

TEE HUN CHING THE ART OF TEMPERING JUSTICE WITH MERCY B9

EDUCATION

Stemming a worrying high-tech brain drain

New initiatives aim to enhance sector's appeal among youth and help it retain grads

Amelia Teng and Pearl Lee

When Mr Willy Zhang, 32, chose to study mechanical engineering at the National University of Singapore (NUS) years ago, it was almost a natural decision.

He had a few uncles who were engineers, and the job seemed stable.

But it was only in his third year of university, and on an internship at a shipyard, when he realised what he had signed up for.

"It was a very extreme engineering environment. The other interns were doing welding and blasting and everyone was working and working."

It was not long before Mr Zhang decided the engineering route was not for him, and shortly after graduating, he joined the finance sector.

His story is common among those trained in the science, technology, engineering and mathemat-

ics (Stem) fields who go on to join other sectors.

Ministry of Manpower data released each January shows that eight of the top 10 professional occupations in the last three years with the most vacancies came from the Stem sectors, including jobs such as software, Web and multimedia developer, civil engineer and systems analyst.

This is even though the intake for Stem courses at the polytechnics and universities has stayed steady. Most recent publicly available figures show the five polys took in about 7,600 engineering students in 2013. In the same year, they accepted 1,600 students for science-related courses, and 3,700 for information technology courses.

Last year, Nanyang Technological University accepted 2,800 engineering students, and National University of Singapore took in 1,500. These figures are about the same as in the previous year.



Mr Leong Ying Wei, lecturer at Singapore Polytechnic's School of Mechanical and Aeronautical Engineering, watching visiting secondary school students control a Robocar. The students were attending an engineering camp at the polytechnic last Saturday. The camp was organised to help O-level students discover and appreciate the importance of engineering, and to explore career options and prospects in the sector. PHOTOS: DIOS VINCOY JR FOR THE STRAITS TIMES

The number trained by local universities will rise with new courses from the Singapore University of Technology and Design (SUTD) and Singapore Institute of Technology (SIT).

To fix the problem, schools and organisations are piquing students' interest by holding events such as ice cream making contests and visits to chemical plants. They are also offering "tinkering kits" with materials like motors, bolts and wooden parts

for students to experiment with. They aim to expose students to Stem jobs and help them decide their study and career routes.

Mr Seto Lok Yin, chairman of the steering committee for Learning Engineering at Polytechnics, an effort by the five polys to promote engineering, said: "Engineers can switch to non-engineering jobs but it is not possible the other way around, due to the specialised skills required for engineering jobs."

Mr Seto said the initiatives are to help students make the link between Stem subjects and real world experiences, like understanding how flight works.

"In the early years, we should develop children's curiosity and their ability to experiment," he said. "In secondary school, we should help students and parents make informed choices about courses and careers."

To this end, the Institute of Engineers Singapore (IES) started a series of public talks aimed at students this year. A total of 33 such talks have been conducted by its members, who share their experiences of the profession and examples of innovations in engineering.

Its president, Mr Chong Kee Sen, 57, said IES started to raise funds for scholarships earlier this year for needy engineering students in polytechnics and universities.

The scholarships will be given next July. It has so far collected \$150,000 and hopes to raise half a million over the next eight months, said Mr Chong.

This month, Science Centre Singapore, the Agency for Science, Technology and Research (A*Star) and SUTD teamed up to conduct workshops and facility visits for children aged nine to 11 to look at how science can be used to solve real world problems.

The sessions take their cue from a National Geographic series titled Breakthrough, about how innovations can relieve issues such as water shortage and pandemics.

The Science Centre will run workshops where pupils learn about energy conservation. They will then build a windmill and learn about the concept of air resistance.

Science Centre chief executive Lim Tit Meng said the initiative targets young children as they are "brimming with curiosity and are not afraid to observe and ask questions", pointing out that "these are the precursor attributes of becoming a scientist".

He hopes the television series and workshops will spur pupils' interest in science.

Some organisations try to enthrall older students with a taste of research work.

A*Star, for instance, has three programmes for students keen to learn about research. These schemes, including the A*Star Young Research Attachment Programme, take in about 150 upper secondary and junior college students each year.

Education officials said it is not that they lack engineering students, but that they are losing better students to other courses.

Said Mr Seto: "In the past, academically strong students chose engineering. Today they go into business, mass communications, psychology."

To attract the best, polytechnics have started offering diplomas that blend engineering with topics such as business. These have drawn stu-

dents with better O-level scores compared to the traditional engineering disciplines.

Local universities also offer programmes with overseas partners, such as London's Imperial College, which take in top students.

The problem is so worrying that Prime Minister Lee Hsien Loong spoke about the brain drain in the Stem sectors in May, during the opening of SUTD.

Mr Lee said because of industry trends, it has become harder to attract people to study and work in the Stem sectors, even though Singapore's education system places strong emphasis on these subjects. This has sent people looking for jobs in fields such as real estate, finance, law and medicine.

Young people who have grown up in a more developed economy take science and technology more for granted, and pursue interests in other areas, he added.

A*Star scientist Ooi Zi En agreed, saying: "When technology is all around us, it's so easy to take it for granted. For instance, everyone has a mobile phone but no one knows how the flat display technology works."

Mr Chong said other options such as the arts, social sciences and music sound more exciting.

"One of our challenges is raising the excitement level of the engineering profession and correcting young people's perception that it is dirty and dangerous."

While it is hard to measure the effectiveness of the outreach initiatives, they have won over some youngsters.

Ms Brenda Ang, 20, chose to study information security at Nanyang Polytechnic after a SIT talk.

"It started with computer games in primary school, and then I got exposed to blogging and learning coding and basic HTML in secondary school," she said. "At the talk I realised I could turn my hobby into something more, and there were many job options."

CRANKING UP THE APPEAL

One of our challenges is raising the excitement level of the engineering profession and correcting young people's perception that it is dirty and dangerous.



MR CHONG KEE SEN, Institute of Engineers Singapore president

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SEE EDUCATION B11



Secondary school students getting hands-on experience with a robot during a one-day programme jointly organised by Singapore Polytechnic's School of Mechanical and Aeronautical Engineering, and School of Electrical and Electronic Engineering.