

Technology Online Webinar, Years 0–6 Teaching Technological Knowledge



Technology Online

*Kaue e rangiruatia te hāpai o te hoe;
e kore to tātou waka e ū ki uta*

Karakia Timatanga

Kia hora te marino
Kia whakapapa pounamu te moana
Hei huarahi mā tātou
i te rāngi nei
Aroha atu aroha mai
Tātou i a tātou katoa
Hui ē! Tāiki ē!



Opening Karakia

May peace be widespread
May the sea be like greenstone
A pathway for us all this day
Let us show respect for each other
For one another

Bind us all together

Technology Online Webinar, Years 0–6 Teaching Technological Knowledge

Dorothy Hutton: Year 6 Teacher
Columba College, Dunedin



Wendy Webb: Resource facilitator



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Webinars for primary

- **Wednesday, 18 November: Teaching technological knowledge**
[Exploring food packaging](#)
[Introducing technological systems](#)
- **Wednesday, 25 November: Developing technology understandings alongside practice**
[Technological practice and producing a newspaper](#)
[Technological modelling in tie-dying](#)
[Is food a technological outcome?](#)
[Recycling coffee sacks: Integrating technology and art](#)



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The technological knowledge strand

Technological knowledge

Three components

- Technological modelling
 - functional modelling
 - prototyping
- Technological products
- Technological systems



Technological modelling

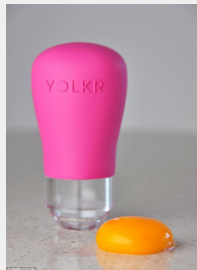


Technological modelling

Technological modelling

Functional models:

- are used to represent potential technological outcomes
- exist in many forms: **thinking, talking, drawing, physical mock ups, computer aided simulations**
- are used to test design concepts:
 - parts of the outcome
 - the whole technological outcome
 - to see if is suitable for use in the development of an outcome.



Technological modelling

Web links and classroom visitors

- [Hubless Wheel Prototype](#)
- [The making of black](#)
- Blue and white Masterton game
- [British Airways Boeing 747-400 in D-Check](#)
- Wind Tunnel testing for a 747 plane
- Mechanical and electrical engineers
- [Futureintech ambassador](#) from Fisher and Paykel
- Testing the dishwasher drawer adapter for glasses and mugs



Technological modelling

Testing and Trialling

- provide an outline template of, for example, a car, smart phone, or toy
- students label the parts they think might need to be tested and trialled
- students explain their choices



Examples:

- Year 1 and 2 Rafts
- Collision biscuits

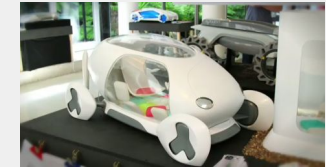
See, [Is food a technological outcome?](#)



Technological modelling

Technology in the news

- [Cars designed to be slept in](#)
- [Buttercup the duck receives new 3D printed foot](#)
- [What is Fisher and Paykel up to?](#)
- [Smart streets and solar roadways produce energy for the power-grid](#)
- [Sweeties comfort furniture series by boggy chan](#)



MINISTRY OF EDUCATION
Te Kaitiaki Take Kōwhiri
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Technological modelling

Decision making after functional modelling may mean you:

- stop making it for a while or all together
- continue making it as planned
- change or improve it, and then carry on
- carry on as planned to the prototype

Functional modelling and prototyping support decision making when developing an outcome.

Examples

- [The making of black](#)
- [Technological modelling in tie-dyeing](#)
- Fisher and Paykel mug and glass rack – decisions made at each stage



Technological modelling

Prototypes are:

- used to test technological outcomes
- the first versions of fully completed technological outcomes
- the final models made before the outcomes are made and sold



Fashion directors often coordinate with fashion designers to gather prototypes for designs which clients can view.

Prototyping shows what the final outcome is going to look like (at the size it was designed) and how it is planned to function.



Prototyping and functional modelling lower the impact on the world and save money, labour, and time.

Technological products – materials

Technological products



Technological outcomes can be classified as products or systems, or both. (See [Characteristics of technological outcomes](#)).

But in this component the focus is on technological outcomes as products and, more specifically, their material natures.

- Identify any misconceptions that “materials” means only fabric – technological materials are what products or components are made of.
- Students bring a technological outcome to school, research the materials it is made from, and present it to the class.
- Students create a “Class Information Fact File” book on materials and their various properties – *integrate this with reading and writing*.

Technological products

Technology Word Wall

Build a Word Wall to record new vocabulary – just as you would when building science vocabulary.

The performance properties of materials are the same for Technology and Science so this is really worthwhile.

durable	transparent	opaque	fragile
breakable	insulates	stretchy	flexible
brittle	shiny	heavy	light
absorbent	weak	conducts	magnetic
hard	rigid	strong	waterproof

Technological products

To be fit for purpose, a product must be made of materials that will:

- 1) enable its successful functioning
- 2) make it acceptable to users (safe to use, environmentally friendly, economically viable, ethically OK, and so on) depending on the product.

Match the technological outcome to the best choice of material.

- tyre
- saucepan
- towel
- notebook
- sports bottle
- window



- metal
- fabric
- paper
- rubber
- glass
- plastic

Technological products

Match performance properties to various materials.

- waterproof
- flexible
- strong
- transparent



- metal
- fabric
- paper
- rubber
- glass
- plastic

Integration with science: [Material properties](#)

Technological products

Exploring food packaging

- integration with Māori cultural knowledge and science
- home-school links
- community speaker

Sorting materials:

- identifying performance properties
- properties that can be measured objectively and subjectively
- socially acceptable and/or technically feasible?



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Technological systems

Technological systems



Systems are sets of interconnected components that transform, store, transport, or control materials, energy, and/or information for particular purposes.

In any system, how the parts work together is as important as their individual characteristics.



A Toaster System

Inputs:

- information
- humans
- an energy source
- bread

Outputs:

- bread
- crumbs

Cloud catcher

Technological systems

Social, natural, organisational or technological?

- Board of Trustees, human body, library

Simple systems

- toy, torch, Bic pen, toaster

More advanced

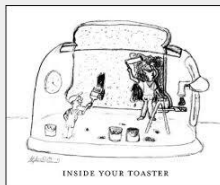
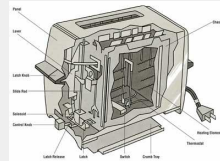
- car wash, computer
- fire brigade (integrate with health and safety)

Activity

- Sort outcomes and pictures into products/systems

Black box technology – an advanced concept

Talking about technological systems in primary



Technological systems

- Night-lights as technological systems
- Tech systems for year 3-4 students: Hydroponics
- A dairy farm as a technological system
- Technological systems in a toys context



Insights from research



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Technological knowledge

Videos

- [Hooking primary students into technology](#)
- [Will my design for a mirror work?](#)
- [Technological experiences at Motat](#)



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Technology Online

Online forums and cluster groups

1. Would you like to participate in an online forum for technology?
What kind of online forum would be useful and appealing?
2. Would you like to form and participate in virtual cluster groups?

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Karakia Whakamutunga

Ka whakairia te tapu
Kia watea ai te ara
Kia tūruki whakataha ai
Kia tūruki whakataha ai
Hui e Tāiki e

*Restrictions are moved aside
So the pathway is clear
To return to everyday activities
Enriched and unified*

