Academia seeks to join global elite

By Clive Cookson
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“I wish Taiwan had a world-class university,” says Morris Chang, chairman of the Taiwan Semiconductor Manufacturing Company. His comment, expressed on several occasions, reflects the wide dissatisfaction with the local higher education system that is felt by high-tech entrepreneurs - and shared by many politicians and government officials - across Asia.

Rapid growth in the quantity and quality of corporate research and development has not been matched by a corresponding improvement in the academic sector. The region has vast numbers of bright young people wanting to study science and engineering, but local universities do not yet have good enough laboratory infrastructure or academic staff to prepare them for careers in R&D.

As a result, hundreds of thousands of Asian students still travel to north America, Europe and Australia every year for undergraduate or postgraduate education.

Employers give several reasons for preferring young scientists and engineers who have attended universities outside Asia, even though they expect higher salaries than their counterparts who have been educated locally. For example, labs are better equipped in western institutions, academics are more tuned into the global research community, links with industry are usually better, and students learn international communication and language skills.

Gopal Krishna, who is setting up an Indian engineering centre in Bangalore for AMD, the US microprocessor company, says most of the technical staff he is recruiting have studied or worked in the west; only seven or eight of the first 40 or so employees come directly from Indian universities. “They have very good theoretical and analytical knowledge - and they are enthusiastic and easily trained - but they do not have the practical experience of US graduates,” he says.

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"The problem is not so much the students as the faculty. We are putting a lot of resources into faculty training," he says.

China is also emphasising the need to improve universities in its endeavour to become a global power in science and technology. Chinese policy for the past 20 years has been to send its brightest students to study in the west - partly because its own universities suffered severely in the cultural revolution of the 1960s and 1970s - but many of them have stayed there.

The Chinese government is now putting more emphasis on bringing western universities and public research institutes to China, where they can help to raise local academic standards. The law was recently changed to allow foreign universities to teach in China at undergraduate and postgraduate level, and officials hope that several institutions will follow the example of Britain's Nottingham University in setting up a Chinese campus (see below).

Statistics from China's ministry of science and technology show the rapid expansion of the country's higher education system. Total undergraduate enrolment rose from 7.2m in 2001 to 9m in 2002; of these, 2.5m in 2001 and 3.1m in 2002 were engineering students.

However Zhao Guoping, director of the National Human Genome Centre in Shanghai, says he still encourages Chinese students to work abroad for a few years.

"Experience in the west is very important. The US has the best graduate programmes. For postdoctoral work, Europe is as good," he says.

China and India - the two largest exporters of students to western universities - do not keep up-to-date figures for the flow in and out of their countries of students or trained scientists and engineers. "We are data-poor in this area and we need to collect better statistics," says R.A. Mashelkar, the Indian government's chief scientist.

Data from the west suggest that the student outflow from Asia may have reached a peak two or three years ago. In the US, the most important destination, the number of graduate applications from China and India fell by 45 per cent and 28 per cent respectively in 2003-04 and by 13 per cent and 9 per cent in 2004-05, according to the Council of Graduate Schools.

Much of the fall in demand for higher education in the US was blamed on stringent visa requirements and a feeling that the country was becoming less welcoming to foreigners after the terrorist attacks of September 11 2001. But there has also been a decline in British universities' recruitment from Asia, which suggests that an improvement and expansion in the region's own universities may already be reducing the need to study abroad. The number of Asian students applying to UK universities fell last year and the provisional figures from the Universities and Colleges Admissions Service show another decline this year, particularly from Chinese students.

None of the various international league tables, which rank the world's universities according to criteria ranging from research excellence to teaching quality, put Asian universities outside Japan near the top. According to the widely respected ranking by the Institute of Higher Education at Shanghai Jiao Tong University, the best is the National University of Singapore, followed by National Taiwan University - but neither is among the world's top 100 academic institutions. The Times Higher Education Supplement is more generous, putting Peking University 17th and National University of Singapore 18th in its world rankings.

But on current trends, it may not be too long before Mr Chang's wish comes true - and Asia has several world-class universities.

NOTTINGHAM UNIVERSITY

Nottingham University has pioneered a growing movement by British universities to set up operations in Asia. Its Malaysia branch, which started four years ago in temporary accommodation in Kuala Lumpur, already has 1,000 students. The campus is moving over the next few months to a new 101-acre site, 30km away in Semenyih - "the first purpose-built campus of any British university outside the UK".

The university's second venture, in China, is even more ambitious. It opened in temporary accommodation last year and will transfer in September to a large campus in Ningbo, a coastal city south of Shanghai, with facilities for 4,000 students. Nottingham is the first and so far the only foreign university to receive a licence from the Chinese education ministry to teach at the undergraduate and postgraduate levels in China.
Douglas Tallack, Nottingham's pro-vice-chancellor for internationalisation, says the Asian campuses have built on the university's strong existing relationships with both Malaysia and China.

"We were invited to set up a campus in Malaysia, where we had very good alumni connections. Although there are one or two good universities there, the Malaysians needed outside help to boost their higher education," he says.

Nottingham already has at least 50 research collaborations with China - and its chancellor, the honorary head, is Fujia Yang, a distinguished Chinese nuclear physicist. The proposal from Ningbo was the best of half a dozen offers that Nottingham received to host its £40m Chinese campus. Prof Tallack says: "The costs of construction and land are provided by our Chinese partners.

"Universities that commit themselves to internationalisation will come out ahead in the competition for students," he says. "We cannot assume that students will always want to come to us in Britain."