

From running 3D printers 24/7 to winning 'Nobel Prize for students'

Singapore start-up's robotics kit uses chopsticks to teach kids the technology

Sarah Koh

When Singapore start-up Stick 'Em found itself among more than 15,000 entrepreneur teams across 130 countries vying for what is called the "Nobel Prize for students", its co-founders Adam Huh Dam and Chong Ing Kai were certain that winning the honour was out of the question.

But they did win the coveted Hult Prize, and are still coming to terms with the accolade, which comes with US\$1 million (S\$1.28 million) in funding for their affordable robotics kit that uses chopsticks to teach the technology to children.

"We froze for a second because it didn't feel real," said Mr Adam, 27, recalling the moment on Sept 5 when he and Mr Chong, 22, received the trophy on stage at London's Tate Modern.

"It felt like a flood of memories from the past five years – the late nights prototyping and stressing over deals, the setbacks, the times we questioned whether to keep going. All these efforts have led to this moment."

Held annually since 2010, the Hult Prize brings together student entrepreneurs to create businesses that tackle social and environmental challenges.

The Stick 'Em founders' journey started in 2020. While they were students at various tertiary institutions, Mr Adam, Mr Chong and two others, Mr Tew Jing An and Mr Chong Kai Jie, set out to promote problem-solving skills and creative thinking via hands-on learning, with the help of their low-cost robotics kit.

Stick 'Em is now a 14-strong start-up, comprising employees and the four founders, that has set up shop at the Singapore University of Technology and Design (SUTD) and National University of Singapore (NUS), where it continually refines lesson plans, manufacture building parts, and work out business deals.

Mr Adam graduated from SUTD earlier in 2025 with a degree in Engineering Product Development, while Mr Chong Ing Kai is completing his stint in national service.

During an interview with *The Sunday Times* at their office in NUS, Mr Chong and Mr Adam said their venture was partly inspired by their love of building and robotics as children.

"In primary school, I liked to build dangerous items like flamethrowers and tasers, and then did a lot of hands-on project work while at the School of Science and Technology," said Mr Chong. "Later in life, this shifted into 'hey, I want to actually help people with what I am building'."

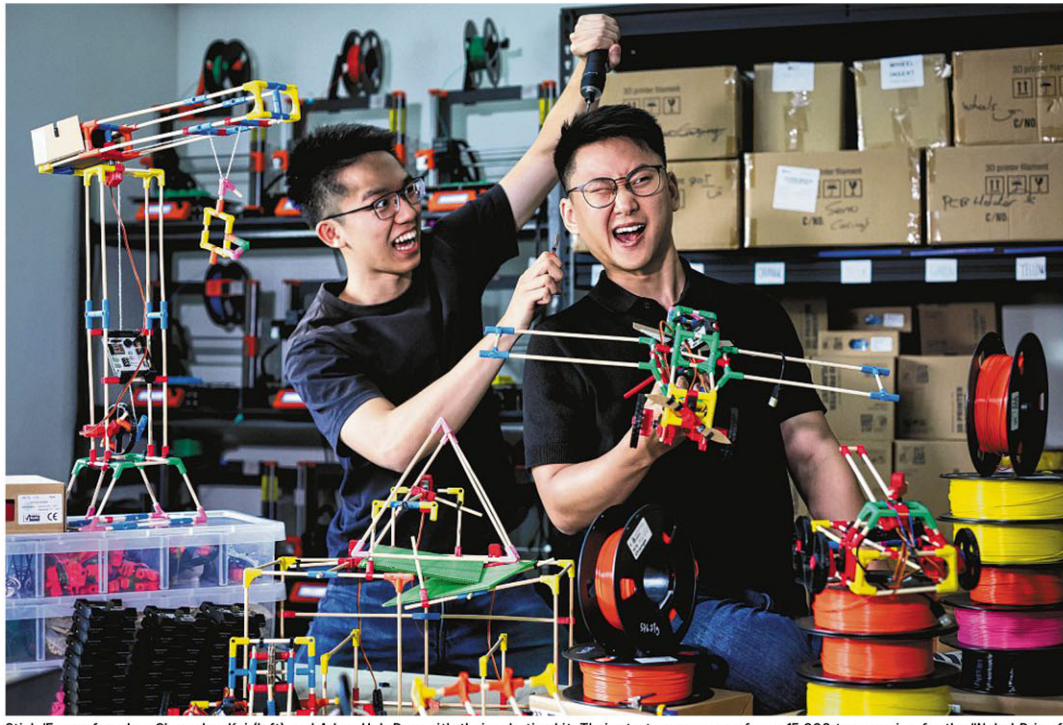
He and Mr Adam used to see each other frequently at robotics competitions while they were in school, and this early connection prompted Mr Chong to reach out to Mr Adam later with the concept of Stick 'Em, when he was in his first year at Singapore Polytechnic.

"I had all these ideas, but realised I could not do it myself because I didn't have much background in hardware design and software," said Mr Chong, who graduated with a diploma in Engineering with Business in 2023. "So, that is when I got all my friends together to build a prototype."

Each Stick 'Em kit costs \$100, which is about one-tenth the cost of conventional robotics kits. It comes with wooden chopsticks, geometric connectors, wheels and plug-and-play electronics – all of which children can use to build any kind of object or structure that can be programmed to move.

It has been sold to over 10,000 children across 27 primary and secondary schools in Singapore so far.

While kids can use the kits to build freely as they wish, Stick 'Em offers ready-made lesson plans for teachers to use in class. The lessons, which incorporate the use of the kits, help to teach a wide range of mathematical and scientific concepts, such as geometry, energy conversion and how recycling



Stick 'Em co-founders Chong Ing Kai (left) and Adam Huh Dam with their robotics kit. Their start-up was one of over 15,000 teams vying for the "Nobel Prize for students", which it won, together with US\$1 million in funding for their affordable kit that uses chopsticks to teach the technology to children. ST PHOTO: GIN TAY



Above: A Stick 'Em robotics kit. Each kit costs \$100, which is about one-tenth the cost of conventional robotics kits. ST PHOTO: GIN TAY

Left: Students in Uganda holding a robotic car they built using a Stick 'Em kit. PHOTO: COURTESY OF STICK 'EM



A roller coaster built by children from the Tak Takut Kids Club in Boon Lay, using the Stick 'Em kit and cardboard and tape. Learning with the kit led to a change in the young ones' behaviour. PHOTO: COURTESY OF STICK 'EM

plants work.

For instance, a lesson on elastic potential energy would require students to build a catapult, which they can use to launch small balls of paper. They would learn that the number of rubber bands used to power the catapult affects the amount of elastic potential energy it carries, which determines how far the paper ball projectiles can travel.

Teachers may also request customised lesson plans.

"In Singapore, there is a lot of pen-and-paper learning, and hands-on learning is often seen as an end-of-year activity," said Mr Chong, adding that the goal of Stick 'Em is to bring this form of

learning into the classroom.

HUMBLE BEGINNINGS

It was chaos in Stick 'Em's early days, with the founders pulling many late nights and living with 3D printers running round the clock in their homes.

"My mum used to joke that she was an employee because I constantly asked her, my sister and my dad to help pack the kits," said Mr Chong.

At the start, the team spent less than \$100 on materials such as 3D printing filament and some electronic pieces. To test their prototype, the founders also got the children of their parents' friends to

HANDS-ON LEARNING

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MR CHONG ING KAI, on the goal of Stick 'Em to promote hands-on learning in the classroom.

see what they enjoyed about the kit, what they stumbled on, and what could be built from the parts.

Adding to their stress was the fact that they were still studying in polytechnic and university while juggling the business of Stick 'Em.

However, Mr Chong and Mr Adam said they prioritised their start-up over academics.

"It was a pressure cooker environment at SUTD, as the curriculum is designed with a lot of hands-on projects on top of exams," said Mr Adam, who came to Singapore from South Korea when he was seven.

"Stick 'Em came first, all the way from the start to the end. I figured out a way to study one day before exams, and then got into a bad habit of doing it routinely."

"But I set a baseline expectation for myself, which was to graduate with an honours with distinction, which I did, so it is all good."

Stick 'Em's first big break came in 2021, when the founders won the River HongBao Hackathon. The competition was sponsored by real estate firm Mapletree, and the company later provided the team with funding to scale up.

They were then given a booth at the festival in Gardens by the Bay, where they unexpectedly received 150 orders from parents who were interested in their product.

The team scrambled to figure out how to fulfil the orders, using

several 3D printers located in their schools and calling up friends who had their own maker studios.

Mr Chong said: "It was hectic, but a very fun experience that showed us, logistics-wise, how we were going to sort these orders out."

"The craziness and unpredictability of everything is definitely lower now, but the workload is higher now, because of more clients."

SINGAPORE AND BEYOND

Back in 2022, the founders told ST that they wanted to make inroads in the global market in the following five years.

Today, Stick 'Em has been distributed to teachers and children in 11 countries, including Indonesia, Vietnam and Uganda.

Most of its business has come from meeting educational leaders at international exhibitions and conferences, and through word-of-mouth among teachers.

Mr Chong and Mr Adam often visit schools in Singapore and overseas to conduct demonstration lessons for teachers.

Mr Adam oversees operations, finance, product development, business development and strategy. Mr Chong oversees product development, strategy and teacher development.

Mr Tew oversees software product development, while Mr Chong Kai Jie oversees hardware product development.

In July, Mr Chong Ing Kai trained 225 teachers from seven schools in Indonesia.

"We spend a lot of time developing the product to be as simple as possible for people to use. We want to know how far we can push it," he said.

The response they receive can be astounding. After sending four free kits to a school in Uganda, the team was met with radio silence for a long while.

"We thought maybe nothing happened. But a few weeks later, they sent me pictures of the schoolchildren building a car with a steering system. They did it by themselves – it was quite amazing," said Mr Chong.

Of the countless teachers and children they have met, one group they taught struck them as particularly memorable – the Tak Takut Kids Club. Located in Boon Lay, the club acts as a community space for children who might be from underprivileged or complex family backgrounds.

"At the start, the volunteers warned us that the kids there were very impatient, might throw tantrums, and would run off quickly once they give up," said Mr Chong.

While learning with the Stick 'Em kit might have initially frustrated some of the children, the Stick 'Em team eventually saw a change in the young ones' behaviour.

"Like when a robot failed to work, we saw that they actually tried to trace the wires and give some thought to what they were making, instead of just running off to the playground," Mr Chong said.

"For me, I saw this as helping them to develop soft skills as well, and not just learn about robotics."

Following its Hult Prize win, the team aims to scale up production, increase awareness, and invest in building teacher communities across all the countries it operates in – plans which can now be accelerated with the US\$1 million prize money.

"By empowering super teachers to lead adoption and mentor others, we can create sustainable growth and deeper impact," said Mr Chong.

"The Hult Prize win is really just the beginning," said Mr Adam.

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