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## About TENZ

Technology Education New Zealand (TENZ) is a professional network working to support and promote Technology education in New Zealand. TENZ:

- fosters the development of Technology in the New Zealand Curriculum.
- develops and maintains national and international links between Technology education professionals and with the wider technological community.
- supports professional, curriculum, and resource development in Technology Education.
- encourages research in Technology Education.
- organises a biennial national Technology Education conference.

# National Technology Education Awards to be presented in Christchurch

The TENZ Trust Board with the support of IPENZ Engineers New Zealand has instituted a national award scheme to provide professional recognition for excellence in technology education.

The first in this series of awards was made at the TENZ 2003 conference in Hamilton.

A second series of awards will be presented at the 2005 TENZ conference in Christchurch.

Awards will be made in four categories:

### Outstanding Teacher in Technology Education Award

This award is made to teachers who have displayed outstanding capability in teaching technology over a period of time. They may be a coordinator or Head of Department or those not holding such positions but consistently displaying excellence in their teaching practice.

Nominations will be considered by a selection committee established by the TENZ National Council and the decisions made referred back to the full Council for ratification. Each individual award will be accompanied by a short citation.

### Teacher Educator in Technology Education Award

This award is made to lecturers, advisors, facilitators, consultants or teachers for their service to teacher development work in technology education. The category is for high quality work that has developed teacher understanding and confidence over a significant period of time in pre-service and/or in-service training.

### Subject Leadership in Technology Education Award

This award recognises excellence in subject leadership. It is made for a significant contribution over a period of time in developing technology education programmes in a school or organisation and achieving consistently high standards of performance from students.

### Outstanding Contribution to Technology Education Award

This is the highest professional award made by Technology Education New Zealand. Those nominated may come from a school management, advisory, lecturing, teaching, research, curriculum development, administration or 'industry' background. Recipients will have given service to technology education over a long period of time and made an outstanding contribution, showing commitment and leadership.

### Nominations

The closing date for receipt of nomination forms is Friday 29 July 2005. Nomination forms can be downloaded from: [www.tenz.org.nz](http://www.tenz.org.nz)

## You too can ride the CREST wave...

### Did you know that:

- CREST is a fabulous curriculum support activity for all Year 6–13 technology and science classes.
- CREST is ideal for use in gifted and talented education too.
- CREST projects can be entered into technology and science fairs or Bright Sparks, as well as be used to provide evidence against NCEA A/S or U/S.
- support is available for all CREST users.
- students undertaking Silver and Gold can apply for project funding.

### June CREST update:

#### Student Venture Capital Fund

There is a lot happening this year with CREST, and one of the developments is the establishment of a Venture Capital Fund for students doing Silver and Gold projects. All students doing a Silver, Team Silver, Gold or Team Gold CREST project can apply to the this Fund for assistance with funding their project. An RSNZ panel will make funding decisions and these decisions are final.

#### Teacher Workshops

Another development in relation to CREST is teacher workshops. We want to provide more support to CREST teachers and are planning workshops around NZ, after school, for a couple of hours where teachers share what they are doing, ask questions of us, and support networks are set up... Keep an eye out for these happening in your area. Faxes will be sent out to schools.

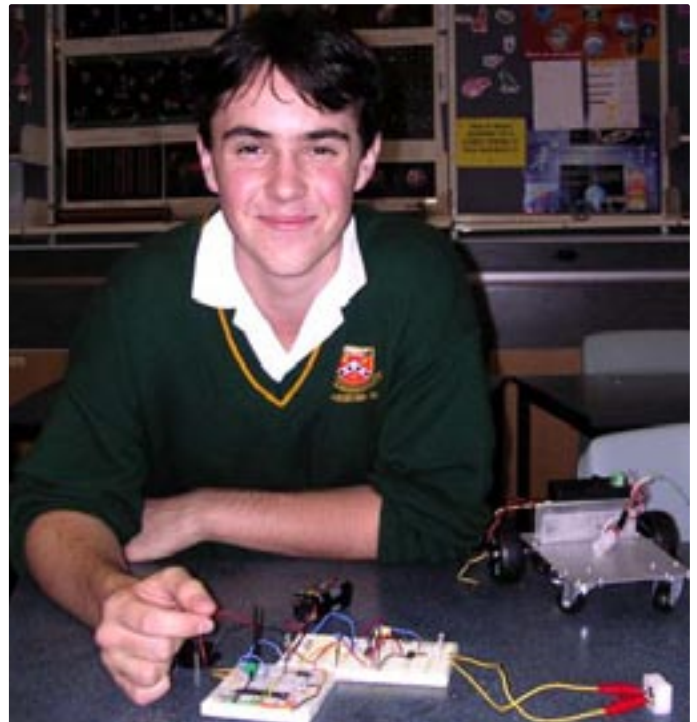
#### CREST On-line

To enable a more accessible and streamlined service, we are putting CREST on-line this year.

#### CREST Gold: NavBot – indoor navigation system

Matthew Richardson of The Manurewa High School is one of our new Gold CREST students for 2005. Matthew has a keen interest in things robotic and his choice of CREST projects reflects this. For his Silver CREST he conquered the age-old problem of having to mow the lawns with the invention of a robotic lawn mower.

Ever wondered what a major limitation of GPS is? Well,



Matthew Richardson with his bread board prototype of the NavBot

Matthew has and it is of course the fact that it does not work indoors. This fact got Matthew interested on working on a system that would work indoors. Think of the applications! You could direct a robot around a warehouse to collect goods or you could invent a see-eye robot to help people with limited sight navigate unknown indoor environments...

Matthew is using skills in mathematics, robot building and computer programming to develop a working prototype. We can't tell you how he intends to solve this problem right now, but watch this space to see what this bright young man will come up with!

#### For more information

Contact Cris Westrupp tel 04 470 5772, cell 0274 575 010  
email: [cris.westrupp@rsnz.org](mailto:cris.westrupp@rsnz.org), fax: 04 473 1841  
CREST, Royal Society of New Zealand, PO Box 598, Wellington  
[www.crest.org.nz](http://www.crest.org.nz)

CREST is proudly supported by:

**The Todd Foundation**

**Eastern and Central Community Trust**



## Insects inspiring a new wave of robotics

Insects are rarely held in high regard – mosquitoes bite, flies annoy, locusts destroy crops, and cock-roaches just give us the creeps. However, a new line of research is studying their unique attributes – not to work out better ways of wiping them out, but to guide the next wave of advances in biomimetic robotics.

Biomimetics, in case you didn't know, is a term used for engineering systems that make use of traits observed in biology. It may be a relatively new term, but the practice of borrowing from nature is old. Even the earliest stone-age implements mimicked attributes of other animals, such as claws used for digging or teeth used for ripping meat.

Entomologists have often marvelled at and puzzled over the difficult tasks that insects can perform, despite the apparent absence of a great deal of brainpower. Perhaps by learning about and then mimicking the attributes of insects, which have been honed by millions of years of evolution, we can fast-track the development of robots – so that they can do what we want them to do without needing brains the size of

a planet.

Insects have obvious practical advantages for researchers. They are plentiful and easy to maintain in laboratories and they have an exoskeleton (a hard outer covering) rather than an internal skeleton like humans, making the study of the way they move relatively easy. They are also immensely diverse, offering a wide variety of strategies for things like locomotion, navigation and vision. And recent advances in miniaturisation now make the construction of insect-sized robots much more of a reality.

This fascinating area of research is the subject of 'The buzz about insect robots', the latest technology article in Nova on the website of the Australian

Academy of Science [www.science.org.au/nova/o84/o84key.htm](http://www.science.org.au/nova/o84/o84key.htm)

The Nova article examines why robotics engineers are now hard at work designing machines that mimic, for example, the biomechanics of the cockroach and the navigational strategies of the bee.

Other technology features on NOVA include:

- Biodegradable packaging
- Sustainable agriculture
- Alternative fuels
- Car safety design
- Composite materials
- Mobile phones
- Genetic engineering

All articles are written for students and provide links to other useful sites, further readings on the topic, activities for students and a glossary of terms. All this makes it a 'must visit' site for technology teachers.

## Biotechnology Learning Hub takes off

About 250 teachers were recently introduced to the Biotechnology Learning Hub [www.biotechlearn.org.nz](http://www.biotechlearn.org.nz) at workshops held in Dunedin, Christchurch, Wellington, Hamilton and Auckland.

The response has been very enthusiastic, with teachers expressing a range of different ways in which they will be able to use the resources provided.

One Head of Technology at an Auckland Intermediate School, for example, is very keen to explore ideas from the forensics unit plans with her students next year. A Hamilton primary school principal said his school is "taking baby steps in the direction of biotechnology" but that

he felt more confident about access to ideas for teaching contexts.

High school teachers have also been impressed and are looking forward to exploring biotechnology in new contexts. The video clips and interactive activities seem to be particular favourites because of the way they give students access to procedures and people not easily available to schools.

As part of its content, the Hub features in-depth examples of biotechnology in action, including mining milk for a range of healthful supplements, the biological control of possums, and a very new research focus in New Zealand called nutrigenomics (the way our food and our genes interact). Case studies of classroom teaching have also been developed to highlight effective pedagogical practice.

The Hub was launched in March of this year by the Honorable Pete Hodgson and is still only in its infancy. Content will continue to be developed in response to your needs. Please contact the Hub staff by emailing [enquiries@biotechlearn.org.nz](mailto:enquiries@biotechlearn.org.nz). They look forward to hearing from you!

The Hub is currently managed by the Centre for Science & Technology Education Research at the University of Waikato, in conjunction with CWA New Media.

### So... what is it?

It's the distillation unit used in a lavender farm. The visit, which is the subject of a case study on the website, was organised as part of a Year 9 Biotechnology unit investigating the propagation of lavender plants and production, packaging and marketing of lavender oil for aromatherapy uses.

Article submitted by Cathy Bunting, Project Manager, New Zealand Biotechnology Learning Hub

### What is it... ?



## Space Day 2005

for the wonders of the universe and inspiring them to continue the stellar work of today's space explorers".

International in its scope, this award-winning program involves hundreds of thousands of teachers and millions of students throughout the United States, Canada and beyond. Space Day events have taken place in 21 countries, on six continents. Thanks to widespread media support, nearly a billion people have attended Space Day events since its inception in 1997.

Space Day 2005 had the theme 'Return to the Moon' – check out [www.spaceday.org/index.html](http://www.spaceday.org/index.html) for the events, and to be put on the mailing list for next year's event.



The Space Day educational initiative takes place annually on the first Thursday of May. Its goal is to promote mathematics, science, technology and engineering education by "nurturing young peoples' enthusiasm

## TechTalk launched

A very recent innovation in technology education in New Zealand has been the launch of the new web-based TechTalk forum.

Set up by Hamilton-based Mike Forret, TechTalk provides a 'place' where anyone

with an interest in New Zealand technology education can come to air their views, share their ideas, contact others involved in technology education, discuss, debate, learn, ask for help, provide help, or just check out what others are saying and doing.

"TechTalk is neutral ground," says Mike, "and has no affiliation with any particular institution or organisation. It is independently organised and managed and its only agenda is to promote interest and involvement in technology education"

### The TechTalk site

TechTalk is organised in five sections:

- **Welcome to TechTalk**
  - Introduction – about TechTalk and how to register.
- **Community**
  - Member introductions – introduce yourself to the TechTalk community.
  - Can anyone help? - Whatever technology education question or problem you might have, there is a good chance that you are not alone and that someone else might have the answer or a possible solution. This is the place to post your question.
  - Resources - If you have come across a useful book, article, video, website, piece of software, practical kit, etc. that might be of interest to others, here is the place to share the information.

- **Events** - The place to discuss and post information about technology education related events.
- **Developing TechTalk** - The structure of TechTalk is not fixed. It is intended to evolve in response to the community's needs and wants. If you have suggestions on how to make TechTalk more effective in meeting its goals then please share those ideas here.
- **Curriculum**
  - Essence statement - What are your views, suggestions, questions regarding the developing technology essence statement?
  - Exemplars - Discussion regarding technology exemplars.
  - Matrices - Issues relating to the development and use of technology education assessment matrices.
- **Assessment**
  - NCEA – Forum concerned with National Certificate of Educational Achievement in technology education.
  - Scholarship - Forum concerned with scholarship technology.
  - Research and Development
  - General - Discussion aimed at technology education in general:

education research, curriculum development, professional development.

- **Primary** – A forum for primary-focused technology education research and development.
- **Intermediate** – A forum for intermediate-focused technology education research and development.
- **Secondary** - A forum for secondary-focused technology education research and development.

As explained in Developing TechTalk, this is just an initial structure and will probably change as TechTalk develops.

### Get talking now!

To register and participate in TechTalk click on the logo



or go to [techtalk.bitcache.net](http://techtalk.bitcache.net)

If you have suggestions about the development of TechTalk, would like to set up a particular discussion group or forum then either post your suggestions in Developing TechTalk or email: [techtalk@bitcache.net](mailto:techtalk@bitcache.net)

**t-news hounds...** We welcome your suggestions on news items for inclusion in future issues. If it's topical and of interest to others in technology education email the material to [tenz@ipenz.org.nz](mailto:tenz@ipenz.org.nz).

## TENZ 2005 Conference

TECHNOLOGY EDUCATION – A FUTURE IN TECHNOLOGY

# TENZ Conference 2005 5–7 October, Christchurch

### Conference update

#### Call for papers – don't miss out!

Just a reminder that papers are due to be sent to the conference administrator by 30 June 2005. Papers will be refereed so it is important that they are in on time.

#### Outlines of proposed workshop presentations

are due to be submitted by 29 July 2005. Guidelines for presenters are at [www.tenz.org.nz](http://www.tenz.org.nz) or contact the conference administrator, email [tenz@ipenz.org.nz](mailto:tenz@ipenz.org.nz)

**Conference CD** This year we are planning to publish conference proceedings on CD. No more heavy books to take to bed!!!!

#### Student Teacher Discount \$120.00

As a contribution to the future of technology education the committee is offering a limited number of conference places for students currently enrolled in teacher education programmes/ On registration please provide a copy of student ID and written confirmation of enrolment.

**Howard Fancy** will be presenting a paper at the conference on Enterprise Education in Schools. I am sure

you are aware of Howard's profile in education in New Zealand. It is wonderful that we have such obvious support for technology within the Ministry.

**Our Conference Dinner** promises to be an excellent night out.

Amazing venue with wonderful live entertainment. Looking forward to seeing you there.

**A great line-up of workshops** – we have a number of exciting workshops planned including Robotics – Science Alive, Zig Zag Ltd, Polymer clay, New Zealand Institute of Food Sciences, LEARNZ Virtual field trips, Manzana Ltd Interactive whiteboards, Electronics at Year Four- to name a few

### Technology Education HoD Technology Day Tuesday 4 October 2005

#### Attention All Technology Heads of Department

The GIF – Technology Education initiative has organised a special one day event for Heads of Department and teachers in charge of technology which will be held in conjunction with the TENZ 2005 Conference in Christchurch.

The morning session will provide an overview of the nature and breadth of the GIF -Technology Education initiative itself:

- Beacon practice
- Technology online
- Resource development
- Technology education promotion

Additional sessions will focus on updates on the latest developments in technology education including:

- The technology education in the NZ curriculum project
- The 'essence statement'
- Directions and findings in technology education research
- NCEA & Scholarship

In the afternoon the main focus will be on change management and leadership in technology education.

A registration form can be downloaded at: [www.tenz.org.nz](http://www.tenz.org.nz)

#### How to find out more...

Check out the TENZ website, [www.tenz.org.nz](http://www.tenz.org.nz), which is kept up to date with all the latest news and developments.

For general conference information contact the conference convener at [tenzconference@cce.ac.nz](mailto:tenzconference@cce.ac.nz)

## “I call this my ‘gift’ year !”

Wool and possum blended fibres and products, and the industries involved in producing them were the main focus of Pam Knight's 'gift' year – her 2004 Royal Society of New Zealand Teacher Fellowship year.

Based at the New Zealand Wool Testing Authority (NZWTA) in Napier, Pam's year began with researching the history of the NZ wool and possum industry. As her year unfolded, she visited over 50 New Zealand industries, including an organic farm, tanneries, knitting and weaving plants, to retail outlets, where she observed state-of-the-art technology sitting alongside machinery which was 60 or more years old.

Pam's research took her to the UK where she visited buyers of our merino wool, and visited the new Wool Testing Authority Europe in Wales.

On her return to New Zealand she headed south to Nelson, Christchurch and Dunedin to complete her industry visits. Flexible work hours enabled Pam to attend many courses, some related to NCEA Technology, others hands-on creative textile forums. Felting, dyeing fibre, yarn and fabric, flax weaving, hand and machine knitting and a variety of fabric embellishment techniques, kept Pam busy. She met some amazing textile artists and tutors, and contracted 2 of them to run courses for Hawke's Bay Textile Technology teachers in 2005.

At the end of a hectic and very enjoyable year, Pam could look forward to passing on her experiences to her classes back at Woodford House School, including taking up the invitations by employers to visit them with senior students. “I call this my ‘gift’ year,” she says. “It was time out from the demands of teaching, time to refresh, to learn new skills, to make new contacts and friends, to appreciate what has gone before, and to look forward to what is ahead in returning to the students and staff at Woodford in 2005.”

The full documentation of Pam's year, together with many other teachers' stories of their Fellowship years, can be found on the Royal Society of New Zealand website at [www.rsnz.org/awards/teacher\\_fellowships/](http://www.rsnz.org/awards/teacher_fellowships/)

Remember that applications for the 2006 Fellowship year are due by 15 July 2005.



### Help us spread the word

This edition of t-news has been sent to TENZ members who have provided an email address and others who have requested a copy.

We welcome the wider distribution of the newsletter to individuals or groups who may be interested in information relating to technology education in New Zealand.

To be added to (or removed from) the distribution list or to make suggestions on format or content, email [tenz@ipenz.org.nz](mailto:tenz@ipenz.org.nz).

## Futureintech update

### The importance of Technology Education

It's widely accepted that New Zealand needs more wealth creators if we want to have a higher standard of living.

What isn't always recognised is the crucial role of technology education in achieving this. Education is needed to grow and nourish these entrepreneurs and innovators.

This is why Futureintech in collaboration with GIF – Technology Education has released a briefing paper entitled "Technology Education... the key to New Zealand's future", looking at the challenges and opportunities facing technology education, a subject often underappreciated by schools and industry.

Copies of this publication will be sent this month to the Secretary of the Board of Trustees in all schools and HoDs Technology in Secondary Schools. Contact Futureintech for a hard copy. Kiwi physics

### How much energy is in a car crash?

How do satellites get into space? How do they stay up there?

If a sumo wrestler and a dwarf jump off a cliff, who hits the ground first?

The answers might surprise you...

Find out how the physical world really works the help of Matthew Ridge, Marc Ellis and Kiwi Physics.

This new interactive CD-ROM, brought to you by Futureintech uses games, puzzles, videos and animation to show how physics knowledge can be applied.

The topics include waves, cars, satellites and bungee jumping, and you can meet



people who've made a career out of using physics for things like surfboard design, astrophysics and police investigations.

Almost a year in the making, this great new resource for schools will be launched at a Parliamentary function later this month and be available for schools soon after.

### Futureintech Ambassadors in action

Successful training days have been held around the country for the next intake of Futureintech Ambassadors – young engineers, technologists and scientists with a passion for what they do.

A whole range of school projects are already lined up already for many of the Ambassadors, particularly in Auckland.

Students at Buckland's Beach Intermediate have been studying "innovation and inventors" with the help of Ambassador Wendy Robinson.

Wendy is a Food Technologist with Tip Top, helping the company come up with new ice-cream products. She's been teaching the students about brainstorming and product development, with the help of

examples from her work.

She was able to show the students an example of a brainstorm sheet used at Tip Top for a "King Kong" ice-cream to tie in with the movie release. The students were then set the task of creating ideas for their own new ice-creams, and stunned their teachers with innovative ideas, according to all accounts.

Meanwhile Botany Downs Secondary School have been using scientist Kitty Lai from ESR for their units on forensics, being studied by a class of gifted and talented Year 9 students.

And Mount Eden Normal School are embarking on a Neighbourhood Engineer's Award project to transform their "Rocky Hill" into a safer and more useful area.

### How to contact us

Visit our website at: [www.futureintech.org.nz](http://www.futureintech.org.nz), or email [enquiries@futureintech.org.nz](mailto:enquiries@futureintech.org.nz).

