

Recruiting for success

Recruiting good young graduates is a real challenge for most technology, engineering and science-based industries. Many companies, big and small, now target talented students before they've finished their studies.

For Fraser Thomas Ltd, a medium-sized consulting engineering company based in Manukau, recruitment of suitably qualified and skilled graduate engineering staff has become a challenge they've had to apply their minds to.

In addition to selecting newly qualified BE graduates, Fraser Thomas Ltd has tried a new approach by selecting students at the end of their first year's study and supporting them both financially and with summer work up until their graduation.

In return, the students commit to work for the company for a prescribed time after graduation, and must repay some of the contributed money if they leave earlier. It's an innovative approach, and the results are highly promising.

Making an early investment

Barry Brown, a Director in the firm who leads the structural division, says the 'First Look' scholarship scheme promoted by Auckland University's Civil & Resource Engineering Department has many benefits.

"We're looking for continuity by starting early and making a long term investment. We want people who'll stay for a while.

"We want to expose them to real-life engineering during their academic training. By the end of their studies they'll be more confident, productive, and reasonably switched-on, and we can pay them more on graduation as a result.

"All up we're putting about \$10,000 into it, but it's a two-way commitment. The incentive for us is to look after them, and they have a commercial incentive to stay."

As part of the scheme Fraser Thomas Ltd pays 50% of the student's fees in their second year, 75% in third year, and then 100% in the final year.

"It's partly a bond because they pay back some of the money if they leave early, as a form of reimbursement for the investment we've made," says Barry.

"As well as the money we provide solid mentoring and a chance to work in all the different areas of the company, to get a taste of each area and work out which area they like best and want to specialise in."

On-the-job learning

20 year old Aaron Wilson is a third year engineering student at Auckland University, and the first participant in Fraser Thomas's programme.

"I can't speak highly enough of it. I'm extremely fortunate to have this opportunity, quite apart from just the financial gain of having a summer job. They've really looked after me at Fraser Thomas, and given me the chance to learn things you don't at university.

The AgResearch example

Investing in the education of talented students has also a successful formula for AgResearch, New Zealand's largest Crown Research Institute. The company provides a range of summer work and scholarships for postgraduate students carrying out research of interest to the company, with many of the recipients eventually joining the company fulltime.

According to Simon Lovatt from AgResearch's science strategy group, it's a good way to identify talent and ease people into the job. "It means we have a pool of people with the right skills to choose from. And giving students some experience of working here is really beneficial for both sides, because we can see how well people fit in and if they'll enjoy the work."

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Neighbourhoodengineersaward

Futureintech in action: students at Blockhouse Bay Primary in Auckland are getting a new playground later this year, thanks to the help of Futureintech and a local engineer.

The school won the first prize of \$2,000 in the 2004 Neighbourhood Engineers Award for their design of a new playground, which was helped by Sanjesh Lal from Opus International Consultants.

Sanjesh says he's always been interested in IPENZ activities in the community, and leapt at the chance to help out the school where his two children attend.

"I initially had no idea what type of project would keep 8-10 year olds interested – my initial ideas were worm farms, school safety audits, and footpaths, but none seemed to capture their imaginations – until the idea of designing a new school playground was mooted," he said.

"The kids were ecstatic, and were drooling at thoughts of racing tracks, play station studios, flying foxes, and arcade games, but

alas, the issue of constraints needed to be explained."

Piece by piece a project path was devised and once the

issues of need, resources, and safety and budget were explained the kids were quick to get back to reality.

Along the way Sanjesh helped the students plan their time, construct a chart of the pros and cons of different ideas, and eventually put together an overall plan and map for the new playground.

For Sanjesh the work was a rewarding experience. "Quite often in engineering practice, not enough consideration is given to the end users. Consultation is thought to be a means to an end, a necessary evil.

"Children can be intelligent enough to consider access for a handicapped student, even considerate enough to design playground seats so that a wheelchair can park alongside and the disabled child can sit beside her friends! This was really very humbling for me."

About the Award

The Neighbourhood Engineers Award is run by the Institution of Professional Engineers (IPENZ), and is one of three key programmes promoted and supported by Futureintech (the others being Bright Sparks and the CREST Awards).

Sponsored by Transpower, the Award involves volunteer engineers working with teachers and students to meet an identified need or opportunity in the community. It helps create greater awareness of the engineering profession and encourages innovative thinking. There are three award categories and prizes of up to \$2,000 available.

Other winners for 2004 included St Johns Hill School in Wanganui for their design and construction of homes for snails, and Tararua College in Pahiatua for a new food safety programme.



Attractingengineers+keepingthem

Research from Australia has shown up similar challenges facing employers of engineers in New Zealand – not just in attracting young people into engineering, but in keeping them.

Peter Taylor, Chief Executive of Engineers Australia presented a review to his New Zealand counterparts last month on the issue of skills shortages in Australia.

As hard as it is to attract young people into the profession, retaining them is another challenge - figures from Australia show that after 10 years fewer than 50% of graduates are still involved in engineering, and the problem seems to be particularly marked amongst women engineers.

Several important reasons for this trend are noted, including the move into management and leadership roles – which happens to as many as 50% of engineers. The report notes that graduates from engineering have become “a new source of managers and leaders for many organisations and professions.”

Of course this in itself is not a bad thing, but it can mean valuable technical skills are under-utilised. Engineers Australia has established the Centre for Engineering Leadership and Management (CELM) as a way to retain this connection.

The importance of education

Other issues raised include the decline in cadetships. Once upon a time a significant number of engineers were trained in the public

sector, with extensive training and development. It's only in recent times that groups like IPENZ have encouraged professional



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Peter Taylor, Chief Executive
Engineers Australia

development, employers have introduced graduate recruitment and mentoring programmes, and some local bodies are now looking at re-introducing some forms of cadetships.

And on top of all these issues, the completion rate for students studying engineering is not good – for Australian students the completion rate from 1993 to 2000 was as low as 56%.

There are some encouraging signs though – the report notes the introduction of Futureintech as “a step in the right direction,” and a new “Engineering Studies” course offered in New South Wales high schools, designed to prepare students for potential study at tertiary level.

“Students need to be given the clear message that engineering offers great careers that can make

a difference to humanity while returning high levels of personal satisfaction,” says Mr Taylor.

Keeping Engineers in local government

Recruiting and retaining engineers is a challenge local government in New Zealand is facing up to. The Society of Local Government Managers (SOLGM) is developing a

national strategy to tackle this problem across five professional areas, including engineering.

Initial research has shown up some important factors that engineers look for in a job – not necessarily just salary, but job content, the location and the chance to take on a more senior role.

Over 60% of engineers surveyed said they were likely to stay in local government for the rest of their careers, a relatively high rate. But while there was a good level of job contentment (thanks to the variety of work and community interaction), many engineers suggested improvements that would make them more likely to stay.

Suggested improvements included:

- A more challenging role
- Perks and benefits (such as cars or cell phones)
- Flexible working hours
- More support from management
- Less stress – engineers were the most likely of all groups surveyed to mention this.

Food for thought for employers of engineers.

Futureintechnews

Beacon Practice

An exciting new initiative to support technology education has started in Wellington, with four secondary schools working on the Technology Beacon Practice Project.

The aim of Beacon Practice is to build teacher capability in technology education through a focus on quality teaching, innovative environments and supportive relationships. It's all part of the government's Growth and Innovation Framework (GIF) – Technology.

Four schools in Wellington have been selected for the pilot project, and each is working on unique projects involving outside clients and expertise. The results will be case studied in detail and made available for schools throughout New Zealand.

Futureintech is facilitating the project, and helping build important links by putting schools in touch with tertiary and industry groups who can help with their projects.



discuss issues such as solar power, why metals are used in circuits, and the different types of switches.

The next step is giving the students the opportunity to make some working circuits, and by the end of the unit they'll be making toys or tools which use a simple circuit.

The teachers involved have been mightily impressed, noting that while the Ambassadors may be great engineers, they're also "great teachers".

Not only has it been a rewarding experience for the students, but it's been a unique form of personal development for the Ambassadors, helping to build confidence and communication and presentation skills.

A big thank you is due to the employers who have allowed their young staff to take a few hours off for this project – ERMA, URS New Zealand, and Transfield Services Infrastructure.

Futureintech's new home

Futureintech (and IPENZ) have moved – our new home is 158 The Terrace, Wellington. Our PO Box and all phone numbers are unchanged.

www.futureintech.org.nz

Futureintech's website contains a wealth of information for students, parents, teachers and careers advisors. It has profiles of young people working in technology, engineering and science, and the companies they work for, along with information on different courses, careers and scholarships available.

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More Ambassadors in action in Auckland

Students at St Thomas's primary school in Auckland are getting a taste of electrical engineering, thanks to Futureintech Ambassadors.

Ambassadors are young engineers, scientists and technologists working with students in the classroom to help inspire a love of technology learning. In this project they've been helping students to draw the electrical parts of a torch, and



Top: Futureintech Ambassador Dinusha Koggalahewa talks to students

Above: Auckland Ambassadors in the classroom at St Thomas's Primary School