principal Jacy Wong, principal Au Kwong-wing, and associate science educator Lau Kai-shul.

fossil collection and an exhibit of all the mass extinctions.

The focus on sustainability comes as the Organisation for Economic Co-operation and Development (OECD) said in a 2014 report that the workforce would change and start demanding people with "green skills". With the signing of the Paris climate accord and the UN's focus on its "17 sustainable development goals", students need to be able to perform carbon and waste audits, impact assessments, and other such exercises.

"Sustainability needs to be both conceptual and experiential if we are to effect global change in habits and lifestyles," says Malcolm Pritchard, head of school at the ISF Academy. "This next generation must be creative stewards, changing behaviour now to protect their future."

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MALCOLM PRITCHARD, HEAD OF SCHOOL AT THE ISF ACADEMY

But the creative sustainable thinking seen in these schools is not replicated across the city. Most still have an industrial mindset and focus on content and exams, Quinton says.

On top of this, many schools are vast generators of waste and consumption, says Paul Clarke, author of *Education for Sustaina-*

bility: *Becoming Naturally Smart* and professor of education at St Mary's University in London.

The Hong Kong government gives out green school awards annually to promote sustainable practices, with 840 schools out of a potential pool of about 2,100 entering the scheme since it started in 2000. But while there is a rise in activity across schools in Hong Kong, Clarke says there is generally "a serious lack of effort by senior leadership of the schools and leaders of the education system as a whole to embed and enhance and network the learning".

Sustainable development is not part of the core curriculum in Hong Kong, according to Tim Au, who teaches general education at the Caritas Fanling Chan Chun Ha Secondary School.

"It very much depends on an individual teacher's choice whether to teach it, and to what extent," he says.

Teachers are unlikely to embark on this course unless the school supports them and helps them find charity partners. That is according to George Jor, director of Grateful Green Group - a charity for biodiversity and environmental education - and an adviser to the government.

"The Hong Kong government has the resources, power, knowledge and skills to partner with schools, green NGOs and parents to lead our younger generation and educate them on sustainable development," Jor says.

"But there must be immediate actions, and mid-term strategies and long-term policies, to deal with mounting environmental challenges such as climate change and disposable plastic pollution."

Clarke is working with schools around worldwide on how to educate for an "ecological age", which he says involves a move from "ego" to "eco".

"We already know how to restore damaged ecosystems, we know how to design without waste by-products, we know how to grow food in resilient and regenerative ways, we know how to restore water and make it clean and available for all. But these are the first baby steps," he says.

"Schools can play a part in setting these steps in place."