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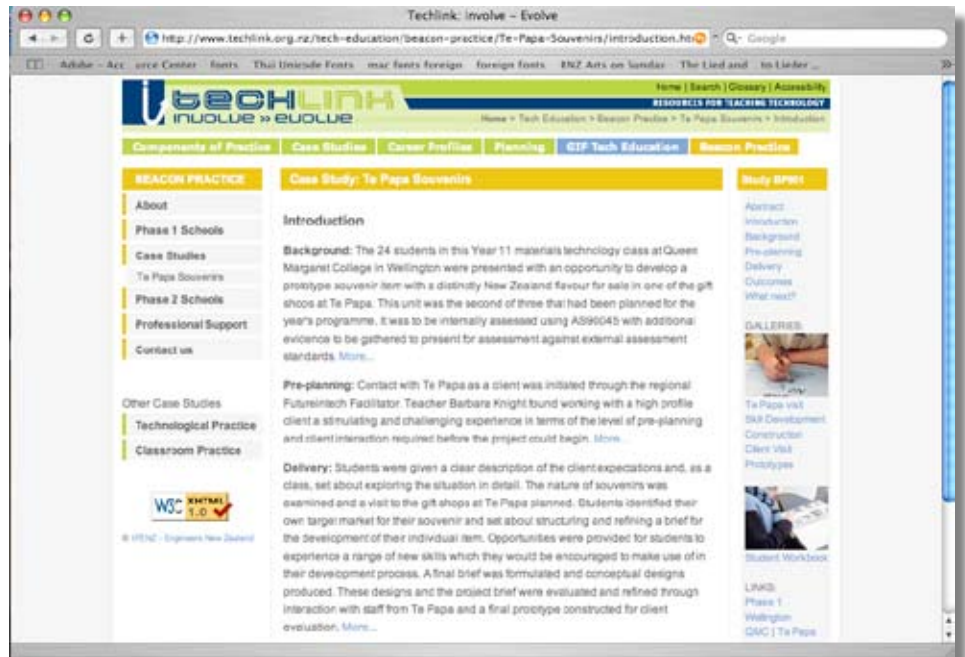
About TENZ

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.
- to register for TENZ, visit www.tenz.org.nz.

Beacon Practice case studies begin

A case study of Queen Margaret College's Year 11 Te Papa Souvenirs project was published on the Techlink website this week, within a redesigned context that will be a model for future development of the site.



The Queen Margaret case study is the first in a series being developed from the experience gained within the Beacon Practice Project.

These case studies are part of the support provided for schools by the Ministry of Education as part of the **Growth and Innovation Framework (GIF) Technology Education initiative**. Their aim is to highlight quality classroom and teacher practice in technology education and to encourage and enable teachers to reflect on and evaluate their own practice.

Te Papa Souvenirs is the case study of a Y11 materials technology unit. It provides an insight on how a planned unit of work was modified during delivery to take advantage of an unexpected opportunity for student learning.

The unit had been delivered successfully the previous year and refined to change the focus to that of developing individual

student outcomes to meet the needs of a client. In this case, interaction between teacher Barbara Knight and Wellington Futureintech Facilitator Phil Sadgrove opened up the possibility of Te Papa Tongarewa – Museum of New Zealand becoming a class client. Issues faced by Barbara in establishing and maintaining effective relationships with such a high profile client are detailed within the study.

When it became obvious that the change in focus had widened the scope of the student practice and opened up new opportunities for student learning, the decision to modify the unit and extend the time-frame was one which had to be faced – and was ultimately made by Barbara in close consultation with her students.

The process of continuous reflection and re-planning that the students followed is clearly illustrated in the gallery of student work. That they were able to meet the

established deadline and present such high quality final outcomes is a reflection of the quality of their practice and the range of skills they had developed.

Reflective comment from the perspective of the client, students and the teacher confirms the reality of the development process to everyone and underlines the influence that the nature and effectiveness of the interactions had on the outcomes.

The case study can be accessed at:

www.techlink.org.nz/tech-education/beacon-practice/case-studies.htm

The project plan will see new case studies being posted on the site on a regular basis over the second half of 2006 and throughout 2007. We would encourage you to use the feedback facility on the site to make constructive comment on the nature of the material, the way it is presented and how it can be made more useful to teachers.

About GIF Technology Education

Next round of HOD Days begins

The first of the next in a series of support days for technology HODs took place in Christchurch on Monday 19 June. These HOD days are organised through the GIF-Technology Education initiative and follow on from the successful national day which was held prior to the last TENZ conference.

Grant Miles, Adviser in Technology at Christchurch College of Education started off the day by immediately focusing on the role of the HOD. Grant outlined the opportunities to shift the focus of activity of the HOD from one dominated by routine administration and organisation to that of developing the department as a professional learning community (PLC). Grant was supported by Brian Woods who demonstrated how the PLC within the technology department at St Margaret's College has been evolving with the support of the Beacon Practice project.

In the next session Vicki Compton updated the group on the development of the Technological Knowledge and Nature of Technology research project and discussed some of the implications for teachers. These findings will inform the next stages of the writing of the 'Essence statement' for technology.

After lunch, Geoff Keith, the Senior Adviser for Technology at the Ministry of Education took time to share his background and vision for technology with the group and outlined current Ministry priorities in technology education.



Niall Dinning speaking at the Christchurch support day.

The GIF Technology Education initiative supports senior secondary technology education in schools through:

- Raising the quality and effectiveness of teaching and learning
- Increasing student participation
- Enhancing teacher capability
- Improving alignment between the secondary and tertiary sectors
- Increasing interaction with business/industry

Geoff's session was followed by a presentation by Cliff Harwood which focused on the Level 1-3 external achievement standards in Technology. Cliff emphasised the common messages from the 2005 Chief Assessor's reports which are now on the NZQA web site. In the second part of his session Cliff addressed the place of skills in technology education with some well chosen graphics to illustrate the points made.

In the final session, Glynn McGregor outlined the development process for the new range of support materials for technology education which are being published on the Techlink web site. Some of the issues which are being addressed were discussed and the importance of ongoing feedback from teachers in the quality assurance process emphasised. Despite some inhospitable south island weather the programme attracted 20 teachers from the Canterbury and Otago regions. Comment at the end of the day indicated that the national perspective presented effectively supplemented the regional clustering which is in place.

Further workshops will be held in Hamilton on 28 June and Wellington on 29 June. For late registrations, contact Emily Keddell: technology@currentevents.co.nz phone 04 499 1882, fax 04 499 1883

UE approved! So where to from here...?

The news that technology has been added to the UE approved subjects list was a welcome boost for the technology education community – particularly for secondary school technology teachers. Niall Dinning, who played a leading role in presenting the case for technology's inclusion on the list, answers questions on the reasons for and implications of the change.

Why did technology get on the list ?

Because we were able to demonstrate to the universities that the achievement level we are getting in Level 3 technology aligns with the level of achievement expected in other subject areas already on the list.

We also managed to demonstrate that technology education is not only a vital component of being an informed citizen, but that it also supports student learning whatever university course they might end up going on to. We didn't push technology as important because you needed it for something such as engineering, but because you could use it to support a career involving *any* university degree.

Did you present any specific evidence to the group ?

Most of those asking the questions weren't worried about evidence of actual student work – they'd already seen what student work in technology looked like at Year 13. There was, however, a concern that this work wasn't a representative sample. And while this concern was valid, we put it that we have a system that supports work of that standard and only students achieving to that standard are going to get University Entrance through technology. We kept reinforcing the fact that this standard is the standard – so if you don't meet that, then you don't meet the requirements of technology education.

There was also a concern that for some students technology may be the only subject in which they qualified for university entrance. In fact NZQA evidence

shows that students achieving well in technology at L3 were achieving well in other UE approved subjects.

Now that technology is on the approved list what are the implications for technology as a learning area in schools?

It now gives technology equal status to any other learning area. Technology was the only one that didn't offer the opportunity to move through to university entrance – now it does.

We're not suggesting that just by doing technology students will get entrance into university technology-based qualifications. They're still going to need their maths and sciences and be able to communicate effectively. What we're now able to say is that technology will be able to contribute to that package – alongside and equal to everything else.

So you're confident that one significant barrier to the development of technology programmes in the senior school has gone now ?

Well the barrier has certainly been removed in terms of being on the approved subjects list for university entrance. Students now have a free choice of subjects that includes technology to take right through to Y13 and scholarship.

What about the implications for technology teachers?

From 2007 they may have bigger numbers of students wanting to take advantage of the UE status so may be in a position to offer a wider range of programmes at Y13.

This will also present a challenge for

teachers of Y13 technology – not to see their subject as isolated from the rest of the senior school curriculum. As I see it the challenge will be to make links and develop relationships with other Y13 teachers – teachers of maths and of science and of languages – wherever it is appropriate to help to provide a quality programme for their Y13 students.

Schools should be in a position to present an even amount of information to students in terms of selection of all subjects on the UE approved list – and be able to explain the implications of selection choices on potential university courses. The challenge for technology teachers is now to make these opportunities clear to their current and potential students.

What about the implications for technology as a learning area ?

There's now an opportunity for technology to be recognised as an area that can challenge the best students in a way that other learning areas may not be able.

That's exactly what the people at universities and those involved in the NZQA selection process for the list saw in the samples of student work. They saw that it was different. They saw the challenges that had been presented. They saw the very sophisticated student responses in many cases and the depth and the integrity of the processes they went through to produce work to that standard.

I think that's what ultimately sold it to those who initially weren't prepared to back it. They saw the level of capability required in the samples to attain 14 credits for UE in technology, and began to appreciate the different learning environment in which technology is taught and clearly began to see its great value.

Advanced materials: technology/science interface

“Advanced materials promise to meet the needs of consumers who demand products that are lighter, cheaper, faster and better than ever before,” according to the advanced materials feature on the NOVA webs site.

Advanced materials outperform conventional materials with superior properties such as toughness, hardness, durability and elasticity. They can have novel properties including the ability to memorise shape or sense changes in the environment and respond. The development of advanced materials can even lead to the design of completely new products, including medical implants and computers.



Advanced materials are also amazingly versatile. Teflon, the non stick surface on frypans, for example, is also used to make windscreen wipers travel smoothly and quietly and the main ingredient in stain-resistant carpet and upholstery.

The area of advanced materials research is very broad in scope and potential applications. While some advanced materials are already well known, it seems like it will take a few more years for others to appear in products.

The NOVA feature describes some of these advanced materials and predicts the future technologies they will make possible... and it does it all in the comprehensive and user friendly manner which the site has become noted for.

Check out the feature and the amazing range of related links on the NOVA website at: www.science.org.au/nova

Conference News – call for papers

PATT-18: Pupils’ Attitudes Towards Technology

International Design and Technology Education Conference

Teaching and Learning Technological Literacy in the Classroom

PATT-18, 21-27 June 2007 in Glasgow, Scotland, will feature some of the greatest names in the philosophy and sociology of technology. They have all (along with others who will attend the conference) recently been published in a book called *Defining Technological Literacy*. This title forms the basis of the conference theme. The conference takes place just before the CRIPT conference, which in turn, takes place just before the DATA conference. This makes it possible for delegates to attend all three conferences.

About the Conference

There is very little education literature on the technological nature of the world that young people must negotiate or about the kinds of technological obstacles they are likely to encounter in that world. Their views of technology influence their ability to both use and relate to it. Many young

people tend to perceive technology in terms of its artifacts, such as computers, cars, televisions, toasters, pesticides, flu shots, solar cells, genetically engineered tomatoes. Often they do not see technology in terms of the knowledge and processes that create these artifacts, nor are they aware of the various implications for society resulting from these technologies.

We do not sufficiently engender in young people an abiding curiosity about how the technologically shaped world in which they live actually affects them.

Within the various rationales for technology education, an abiding and recurring issue is evident: Technology education must engage with the development of informed attitudes about the impact that existing and emerging technologies will have upon their cultural development, as well as the potential and

actual consequences these technologies will have upon the environment, both locally and globally. This is known variously as ‘Technological Literacy’ or ‘Technological Capability’.

Conference papers are invited that address aspects of methods of teaching and learning technological literacy in the classroom, both within the conference theme and other topics relevant to technology education.

All papers accepted for the conference will be double-blind peer-reviewed before the conference. All accepted papers will be published electronically and also in a book that will be available at the conference. Authors of selected papers will be invited to work their papers up into chapters for submission in a book, to be published by Sense Publishers in 2007, based on the conference theme.

To find out more, contact the Conference Director, John Dakers at jdakers@educ.gla.ac.uk. Send completed papers (2,500–3,000 words) to John Dakers by 30 November, 2006.

Futureintech update

Work experience

With secondary schools releasing students for up to a week of work experience in the coming months, this is an great opportunity to help your technology students get the chance to see where their education is taking them.

If you or your students need help to identify companies to approach or find out who to talk to, then contact your local Futureintech Facilitator.

Futureintech works closely with the majority of New Zealand's large technology companies. Facilitators have close ties to the technology industry in their sectors and are more than happy to make introductions on behalf of students and teachers.

They can direct you to professionals who are keen to pass on their passion for their field, ensuring that your students get the most out of the experience.

You'll find the contact details for your local Facilitator on the Futureintech website at: www.futureintech.co.nz/facilitators.cfm.

Examples of companies that may be popular with your students include:

- Cadbury's
- Tait Electronics
- Fisher & Paykel
- Industrial Research Limited (IRL)
- Compac
- Frucor
- Environmental Science & Research (ESR)
- Wattie's

Don't forget – the sooner companies are contacted, the more prepared they'll be to involve your students. Start encouraging your students to network now!

Foundation Scholarship students doing well

Each year the Institution of Professional Engineers New Zealand (IPENZ) offers \$5,000 scholarships to Year 12 and 13 students to help them in their tertiary studies in engineering.

Two students were awarded scholarships in 2005, chosen from among 18 applicants from all over the country for their academic record, their motivation to become professional engineers and their communication skills. They were: Benjamin Drake who was awarded the IPENZ Foundation Manawatu Scholarship and is studying at the University of Canterbury; and Matthew Hawkins who was awarded the IPENZ Foundation Taranaki Scholarship and is studying at Auckland University.

The 2004 award winners, Josephine McVittie and Blair Howarth both continue to do well in their studies.

Blair is studying engineering at the University of Canterbury. His high bursary marks had gained him direct entry into the first professional year in mechatronics, which combined mechanical and electrical engineering, plus some computing. He achieved an A average and enjoyed a mix of topics particularly Introduction to Mechatronics where he programmed a flashing bike tail light, and designed and built a stylophone (similar to a keyboard). He is currently in his second year.

Josie is at Auckland University doing a conjoint Engineering and Arts degree. In 2005, Josie had a year of academic and sporting accomplishments. At the end of 2005 UNESCO invited her to be the New Zealand delegate for the WAYS (World Academy of Young Scientists) conference in Morocco. In January 2006 she completed a French study-abroad course

in Paris for credit towards her arts degree. Josie is specialising in Engineering Science this year and enjoys the mathematical and problem-solving content of the course.

Teachers are encouraged to recommend the Foundation Scholarships to any students considering studying Engineering at a tertiary level.

Applicants must be New Zealand citizens or permanent residents and who, in the year of the award, are enrolled to study towards an IPENZ accredited engineering degree. For a list of IPENZ accredited degrees visit www.ipenz.org.nz/ipenz/careers/accreditation.

Entries close on 10 January 2007.

To apply, contact: The Secretariat, IPENZ Foundation, PO Box 12 241, Wellington.

For more information, visit: www.foundation.org.nz/Scholarships.cfm

Visited the Futureintech website lately?

Futureintech's website, at www.futureintech.co.nz, has a wealth of information for students, parents, teachers and careers advisors.

The website is constantly updated with 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.

Futureintech promotes informed choice in the career paths of our future technologists, engineers and scientists. So if your students haven't visited the site recently, they may miss out on the great challenges and rewards such a career can bring to their lives!

