



e-newsfor**schools**

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2011 Transpower Neighbourhood Engineers Awards

It's been a great year for the Transpower Neighbourhood Engineers Awards, with a record number of projects being submitted for judging.

CONGRATULATIONS TO ALL THE SCHOOLS that participated in this competition, which challenges teams of students to complete a technology project in their community with the support of a volunteer engineer.

Participating students develop a wide range of competencies from accurate measurement, research and analysis to teamwork and presentation skills, and teachers can present maths and science curriculum elements in a practical context.

Most importantly, the projects introduce the principles of good technological practice – identification of a problem, assessment of the options and making decisions that lead to a solution.



Ararimu School's Bridge Project team – winners of the 2011 Transpower Neighbourhood Engineers Awards

This year the judges were very impressed by the 40 projects that arrived from schools all around the country. They looked for evidence that teams had demonstrated good technological practice, worked effectively with their engineer and involved the community.

Ararimu's School Bridge project was the overall winner, receiving a \$2,000 cash prize. The rest of the \$11,000 prize pool provided by Transpower was divided amongst nine schools who earned merit prizes for their projects, which included sustainable transport solutions, a scooter storage rack, rainwater tanks and pumps, and outdoor learning areas, community gardens and other playground structures. For a full list of the winners, see table on the left.

"We found the judging very difficult this year as there were so many high quality entries," the judges said. "But Ararimu School's bridge project really stood out for all of us. We felt that the students were addressing a real issue, something that would make a real difference to them."



TRANSPOWER NEIGHBOURHOOD ENGINEERS AWARDS 2011			
	School	Project	Engineers
Winner	Ararimu School	Ararimu's School Bridge	Rohan Pollard, Blueprint Consulting
Merit	St Mary's Kaikorai School	Our Sacred Space	Ambassador Rhys Owen, Opus
Merit	Glamorgan School	Sustainable Transport Options	Ambassador Josy Bird, Coast Digger Services
Merit	Sunnybrae Normal School	Shady Edge	Ambassador Laura Foster, Golder Associates
Merit	Freemans Bay School	Community Garden area	Ambassador Jesse Ashton, AWT
Merit	Verran Primary School	Child-powered water pump	Ambassadors Julian Murahidy, GHD, and Dominic Lauten, URS
Merit	Victoria Avenue School	The Marvellous Makeover	Helen Evans, HJE Consulting, and Toko Kofoed, Beca
Merit for 2 projects	Otumoetai Intermediate School	Outdoor Learning Area Bus Waiting Area Redesign	Bill Strauss, Coin Automation, and Ambassadors David Cross, Opus, and Anita Jackson, RedCo
Merit for 3 projects	Kowhai Intermediate School	Scooter rack Pergola Rainwater Collection	Ambassadors Robbie Lawton, CPG NZ, Isabella Franks, AECOM, Kate Woolley, AECOM, Carys Everett, Tonkin & Taylor, and Mark Bayfield, Auckland Council Property Ltd
Merit	Elmgrove School	Elmgrove Front Area	Ambassador Jemma Wells, Fisher & Paykel Appliances



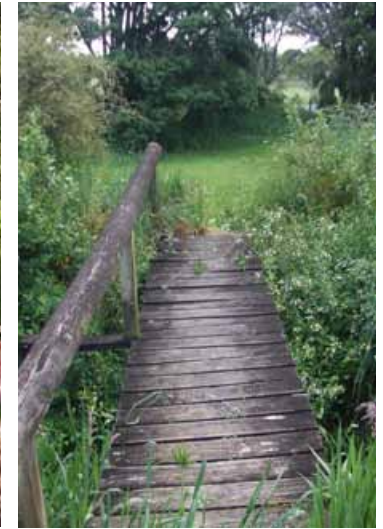
Presenting ideas to the team at Kowhai Intermediate School.



Ambassador Jesse Ashton helping the team at Freemans Bay School construct their watering system.



Engineer Rohan Pollard working on the new bridge design with the team at Ararimu School.



The problem: an old and unsafe bridge.

At the beginning of the school year, the senior class at this small rural school in Drury, south of Auckland, were told that they could no longer use the reserve that had traditionally been 'their area' during break times as the access bridge was now unsafe.

"The 16 students were keen to resolve the issue, so undertaking this engineering project was both relevant and also something that they were passionate about," said their teacher Jane Marshall.

They were mentored by local engineer Rohan Pollard of Blueprint Consulting Ltd, who was impressed by the enthusiasm of the students and the dedication of their teacher. "They have worked tirelessly and consistently over many months, and as a result have been rewarded with

an enriched learning experience this year," he said. "It has been a real privilege to have been part of this project."

The class started by surveying the site and studying the existing bridge, developing project planning skills using Gantt and fishbone charts, and working on maths activities such as comparing the rigidity of different geometric shapes.

In the second term they moved onto researching different types of bridges, learning about compression, tension, force and pressure, and surveying the local community to find out whether they would use a new bridge.

In the beginning their teacher found that it was a challenge to keep them focused on the technological process but by the end of June she noticed a shift. "Involvement and

interest increased, and parents frequently visited the classroom to follow progress and help their children to construct models," Jane said. "By term three, the bridge project had taken on a life of its own."

She taught maths lessons around angles, gradients, measurement and scale drawings, focused science session on physical forces and the properties of materials, and used literacy lessons to develop skills for communicating and presenting ideas, and for making informed team decisions.

"As an educator the value of undertaking the Transpower Neighbourhood Engineers Awards competition through Futureintech and working with an engineer was exceptional, exceeding my expectations as a teacher at this level. A fantastic opportunity!"

NZIFST/CREST Product Development Challenge: “technological practice that you can taste”

Congratulations to the students and teachers who entered their creative new food products in this year’s Product Development Challenge.

THE NZIFST/CREST STUDENT PRODUCT DEVELOPMENT Challenge brings teams of students together with mentors from the food industry to develop a new food or beverage product. The teams follow a technological practice pathway from identifying a market need, through research and development, small scale manufacture and consumer evaluation.

This year’s 21 entries included a kiwifruit-based table spread and kiwifruit pie filling, a non-alcoholic fruit-flavoured version of Speight’s beer, a variety of sports drinks, and snack bars for sale at the tuck shop. A number of teams came up with ‘breakfast on the go’ products, demonstrating a good grasp of what appeals to the modern teenager. The main meal wasn’t entirely neglected, as there were several ready-to-heat dinner entries as well as gnocchi and a BBQ-flavoured beef roast.

The team from Diocesan School for Girls won the Upper North Island contest with their ‘Racey Recovery: a speedy snack to keep you on track’ sports bar. Wellington High School’s ‘Snap’, a biscuit that can be consumed with plain milk as a breakfast substitute and eaten on the go, was the



Top: The team from Diocesan School for Girls with Futureintech Ambassador and mentor Bronwyn Munro from Horley’s (second from left) and teacher Ritu Sehji (right).

Above: Riccarton High School teacher Gillian Mandley, Futureintech Ambassador Anna Searle from Cookie Time and student Frankie Moull.

Left: Some of the winning products developed by the students in the Challenge.





The Wellington High School team with teachers Karen Saunders and Marietjie van Schalkwyk (left) and mentors Dennis Thomas and Shankar Kumarasamy from FSANZ (right)

winner of the Lower North Island competition. And the South Island judges gave top marks to Riccarton High School's 'F Bar'.

Participation in the Challenge introduces students to what a career as a food technologist would involve, and teaches a technological process that is applicable to the development of many other products, from computer games and electronic circuits to refrigerators, yachts and aircraft interiors.

The Challenge was developed by the New Zealand Institute of Food Science and Technology (NZIFST) in collaboration with the Royal Society of New Zealand's CREST Awards for science and technology projects, so all participants who complete the challenge and meet the CREST assessment criteria will earn this prestigious award, as well as potentially qualifying for NCEA Technology achievement standards.

The student teams receive support and guidance from industry mentors, who are often Futureintech Ambassadors, and may be able to visit company facilities and tour processing plants as they work on their projects. They are able to learn and apply skills in research, measurement and analysis as well as develop team work and communication skills.

Sponsorship from the food industry helped meet each school's costs in entering the Challenge, and professional development and support for the participating teachers was provided by staff from the Institute of Food, Nutrition and Human Health at Massey University (North Island teams) or from the Universities of Otago and Lincoln (South Island teams).

We'd like to encourage all schools to consider participating in the Student Product Development Challenge next year. Please contact your Regional Facilitator who can help find you a mentor from the food industry.

And thanks again to all the Ambassadors who provided their time and professional insight for these projects, and to the local industries that encouraged and supported the competition. We'd also like to acknowledge Jessie McKenzie of CREST and Futureintech Facilitator and NZIFST Careers Coordinator Jenny Dee, whose promotion and support of the competition is essential for its success.

To read more about CREST awards and the Product Development Challenge, visit www.royalsociety.org.nz/programmes/awards/crest/silver/recipient/2011/2011-nzifstcrest-student-product-development-challenge-2

STUDENT PRODUCT DEVELOPMENT CHALLENGE		
SCHOOL	PROJECT	RESULT
SOUTH ISLAND CHALLENGE		
Riccarton High	F Bar	Winner
	Barbefuel	Highly commended
	Easiyo Active Plus	Commended
	TATAtime	Commended
Kavanagh College	Fudgemallow SLAM	Highly commended
Queen's High	Speight's Fruity	Highly commended
LOWER NORTH ISLAND CHALLENGE		
Wellington High	Snap – the breakfast biscuit	Winner
Napier Girls' High	Curry in a Hurry	Highly commended
	Team Teen Beef Tagine	Commended
Palmerston North Girls' High	PRO-recovery	Highly commended
Tararua College	Virgin Malt Fizz	Commended
Taupo-nui-a Tia College	Protein on the Go	Highly commended
UPPER NORTH ISLAND CHALLENGE		
Diocesan School for Girls	Racey Recovery	Winner
Botany Downs Secondary College	Troppa Choc	Commended
Marist College	Dip Delight	Commended
	Grab & Go	Commended
Ormiston College	Kiwi Loaf	Commended
Sancta Maria College	Breakfast Cookie	Highly commended
Te Puke High	Kiwifruit pie filling	Highly commended
	Spreadables	Commended
	Green Clean	Commended

Best wishes from Futureintech

The aim of Futureintech is to increase the number of young New Zealanders who choose a career in technology, engineering and science.

Our strategy involves graduates with jobs in industry visiting classrooms and talking directly to students. Not only do the Ambassadors provide a personal introduction to their careers and workplaces, they can also contribute to making maths, science and technology subjects fun and relevant. This is important as students need to enjoy and achieve in these subjects to take advantage of the ongoing demand for skilled workers in fields such as IT, engineering and food technology.

As part of our contract with New Zealand Trade and Enterprise, we have set annual milestone tasks and targets. Again, this year our results indicate that we will reach and exceed the overall goal of the project. This success is due to the tremendous support we have from teachers and careers advisers around the country, and of course from our outstanding volunteer Ambassadors and their employers.

As the school year draws to a close, I'd like to take this opportunity to thank you for your contribution to the promotion of careers in technology, engineering and science, and ultimately to the improvement of New Zealand's economic, environmental and social well-being. The team's reflections that follow illustrate just how much we've enjoyed working with you all in 2011.

Angela Christie

Director-Futureintech

SeASON'S GREETINGS

Thank you from the
Futureintech team for your
valued contribution to another
highly successful year, and we
hope you have a relaxing and
well-deserved summer break!



Reflections from the Futureintech Team

Lynne Newell *Dunedin Facilitator*

A fantastic year for Futureintech in Dunedin with record visit numbers. The diverse range of topics and career talks that my growing Ambassador team have supported in schools is impressive and no doubt accounts for the repeat visit requests I constantly receive. I am looking forward to 2012 with Ambassadors supporting more classroom programmes and career events.

Catherine Smith *Christchurch Facilitator*

I thoroughly enjoyed the year. I worked with the full age range from Years 1 and 2 – Simple Machines at Russley School and Plant & Insect Science at Burwood School – right through to Year 13. At secondary schools I found curriculum-linked visits to physics and chemistry classes particularly effective. And Riccarton High School students who were interested in engineering went on a Big Day Out, visiting a diverse range of organisations that employ engineers.

Susan Weekes *Wellington Facilitator*

Having recruited a really wide variety of Ambassadors this year, I was able to offer presentations suitable for biology/botany and space science as well as the other sciences, maths and technology subjects. The Ambassadors' enthusiasm for what they do has been infectious, leading to some great feedback from teachers including: "I am so pleased that the first time I have ventured to have one of your ambassadors visit one of my classes it has been so successful!"

Jenny Dee *Napier/Hastings Facilitator*

The highlight of 2011 has been the positive feedback we've received from students and teachers - the thank you cards and letters from the students, and comments such as this one from a careers adviser: "Thank you for all your input this year. For the first time ever we have two Year 13 chemistry groups and numbers for Year 12 are again very healthy."

Margaret Brunton *Central North Island Facilitator*

Another year with wonderful outcomes. To all those teachers in the CNI region who started with a good idea and engaged Futureintech Ambassadors to accelerate their students learning, well done! I have enjoyed working with all the teachers and students who have used Futureintech's resources this year. The involvement of two CNI schools in the 2011 NZIFST/CREST Student Product Development Challenge has been an exciting development.

Gay Watson *South & East Auckland Facilitator*

As usual we've been very busy this year. Proactive teachers and careers advisors have made good use of exciting Ambassador presentations to showcase interesting careers in technology, engineering and science and forge links between the curriculum and the real world. "It makes all the difference to student learning for them to hear from someone who works in a particular field," said one teacher. I look forward to working with you all in 2012.

Julia Parker *Central & West Auckland Facilitator*

It's been very rewarding joining Futureintech this year and seeing how powerful the programme is. I love witnessing

Ambassadors interacting with students, and watching them share their passion and enthusiasm. It's great to see how the Ambassadors can really inspire the students to develop a vision for their own future. Being innovative with hands-on activities makes visits very interesting for everyone involved.

Rod Hare *North Auckland Facilitator*

It was one of those magic moments. Two classes – 60 students – went very still and quiet. Ambassador Dominic Lauten was showing them how to design a better catapult. What was holding us spell-bound was the fact that he was using maths to do it. It was the first time we had all seen just how a real problem could be described mathematically, solved as an algebraic equation and then translated back into a real world solution. Magic!

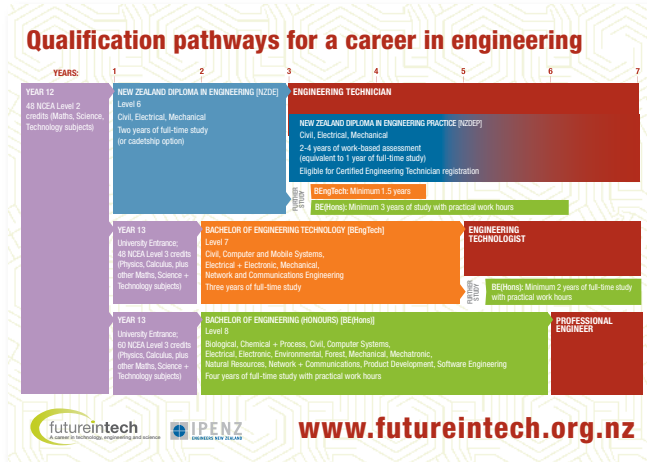
Katrina Arboleda *Administrator/Project Officer*

I have only been with IPENZ/Futureintech for a couple of months but it has so far been a very rewarding and valuable experience. I've enjoyed working with the organizing team for the TENZ Conference and coordinating the Transpower Neighbourhood Engineers Awards. It has been great to see the kids' enthusiasm and their growing engagement with engineering, science and technology.

Madeleine Rashbrooke *Writer/Researcher*

I only started working for Futureintech in May but I've already learnt so much about all the interesting jobs that are out there. I love hearing about how much schools enjoy working with our Ambassadors. The Pathways to Careers web pages and posters have been a lot of work, but getting positive feedback from both industry and schools makes it worthwhile.

‘Qualification pathways for a career in engineering’ poster



In response to your requests, we have made a PDF version of the ‘Qualification pathways for a career in engineering’ diagram that can be downloaded from www.futureintech.org.nz/pathways/engineering-qualification-pathways.cfm and printed on A3 paper for use as a classroom poster.

Endeavour Teacher Fellowships



The Royal Society of New Zealand offers Fellowships to teachers of science, mathematics and technology so that they can have the opportunity to experience the application of their subject outside the classroom. Successful applicants will spend two terms in industry or research organisations,

which should enable them to enhance their teaching with up-to-date ideas and modern technologies. A leadership programme will develop communication skills to enhance the transfer of knowledge to the wider school community.

For information on the Endeavour Teacher Fellowships, visit www.royalsociety.org.nz and search for Endeavour Teacher Fellowships.

Biomimicry Public Youth Forum

University of Auckland, 8 December 2011, 7-9pm

Biomimicry is a design discipline that seeks sustainable solutions by emulating nature’s time-tested patterns and strategies, for example using a leaf to inspire the development of a solar cell. In association with the Conservation Biology Congress meeting, the US Institute of Biomimicry has organised a Public Youth Forum.

What can a kaka’s beak teach us about the design of heavy duty demolition equipment?



The Forum will feature a panel of young New Zealand professionals and be facilitated by Michael Steedman of Ngati Whatua, who is the Kaiarahi for the College of Sciences at the University of Auckland.

Find out more at www.biomimicry.org.nz

Off the Wall
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World of Wearable Arts: Up Close

For the first time in well over a decade, WOW is taking a selection of their very best garments on tour around New Zealand to showcase the creativity and design technology involved in these works of art.

Off the Wall opens at Canterbury Museum in December 2011 then travels to a range of New Zealand cities and centres.

An online education resource has also been developed by Techlink in conjunction with the Ministry of Education to support the tour. It features selected garments from the exhibition and highlights the stories of their creation.

See www.worldofwearable.com/exhibitions

About Futureintech

Funded by NZ Trade and Enterprise, Futureintech is an initiative of the Institution of Professional Engineers New Zealand (IPENZ). Established in 2003, Futureintech is a practical attempt to increase the number of young New Zealanders choosing careers in technology, engineering and science – crucial sectors for the infrastructure and social and economic growth of the country.

Futureintech Ambassadors

Futureintech Facilitators around New Zealand work to develop links between schools and local industries. Central to this work is the recruitment of Ambassadors – young people working in technology, engineering and science who are trained by Facilitators to volunteer in schools. Their contribution includes giving presentations, explaining their work, supporting projects, providing a real-world perspective and demonstrating the practical applications of the curriculum. There are currently over 540 trained Ambassadors working with Futureintech, representing a wide variety of industries. Their support and that of their employers is greatly appreciated.

Futureintech partnerships

Futureintech maintains partnerships with around 300 companies, representing a diverse cross-section of New Zealand industry. Partners work with Futureintech in a variety of ways, from encouraging staff members to become Ambassadors to providing expert information for publications or promoting Futureintech to a wider audience. Futureintech's work would not be possible without their generosity and commitment.

Futureintech publications

Futureintech produces an ever-increasing range of print resources for teachers, students, careers advisors, caregivers and industry, all of which are available free of charge by request from head office.

Futureintech's website www.futureintech.org.nz is another key component of the initiative. It offers profiles of Ambassadors and their employers, a database of relevant tertiary courses and monthly regional news, and is regularly updated.

Futureintech's monthly newsletter **enews** is distributed in alternate months to schools and industries, and aims to ensure that all stakeholders are kept fully informed of Futureintech's activities and of the resources we provide.

Futureintech Facilitators

Futureintech's regional Facilitators promote and maintain relationships with schools and industry employers. This involves recruiting and training Ambassadors, advising teachers on how Futureintech can best support their programmes, arranging, planning and supervising Ambassador visits and distributing resource materials.

Facilitators are supported by Host Partners, who provide the office space which enables them to work remotely from the Wellington national office. Host partnerships ensure that Facilitators not only benefit from a collegial atmosphere but also have daily exposure to an industry-related workplace.

If you have a class that might benefit from contact with a Futureintech Ambassador, or to discuss other ways Futureintech may be able to help, please contact your local Facilitator to discuss how we can work together.



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