

Teaching via video

When Futureintech Ambassadors are in demand across the country, innovative methods must sometimes be employed to ensure that no one misses out.

2 Student designers
Running like clockwork

Stephen Tauwhare, a research scientist for Industrial Research Ltd (IRL), has combined his love of science and his culture to focus his research around understanding the scientific reasons behind traditional Māori medicine. Harakeke, or native flax, has been used by Māori for generations for its medicinal qualities but Stephen is the first to chemically investigate how the plant performs and whether it has further abilities yet to be uncovered.

3 CREST
in schools

With such an interesting topic to discuss with students, Futureintech Facilitators had no trouble finding classes eager to work with Stephen. Following a request from Dunstan High School in Alexandra, Facilitators found that Te Kura Kaupapa Māori o Tamaki Nui a Rua in Dannevirke, Te Kura Kaupapa o Hoani Waititi Marae in Auckland and Te Kura Kaupapa Ruamata in Rotorua were keen to come on board in a joint video-conference from their classrooms.

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news

As Stephen is based in Wellington, Futureintech arranged for a multi-school video-conference enabling students around the country to hear one another's views and have the benefit of Stephen in their classroom for discussion on the harakeke.

The students asked a broad range of questions, switching between English and Te Reo as they talked passionately about science and their heritage. Of particular interest were the different strains of the harakeke and how their uses varied.

The video-conference was recorded, which can be viewed in easily downloadable segments at: www.biotechlearn.org.nz/multimedia/video_conferences/the_harakeke_project_at_industrial_research_ltd

Futureintech looks forward to working with Stephen again, and our Facilitators are always looking for opportunities to



"Māori have huge knowledge to offer science. My passion is to help science come to grips with this, and use the knowledge and the science I have to benefit Māori."

"I'm working on a project to research harekeke (flax) using plant chemistry. My role involves the harvesting of the harakeke for the fibre and gel and then analysing the material."

"There is strong traditional Māori knowledge surrounding harakeke but unfortunately some of this knowledge has been lost, forgotten or replaced by modern technology. This research will increase Māori options and Māori development."

"My advice for others: keep your options open, never turn your back on an opportunity, never discard anything and go for it. Don't be scared of failure."

work with other Māori Ambassadors. Other Futureintech initiatives to increase Māori representation in technology, engineering and science include meetings with a wide range of Māori organisations, supporting Victoria University Awhina student mentors visits to schools, and a pilot programme to support Māori scientist visits to schools.

Student designers

The completion of Brandon Intermediate's new playground sunshade is being supervised by students, with the help of structural engineer Henry Tatham.

After students had engaged in developing their own designs for the sunshade, teachers turned to Futureintech Ambassador Henry Tatham to come in and work with the students on the final phase of the project design.

Employing a relaxed presentation style to encourage discussion, Henry lead the students in a brainstorming session to analyse what they wanted to get out of the project,



how to go about designing it and key engineering tenets to consider.

Together the students and Henry worked to establish what ideas worked and how to further refine the concepts in order to develop a successful outcome.

Once plans are finalised and the shade constructed, Brandon

Intermediate intends to enter the project in the Transpower Neighbourhood Engineers Awards. If the project is successful the school will be eligible for a \$2,000 award.

To find out about the Transpower Neighbourhood Engineers Awards, visit: www.ipenz.org.nz/ipenz/Education_Career/neigheng

Running like clockwork

When product designer for DesignBase in Invercargill, Derek Manson visited St John's Girls' School, he didn't just focus on the technical aspects of his work, but talked about how a designer works with clients to make sure they get what they need – which is often different from what they ask for.

Students don't just need knowledge; they need the skills to know how to best employ that knowledge. Problem-solving and decision-making are seen as valuable qualities by employers and dedicating time to them in the classroom is important for a student's development.

Derek Mason's class included how designers build a relationship with a client to ensure the right outcome. Structuring the class around clocks, Derek took the class through the process of designing a product starting with the client's needs. He outlined the importance of asking questions to determine what the client wants, and of doing initial

rough sketches before proceeding to the more detailed planning stage.

The girls were then able to see the process demonstrated practically when he took on the role of designer

while the students played client. Taking his instructions from the students, Derek and the class worked to create a final design. With Derek's help, the students clarified their thinking while Derek alerted them to the details that are important in the planning process and shared a few tricks of the trade.

Using Derek's advice the class will continue the process with their teacher, implementing the principles learned in the planning session.



CRESTinschools

CREST can help students in their major research projects by providing mentors with the right expertise.

CREST is an internationally recognised Awards framework which fosters interest and rewards excellence in technology and science among primary and secondary school students.

CREST projects are ideal for Years 6-13 Technology and Science classes. Students can work individually or in a team or class.

Once completed, students can also enter their CREST projects into regional Science and Technology Fairs, ETITO Bright Sparks and other competitions.

CREST projects can also help provide the evidence for assessment against NCEA achievement or unit standards.

CREST is designed to encourage student projects in Science and Technology. The scheme enables students to be innovative, creative and to problem solve; and can inspire an enduring passion for science and technology from an early age.

To find out more, visit: www.crest.org.nz.



Benson Chen is in the run to be the first Gold CREST Award for 2006 for his work on ethnopharmacology.

Benson (now just beginning study at Auckland University) completed most of his research while a Year 13 student studying at Howick College. Benson studied ways in which Māori and early settlers to New Zealand used the native flora to create traditional Māori plant and herbal medicines (Nga Rongoa). Using this knowledge he has produced a range of natural creams and lotions suitable for sale and use as alternatives to modern medicine.

Benson's initial research looked at the different pathogens that caused common skin ailments such as psoriasis, as well as the different methods Māori used to treat skin diseases. From this information Benson identified a client (his mother) who gardens regularly which causes rough, itchy skin. After testing many plants used by the Māori for skin ailments (kawakawa, patete, tarata), he finally settled on patete (*Schefflera digitata*) because the extract had the safest active ingredient as well as having an excellent overall antimicrobial effect.

Shieldings Industries helped Benson develop suitable mechanisms to deliver his extracts to the skin. Together they looked at creams, ointments and gels to consider which would be the most suitable method to dispense his formula; as well as microbiological and physical stability and general product aesthetics like appearance, texture and skin absorption.

Benson also entered his project as part of a portfolio of his work for the 2005 NCEA Scholarship Technology exam, and provided extra knowledge for Scholarship Biology.

Benson plans on using the project further for his interviews for admission into medicine at Auckland University in order to demonstrate to the interview panel his interest in community health and his ability to undertake high-quality research.

Futureintechnews

Events Register

The new Futureintech Events Register on the Futureintech website can be used free of charge by anyone wishing to advertise a technology, engineering and science event – such as dates for international speakers, available work experience positions and upcoming workshops.

You can visit the Events register at www.futureintech.co.nz/events.cfm, or by clicking the Career Events button on the Futureintech homepage.

Send your event details to Sam Sheppard at ssheppard@futureintech.org.nz.

Be sure to include a title, date, venue, contact details and up to one hundred words outlining the event.



Free Kiwi Physics CD-Rom

Futureintech's free interactive CD-ROM for schools features games, puzzles, quizzes and animation to show how physics knowledge can be applied.

Schools can order copies via the Futureintech website www.futureintech.org.nz

Multi-cultural technology career guide for caregivers

Futureintech's guide to careers in technology, engineering and science for parents and caregivers will soon be available in Te Reo Māori, Samoan and Cook Island Māori.

Copies can be ordered online at: www.futureintech.co.nz/guide.cfm.

www.futureintech.co.nz

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

Breaking news: Girls are different from boys

A study by the Centre for Studies in Science and Mathematics Education at the University of Leeds in England has found that 15-year-old boys are interested in things like explosive chemicals and how the atom bomb functions, while 15-year-old girls are more interested in why we dream, what it means, and the human soul. The study, to determine how to make science more interesting for students, contacted 1,200 students for the survey.

"The responses of the boys reflect strong interest in destructive technologies and events," say the researchers. Boys opted for alternative therapies as their most dreaded topic. Girls, by contrast, would prefer to learn about their own bodies. They wanted to know how to deal with eating disorders and they were also interested in

how to beat cancer and what to do to keep fit, leaving teachers with a daunting prospect for teaching a co-ed class.

Was there anything both girls and boys agreed on? They definitely were least interested in studying the benefits and possible hazards of modern farming methods.

It is doubtful the study will result in separate classes for different sexes.

But with most British high school students claiming they find science classes boring, the study raises interesting questions for teachers and researchers about how to engage a student's interest.

Hawke's Bay Ambassadors

In September last year, Carol Rimmer, Co-HoD Technology at Havelock North High School, was invited to meet with a group of food technologists, members of the New Zealand Institute of Food Science and Technology (NZIFST), to discuss how they could help technology teachers at Hawke's Bay high schools teach food technology within their curriculum.

Six months later, four young food technologists from Heinz Wattie's have been trained as Futureintech Ambassadors and are working with technology teachers and students at Havelock North High School, Tamatea High School and Woodford House.

If you would like a Futureintech Ambassador to assist at your school, contact your local Futureintech Facilitator – see www.futureintech.co.nz/facilitators.cfm.