Singapore News

Shortage of engineers may weaken manufacturing capabilities
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Singapore’s universities produce 4,000 engineering graduates every year, but industry observers said a growing number are choosing non-engineering careers. Some experts said not having a ready pool of engineering talent could have considerable consequences for Singapore. Singapore’s universities produce some 4,000 engineering graduates every year, but industry observers said a growing number are choosing non-engineering careers. Some experts said not having a ready pool of engineering talent could have considerable consequences for Singapore.

Philip Lew, managing director at Fong Shion Mould and Precision Engineering, said: “In Singapore’s precision engineering industry, we’re not getting many people to come in to join this industry, and we foresee that the youth are not willing to come in. We think that automation will help us to minimise our productions and with minimum labour.”

In an industry already hungry for fresh ideas and better solutions, Mr Lew said he is having trouble hiring engineering graduates. But statistics from Singapore’s universities show no lack of engineering graduates every year. At National University of Singapore, the number has grown more than four times between 1995 and 2013. Engineering graduates used to fetch from 10 to 13 percent of the graduating cohort, but it is now about a 10 percent.

At Nanyang Technological University, its engineering faculty boasts the largest number of graduates each year. Over the last two decades, the number almost doubled to 2,800 last year. But out of the 4,000 who graduate each year, a growing number are not becoming engineers.

One of them is Jason Lim, who is now in business development, despite studying mechanical engineering. Mr Lim said: “In the finance industry, you need to do a lot of mathematics, so being engineering-trained, I have that slight advantage over my peers. If you talk about mathematical situations, and also in this instance, if you talk about problem solving, engineering students tend to be much more – I would say they're trained to be problem solvers, to improve situations, to improve processes.”

Mr Lim said there are others like him – many of whom are drawn to finance and the higher salaries.

Surveys from 2013 show that most engineering graduates get a basic starting salary of about $5,000. This is a few hundred dollars less than business graduates, and up to $520,000 less than law and medicine graduates.

With lower starting salaries to offer, it is the smaller engineering firms which are struggling most to attract talent. The smaller firms themselves are struggling to find skilled engineers, in a further complication, the problem of how SMEs already have trouble attracting young Singaporeans in recent years.

Mr Lim said: “It is less glib terminology because SMEs are still relatively unknown, so if you were to have a conversation with your friends, you'd probably say, 'Ah, your cousin works for XYZ company.' But what about your cousin works for SMEs, or some of the SMEs. And in terms of salary package, perhaps some of the SMEs are not able to match the kind of salary package as compared to the bigger, more established MNCs.”

Observers said SMEs can do more to improve their image, as there is a perception that “only big companies can treat you well.”

Zaqy Nazarian, member of the Government Parliamentary Committee for Manpower, said: “SMEs can actually sell themselves better. But it's not the salary package, it's probably the environment and the values of the company.”

He said that many companies are looking for successful leaders who are currently either bosses of SMEs or leaders of CEOs on their own startups and how they’ve been successful.

Beyond SMEs, observers said the implications of not having enough engineers could be serious. Professor Choo Kwa Kiang, president of Institution of Engineers, said: “It will definitely weaken our manufacturing, our manufacturing capability, it would be definitely more difficult for us, people, to need to improve our infrastructure. It would be a huge question mark as to how we’re going to be prepared for eventualities, be it climate change or be it security situations where our food supply and water, energy supplies become at risk.”

Mr Zaqy said: “The trend shows that people, especially when the economy also relies on innovation, manufacturing, we have a huge reliance on manufacturing, construction, and also some of the future value-added technologies.”

To address this, the Institution of Engineers has launched an accreditation programme to give professional recognition to qualified engineers.

Currently, only civil, electrical and mechanical engineers can register for Professional Engineer status. Professor Choo said: “At this present state, our economy is growing further, diversifying, with possible new industries in the future in our mix, in commerce, in commerce and in production and engineering and we will be opportune for us to grow, we grow, to engineer competent engineers to stand alongside those who are traditionally in the built environment, where they’re already certainly critical.”

“Some of these other engineers who are working in diverse industries or even systems engineering in the military and so on, with recognition, we believe it will help raise the profile of these engineers, and it will add glamour, hopefully, and it showcases their achievements and also the science.”

But there is another trend that some academics are worried about.

Even among students entering university, the popularity of engineering courses is slipping among top students.

While the most popular courses - law, medicine and business - require three 'A's to enter, most engineering courses are calling for a combination of 'B' and 'C' grades.

Professor Teo Chee Hean, director of Renaissance Engineering Programme at Nanyang Technological University, said: “Our top scorers from ‘A’ Levels, polytechnics, for example, are not going into engineering, which is a very important programme for mankind’s future, because of the technology development for Singapore. Engineering is very broad-based. As a result of that, we realised that we need to do something because if we don’t, there’ll be a big vacuum left in the next generation.”

“It is worrying because we know from history that innovations, technology in the country is heavily driven by engineering. We need to bring back good engineers to the industry. We need to bring back the flavour that engineering is not just a technical.”

NTU thus repackaged its engineering course, and launched a new programme called Renaissance Engineering (REP) in 2011.

The idea is to blend business principles and liberal arts with engineering. There is also one-a-year overseas immersion programme.

Prof Teo said: “I can tell you why you the university is so successful - because they have tremendous marketing. The tablet technology was in science for more than 10 years. But no one was able to market like Steve Jobs. We put the business school with engineering, technology, design and entrepreneurship. That has a marketing spin.”

First-year student Victoria Zhao said she is drawn to the unique curriculum at REP, even though she wanted to study business at first.

She said: “I enjoy future engineering something which is extremely technical. I don’t really see myself as a real practicing engineer. It’s not a career choice for me and it’s not what I’m interested in. But REP is very different, it equips us with Business and Engineering skills, which can help me become the management of a company which might do engineering-related things.”

The programme has so far seen success in drawing the best students - with 400 applicants vying for just 50 places last year.

It is the only engineering course in Singapore that requires applicants to have three 'A's at the 'A' Levels.

But even if it seems promising in reversing interest in engineering, the university is cautious about expanding its intake.

Prof Teo said: “We need to let REPs the concept evolve. We don’t want to be so gung-ho and over-produce. How REP will hit into the economy in Singapore needs to be studied carefully.”

In recent years, the government has also been paying attention to the need to nurture engineers, and the number of engineering courses has grown exponentially in the last five years — with the establishment of Singapore’s fourth and universities — the Singapore Institute of Technology and design and Singapore Institute of Technology, each with its own take on how an engineering education should take shape.