# Information about technology education for parents

*This page explains what technology is and how it is being taught in New Zealand schools, and the new and exciting possibilities this presents for their children.*

*This file can be used by schools in their own publications promoting technology education.*

## Introduction

Almost every aspect of our daily life – food, health care, transport, communications, entertainment, our environment – uses technology. This technology is constantly evolving and is changing the way we look at things and how we do things.

Technological literacy is becoming increasingly important to our everyday lives. Specialised technological knowledge and skills are vital to the current and future well-being of New Zealand – we need an increasingly wide range of technology professionals in many different fields to remain competitive and to contribute globally.

The importance of technology to all New Zealanders was acknowledged with the introduction of a Years 1-13 curriculum in Technology in 1995. In June 2006, Technology was added to the 'approved subjects' list for university entrance, in recognition of the academic strength of the new subject at senior levels in schools, and the fact that technology is a growing focus of university study.

## About technology education

Study in technology at school develops a broad technological literacy through the experience and exploration of a wide range of technologies in a variety of contexts.

Technology challenges students in a way unlike any other subject. Within areas such as control, food, communications, structural, dynamic, and bio-related technologies, creative design processes and materials, students work creatively and analytically to identify, trial and evaluate potential solutions, and eventually put their ideas into practice.

Technology has natural inter-relationships with other subjects such as the sciences, social sciences, languages, the arts and health and physical well-being.

In technology classes, students gain knowledge and skills essential to all kinds of work, university study and a successful life. They are encouraged to show initiative, be innovative and creative, be independent in their learning and to take responsibility for their work. As well they will learn teamwork and communication skills and the importance of contributing to the community both socially and economically.

A growing number of classroom projects work with real-life 'clients' within and outside the school environment. These provide real-world experience and genuine opportunities for students and teachers to interact in a mutually beneficial way with the wider community. Many technology teachers also take advantage of the extensive support network that is in place in which volunteer industry professionals work with classes on projects and mentor individuals.

These interactions enhance and focus learning and give students experience of and confidence in situations outside the classroom, and an invaluable appreciation of working environments and opportunities and the broader impact of technology on society.

# Three learning strands

Students develop technological literacy by learning in three interrelated strands: **Technological Practice**, **Technological Knowledge**, and the **Nature of Technology**.

**Technological Practice** provides opportunity for students to undertake technological practice and examine the practice of others. Technological practice includes identifying and investigating issues and existing outcomes. This requires consideration of such things as: ethics; legal requirements; protocols; codes of practice; and the needs of, and potential impacts on, stakeholders. Through technological practice students may develop and communicate concepts, plans, briefs, technological models and technological outcomes. Some projects may be done with other stakeholders, even working with real-life clients outside of school.

**Technological Knowledge** provides opportunity for students to develop technological knowledge generic to all technological endeavours. Key ideas include: functional modelling and prototyping; material use and development; and components of technological systems and how they interact.

**Nature of Technology** provides opportunity for students to develop a philosophical understanding of technology, including how it is differentiated from other domains of human activity. This strand supports the development of a critical understanding of technology and allows for informed debate of historical and contemporary issues and future scenarios.

# Choosing technology

The technology curriculum provides students with the opportunity to develop a broad technological literacy within local and global cultural, ethical, environmental, political, and economic contexts. This learning is important to all students and equips them to participate in society as informed citizens.

Technology is one of the eight essential learning areas that are compulsory for all students to study in Years 1-10.

In Years 11-13 most schools offer technology as an option. This may be in the context of areas such as materials, information and communication technologies (ICT) and/or food technologies, but increasingly these boundaries are dissolving due to the multidisciplinary nature of technology – for example, an important aspect of food technology is its packaging (materials) and marketing (ICT).

Senior technology classes provide a unique learning experience that is challenging and rewarding for ALL students.

For those going on to tertiary study, technology is an ideal foundation subject, particularly for further study in science, engineering, medicine, agriculture, architecture, design and the creative arts.

For those considering a career in technology, fashion, biotechnology, information technology, food technology, study in technology at senior school level is strongly recommended.
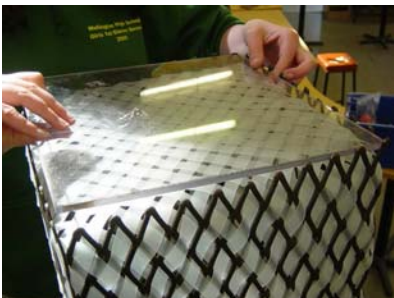
# What students are doing



*In this project, students designed and manufactured original lighting units for a local popular city nightclub, in consultation with the client, university design students and industry professionals. See the case study at www.techlink.org.nz/tech-education/beacon-practice.htm*



*In this school, past technology students stay in email contact and regularly visit the classroom to give advice and share their experiences of tertiary study and working. See the case study at www.techlink.org.nz/tech-education/beacon-practice.htm>*



*In this project, students worked with staff members of Te Papa to design and create prototypes of souvenir items suitable for sale in the Te Papa shop.  See the case study at www.techlink.org.nz/tech-education/beacon-practice.htm*



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# What students are saying

*"Studying technology through to Year 13 has proved an invaluable experience to me. It has taught me how to approach and solve everyday issues and challenges in a systematic and informed way. I have discovered that the technology process is of application far beyond the discipline of the materials I focused on. I also really enjoyed the fact that technology goes far beyond design and puts you in the context of the real world: dealing with stakeholders, considering what will be suitable for mass production and so forth. This gave me a taste of the industry itself."*
**Alice Irving**, ex-technology student, now studying law and philosophy at Otago University

*"It's a lot of work but very satisfying. I feel proud seeing my work displayed 'that's my skirt!' especially if you've put a lot of effort into it. You've got to be committed – quite a few lunch times you'll see some of us in here doing stuff."*
**Student**, St Margaret's College, Christchurch

*"I quickly appreciated that it was an academic subject … It wasn't easier than other subjects but more fun, you get involved more… I enjoyed the skills stuff, the interaction with the focus group and the feeling of doing something real."*
**Student comments** from Tararua College, Pahiatua

# What the experts are saying



*"Globalisation and technological change are the two key features that are changing and shaping our lives. The technology curriculum has now developed to a level that I strongly recommend it as a subject, both to students who have an interest in making a career in engineering, technology or science, and generally as a means of better understanding the modern world."*
**Professor Bob Hodgson**, Director, School of Engineering and Technology, Massey University
Chairman, New Zealand Council of Engineering Deans

*"In primary and secondary schools a great deal has changed in the way in which the curriculum is delivered but the greatest and most influential change can be seen in the technology classroom.*

*"Learning is interactive. Students are involved in analysing, discussing, trialling and evaluating in order to seek the most appropriate solution to the problem on which they are working. Team solutions are encouraged and students learn to work with others, to show initiative, to demonstrate creativity and to find compromise when this is appropriate. There is also a great deal of peer tutoring and support. Students are engaging in a way that means real learning is taking place.*

*"Among technology teachers there is a high level of professional discussion as they share with one another best practice, reflect on their classroom programme and constantly strive for ongoing development.*

*"What is happening in the technology classroom and among good technology teachers is beginning to influence other areas of the curriculum."*

**Claudia Wysocki**, Executive Principal, St Margaret's College, Christchurch

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*"The food industry in New Zealand is a major generator of wealth, both in terms of income and employment opportunities. A large proportion of the people working in it and in its supporting industries are technologists.*

*"Specialist food technologists and biotechnologists work to develop new crops, foods and processes that increase the diversity, convenience and desirability of the foods New Zealanders purchase and export. In addition producing, transporting, storing, selling, packaging and all the other aspects of managing food production from the farm to the table require input from a diverse range of technologists in areas such as IT.*

*"Technology is the life blood of the food industry and therefore of New Zealand's prosperity and well-being. NZIFST encourage and support young people to see technology as a great future."*

**Dr Sally Hasell**, President, NZ Institute of Food Science and Technology

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*"Technological literacy is vital to all young New Zealanders. It is important for students to have a broad understanding of technology so that they can contribute as informed members of society.*

*"New Zealand is currently sharing a strong global demand for engineers. This is a profession that requires a high level of understanding of technology and an ability to use that understanding in solving complex problems. Careers in engineering are rewarding, both financially and through their participation in developing our productive economy and the infrastructure which supports it.*

*"IPENZ supports technology education because it develops skills that will assist our future leaders to engage with and gain benefit from increasingly sophisticated new technologies."*

**Professor Peter Jackson**, President, Institution of Professional Engineers

## Careers in technology

There's a huge range of careers in technology, at all levels of endeavour. The main areas in New Zealand include agricultural & horticulture, biotechnology, chemical products and processing, civil engineering, electrical & electronic engineering, environmental engineering, fashion, food technology, forensics, information & communication technology, mechanical engineering, medicine and product design.

A range of different technology courses are offered at tertiary level, ranging from two to four years for most qualifications.

New Zealand has a serious shortage of technology graduates, and the Government has acknowledged this by offering a large number of scholarships for school-leavers to do technology-related study at university. Some students are also offered scholarships and jobs before they've even graduated.

In employment, remuneration is good, and graduates often have a wide choice of work opportunities and locations. This shortage is worldwide, and is forecast to get worse, so the opportunities for technology graduates are excellent in the long-term.

## How to find out more…

Talk to the career advisor at your school to find out    the opportunities available for your child or visit **www.kiwicareers.govt.nz**

The Techlink webiste **www.techlink.org.nz** has a growing number of case studies of high quality teaching and student technology work from around New Zealand.

To find out about all tertiary technology, engineering and science courses available in New Zealand, and about the wide range of scholarships offered, visit **www.futureintech.org.nz**.