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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.

## Feedback requested on 'Technology Essence Statement'

The latest draft of the curriculum essence statement for technology has just been released for comment. This marks the next stage in the consultation and feedback process in the NZ Curriculum/Matauranga Project.

The 'curriculum project', as it is commonly known, involves redeveloping the New Zealand curriculum and te marautanga o Aotearoa – as a result of recommendations from the Ministry of Education's 2002 curriculum stocktake report. The end result of the process will be one document which will replace the current seven curriculum statements. The new curriculum will include 'essence statements' for each of the essential learning areas (including the new area of learning languages). The existing curriculum statement for technology will then sit under the final essence statement for technology as a support document. Ongoing information on the project can be obtained on the TKI website at [www.tki.org.nz](http://www.tki.org.nz)

The newly released essence statement for technology explains the changes being proposed and explains why.

The key recommendations at this stage are:

- The three strands are redefined as Nature of Technology, Technological Knowledge and Technological Practice
- Achievement objectives have been identified to support the three strands
- Technological areas and contexts have not been stipulated - but a broad coverage is still expected.

Reasons for these recommendations include:

### The strands

The current curriculum is focussed on developing technological practice through the integration of the three strands. This integration is now represented in the draft essence statement as a single strand named technological practice. The

importance of understanding the nature of technology has been recognised by being given a strand in its own right. While knowledge gained through technological practice is an essential part of technological literacy, the new curriculum structure recognises that technological knowledge can also be gained in other ways. This recognition is expressed in the updated technological knowledge strand which refers to knowledge that is developed and can be expressed outside of practice.

The inclusion of the nature of technology and the technological knowledge strands allows the opportunity for learners to study aspects of technology in ways other than through their own practice.

### Achievement objectives

Research on teachers' classroom programmes has resulted in a matrix of indicators of progression for technological practice. These have been focussed on three achievement objectives which are at the moment called; undertake brief development, undertake planning to support and inform practice and develop and evaluate technological outcomes. In addition current research is exploring the nature of technology and technological



knowledge. This research involves talking to technologists and trialling these findings in the classroom. The findings from this research will inform the development of the achievement objective and indicators of progression for the remaining two strands.

### Areas/Contexts

The current curriculum names technological areas and contexts. However the new essence statement does not identify any areas or contexts in recognition of the restrictive nature of doing this. Classroom practice and research has clearly shown that learning in technology often goes across a number of technological areas and contexts and beyond those named.

### Implications for programme design

A technologically literate student should be able to engage in technological practice, develop their technological knowledge and critique technological achievements and issues. The aim of technological literacy requires this exploration from a wider perspective than students' own technological practice. Therefore technology units may now be situated within a strand or a variety of combinations in order to enrich the programme.

However all strands must be comprehensively covered and integrated within an overall programme in technology education. The removal of the restriction of named technological areas and contexts will allow schools to develop programmes that reflect their unique communities. A consequence of these changes means that the potential for diversity in technology education is increased.

The Ministry is keen to receive feedback on the nature of these changes and the rationale for change. To date much of the feedback process has been web based - centred around the online discussion forum. However, many who have registered to be part of this feedback process have found this medium to be difficult to access and far from user friendly. This has now been remedied and an easy access (no password required) website containing the full essence statement and rationale for change can be found at [www.tech.cmp.ac.nz](http://www.tech.cmp.ac.nz). The website encourages feedback directly online or it can be provided to Heather Bell, senior adviser, at the Ministry of education [heather.bell@minedu.govt.nz](mailto:heather.bell@minedu.govt.nz) and/or [TENZ@ipenz.org.nz](mailto:TENZ@ipenz.org.nz)

It is expected that an official draft of the curriculum will be published later this year with the publication of the final document scheduled for late 2006.

## TENZ 2005 Conference

TECHNOLOGY EDUCATION – A FUTURE IN TECHNOLOGY

### HoD Technology Day Tuesday 4 October 2005

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)



**TENZ 2005  
Conference****TECHNOLOGY EDUCATION – A FUTURE IN TECHNOLOGY****5th – 7th October 2005****Christchurch College of Education**

In our last issue we looked at the social events on offer in Christchurch now its back to the programme to highlight some of the confirmed activities:

**Keynote speakers include:**

- **Welby Ings** Welby lectures in the School of Art and Design at Auckland University of Technology. He is well renowned as an inspirational presenter and has had a close association with the development of technology education in schools over many years. Welby is a practicing designer, writer and film maker with research interests in the areas of music video design, narrative, film, graphic design, education and queer language and politics. He is an elected fellow of the Royal Society of Arts [Britain], a member of the Technology Advisory Group of the New Zealand Royal Society and a consultant on creativity in learning and teaching.
- **Professor Peter Jackson** Canterbury University's Pro-Vice Chancellor of Engineering, Peter Jackson, has only just been appointed to this new position and is delighted to have the opportunity to be involved with the TENZ conference. Peter has a strong engineering background combined in recent years with the use of computers to achieve greater efficiency in design, and was involved in work associated with one of the Kiwi challenges for the Americas Cup. As head of Canterbury's engineering and computer-science departments, he is determined to see them become the powerhouse of the high-tech Silicon Plains and wants greater collaboration and communication with the sophisticated industry on the university's doorstep. He is an elected Fellow of the Royal Aeronautical Society and of the Institution of Professional Engineers of New Zealand and a member of the American Institute of Aeronautics and Astronautics.

**Hands-on workshops include:**

- **Working with Polymer Clay with Petra De Gues** Polymer clay is, as the name implies, a pliable, blendable polymer compound. It's not a true clay but it can be used much like

clay. What makes polymer clay special is its versatility. It comes in dozens of colors, and you can blend clays together like paints to make your own colors. The process that fuses the particles into a solid requires only low temperatures, low enough to use a home oven as your kiln. The colors and size are not changed during firing. When fired, the clay gets hard enough to make durable objects, and can be finished in various ways to obtain textures from glassy to stonelike.

- **Robotics with Vivienne Mander from Christchurch Science Alive** The latest Robotic software from Australia will excite even the most casual of Star Wars fans while offering some motivational ideas for activities in the classroom.
- **Virtual Reality Field Trip with Pete Somerville, LEARNZ** Pete and his team are regularly venturing into the countryside to give those who can't make it the opportunity of seeing what life in the more inaccessible areas of NZ really looks like.

**Visits to 'local attractions' will include:**

- **Lane Walker Rudkin** One of Christchurch's largest clothing manufacturers who have made an international name for themselves over many years. A full range of production methods and materials will be visible on this visit.
- **Christchurch Engine Centre** The visit will include a trip to the Air New Zealand maintenance hanger. The high quality of staff and facilities required to work on this equipment has to be seen to be believed.

**Call for papers**

Conference organisers are hoping for a good response to the call for papers and workshop presentations. Papers should be submitted by June 30 to allow for refereeing and publication before the conference. Outlines of proposed workshop presentations are due to be submitted by July 29 2005.

Guidelines for presenters are at [www.tenz.org.nz](http://www.tenz.org.nz) or contact the conference administrator at [tenz@ipenz.org.nz](mailto:tenz@ipenz.org.nz)

**How to find out more...**

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

## Bright Sparks

### What is it then?



Photo courtesy of the Taranaki Daily News

It's an automatic hutch door - which Jozien Hannah and Shinade McKenna of St Joseph's School Opunake designed for their pet/wild rabbit, Karmakaze. It seems that Karmakaze gets stressed being locked in, so they organised a come-go as you please door, with a touch pad control. The project won the two girls 1st Place in Category A of the 2004 Bright Sparks 'Hi Tech' competition. In this year's Bright Sparks 'Hi Tech' competition a total of 42 prizes will be awarded, with a total of \$5,000 in cash prizes for 1st, 2nd, 3rd and highly commended in five categories at both junior and senior levels.

The first place winners will receive their prizes at the Industry Awards weekend in Christchurch with the teachers of the two supreme award winners (senior and junior) also being invited to attend the event.

A series of practical workshops, designed to introduce students with some experience to key skills in project making will begin in some centres this month. These skills will include: Remote Control (RF and IR); serial data transmission; PICAXE skills; ADC (light, temp, Hall effect devices), motor and servo control (for robotics etc). The workshops will be free to students and accompanying teachers and / or parents - with a small charge to cover take-home materials. Time to get organised - 29 AUGUST 2005 is the target date for submission of projects.

For more information or to download an entry form go to [www.brightsparks.org.nz](http://www.brightsparks.org.nz)

### A case for Mummies

Mummies mean business for one of NZ's leading Crown Research Institutes, Industrial Research Limited (IRL) - and in the April 2005 edition of their Innovate newsletter they explain why.

The article case studies the development of a purpose built display case to solve deterioration problems which the Auckland Museum was having with one of its star attractions - the Egyptian mummy. Dramatic fluctuations in Auckland humidity appeared to be

responsible for damage which was occurring to the fragile organic material in the mummy.

Using guidelines set out by the Getty Conservation Institute a system was developed to enable a permanently low oxygen atmosphere to be maintained inside the mummy's case.

Not only was this particular problem solved, but it looks like the system developed now has the potential to be marketed world wide to solve the problems associated with a whole range of items that could deteriorate if not kept in controlled conditions.

A complete description of the case study can be readily accessed at : [www.irl.cri.nz/whats\\_happening/innovate/issues](http://www.irl.cri.nz/whats_happening/innovate/issues)

Innovate is the free quarterly newsletter covering world-leading technology and research projects undertaken by IRL for business. Each issue is available in PDF format at : [www.irl.cri.nz](http://www.irl.cri.nz)

### The Millenium Assessment Report

by Marian Douglas - Zayed College for Girls, Auckland

Last month the news was full of events that took the front pages, including the death of the pope and the marriage of Prince Charles. But how many people heard or read of a report prepared by 1,300 scientists over a three year period about the state of the natural ecosystems of Earth that support life as we know it?

The Millenium Assessment report did not suggest a happy future, explaining that about 60% of the natural systems that support life are in a critical condition. One of the great contributors to this current state is the development and marketing of technologies that damage Earth's living systems.

Responsible technologists have been considering the environmental impact of their developments for some years but too often the economic factors have been prioritised over others such as the environmental factors. The contents of this report suggest that all technologists need to carefully consider and give a greater priority to the way their developments could impact further on the living systems that keep us alive.

TV 3 ran an interview with a co-author of the report, who felt confident that people could revitalise the health of Earth's living systems - but only if action was taken immediately. This interview and other associated information was presented on 'Campbell Live'. A copy of that programme is available to teachers wishing to use it in their classes. (Contact TV3 Ventures, PB 92624, Auckland)

To find out more about the Millenium Assessment Report, and join the discussion on the role that technology educators can play in providing an immediate response, go to:

[www.millenniumassessment.org/en/Products.Synthesis.aspx](http://www.millenniumassessment.org/en/Products.Synthesis.aspx)

## Qualifications update

### Technology gets its first 'top scholar'

New Zealand Scholarship is designed to extend our best secondary students and enable top scholars to be identified and acknowledged. Alice Irving, a Year 13 student at Havelock North High School was awarded Scholarships in three of her subjects in 2004 – two, including technology, with outstanding performance.

In April, Alice joined other top Scholarship students from around New Zealand at a gathering at Government House in Wellington where she was presented with \$4,000 for her two outstanding performance awards and the award of top scholar overall in technology. This was the first such award in the new learning area of technology.



Alice with technology teacher Carol Rimmer

The project which Alice presented for Scholarship focussed on the design and construction of a range of garments for her brother, a student in Dunedin, as the client.

As part of her research she visited Dunedin to explore the environment and interview a range of students. She also followed the professional practice of a graphic designer and was exposed to a range of new skills including coming to terms with all of the challenges that designing for man brought to her practice.

Alice was awarded one of the prestigious law Scholarships from Russell McVeigh and has now moved on to Victoria University where she is studying for a double degree in Law and Arts.

### NZQA Web site Updated

The release of the assessment schedule, chief assessors report and statistics for each of the externally assessed standards at Levels 1, 2 and 3 completes the recent updating of the dedicated technology pages on the NZQA website. These pages can be accessed at [www.nzqa.govt.nz/ncea/assessment](http://www.nzqa.govt.nz/ncea/assessment)

This page makes available the text of a recent letter written to all graphics and technology teachers by Steve Bargh, the National

Assessment facilitator for Graphics and Technology. In this letter Steve draws teachers attention to:

- the importance and relevance of the assessment specifications
- availability of examples of student material that gained Scholarship or Outstanding Performance
- the achievement standard review process
- authenticity of work submitted by students

The page also links to an Issues 2004 document. This addresses some of the major concern which have been expressed concerning the level 1 external results and AS90050 in particular.

### Review of Level 3 Technology Achievement Standards

The subject writing group for technology has come up with a series of recommendations in response to the initial consultation feedback received. Several significant changes have been proposed.

#### AS3.1 and AS3.2

There was general feeling within the group that the de-emphasis in the technological areas outlined in the draft Essence Statement for technology should be reflected in the structure of the Level 3 standards. The group considers that the focus for both AS3.1 and 3.2 is the addressing of a client issue and that the process and principles inherent in the development of evidence for each would be similar regardless of context. The recommendation is therefore that the area specific standards be deleted leaving

- One generic 3.1 (AS90613) and
- One generic 3.2 (AS90620)

#### AS3.6(Knowledge) and AS3.7(Skills)

Similar reasoning is behind the proposal for:

- One generic 3.6 (AS 90628) with a change in title to ensure that the intent is better explained
- One generic 3.7 (AS90687) with a title change to remove the area specific aspect. Skills will be replaced by techniques which provides a step-up from Level 2.

Changes in the credit value is also proposed for level 3 standards:

- AS3.1 and 3.2 move from 6 credits to 8 credits - to better reflect the time and effort required by students to produce the necessary evidence
- AS 3.3 is reduced from 6 credits to 4 credits – to better reflect the evidence and effort required for this standard
- AS 3.4, 3.5 3.6 and 3.7 move from 3 credits to 4 credits – to reflect the expectations of the standard.

The recommended changes and a full rationale for the proposals have been distributed to schools and detailed feedback has been requested by Monday 23 May.

### Changes to assessment at Level 1

In addition to providing feedback on the reviewed level 3 standards teachers have been asked to consider whether they agree or disagree that AS90050(1.6) – Present a technological solution that addresses the requirements of a brief, should have its mode of assessment changed from external to internal.

The observation has been made that the nature and requirements of the external assessment have narrowed the way in which evidence can be presented for external assessment. Students are required to provide a brief and an evaluation and analysis of their

solution. In most situations this is written. Internal assessment of this achievement standard would enable teachers to undertake ongoing assessment of the student's capabilities throughout the development of the solution, in addition to providing opportunities for more relevant and student specific means of presenting evidence of assessment such as conferencing, video or group presentation.

If this standard were to be changed to an internally assessed standard then it would take effect from 2006. **This would mean that 2005 would be the last year that a visiting assessor mode of assessment would be used. Feedback is requested by 23 May.** From 2006 the external assessment of AS90049(1.5) and 90051(1.7) would be through a submitted portfolio similar to Levels 2 and 3.

## The CIVENG Programme

CIVENG is a hands-on, school based programme sponsored by the civil engineering industry and education providers. Presented by Helen and John Irvine, CIVENG offers students the opportunity to engage in engineering activity and promotes further study leading towards a career in the civil engineering field. The CIVENG bus visited Wanganui recently and Glynn McGregor sat in on a typical hour long session with some of the students and technology staff at Cullinane College.

The 60 or so Y9-13 students crowding into one of the larger technology rooms were given a brief overview of the breadth of the civil engineering field. They were divided into five teams and quickly embarked on a structured bridge building exercise. Simon Maher, a young roading engineer working for MWH Global in Wanganui, joined Helen and John for the morning and they comfortably interacted with the groups and ensured that they all achieved their goal. During the activity technical aspects were fully addressed both at a group level and with interested individual students. The session concluded with an emphasis on the range of further education and employment opportunities available in this field.

Colin Pepperell, the HOD Technology at Cullinane, took full advantage of the opportunity to cycle all their Y9-10 students through the activity during the day. A bonus for Colin was the large proportion of their senior technology students able to join in and work with the junior students on the construction exercise.

Since the start of 2003 Helen and John have taken the CIVENG bus to over 260 primary and secondary schools and involved over 40,000 students in their programme. Further details and contact information can be obtained from [www.civeng.co.nz](http://www.civeng.co.nz).

### Biowiz site redesign

Biowiz started as a two year Auckland based project, funded by New Zealand Trade & Enterprise and The University of Auckland Business School - to 'enhance New Zealand's innovative and entrepreneurial culture and capability in the biotechnology industry'.

The Biowiz web site, which was developed and trailed as part of the project, has recently been redesigned. Teachers from schools outside the original project group can now register to access a wide range of biotechnology information designed to support technology and science programmes in primary and secondary schools.

The site has areas which focus on: medical biotechnology; plant and animal technologies; 'Bio-industry' companies and groups; and a collection of unit plans to assist programme planning at junior and senior levels.

There is also a section targeting innovation where you can 'learn about creativity and innovation and see how they are purposefully used by entrepreneurs to conceptualise and build new business ideas.' In this part of the site you are asked the question – 'Do you have what it takes to be an entrepreneur?' and you are encouraged to work through a module in which you 'discover the traits of an entrepreneur and learn new ways to be more creative'.

To find out more go to [www.biowiz.org](http://www.biowiz.org)

## Futureintech update

### Ambassador training

More Futureintech Ambassadors are on their way, after another series of training days were held around the country over the last few weeks.

Futureintech Ambassadors are young engineers, technologists and scientists with a passion for what they do. They've volunteered to help out in classrooms, telling (and more importantly, showing) students about their careers and what they involve. The training days have covered topics including:

- The classroom-based programmes we support – Crest, Bright Sparks, the Neighbourhood Engineers Award and the Young Designer Awards
- What to expect in the classroom, with advice from teachers and those who've worked on similar projects
- Background on Futureintech and advice for dealing with the media.



With three new Facilitators in action this year, the demand for Futureintech services has greatly increased. More and more schools are looking to get Ambassadors into the classroom to help inspire their students, particularly in Auckland where demand is very high.

A big thank you to all employers who have allowed their staff to work as Ambassadors.

### Building links in Wellington

A whole range of projects are underway in Wellington to help build links between local high schools, industry and tertiary institutes. Some of the projects Wellington Facilitator Phil Sadgrove has been working on include:

- A student mentor scheme with Victoria University design students visiting local secondary schools to explain how the design process works and showing students their design portfolios
- A series of guest lecturers for schools has been organised, including a presentation by renowned scientist Professor Paul

Callaghan of the MacDiarmid Institute for Advanced Materials and Nanotechnology

- At Queen Margaret College, Cam Trollope of Catch Design Collective is working with Year 12 design students on following a brief, research skills, consultation and pitching designs to clients.

### And the Central North Island

David Henry School in Tokoroa has also been using Futureintech's contacts to enhance their school programmes. With the help of Central North Island Facilitator Margaret Brunton, the school has enlisted a series of outside experts to help the students with their technology project on the theme of Ruru (otherwise known as the Morepork).

Jan Hoverd of Biodiversity Waikato has visited the class to explain the characteristics of the Ruru, while a local engineer has helped the students build homes for the birds.

According to the teacher, bringing an engineering perspective has meant that she (along with the students) now have a much better idea about what it is that an engineer does and how structures work.

The students have loved having new people in the classroom, and the school is now looking to use an engineer to help with their school-wide electronics and control theme.

Find out more about how Futureintech can help your school:

[www.futureintech.org.nz](http://www.futureintech.org.nz); [enquiries@futureintech.org.nz](mailto:enquiries@futureintech.org.nz)

## Contributions to t-news

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).

This fourth edition of t-news has been sent to TENZ members who have provided a current email address and others who have specifically requested a copy. We would welcome the wider distribution of the newsletter to other 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).