

Techlink site glossary

Last updated: 16 May 2012; 271 definitions

555 timer	A basic integrated circuit used for timing in a variety of simple electronic devices.
Achievement Objectives	The achievement objectives are the outcomes for student learning that have been determined to be key for all students across New Zealand. In technology the achievement objectives have been derived from each component within the strands. They provide a generic description of what student achievement should reflect at level 1 through to level 8.
ActionScript	ActionScript is a scripting language used primarily for the development of websites and software using the Adobe Flash Player platform but is also used in some database applications. Originally developed by Macromedia, the language is now owned by Adobe, which continues its development. ActionScript was initially designed for controlling simple 2D vector animations made in Adobe Flash (formerly Macromedia Flash). Later versions added functionality allowing for the creation of Web-based games and rich Internet applications with streaming media (such as video and audio).
Alternative Function	Alternative functions are other uses that the outcome has been put to in addition to its proper function.
Anthocyanins	Natural pigments occurring in plants which give blues and reds; for example, the red in grapes and red wine.
Art Clay Silver	<p>Art Clay Silver is a relatively new product composed of 1-20 micron sized silver particles from silver recycled from the back of used film or x-rays. It comes in the form of clay, a paste, a liquid and in sheets.</p> <p>Art Clay Silver clay is molded into a desired shape and dried, after which it can be filed, carved, and sanded. It is then fired – using a gas stovetop, butane torch or kiln – to burn away the organic binders (which causes shrinkage of up to 10%) and leave a remaining object that is 99.9% pure silver.</p> <p>Art Clay Silver paste is normally used to bind clay elements and repair them before firing. This paste can also be applied to the surface of organic objects (such as leaves) in layers to capture its fine details, then fired and polished.</p>
Attributes	<p>Attributes are descriptive aspects of the physical and functional nature of a technological outcome. (Note: Specifications define the requirements of the physical and functional nature of the outcome in a way that is measurable.)</p> <p>For example, an attribute may refer to the outcome being small enough to be comfortably held, whereas the specification would give more precise measurement in terms of length, width and depth.</p>
Attributes and Specifications	<p>Attributes are descriptive aspects of the physical and functional nature of a technological outcome. Specifications define the requirements of the physical and functional nature of the outcome in a way that is measurable.</p> <p>For example, an attribute may refer to the outcome being small enough to be comfortably held, whereas the specification would give the precise measurement in terms of length, width and depth.</p>
Ball-peen hammer	A ball-peen hammer (also spelt pein, pene or pean-hammer) is used in metalworking, and is useful for striking chisels or punches.
Ballast	The stones the track sits in; these need to be replaced over time to ensure the track stays embedded in place
Bandwidth	The amount of data that can be transmitted in a fixed amount of time.
Bebo	Bebo is a social networking internet site on which members have personal pages on which they can share information about themselves, participate in online message boards

and include additional items such as photos, videos, quizzes and games.

Bevel	The angled edge on the inside of a mat board.
Bitmap	<p>Bitmap in computer graphics refers to the storage of digital images as a 'map of bits' ('bits' being a single unit of information stored on a computer. In some contexts, the term bitmap implies one bit per pixel, while pixmap is used for images with multiple bits per pixel.</p> <p>Many graphical user interfaces use bitmaps in their built-in graphics subsystems, the most common being the Microsoft Windows and OS/2 platforms' GDI subsystem usually named with the file extension of .BMP (or .DIB for device-independent bitmap). Besides BMP, other file formats that store literal bitmaps include InterLeaved Bitmap (ILBM), Portable Bitmap (PBM), X Bitmap (XBM), and Wireless Application Protocol Bitmap (WBMP). Similarly, most other image file formats, such as JPEG, TIFF, PNG, and GIF, also store bitmap images (as opposed to vector images), but they are not usually referred to as bitmaps, since they use compressed formats internally.</p>
Bogie	Structure underneath a train to which wheel axles are attached
Brazing	Soldering done at high temperatures (higher than 450O)
Brief	A brief is developed to clearly describe a desired outcome that would meet a need or realise an opportunity. It is comprised of a conceptual statement that communicates what is to be done and why, and a set of specifications that define the requirements of the outcome in terms of its physical and functional nature.
Brown Document	The Ministry of Education statement 'Technology in the New Zealand Curriculum' is often called 'the document' or 'the brown document' by teachers.
Bug	A coding error in a computer program.
Build	A pre-release version of a game, repeated builds are an important part of the development process.
Cab	The enclosed driver's compartment
Cabochon	A cabochon is a bead, usually a gemstone, which has been shaped by polishing or has been cut so that the surface is smooth and does not have any facets.
Calcium sulphate	Calcium sulphate is a food additive which, amongst other things, can be used as a thickener or setting agent, and increases the amount of calcium in a product.
Cancer	Cancer is renegade system of growth that originates within a patient's biosystem ie human body ...unchecked growth that progresses towards limitless expansion.
Carcinogens	Carcinogens are chemicals and radiation that are capable of triggering the development of cancer.
Carcinomas	Carcinomas the most common type of cancer, arise from the cells that cover the external and internal body surfaces ...lung, breast and colon.
Card sorting	Card Sorting is a technique for exploring how people group items, so that structures can be developed that maximise the probability of users being able to find items. Card sorting is cheap and easy to conduct and provides an understanding of how 'real people' are likely to group items. The technique identifies items that are likely to be difficult to categorize and find and terminology that is likely to be misunderstood.
Carding	Fibres of wool or cotton are combed to disentangle them before spinning.
Central Processing Unit (CPU)	The central unit in a computer containing the logic circuitry that performs the instructions of a computer's programs.
Circuit, H bridge	A circuit, commonly used in robotics, that uses a configuration of four switches to change

the direction of a current. They are often used to give alternate between a left and right, or forward and backward movement in a simple device.

Classroom Curriculum

The classroom curriculum for technology will be developed by classroom teachers to guide their individual teaching. The classroom curriculum can be recorded as a unit. Units will be developed in line with the school technology programme, but will also take into account the specific interests and abilities of the teacher/s and students within the classroom.

See the [Unit Planning in Technology package](#).

Cochineal

The cochineal beetle (*dactylopius confusus/dactylopius coccus*) is a tiny insect which lives on cactus plants, especially the prickly pear cactus, in Central and South America. Female beetles eat the red cactus berries and concentrate the red colour in their bodies. They are scraped off the cactus into hot water; their bodies are dried in the sun, and then crushed into powder. Approximately 150,000 are needed to make 1 kg of dye.

Coefficient of Expansion

The coefficient of expansion (COE) refers to the measured expansion of heated glass, as not every type of glass expands and contracts at the same temperature. In order to fuse together completely, glass pieces should have the same COE.

Computer numerical controlled (CNC)

CNC refers to the automation of machine tools that are operated by a computer. In modern CNC systems, CAD/CAM drawings are output to programs that can generate a computer file that creates the commands needed to operate a particular machine. These commands are then loaded into the CNC machines for production. Since any particular component might require the use of a number of different tools, such as drills, saws, modern machines often combine multiple tools into a single "cell". In other cases, a number of different machines are used with an external controller and human or robotic operators that move the component from machine to machine. In either case the complex series of steps needed to produce any part is highly automated and produces a part that closely matches the original CAD design.

Based on the Wiki entry: http://en.wikipedia.org/wiki/Numerical_control

Context

'Context' in technology education has been used to refer to the overall focus of a technological development or of a technological learning experience. When talking about the context of a technological development, the term refers to the wider physical and social environment within which the development occurs.

Coder

Programmer, a person who designs, writes and tests computer programmes.

Comic Life

Comic Life is a Mac and PC computer program used to create comic strips or arrange photos into a scrapbook. Using the program, images can be imported and 'filtered' to look comic like, and enhanced with built-in comic panels, lettering, captions and balloons.

See: <http://www.comiclif.com>.

Coping saw

A handsaw with a taut thin blade, used to cut intricate external shapes and interior cut-outs, and useful for cutting small curves. It is widely used to cut mouldings to create coped rather than mitre joints.

Communicative Model

A communicative model is a physical or virtual representation of a technological outcome, the purpose of which is to communicate the physical and/or functional attributes of a design concept. Communicative models do not seek to test the potential fitness for purpose of a design concept.

Components of Technology Curriculum Strands

Technology has three strands –Technological Practice, the Nature of Technology, and Technological Knowledge. These strands provide a structure for the key ideas and practices that form the basis of [technological literacy](#). These key ideas and practices have been categorised within each strand as separate but interrelated components.

Technological Knowledge Strand

Developing Technological Knowledge has been recognized as important in the development of a broader and deeper technological literacy. In order to support student learning of Technological Knowledge, three interconnected components have been identified. These are: [Technological Modelling](#), [Technological Products](#) and [Technological Systems](#). Technological Modelling focuses on developing the big ideas underpinning functional and prototype modelling. Technological Products focuses on developing the big ideas underpinning materials use and development. Technological Systems focuses on developing the big ideas underpinning systems use and development.

While each of these components is described separately, they interact in a highly iterative fashion to support and enhance the development of technological knowledge. It is expected that while some learning experiences in technology education may focus on one or two components specifically, over a technology education programme all components should be comprehensively covered. Links between the components should be stressed in order for students to develop a sound understanding of the big ideas involved in Technological Knowledge.

Technological Practice Strand

Understanding and undertaking Technological Practice is an important aspect of student learning in technology education in New Zealand. In order to support student learning associated with undertaking their own practice, three interconnected components have been identified. Research findings suggest that if teachers and students can focus on smaller components within technological practice, they are better able to identify learning needs and therefore respond more specifically to enhance formative interactions in the classroom.

The three components of practice, identified from classroom research, and verified in technologist communities, are: [Brief Development](#), [Planning for Practice](#), and [Outcome Development and Evaluation](#). Brief Development focuses on the defining practices of technological development. Planning for Practice focuses on the organising practices. Outcome Development and Evaluation focuses on the trialing and production practices. While each of these components is described separately, they interact in a highly iterative fashion to support and enhance overall technological practice. It is expected that while some learning experiences in technology education may focus on one or two components specifically, over a technology education programme all components should be comprehensively covered. Links between the components should be stressed in order for students to develop a sound understanding of, and capability in, undertaking technological practice.

Nature of Technology Strand

Understanding the Nature of Technology has been recognized as important in the development of a broader and more critical technological literacy. In order to support student learning associated with the philosophy of technology, two interconnected components have been identified. These are: the [Characteristics of Technology](#) and the [Characteristics of Technological Outcomes](#). Characteristics of Technology focuses on developing a philosophical understanding of technology as a form of human activity. Characteristics of Technological Outcomes focuses on developing a philosophical understanding of the resulting outcomes of technological developments as they exist in the made world.

While these components are described separately, they interact in a highly iterative fashion to support a critical understanding of the Nature of Technology as a discipline. It is expected that while some learning experiences in technology education may focus on one or other of the components specifically over a technology education programme both components should be comprehensively covered. Links between the components should be stressed in order for students to develop a sound understanding of the Nature of Technology.

Conceptual design	<p>Where it is not feasible to present a full model of some or all of the technological solution, e.g. in the case of a technological solution that requires ongoing production and it is not practical to construct a prototype, the conceptual design is presented. This is a description of how the solution would be implemented using presentation techniques such as scaled plans or drawings, scale models, computer simulations, written descriptions, lists of components and assembly instructions.</p>
Confidentiality of ideas	<p>A good idea should be protected by keeping it secret until it is developed into drawings or plans which can be copyright, or a product which can be patented.</p> <p>Confidentiality agreements can be used to prevent others stealing ideas while the inventor considers how to develop them. They allow someone to discuss their ideas with others, for example manufacturers, and such discussions will not count against them should they eventually decide to apply for a patent (see discussion of novel under Patents, below). Confidentiality agreements can be enforced in court.</p>
Context	<p>'Context' in technology education has been used to refer to the overall focus of a technological development or of a technological learning experience within technology education. In order to ensure that the contexts that are chosen provide for a range of diverse learning opportunities, programmes should include contexts in both senses as explained above, and that these contexts focus on the transformation, storage, transport and/or control of energy, information and/or materials.</p> <p>When talking about the context of a technological development, the term refers to the wider physical and social environment within which the development occurs. For example:</p> <ul style="list-style-type: none"> • The context of Zambesi's work was that of rebranding an airline with a focus on the transformation of information. • The context of wind generation is sustainable energy generation with a focus on the transformation, storage and control of energy. • The context of a packaged scallop product is marketable food products with a focus on the transformation and storage of material and information. <p>When talking about the context of a technological learning experience the term refers to all the aspects that must be thought about to situate the learning.</p> <p>For example:</p> <ul style="list-style-type: none"> • The context in Meeting Seating was outdoor seating within a school environment with a focus on the transformation of materials. • The context in ICT programming was programme development in ICT with a focus on the transformation, control and storage of information. • The context in Hairs your Gift was hair care with a focus on the transformation and storage of materials.
Contract manufacturing	<p>Alaron Products provides contract manufacturing services. The company contracts to supply goods to another company e.g. Comvita.</p>
Copyright	<p>The exclusive legal right to reproduce and control an original literary, musical or artistic work.</p> <ul style="list-style-type: none"> • Protects original written works, computer programs, music, art and designs, photographs, videos, movies, broadcasts, tape recordings, and CDs. • Protects them whatever format they are available in - including online. • Comes into effect immediately, no need for registration. • The copyright owner can legally prevent others copying her work, issuing copies to the public e.g. by selling, making an adaptation of the work, such as writing a film script from a book, performing, playing, showing or broadcasting the work in public. • Protection lasts for a certain term of years, depending on the kind of work and the country; for instance, in New Zealand, a written work is copyright for the lifetime of

the author and another 50 years.

- Once the term of copyright has expired, the work falls into the public domain for anyone to use.

Copyright and Fair Dealing

Copyright is not a monopoly like a patent or registered design – the defence of **fair dealing** applies to some uses of copyright works which are permitted by law for the public benefit. The reason for the defence is partly because the copyright term is much longer than other IP rights. The problem is that only the courts can decide what is fair - so it can be risky to rely upon fair dealing.

Examples where the defence is likely to apply include making one copy of a copyright work for a person's **own private study or research**, provided it is fair to do so and quoting extensively from a copyright work for **criticism or review**.

CRC (Class Responsibility Collaboration) Cards

An object-oriented design method using ordinary 3x5 index cards to represent responsibilities (knowledge and services) and collaborators (interactions with other objects), that provides an informal, intuitive way for group members to work on object design together. See "Using CRC Cards" by Nancy Wilkinson, SIGS BOOKS, ISBN 1-884842-07-0.

CREST

CREST is an international awards scheme, administered here by the Royal Society of New Zealand, which provides a framework to support and enhance students' educational experience in Science and Technology. CREST encourages students to be innovative, creative and to problem solve. At secondary school level CREST projects can help provide the evidence for assessment against NCEA achievement or unit standards. Year 6-13 students can enter their completed CREST projects into regional Science and Technology fairs, IPENZ Neighbourhood Engineers Awards, Bright Sparks and other educational competitions. See: www.crest.org.nz.

CSS

Cascading Style Sheets (CSS) is a stylesheet language used to describe the presentation of a document written in a markup language. Its most common application is to style web pages written in HTML and XHTML, but the language can be applied to any kind of XML document.

CSS can be used locally by the readers of web pages to define colors, fonts, layout, and other aspects of document presentation. It is designed primarily to enable the separation of document content (written in HTML or a similar markup language) from document presentation (written in CSS). This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, and reduce complexity and repetition in the structural content. CSS can also allow the same markup page to be presented in different styles for different rendering methods, such as on-screen, in print, by voice (when read out by a speech-based browser or screen reader) and on Braille-based, tactile devices.

Custom Board

Custom board (also called MDF [Medium Density Fibre]) is a residue-based composite material. Fine wood fibres are bonded under heat and pressure with an adhesive; the wood is available in a range of thicknesses.

Customer profile

It is common for companies to build up a customer profile which looks at what sort of people are using its products or services. This may be an informal profile which gives a general idea, such as where customers tend to live and what they buy. Other times a more complex profile is built up using information submitted by the client and this may show income level, family size, hobbies and interests, newspapers read, etc. The idea of making up a customer profile is that advertising can be targeted at certain groups and in certain ways, there may be differences in products/services offered which will appeal more to a particular group.

Dauber

A dauber is an inking pad made of rolled felt, leather or cloth.

'Dead man's' switch

A safety feature that automatically switches off a machine if the operator becomes incapacitated in some way.

Deconstruct

To interpret a text (or artwork) by discovering, recognising and understanding the

underlying (unspoken and implicit) assumptions, ideas and frameworks.

Delta	Delta kites (named for their resemblance to the Greek letter Delta) have triangular shaped wings. This design makes a kite that is very efficient and can float in lighter winds than most other kite shapes.
Demographics	Demography is the study of population, especially with reference to size, density and distribution of the inhabitants of an area.
Devitrification	Devitrification, the formation of crystals appearing as a scum or crazing on the glass, is a result of prolonged heating or slow cooling during the firing of fused glass.
Diagnostic Tool	Diagnostic tools are assessment tools or tasks that allow teachers to identify each student's strengths and weaknesses in a particular learning area, and provide information for future teaching.
Digital textile printer	Digital textile printers use inkjet technology to print directly onto fabrics. As opposed to dyeing or screenprinting, digital textile printing can quickly produce a larger range of colours at one time with sharper detail, and minimal waste. It can be used for one off jobs or for mass manufacture of textiles. Although cost are decreasing, Digital textile printers are still expensive and are primarily used in industry.
Dissolvable Fabric	A type of fabric which can be stitched upon before washing away the fabric leaving the stitching intact.
Div Layer	<p>From www.lissaexplains.com</p> <p>"What is a div element?"</p> <p>A div element is a block of content that can be positioned anywhere on your site by using absolute positioning and the <div> tag. The purpose of div elements is to hold content, whereas frames hold pages. This content can be placed anywhere on your site and it can even overlap. The content can consist of images or html. All of the style elements like scrollbar color and font color can be controlled by a simple style sheet."</p>
Dot Com bubble	The "dot-com bubble" was a speculative bubble covering roughly 1997–2001 in which stock markets in Western nations boomed, driven by growth in the new Internet sector and related fields. The period was marked by the founding (and in many cases, spectacular failure) of a group of new Internet-based companies commonly referred to as dot-coms. A combination of rapidly increasing stock prices, individual speculation in stocks, and widely available venture capital created an exuberant environment in which many of these businesses dismissed standard business models, concentrating on increasing market share at the expense of the bottom line. The bursting of the dot-com bubble marked the beginning of a relatively mild yet rather lengthy recession in Western nations.
Dreamweaver	<p>Dreamweaver is a web development application originally created by Macromedia and now owned by Adobe Systems. Available for both Mac and Windows operating systems, recent versions of Dreamweaver have incorporated support for web technologies such as CSS and JavaScript.</p> <p>Dreamweaver can hide the details of pages' HTML code from the user, making it possible for non-coders to create web pages and sites. A professional criticism of this approach is that it produces HTML pages whose file size and amount of HTML code is much larger than they should be, which can cause web browsers to perform poorly. This can be particularly true because the application makes it very easy to create table-based layouts.</p> <p>Dreamweaver allows users to preview websites in many browsers, provided that they are installed on their computer. It also has some site management tools, such as the ability to find and replace lines of text or code by whatever parameters specified across the entire site, and a templatisation feature for creating multiple pages with similar structures. The behaviours panel also enables use of basic JavaScript without any coding knowledge.</p>
EAGLE	Cadsoft EAGLE is a freeware editing program used to design electronics circuit diagrams and printed circuit board (PCB) layouts. The program automatically starts off with all of the

components required by the schematic. Components are manually arranged on the board, with the help of coloured lines showing the eventual connections between pins that are required by the schematic, to aid in finding a placement that will allow the most efficient track layout.

It also provides a good autorouter, which, once the components have been placed, will attempt to automatically find an optimal track layout to make the electrical connections. The .brd files that EAGLE uses to store board layouts are accepted by many PCB production houses.

[Cadsoft EAGLE homepage](http://www.cadsoft.de) < <http://www.cadsoft.de>>

[Cadsoft EAGLE tutorials](http://www.ece101.com/category/tutorials/eagle/) <<http://www.ece101.com/category/tutorials/eagle/>>

Ergonomics	Ergonomics is an applied science concerned with correct posture and positioning of the body, whether at work, rest or during leisure activities. Consideration is given to designing or arranging things so that people are able to use them efficiently and safely, for example, seating and work stations in an office environment.
Executive Producer	The producer who is involved in the overall production and its finances and not involved in any technical aspects.
Extreme Programming	<p>Extreme Programming (XP) is one of a number of flexible and relatively informal programming methods collectively known as agile methodologies. XP strongly emphasizes teamwork, testing and refactoring, and has 12 key practices – including pair programming, small releases, collective code ownership and continuous integration. These revolve around four key values: communication, feedback, simplicity, and courage.</p> <p>Kent Beck's Extreme Programming Explained is an excellent beginners guide to XP's philosophy and practices.</p> <p>Useful websites on XP and other agile methodologies include:</p> <ul style="list-style-type: none">• http://c2.com/cgi/wiki?ExtremeProgrammingRoadmap• http://www.agilealliance.org• http://www.extremeprogramming.org• http://www.xprogramming.com
Felting	A process where wool is matted by pressing the fibres together.
Fibreglass	Fibreglass is a synthetic fibre, made from glass which has been extruded in extremely fine filaments and woven into cloth. It is strong, light, non-flammable and has a high tensile strength.
Fillet	A spacer device placed between the artwork and the glass to prevent contact.
Fireworks	Adobe Fireworks (originally developed by Macromedia) is a bitmap and vector graphics editor for web designers designed to automatically integrate with its partner programs Flash and Dreamweaver.
Firing Schedule	A firing schedule (or firing cycle) is a set schedule where the temperature of the kiln ramps up at controlled degrees. The temperatures are held for set times to allow the item being fired to cool and anneal (harden and toughen) which will prevent cracking.
Fitness for purpose	<p>'Fitness for purpose' is commonly used to judge the ability of a technological outcome to serve its purpose in 'doing the job' within the intended location, where the 'job to be done' is clearly defined by the brief.</p> <p>When 'fitness for purpose' is described as being 'in its broadest sense', the concept is extended to include the determination of the 'fitness' of the practices involved in the development of the outcome - including such things as the sustainability of resources used, treatment of people involved in manufacture, ethical nature of testing practices, cultural appropriateness of trialing procedures, determination of lifecycle and ultimate disposal, etc - as well as the 'fitness' of the actual outcome itself.</p>

Flash	<p>Adobe Flash (previously called Shockwave Flash and Macromedia Flash) is a set of multimedia technologies developed and distributed by Adobe Systems and earlier by Macromedia. Since its introduction in 1996, Flash technology has become a popular method for adding animation and interactivity to web pages; Flash is commonly used to create animation, advertisements, various web page components, to integrate video into web pages, and, more recently, to develop rich Internet applications.</p>
Flat Felting	<p>This is the easiest form of felting where flat pieces such as table runners or rugs are made.</p>
Flute	<p>Flutes are grooves or channels formed as ornamentation, such as on pillars.</p>
Franchise	<p>When a distributor is authorised to sell a company's goods or services.</p>
Freehand	<p>Macromedia FreeHand is a computer application for creating two-dimensional vector < glossary> graphics, used by the professional desktop publishing market. It is available in versions for Microsoft Windows and Mac OS X.</p> <p>FreeHand is very similar in scope, intended market, and functionality to Adobe Illustrator. A flexible application, FreeHand is used for page layout as well as the creation and editing of vector graphic files for print and the Web.</p> <p>Its current version, FreeHand 11, is marketed as FreeHand MX, which shows its integration with the Macromedia MX line of products, which also includes Macromedia Flash, Macromedia Dreamweaver and Macromedia Fireworks and more</p>
Functional Modelling	<p>Functional modelling allows for the ongoing evaluation of design concepts for yet-to-be-realised technological outcomes.</p>
Functional Reasoning	<p>Functional reasoning focuses on 'how to make it happen' and 'how it is happening'.</p>
Futureintech	<p>Futureintech is a project that helps set up and support technology, engineering and science industry links in the classroom, and provides information to students and their caregivers about career choices in these areas. Futureintech works directly with schools, industries and universities to help ensure that technology, maths and science teachers have the right resources to inform school students and inspire them to continue their study through to tertiary level.</p> <p>Through partnerships with technology-based organisations, the project works in close collaboration with a growing number of industry groups who support Futureintech by:</p> <ul style="list-style-type: none"> • Making a public commitment by becoming a Futureintech Partner; • Encouraging industry peers, service providers and customers to get involved; • Selecting young employees to act as Futureintech Ambassadors; • Helping young employees to be profiled for the Futureintech website; • Inviting the local Futureintech Facilitator to learn first hand about a company; • Becoming a Visiting Industry Professional; and • Providing a scholarship for tertiary study in a related field. <p>Work is done through regional Facilitators throughout New Zealand supported by a central office in Wellington.</p> <p>Futureintech was initiated by the Institution of Professional Engineers New Zealand (IPENZ) in 2003 and is funded by Government until 2010.</p> <p>To find out more about Futureintech, visit www.futureintech.org.nz.</p>
Futureintech Ambassadors	<p>Futureintech Ambassadors are young people working in technology, engineering and/or science industries who have volunteered to assist in local classrooms on practical projects, such as CREST or the Neighbourhood Engineers Award scheme. This can be as simple as answering email and phone questions from the students, or making the</p>

occasional visit to the classroom to help on a project.

Futureintech Ambassadors are trained Futureintech Facilitators to familiarise them with classroom dynamics, and to maximise the effectiveness of their time with students.

A few examples of the many projects worked on by Ambassadors over the past four years include: designing basic playground equipment and seats; baking and selling cookies; small-scale electronics projects; and improving health and safety processes.

Futureintech: tel 04 473 2023; fax 04 474 8933, email enquiries@futureintech.org.nz

To find out more about Futureintech, visit www.futureintech.org.nz.

Futureintech Facilitators

Futureintech has eight regional Facilitators who work to engage industry support, and work with classroom teachers, careers advisors, students and their caregivers, within primary, intermediate and secondary schools throughout New Zealand.

North Auckland: northauckland@futureintech.org.nz

Central/West Auckland: centralauckland@futureintech.org.nz

South/East Auckland: southauckland@futureintech.org.nz

Napier/Hastings: napier@futureintech.org.nz

Central North Island: centralnorthisland@futureintech.org.nz

Wellington: wellington@futureintech.org.nz

Christchurch: christchurch@futureintech.org.nz

Dunedin: dunedin@futureintech.org.nz

For full contact details, visit www.futureintech.org.nz.

Gantt chart

The Gantt chart (named after American engineer Henry Lawrence Gantt) is a useful project management tool. It is a bar chart which shows the start/finish dates of the project, when particular tasks or activities need to be undertaken, and (may incorporate) the resources required for them.

Gene

Genes are inherited instructions that reside within chromosomes... each gene instructs a cell to build specific products... usually proteins.

Global Positioning System

GPS is a global satellite navigation system which was originally designed for military use; Nowadays however there are many civilian users. GPS is used for land, sea and air navigation. It provides satellite signals that can be processed in a GPS receiver which can then work out position, velocity and time.

GMP

Good Manufacturing Practice (GMP)

UK version: Good Manufacturing Practice (GMP) is that part of quality assurance which ensures that medicinal products are consistently produced and controlled to the quality standards appropriate to their intended use and as required by the marketing authorisation or product specification. GMP is concerned with both production and quality control.

Australian version: Good Manufacturing Practice is that part of Quality Assurance which ensures that medicinal products are consistently produced and controlled to the quality standards appropriate to their intended use and as required by the marketing authorisation or product specification.

Google Docs

Google Docs is a free, web-based [word processor](#), [spreadsheet](#), [presentation](#) and [form application](#) offered by [Google](#) that enables users to create and edit documents online while collaborating in real-time with other users. See: [Google Docs Tour](#).

HACCP

The hazard analysis critical control point (HACCP) plan identifies ways in which potential food safety hazards could be introduced, and specifies preventive measures to ensure that they are not. The comprehensive plan reviews potential risks associated with the ingredients, packaging, equipment and staff, as well as all the stages of the production process. In effect it covers everything that influences the work environment, equipment,

processes and people involved.

Hapa-zome	Hapa-zome ('leaf dye' in Japanese) is the name India Flint uses to describe the process of beating colour into cloth using a hammer to create an image of, for example, a leaf.
Hardboard	Hardboard is a manufactured material made from compressed wood fibre (it is also known as high-density fibreboard). It is similar to MDF but denser and stronger.
Hardware	The physical equipment as opposed to the computer program or method of use; mechanical, magnetic, electrical or electronic devices such as keyboard, system unit, monitor, disk drive and printer.
Hedonic scale	Sensory testing using the hedonic scale has the tester evaluating the product and marking it on a range from 'like extremely to dislike extremely'.
High risk enterprise	Obviously there is a risk in running any business as every company is vulnerable to changes in the local or international market. A business may be effected positively or adversely by changes in competition, the economy, new technology, fashions, political upheaval and other complications. A high risk enterprise is one in which there are potentially high monetary rewards but which at the same time has a high risk of failure or things going wrong. Because the level of risk is high, a large corporation does not want its more stable and prosperous departments to be endangered. For this reason a special department or company may be set up to manage the activity.
<i>I Can Animate</i> software	The I Can Animate software provides stop-motion animation and time lapse. The program is simple enough for student of any age to use and can be downloaded for a free five-day trial.
Impulse Sealer	A machine that heats plastic to shrink wrap a product.
Inclusions	Inclusions is the term used to describe extra ingredients put into food products to change texture, taste, smell and/or appearance.
Indicators of Progression	Indicators of progression have been developed in technology to help teachers mediate the achievement objectives into specific Learning Outcomes. The indicators can be used to plan learning experiences, aid in diagnostic assessment, and support formative interactions within the classroom to help scaffold student learning. They can also support summative assessment for reporting purposes. The indicators are 'indicative' of the level expected by the achievement objective. They do not provide a checklist.
Indigenous Rights	<p>With respect to intellectual property, this term is used to describe the acknowledgement that is due to the culture of the indigenous people of any country. It is not strictly a legal term but refers more to the respect that should be given to other people's beliefs.</p> <p>Indigenous rights are considered to arise in connection with things like traditional knowledge (for example, the healing properties of native plants), folklore, artistic works, and traditional performances, including dance and folk music. The haka and the poi dance are New Zealand examples of indigenous culture. Other countries have their own indigenous culture. These things are not protected by our current intellectual property legal system because they have been in existence for hundreds of years and the intellectual property system only protects developed ideas for a certain term of years. After that time they become part of the public domain and anyone can use them for free. Another reason why traditional culture is not protected is because it is difficult for the law to decide who should own it.</p> <p>Some people think this situation is wrong and that some new system should be developed to give legal protections to traditional culture. The respect and honour that is owed to some traditional culture should mean that it is never permitted to become part of the public domain for anyone to use in any way they choose.</p>
Information architecture	Information Architecture is the practice of structuring information (knowledge or data) for a purpose. The term is most commonly applied to Web development, but also applies to disciplines outside of a strict Web context, such as programming and technical writing. In the context of Web design (or design for related media) Information Architecture is defined

as the art and science of organizing and labeling web sites to support usability and findability.

Inspiration 8	Inspiration is a computer program for Macintosh and PC computers predominately used by school students in the classroom for mind-mapping, building graphic organizers, such as concept maps, diagrams and webs. It is also increasingly used by adult learners, educators and other professionals for a variety of tasks including web site planning and project management.
Intellectual Property	The legal rights associated with creations of the intellect. This could cover inventions, discoveries, artistic or literary works and institutional knowledge.
Intermediate Outcomes	Technological practice also results in other outcomes that are referred to as intermediate outcomes. These intermediate outcomes are very important in technology and technology education, as they are valuable for developing ideas, exploring, testing and communicating aspects of technological outcomes before they are fully realised <i>in situ</i> . These include such things as feasibility studies, conceptual designs, models, prototypes, etc.
Introductory Learning Area Statement	The Technology Introductory Learning Area Statement has been developed to communicate the essence of technology as both a discipline and an essential learning area in the compulsory school sector. It therefore defines the concept of technology underpinning this learning area and provides a rationale for why it is important to study technology. The statement also outlines how the learning area has been structured into strands to help teachers develop technology programmes.
Isometric Drawing	Isometric (from the Greek 'having equal measurement') projection is a form of orthographic projection in which a three-dimensional drawing has angles of 30° and where length, width and height are represented by lines 120 degrees apart, with all measurements in the same scale.
Issue	An issue in technology refers to a specific subset of the context that will allow students to identify a need or opportunity.
Jump Rings	Jump rings are all-purpose connectors, used in jewellery as well as other products, usually in a round shape but which can be made as ovals, triangles, etc.
Kanban system	The kanban (Japanese: literally 'visual card') system is a card inventory system used in manufacturing plants to ensure a continuous supply of components while minimising overstocking. The system was first introduced by Toyota in their main plant machine shop in 1953.
Kawakawa	An edible New Zealand native plant with a peppery taste.
Key Stakeholders	Key stakeholders are those people that are directly impacted on by the development practices and the resulting outcome. Wider community stakeholders are those people and social groupings that are less directly impacted on or influenced by the development practices and the resulting outcome.
Key Switch	A switch that can be activated only by a key and commonly used in high security contexts such as for alarm systems, where the key will disarm the alarm.
Kid Pix	Kid Pix is a bitmap drawing program for Macintosh computers with an easy user interface and a range of tools and brushes designed to particularly appeal to children. See: http://softwremackiev.com/downloads/resourcecenter/kp_datasheet.pdf .
Kludge (or Kluge)	A kludge is a term for a clumsy or inelegant solution to a problem or difficulty, used in engineering and computer programming. In engineering, a kludge is a work-around, typically using easily available parts cobbled together. In computer programming, a kludge is often required to fix an unanticipated problem in an

earlier kludge.

Lagging	Lagging, made from materials such as wool or foam, is wrapped around pipes as insulation to minimise heat loss.
Lampwork	Lampworking is a glassblowing technique in which the glass is heated over an open flame, such as a gas-fuelled torch. This method is useful for reheating smaller portions of a glass item, so that they can be reformed or extra pieces can be added to them.
Lathe	A machine tool that rotates wood, metal or glass so that the material can be shaped by cutting or abrasion, used in turning.
LED	A light-emitting diode (LED) is a semiconductor that emits light when activated by an electric current. It is widely used for indicator lights on electronic devices and increasingly in higher power applications, such as traffic lights.
Leukemias	Leukemias are cancers of the immature blood cells that grow in the bone marrow and tend to accumulate in large numbers in the blood stream.
Level	A separate area in a game's world, such as a building or city, or the level of power a character gains in a game.
License	Official permission to produce a product or service.
Light-dependent resistor (LDR)	Also called a photoresistor, this is an electronic component that responds to increased light intensity, allowing a current to pass through a circuit.
Logic analyser	A logic analyser is an electronic device which displays signals in a digital circuit, and is used used to test and diagnose an electronic system.
Logic gate	Logic gates are elementary circuits with several inputs and one output. Different types of logic gate such as the AND, NOR, and OR gates are determined by simple binary codes that respond to different combinations of inputs (either high or low) to give an output.
Lymphomas	Lymphomas are cancers that arise in the lymph nodes and tissues of the body's immune system.
Macro	A sequence of commands that are stored and then recalled with a single computer instruction.
Maillard Reaction	A complicated series of reactions when carbohydrates and proteins are externally heated which causes them to go brown.
Malfunction	A malfunction occurs when the outcome does not operate as intended.
Maquette	French word for scale model, often referring to highly functioning, but much smaller versions of an intended project where the proportions and function can be determined ahead of time before construction.
Mat Board	A thick paperboard, available in a range of colours and textures, used to enhance a framed object.
Matua	Matua (parent/father/uncle) is an honorary title given to Maori male teachers and Whaea (mother/aunty) to female teachers, and used as a term for a surrogate parent. In kohanga reo (language nest), kura (school) and wharekura (schoolhouse) all parents and teachers are responsible for the children, acting as parents to all children outside their nuclear family.
MDF board	MDF (medium density fibre) board is a residue-based composite material available in a range of thicknesses. It is made of fine wood fibres bonded under heat and pressure with an adhesive.

Mental models	A mental model is an explanation in someone's thought process for how something works in the real world. Mental models have been studied by cognitive scientists as part of efforts to understand how humans know, perceive, make decisions, and construct behavior in a variety of environments. The relatively new field of Human-Computer Interaction (HCI) has adopted and adapted these concepts to further the study in its main area of concern (usability).
Middleware	A term used to describe software that connects other software together
MIG welding	Metal inert gas (MIG) welding is a semi-automatic or automatic gas metal arc welding process in which a continuous and consumable wire electrode and a shielding gas are fed through a welding gun. Reasonable operator proficiency can be achieved with modest training. Since the electrode is continuous, welding speeds are greater in MIG welding than for the other common method shielded metal arc welding, and the smaller arc size makes it easier to make out-of-position welds, such as overhead joints, as would be welded underneath a structure.
Mild Steel	Mild steel is the most common form of steel because it is relatively cheap and is often used when large quantities of steel are needed.
Milling machine	A machine that grinds, presses or rolls a material.
Mockup	A mockup is a physical representation of an idea (part of an intended solution) that is used to test/predict its feasibility.
Model	A model is a physical representation of a technological solution (sometimes scaled) that enables a solution's feasibility to be tested/predicted.
Modes of Production	Mode of production refers to production processes that include batch, continuous and semi-continuous.
Moodle	<p>Moodle is a free software e-learning platform (also known as a Course Management System (CMS), or Learning Management Systems (LMS), or Virtual Learning Environment (VLE)).</p> <p>Moodle is designed to help educators create online courses with opportunities for rich online interaction. Its open source license and modular design means that people can develop additional functionality. Development is undertaken by a globally diffused network of commercial and non-commercial users, spearheaded by the Moodle company based in Perth, Western Australia.</p> <p>Moodle has a significant user base, both in New Zealand schools and world-wide. Internationally, by May 2007 it had over 25,000 registered sites with over 10 million users in over one million courses.</p>
Mordant	A mordant is a substance that reacts with a dye and sets it on the fibre; different mordants will produce varying hues and shades from the same dye.
National Curriculum	The National Curriculum for technology is the document provided by the Ministry of Education that sets out the direction for learning in technology. It includes the Technology Introductory Learning Area Statement and Achievement Objectives that progress from level 1-8 of the New Zealand curriculum framework.
Need	A need in technology refers to an identified requirement of a person, group or environment. A need is identified from an issue, and sits within a context. Technological practice can be undertaken in an attempt to meet an identified need.
Need or Opportunity	<p>A need in technology refers to an identified requirement of a person, group or environment. A need is identified from an issue, and sits within a context. Technological practice can be undertaken in an attempt to meet an identified need.</p> <p>For example:</p> <ul style="list-style-type: none"> • The need in Meeting Seating was to develop a seat appropriate for a school

garden where students could meet for discussions

An opportunity in technology refers to an identified possibility for a person, group or environment. An opportunity is identified from an issue, and sits within a context. Technological practice can be undertaken in an attempt to realise an identified opportunity.

For example:

- The opportunity in [Hairs your Gift](#) was to create a gift for a selected recipient.

Networking	Networking with other technologists off site is useful for exchanging knowledge and expertise. The contacts will be technical experts in other food industries or universities – for example, they may have expertise in protein technology, batters or packaging technology. Frits will use the expertise of people in companies that supply the batter and crumb for the Sealord coating processes to help him decide whether the materials are suitable for processing, and whether they will meet consumer expectations. Networking is an excellent way of sharing, capturing and evaluating new knowledge.
Newton Meter	A device use to measure force (usually torque) in units of energy called Newtons (N).
Non-reflective glass	Non-reflect glass does not provide any protection from fading but ensures the viewer can see the art from any angle without reflection.
Nuno Felting	This form of felting creates a lightweight, sheerer material, suitable for fine garment making.
Oblique Drawing	Showing an object as seen from the front at an angle.
Ohm's law	<p>Ohm's law states that, in an electrical circuit, the current passing through a conductor between two points is directly proportional to the potential difference (i.e. voltage drop or voltage) across the two points, and inversely proportional to the resistance between them.</p> <p>Ohm's law, in the form above, is an extremely useful equation in the field of electrical/electronic engineering because it describes how voltage, current and resistance are interrelated on a macroscopic level, that is, commonly, as circuit elements in an electrical circuit.</p>
Operational amplifier (Op-amp)	<p>An operational amplifier, usually referred to as an op-amp, is a DC-coupled high-gain electronic voltage amplifier with differential inputs and, usually, a single output. In its typical usage, the output of the op-amp is controlled by negative feedback which largely determines the magnitude of its output voltage gain, input impedance at one of its input terminals and output impedance.</p> <p>Op-amps are among the most widely used electronic devices today, being used in a vast array of consumer, industrial, and scientific devices. General-purpose integrated op-amps of standard specification sell for around NZ\$1. Modern designs are electronically more rugged than earlier implementations and some can sustain direct short-circuits on their outputs without damage.</p>
Opportunity	An opportunity in technology refers to an identified possibility for a person, group or environment. An opportunity is identified from an issue, and sits within a context. Technological practice can be undertaken in an attempt to realise an identified opportunity.
Orthographic projection	Orthographic projection is a multi-view drawing that shows every feature of an object in its exact size and shape, usually consisting of a front, top and right-side view, as a means of representing a three-dimensional object in two dimensions.
Paraline Drawing	A paraline drawing gives a 3D aerial image of an object, using parallel lines that remain parallel to each other. In contrast, the parallel lines in perspective drawings converge to vanishing point.
Pasteurisation	Pasteurisation is the process of heating a liquid to destroy bacteria or other organisms which might cause spoilage or disease. The process is named after its inventor, French scientist Louis Pasteur. All fresh milk sold in New Zealand must be pasteurised; it is

heated to a temperature of 72.2 degrees Celsius for 15 seconds and then cooled.

Patents	<ul style="list-style-type: none">• Protect an invention – the main kinds of inventions that can be patented are:<ul style="list-style-type: none">• a useful product that is new or improved,• a new or improved process that can be used in industry,• new computer technology• A fee is paid to IPONZ when applying for a patent, and it will only be granted if an invention is:<ul style="list-style-type: none">○ novel i.e. not previously known in New Zealand (see confidentiality agreements above). IPONZ has special arrangements for permitting the public display of inventions at events such as science fairs, prior to applying for a patent. Certain procedures must be followed (check the IPONZ website well before your event) and the patent must be applied for within a specified time after the display.○ not obvious – it must show an 'inventive step'.• Owning a patent means having the legal right to prevent others in New Zealand commercialising an invention – although this could necessitate taking them to court (which could be costly). It does not have to be proved the invented product was copied, only that the same process of making it has been used commercially without your permission.• The patent will be granted for 4 years, but it can be renewed regularly up to a maximum term of 20 years, after which the patent expires.
Pathogen	Any agent, such as a bacterium, which can cause disease
Performance properties	Performance properties of materials refer to such things as thermal and electrical conductivity, water resistance, texture, flexibility, colour, etc. Subjective measurement is reliant on people's perception (tasty, evokes a sense of natural beauty, warm and inviting, etc.), whereas objective measurement is not (conductivity, UV resistance, etc.).
Personas	Personas are a design tool, used in many types of industrial design, which consist of a set of stories that capture the goals and motivations of characters representing discrete user groups. Personas are a quick and effective way of getting a project team up to speed with the goals of users.
PH	A measure of the acidity or alkalinity of a solution.
Photoshop	Adobe Photoshop is a high-level pixel-based photo-editing program that is the current and primary market leader for commercial bitmap and image manipulation, and is the flagship product of Adobe Systems. It has been described as "an industry standard for graphics professionals" and was one of the early applications that made Macintosh computers the standard platform for the graphics industry.
PHP	<p>PHP (originally an acronym for 'personal home page') is a general-purpose scripting language that is especially suited for web development.</p> <p>PHP generally runs on a web server, taking PHP code as its input and creating web pages as output. It primarily acts as a filter, taking input from a file or stream containing text and/or PHP instructions and outputs another stream of data; most commonly the output will be HTML.</p> <p>PHP can be deployed on most web servers, many operating systems and platforms, and can be used with many relational database management systems. It is available free of charge, and the PHP Group provides the complete source code for users to build, customise and extend for their own use.</p> <p>See: http://en.wikipedia.org/wiki/PHP</p>
Picaxe	Described as a 'computer-on-a-chip' as it has its own memory, a PICAXE microcontroller can process instructions and data, and has input/output functions. They are popular with

microcontroller	<p>developers, students and hobbyists due to their low cost, wide availability, large user base, extensive collection of application notes, availability of low cost or free development tools, and serial programming (and re-programming with flash memory) capability.</p> <p>The PICAXE-18 is a cheap microcontroller, even though it consists of thousands of transistors and many other components. It provides 8 outputs and 5 inputs, and contains a 'bootstrap program' that controls the basic way the microcontroller operates and allows other programs, either sourced or written by students themselves, to be downloaded directly to the microprocessor. These programs are stored in 'non-volatile FLASH memory which means that even if power is removed from the microcontroller the program is not lost. If a new program is downloaded to the microcontroller the previous program is overwritten.</p>
Piracy	Illegal copying, distribution or use of software, music or other media.
Pitching	A concise verbal (and sometimes visual) presentation of an idea to a prospective or existing client, in the hope of attracting development finance.
Plan of action	Sets out how resources such as time, expertise, materials and finance will be used in a coherent and systematic manner during the development of a technological solution. It establishes key milestone outcomes (intermediate project accomplishment points which are usually also key decision points), and states how each of the resources is to be used to achieve the outcome at each milestone stage. It also establishes how consultation with stakeholders and resource people (e.g. experts) will be carried out to ensure that all constraints and requirements are met.
Planimetric Drawing	A planimeter is a drafting instrument used to measure the surface area of a two dimensional shape.
PMI	'Plus/Minus/Interesting' (PMI) is a decision-making tool and creative-thinking strategy devised by Edward de Bono based on the 'pros and cons' practice used for centuries. A technologist would note all the positive points of making a product under the Plus heading, all the negative effects under Minus, and anything that could improve or extend it under Interesting.
Polar fleece	Polar fleece was created in 1979 and is a synthetic fabric made from fine polyester yarns. It is popular because it is lightweight, warm, quick-drying and, as well as maintaining its insulating properties when wet, it draws moisture away from the skin.
Polwarth	The Polwarth, developed in 1880s Australia by cross breeding Merino and Lincoln sheep, produces a high-yield, soft-handling, fine wool and is also farmed for its meat.
Polycarbonate	Polycarbonate is a plastic polymer which is tough, durable, light weight and scratch-proof. It is often used as a shatter-resistant substitute for glass.
Practical Reasoning	Practical reasoning focuses on 'should we make it happen?' and 'should it be happening?'
Prefelt	Fabric that isn't yet fully felted which will be placed on a base fabric for felting.
Powermesh	Powermesh refers to materials created to be stretchy, flexible and breathable, for example a nylon/mesh fabric combination.
Printed Circuit Board	A printed circuit board (PCB) is a thin insulating board which has had conductive metal tracks etched on it, and on which electronic components are mounted to create an electronic circuit.
Pro/DESKTOP	A Computer-aided design (CAD) program for 2D drafting and designing and modelling in 3D. It also allows the user to transfer 3D design into 2D engineering drawing formats and create photo-realistic views with its <i>Album Views</i> feature.
Process guides	<p>Sealord</p> <p>The process guides ensure that total quality management procedures can be followed throughout the manufacturing of a product. They tell production staff what to do to make</p>

the product safely and consistently right first time. The guide contains details that are specific for the processing of the crumbed scallops and links the quality checks to the requirements of the product specification. Initial checks include the recording of batch numbers and use by dates for all the raw materials.

Proper Function	This is the intended purpose of the technological outcome.
Proprietary Coding	Proprietary (or 'closed-source' or 'non-free') coding is computer software that has restrictions on use or modification placed on it by its owner/developers ('proprietors').
Prototype	A basic working model of a product or information system, usually built for demonstration purposes or as part of the development process.
Prototyping	Prototyping allows for the evaluation of fitness for purpose of the technological outcome itself.
PVC	PVC (polyvinyl chloride) is a thermoplastic material made up of polymers of vinyl chloride. (A polymer is a group of molecules joined together: poly = many, mer = part). PVC is widely used in building and construction for, amongst other things, piping. Recycling of PVC has historically been difficult to perfect on an industrial scale, but within the last decade several viable methods have been developed.
Qbasic	Qbasic is a structured programming language, a variant of BASIC - an early programming language which is still used due to its being one of the simplest.
Quick-and-dirty	<p>Quick-and-dirty is a term used in computer programming for a crude, imperfect, inelegant, or otherwise inadequate solution that solves or masks a problem, and is generally faster and easier to put in place than a proper solution.</p> <p>Quick-and-dirty solutions often attend to a specific instance of a problem rather than fixing the cause of the more general problem. As such, they are sometimes used to keep an item of software or hardware working temporarily until a proper fix can be made.</p> <p>Microsoft's first operating system, MS-DOS, was originally called QDOS (Quick and Dirty Operating System) during its development, before its purchase from Seattle Computer Products.</p>
Random Access Memory (RAM)	The most common computer memory which can be used by programs to perform necessary tasks while the computer is on; an integrated circuit memory chip allows information to be stored or accessed in any order and all storage locations are equally accessible.
Rapid prototyping	The term refers to a class of technologies that can automatically construct physical models from Computer-Aided Design (CAD) data. These "three dimensional printers" allow designers to quickly create tangible prototypes of their designs, rather than just two-dimensional pictures. Such models make excellent visual aids for communicating ideas and can be used for design testing.
Reed Switch	A reed switch is a magnetically operated switch usually mounted on doors or windows; when the magnets make contact they complete an electrical circuit and when they move trigger an alarm.
Registered Designs	<p>The external appearance of some products can be protected by applying to register a design right at IPONZ.</p> <p>A design right protects a new or original shape, pattern, or decorative finish that has been applied to the product by an industrial process. The registered design will be granted for five years, but it can be renewed regularly up to a maximum term of 15 years, after which the registration expires. This kind of protection is similar to a patent. It does not have to be proved the design was copied, only that the same design has been used commercially without permission. Although most registered designs will also be copyright (which is free and arises automatically), registered design protection is stronger.</p> <p>Many New Zealand manufacturers rely upon the protection for industrial designs which is available under the Copyright Act (see below) and do not apply for registered design</p>

protection. However overseas copyright laws do not generally protect industrial designs – if you plan to export your articles you should apply for registered design protection in each country.

Render Farm	A render farm is a computer cluster built to render computer-generated imagery (CGI), typically for film and television visual effects, using off-line batch processing.
Rendering	Rendering, in freehand drawing as opposed to computer rendering, is a skill traditionally used by architects to create two-dimensional images showing the attributes of a proposed design and often done in colour.
Resin	A solid or semi solid obtained from certain plants or produced synthetically.
Resist Dyeing	Where a substance or process stops the fabric being dyed in certain places.
Rete	Rete is a technique in which possum fur is threaded into wool.
Rewena	<p>Paraoa is a Maori word meaning flour or bread. Rewena paraoa (or paraoa rewena) is a bread cooked with a leavening of fermented potato mixture (rewena), made from potato, flour, sugar and water. In some dialects it is called rewana.</p> <p>Taewa refers to Maori potatoes, some of which arrived with early Europeans, while others were said to have been here earlier. Over the years some varieties have been lost, but those surviving include Urenika (also called tutaekuri). Urenika is easy to cultivate, grown year around because of varying climatic conditions in different parts of New Zealand, and cooks up well. Other varieties include Makoikoi, Karuparera, Raupi, Moe Moe, Te Maori Huakaroro.</p>
Right first time	Right first time is an industry term that is applied through the project management system to products as they are being developed and manufactured. Project management systems will establish an agreed time frame, costing, and quality standards. At each stage of the production process quality checks are applied to ensure that the product is made to specification. If the product is not produced right first time there will be consumer dissatisfaction and it could be subject to costly recall from the market.
Risk	<p>"The Australian/New Zealand Risk Management Standard describes risk as the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood. It may be an event, action or lack of action. Risk stems largely from uncertainty."</p> <p>"Risk is a concept used to express uncertainty about events and/or their outcomes that could have a material effect on the goals of the organisation."</p> <p>From: Keey, R B (2000), <i>Management of Engineering Risks</i>, Centre for Advanced Engineering, University of Canterbury, The Institution of Professional Engineers.</p>
RMA	The Resource Management Act (RMA) deals with the management of natural and physical resources. It is concerned with how we use, develop and protect these resources, and the effects of human activities on the environment. Noise, air, land, and water are all dealt with in the RMA.
Rolling Stock	A railway's locomotives and carriages
Rongoa Māori	Rongoa (medicine, drug, remedy) Māori refers to traditional Māori medicines produced from New Zealand native plants.
Rubric	<p>A rubric is an assessment tool that conveys a list of criteria important to the assessment task and then communicates gradations of quality for each criterion. For a rubric to be most effective it should:</p> <ul style="list-style-type: none">• use specific language – avoiding terms like sometimes or rarely;• contain requirements that are both measureable and observable;• be written in positive language that all students can understand; and

- be realistic, providing a valid entry point for all students.

Sarcomas	Sarcomas cancers arising from cells found in the supporting tissues of the body such as bone, cartilage fat, connective tissue and muscle.
Satellites	Satellites in space bounce messages from one part of the world to another. Sirtrack equipment uses satellite communication to show which geographic area a transmitter is sending its message from. Satellites are also used to study weather and astronomy.
Scale Model	A scale model is a 3D representation of a technological outcome that has all parts in the same proportion of their true size (e.g. ¼ full size; 1:4). Scale models are used to test the potential fitness for purpose and/or communicate the physical and functional attributes of a design concept prior to its realisation as an implemented technological outcome.
Schematic	A printed circuit board (PCB) is a thin insulating board which has had conductive metal tracks etched on it, and on which electronic components are mounted to create an electronic circuit.
School Curriculum	The school curriculum for Technology is developed by all staff involved in the leadership and delivery of Technology in the school. The school Technology curriculum is recorded by way of Technology programmes that guide all staff teaching within it. Technology programmes are delivered in line with the expectations within the national technology curriculum, but also take into account the needs and desires of the school community, the strengths of the teaching staff, and the interests and ability of the students. See the Technology Programme Design paper .
SCUMPS	An acronym for the attributes of Size , Colour , Use , Materials , Parts and Shape , used when describing, comparing and contrasting objects. See the SCUMPS model in action (.doc download, 29 kb)
Semifreddo	Semifreddo is 'half cold' in Italian and refers to a range of chilled or partially frozen desserts, including ice-cream, custard, cake and some fruit.
Servo Motor	A servo motor, or servomechanism, (often shortened to servo) is small motor with a moveable output shaft that can be positioned to specific angles by sending the servo a coded signal. Servos are commonly used in robotics and in such things as radio-controlled cars and airplanes to position wheel direction and control surfaces such as the elevators and rudders.
Shibori Dyeing	Shibori Dyeing is a range of resist techniques all involving shaping the fabric in different ways then tying it tightly so that the dye does not affect the secured part of the cloth.
Shim	A shim is a thin, often tapered, piece of material (such as wood, metal or stone) used to fill a space, make something level or to adjust parts to fit.
SketchUp	<i>SketchUp</i> is a 3D modeling program originally created by @Last Software in 1999 to "make design exploration accessible to everyone". In 2006, SketchUp was bought by Google , who released a free version of SketchUp allowing everyone to create models in 3D. The Google 3D Warehouse has a vast library of uploaded SketchUp components and models. SketchUp's key features and uses include: <ul style="list-style-type: none"> • A "smart" drawing cursor (inference) system that allows users to draw 3D objects using a 2D screen and mouse; • Simple massing study capability via "push-pull"; • An interactive Heliodon (sun angle simulator); • Ability to animate camera and sun movements; • Models can be individually colored with an assortment of solid colors, textures and materials;

- Inter-operability with Google Earth; and
- Simplicity of use over other modeling programs for children, amateur artists, and hobbyists.

Skin	A skin is the background framework of a website page or user interface that can be modified (globally or through the changing out of buttons, colours, borders and other graphic elements) without affecting the functionality of the page or interface.
Sous vide	Sous vide (under vacuum) is a process of slow-cooking food (sometimes up to 72 hours) in a water bath, at lower temperatures than used in traditional cooking methods. The purpose is to cook food evenly and thus retain more shape and flavour.
Specific learning outcomes	<p>There are four types of specific learning outcomes in technology:</p> <ul style="list-style-type: none"> • Predetermined curriculum driven • Predetermined context driven • Negotiated curriculum driven • Negotiated context driven <p>Curriculum driven learning outcomes are derived from the achievement objectives. They reflect the intended technology learning that students will achieve as they participate in learning experiences.</p> <p>Context driven learning outcomes reflect additional knowledge and skills required by the context for students to participate successfully in the learning experiences. These learning outcomes may be technological in nature (for example, graphical knowledge and skills, knowledge of materials, skill in material manipulation, knowledge of existing technological products and systems), or may be derived from other disciplines (for example, science, mathematics, the arts, social sciences, language, psychology, etc.).</p> <p>The majority of learning outcomes will be predetermined before unit delivery. That is, they are identified by the teacher as being key to student learning in the planning stages. Additional learning outcomes may be identified and developed during the unit delivery. These are known as negotiated learning outcomes and are important in terms of recognising learning needs and/or opportunities that may arise from student participation in unit experiences.</p> <p>Specific learning outcomes should provide opportunity for all students to progress their learning in technology. Therefore, when developing specific learning outcomes, teachers will need to draw from their knowledge of where the students' current level of achievement is in relation to the intended learning, and what the next steps in their learning will be.</p> <p>The technology Indicators of Progression have been developed to help teachers develop and use Curriculum driven learning outcomes that are in keeping with the achievement objectives.</p>
Specifications	Specifications define the requirements of the outcome in terms of its physical and functional nature. They provide guidance for ongoing evaluation during the development of an outcome, as well as serving as an evaluation tool against which the final outcome can be justified as fit for purpose.
Spin-off company	This commonly refers to a new company formed by a split from a larger pre-existing one, or from a university research group or business incubator.
Spokeshave	A small, metal handheld tool used for shaping and smoothing wooden rods and shafts.
Stabilisers	Stabilisers are substances added to food to preserve its texture; they contribute to the consistency of a product under a variety of conditions encountered during processing, storage or use. Stabilisers are added to a food whose ingredients do not mix well, which prevents them from separating again. Gelatine and carrageenan (edible seaweed) are common stabilisers.
Stage-gate	Stage-gate refers to the development process visualised as a series of stages, separated by gates. At each gate, the decision must be made as to whether to continue the

	development process based on information available at the time, such as cost, time and availability of resources.
Stainless Steel	Stainless steel is made from any steel that has been alloyed with at least 10 percent chromium. It is resistant to the corrosion associated with exposure to water.
Stakeholders	<p>Stakeholders are any individuals or groups who have a vested interest in the technological development or technological outcome.</p> <p>Key Stakeholders are those people that are directly influential or will be directly impacted on by the Technological Practice itself and/or its resulting outcomes (including the technological outcome and any other by-products).</p> <p>Wider community stakeholders are those people that are less directly influential for or impacted on by the practice or outcome. They can, nonetheless, be identified as having some level of influence, often through others, and/or they may be affected by the project or its outcome in the future.</p>
Starch	A complex carbohydrate that is stored in plants and used for food; for example - corn, potatoes, wheat, and rice.
STL (file format)	<p>STL is a file format native to the stereolithography CAD software created by 3D Systems. This file format is supported by many other software packages; it is widely used for rapid prototyping and computer-aided manufacturing. STL files describe only the surface geometry of a three dimensional object without any representation of color, texture or other common CAD model attributes.</p> <p>(Source: Wikipedia)</p>
Stock Collar	Also known as an Ascot Collar. A long white cloth worn around the neck as part of formal riding garb.
Sub contractor	It is common for many businesses to have parts of their work done by another, independent company - this is known as subcontracting. It is often cheaper and more efficient to pay a subcontractor to produce a product or service than for the organization to have to set up staff and space to do this. A subcontractor may also be used because to provide this service would mean the organisation changing the main direction of what it offers.
Tapping	A tap is a tool for cutting internal threads on a lathe or drilling machine.
Task Analysis	Task analysis is the process of identifying and understanding users' goals and tasks, the strategies they use to perform the tasks, the tools they currently use, any problems they experience, and the changes they would like to see in their tasks and tools.
TeacherTube	TeacherTube, at www.teachertube.com , was launched on March 6, 2007 by www.youtube.com to provide an online community for sharing instructional videos. TeacherTube seeks to fill a need for a more educationally focused, safe venue for teachers, schools, and home learners. It is designed so that teachers can post instructional videos for students to view, and to share professional development with other teachers. To find out more, see www.teachertube.com/about.php .
Technological Literacy	<p>The three knowledge types, 'know how', 'know why' and 'know that', combine to provide students with all knowledge types seen as important in developing a sophisticated technological literacy.</p> <p>See: A New Technological Literacy.</p>
Technological Modelling	<p>Technological modelling refers to modelling practices used within technological developments, and includes functional modelling and prototyping</p> <p>See the Technological modelling Explanatory paper.</p>
Technological	Technological outcomes are developed through technological practice for a specific

Outcomes	<p>purpose and are defined as material products and/or systems that are fully realised in situ. Technological practice also results in other outcomes that are not fully realised in situ (and therefore not termed technological outcomes). These outcomes are also important in technology and technology education and include such things as feasibility studies, conceptual designs, models etc.</p> <p>See the Explanatory Papers - Characteristics of Technological Outcomes and Outcome Development and Evaluation in the Curriculum Support section of Techlink.</p>
Technological practice	<p>A widely embracing term used to describe the activities of technologists in their work. Technological practice encompasses working with stakeholders as appropriate, developing briefs, organising and managing resources and time, carrying out ongoing evaluations and developing outcomes.</p>
Technological Products	<p>Technological Products are material in nature and exist in the world as a result of human design</p> <p>See the Technological Products explanatory paper.</p>
Technological solutions	<p>The realisable means proposed by a technologist for meeting the requirements of a brief. It will be presented in sufficiently detailed and clear manner that it is both fully realisable (suitable for implementation in practice), and can be fully tested against the specifications in the brief.</p>
Technological Systems	<p>Technological Systems are a set of interconnected parts (technological products and processes) that serve to transform, store, transport or control materials, energy and/or information.</p> <p>See the Technological systems explanatory paper.</p>
Technology	<p>Technology is a purposeful invention by design activity that results in technological outcomes that impact on the world.</p>
Technology Education	<p>Technology education is a planned process designed to develop students' competence and confidence in understanding and using existing technologies and in creating solutions to technological problems. It contributes to the intellectual and practical development of students, as individuals and as informed members of a technological society.</p>
Technology Indicators of Progression	<p>Indicators of progression have been developed in technology to help teachers mediate the achievement objectives into specific learning intentions. The indicators can be used to plan learning experiences, aid in diagnostic assessment, and support formative interactions within the classroom to help scaffold student learning. They can also support summative assessment for reporting purposes. The indicators are 'indicative' of the level expected by the achievement objective. They do not provide a checklist.</p>
Telomere	<p>The molecular caps at DNA ends that hide from damage detection and can be sacrificed... telomerase repairs telomeres and is not found in normal cells only in cancer cells that can thus divide infinitely and also in stem cells.</p>
Thermoforming	<p>Thermoforming (also known as vacuum forming) is where a plastic sheet is heated and pulled tightly over the top of a mould and the air then sucked out.</p>
Tikanga	<p>Tikanga refers to customs, tradition and culture handed down through time, and the rules, or protocol, by which people live.</p>
Tincture	<p>A solution of a plant product or chemical substance in alcohol.</p>
Toile	<p>Toile (pronounced <i>twaɪ</i>) is a mock-up of a garment, generally made in a cheap fabric such as muslin or unbleached cotton sheeting, used to test for design, fit and proportion. More than one toile may be made before the final garment is produced.</p>
Toll processing	<p>Alaron Products provides a toll processing service. The company takes a customer's materials and puts them together in the form of tablets or capsules. This is common practice for customers such as Comvita and the company is efficiently using its expertise.</p>

Trade Marks	<p>A brand or logo distinguishing the goods or services of one trader from another can be registered as a trade mark at IPONZ. A registered trade mark is entitled to display the ® symbol. A fee is paid to IPONZ when applying to register a trade mark.</p> <p>The main requirements for registration are that the trade mark is:</p> <ul style="list-style-type: none"> • described graphically, that is, in words or pictures; • distinctive (unusual) and not something that is descriptive of the goods or services, because that would prevent other traders using that word; • not misleading or deceptive; • not offensive to any section of the New Zealand community, including Maori. <p>A trade mark is registered for one or more particular classes of goods or services in New Zealand. Other traders might register the same trade mark for different kinds of goods and or services. However, trade marks that are considered world famous are not permitted to be registered in New Zealand by another trader for any class of goods. Nobody else can use the registered trade mark for trading purposes for goods or services of the same class. If they do, a legal action can be brought against them. A registered trade mark never expires so long as it is continuously used by its owner for commercial purposes and a renewal fee is paid to IPONZ every ten years.</p>
Trade Secrets	<p>Once the idea is developed into a commercial product the inventor could choose to continue to keep the way it is made a trade secret. Any employees who need to know the trade secret would have to sign a confidentiality agreement in their employment contracts. The trade secret lasts for ever, provided nobody reveals the information. If they do, the only remedy is to sue them for damages – but the secret is out in the open! A person cannot prevent somebody independently working out how they have made the same product (i.e. 'reverse engineering the process').</p>
Treatment (in film-making)	<p>In film-making a treatment is a draft document which describes what will happen in a film, and is a preliminary draft for the screenplay.</p>
Tuile	<p>Tuile (pronounced <i>tweel</i>), originally made in France, is a thin, lacy biscuit shaped around a mould while still hot from the oven to form a basket or curled shape. It can be sweet or savoury.</p>
Tulle	<p>Tulle is a fine, transparent fabric made from silk, cotton or synthetic materials such as nylon and used for garments such as evening dresses, veils and hats. It is named from the French city of Tulle, where it was first manufactured.</p>
Turnkey	<p>The term 'turnkey' is often used in the technology industry to describe pre-built systems in which everything needed to perform a certain type of task is provided ready to begin operation.</p>
UHT Milk	<p>Ultra high temperature (UHT) milk is processed at a high temperature (heated to 115 degrees C for one second); this destroys any bacteria and gives the final product a shelf life of six to nine months.</p>
UMF (Unique Manuka Factor)	<p>UMF (Unique Manuka Factor) is a quality trademark used by the Active Manuka Honey Association. Refers to the antibacterial/healing quality of a manuka honey. It is only applied to honey which is developed in New Zealand and meets set criteria, including regular monitoring and auditing of honey quality.</p>
Urenika	<p>See 'Rewena'</p>
Usability	<p>Usability is a term used to denote the ease with which people can employ a particular tool or other human-made object in order to achieve a particular goal. In human-computer interaction and computer science, usability usually refers to the elegance and clarity with which the user interface of a computer program or a web site is designed. The concept of usability also includes learnability, retainability and user satisfaction.</p>
Usability Testing	<p>Usability testing is an effective way to verify an existing design or system. It is a structured</p>

observation of users in a laboratory setting. Users are observed performing important tasks with a working system or prototype. They are asked to "think aloud" while completing the tasks. This includes describing what they are trying to do, the hypotheses they are forming, their expected results of an action, etc. The evaluator observes the user's performance noting problems, comments, circuitous paths, etc. Usability tests are useful for collecting quantitative data regarding time per task and number of errors. (Rubin, 1994)

The evaluator always explains to users that only the software is being tested, not the user themselves. Debriefing is usually included to get gather additional information about the user's experience. A usability test is typically videotaped so the evaluator may perform more detailed observations and analysis after the test.

User-centered design	In the user-centered design paradigm, the product is designed with its intended users in mind at all times. In the user-driven or participatory design paradigm, some of the users become actual or de facto members of the design team.
UV glass	UV (ultra-violet) glass blocks the ultra-violet frequencies present in sunlight, which can cause fading and deterioration in organic materials.
Vector	Vector is a common data model made up of points, lines, curves or polygons. Instead of using pixels for storing image information it stores a set of properties that describe the objects attributes, dimensions, and position in the image. CAD (Computer-aided design) programs and drawing applications such as Macromedia Freehand produce vector graphics.
Vignette (in film-making)	In film-making a vignette is a brief incident or scene.
Warp	The yarns arranged lengthwise on a loom through which the weft (widthways) yarns are woven.
Wearable Technology	Wearable Technology is the term given to clothing and accessories which incorporate computer and/or advanced electronic technologies, and to new materials that have functions beyond the usual uses. An example of wearable technology can be seen on Techlink and at ScienceDaily .
Web accessibility	Web accessibility is about enabling equal access to online content and services for all people, including those with visual and mobility impairment.
Wiki	<p>A wiki is software that enables users to create, edit, and link web pages easily.</p> <p>Wikis are often used to create collaborative websites and to power community websites. These wiki websites are often also referred to as wikis. Wikipedia is one of the best known wikis. Wikis are being installed by businesses to provide affordable and effective intranets and for knowledge management. Ward Cunningham, developer of the first wiki, WikiWikiWeb, originally described it as "the simplest online database that could possibly work".</p>
Windows Movie Maker	Windows Movie Maker is video creating/editing software that is included in recent versions of Microsoft Windows. It contains features such as effects, transitions, titles/credits, audio track, timeline narration, and Auto Movie. New effects and transitions can be made and existing ones can be modified using XML code.
WYSIWYG	WYSIWYG is an acronym for What You See Is What You Get, used in computing to describe a system in which content displayed during editing appears very similar to the final output, which might be a printed document, web page, or a slide presentation. In general terms, WYSIWYG implies the ability to directly manipulate the layout of a document without having to type or remember names of layout commands.
XHTML	Extensible Hypertext Markup Language, or XHTML, is a computer markup language. A markup language is an artificial language using a set of annotations to text that describe how text is to be structured, laid out, or formatted in computer typesetting and word-

processing systems.

Youtube

Youtube, at www.youtube.com, was in created February 2005 as a repository for publically-posted online videos that could be accessed free-of-charge by anyone. It quickly became the premier destination to share and watch and videos worldwide.