



## Selecting products to support Digital Technologies & Hangarau Matihiko - DT & HM



There is a very wide range of products such as robotics kits or programmable interfaces available that could be purchased by schools to enable students to get hands-on experiences of digital technologies.

This guide will provide teachers and decision-makers with starting points to help them to consider what items they might procure in order to support the delivery of the Digital Technologies strands of the New Zealand Curriculum and as a whenu within the Hangarau Wāhanga Ako. Learning in digital technologies will link to learning across all Wāhanga Ako in Te Marautanga o Aotearoa.

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Once you have read this guide you are welcome to contact the Connected Learning Advisory to get more personal assistance. We aim to provide consistent, unbiased advice and are free of charge to all state and state-integrated New Zealand schools and kura. Our

advisors can help with all aspects outlined in this guide as well as provide peer review of the decisions you reach before you take your next steps.

For more information visit [www.connectedlearning.org.nz](http://www.connectedlearning.org.nz)

Check out our resources at [resources.connectedlearning.org.nz](http://resources.connectedlearning.org.nz)

Call us for personalised service on 0800 700 400

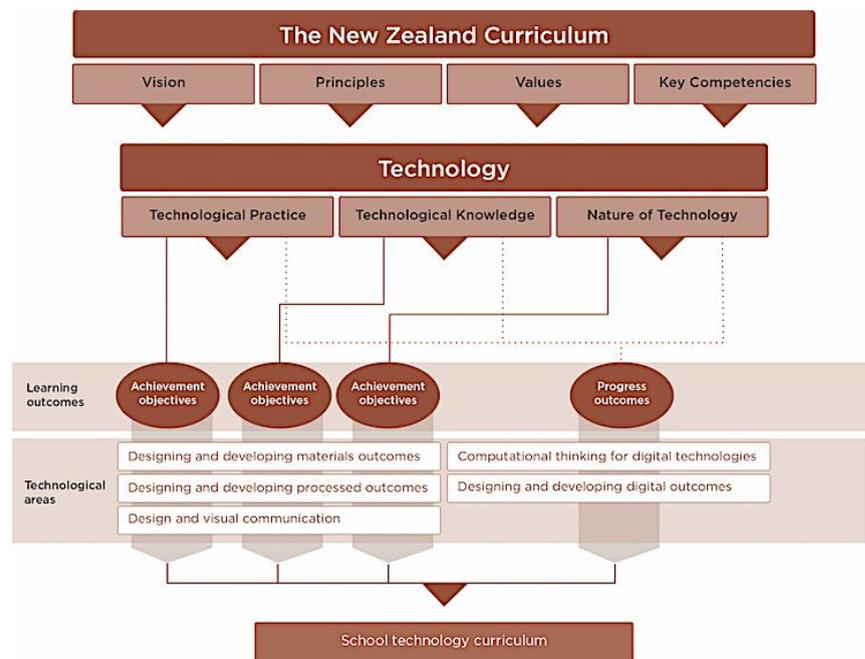
Make a personal inquiry via our online form at [query.connectedlearning.org.nz](http://query.connectedlearning.org.nz)

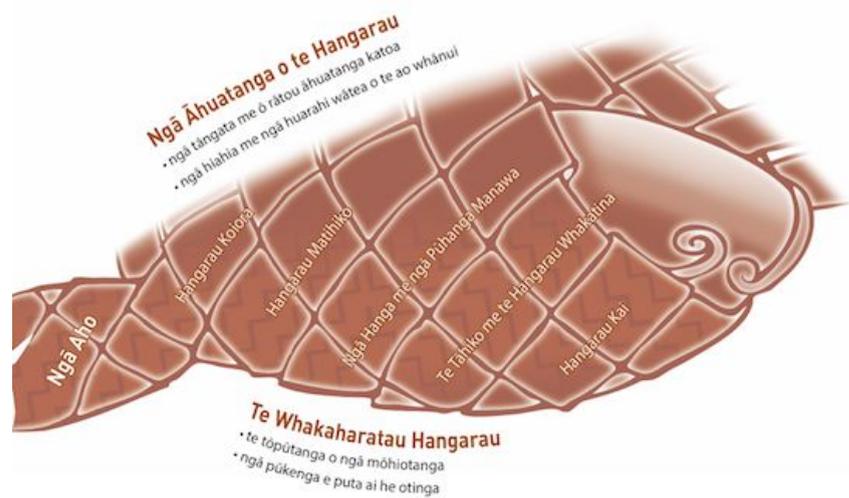
Email [info@connectedlearning.org.nz](mailto:info@connectedlearning.org.nz)

## What's in the curricula?



The Technology area of the New Zealand Curriculum and the Hangarau Wāhanga Ako o Te Marautanga o Aotearoa are represented below:





In the NZC, the additional technological areas are:

- Computational Thinking for Digital Technologies
- Designing and Developing Digital Outcomes.

In the TMoA, the additional Anga Tupuranga Hangarau Matihiko are:

- Te Tupuranga Whakaaro Rorohiko (computational thinking)
- Te Tupuranga Tangata me te Rorohiko (people and computers)

Overall, some key themes include:

The importance of moving from students being users of digital technologies to being **creators** of digital technologies.

The need for students to be identifying and solving **authentic** problems.

The need to keep **people** at the heart of the design process.

The importance of **failing fast** as part of an effective design cycle.

The importance of developing the **key competencies**.

That many of the curriculum concepts can be introduced using **unplugged activities** - i.e. without initially getting hands-on with an electronic device.

## A design thinking approach to product selection



The approach below is based on the [design thinking process](#):

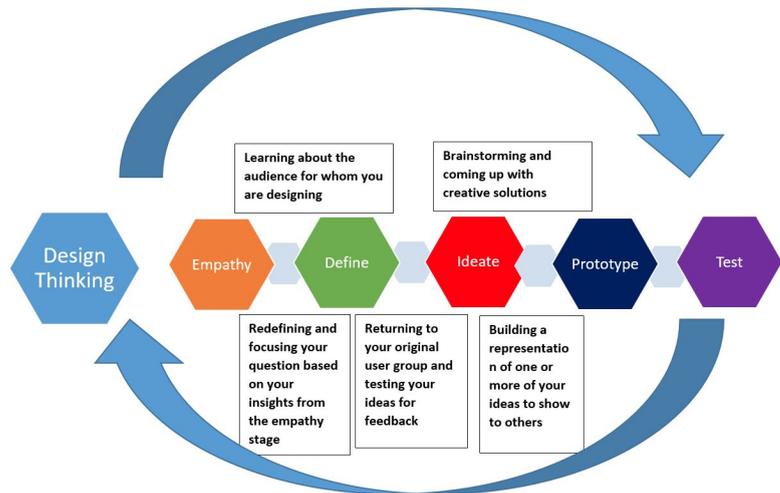


Image: [upload.wikimedia.org/wikipedia/commons/1/17/Design\\_thinking.png](https://upload.wikimedia.org/wikipedia/commons/1/17/Design_thinking.png)

### Empathy

Start by considering your audience (teachers and students) and their needs.

- Who will use the product?
- What have they used before?
- What is needed (skills, abilities, prior knowledge) to use it?
- What do we already do in this space?
- Why do we need a product?
- How does it fit with our school's vision for teaching and learning?

### Define

- What do we need our products to do to support DT & HM?
- What programming languages can be used and how appropriate are they for students at various stages?
- What additional resources are available or might be needed?

- How robust do the products need to be?
- Will they work within existing school infrastructure and the types devices already available?
- Are they well supported with a community and online resources?
- Consider the choice and costs of peripherals, software and add-ons that are likely to be needed up-front or in future. Think about:
  - Storage
  - Batteries / chargers
  - Spares if parts are lost or damaged
  - Software and hardware needed to program or control the product

### **Ideate**

- Research possible products - pros and cons of each
- Look for examples, experiences, reviews and recommendation from a variety of sources such as a range of commercial suppliers, other schools and online communities. To do this you could:
  - Talk with teachers and students in other kura or schools that have similar needs and technologies to understand their experiences.
  - Consider joining the [Digital Teachers' Association of Aotearoa](#) and follow the active discussions.
  - Add a discussion topic to the Technologies section of the [Virtual Learning Network](#) or in other online forums or social networks.
  - Read online reviews of the technology, ideally about its use in kura or schools.
- Research the level of support available for the product in terms of:
  - the presence and vitality of a community that also use the product
  - the breadth, suitability and quality of resources provided by the manufacturer and others to assist you in implementing the product into your teaching programmes
  - the after-sales service provided by the reseller and manufacturer
- See products in action at workshops or by asking resellers for demonstrations

- Talk with the Connected Learning Advisory about what products are currently commonly used in schools.
- Visit the Enabling eLearning sites:
  - [Coding](#)
  - [Robotics](#)
  - [DT & HM introduction and resources](#)
- Visit [Technology Online](#)
- Read blogposts
- Filter to narrow down to a few of possibilities

### Prototype

- Get hands on with as many possible products as you think you need to. A variety of products will enable students to be exposed to a range of approaches suitable for their particular stage of development or interests.
- Seek feedback from a range of teachers and students. Are the products fun to use and easy to get started with as this will mean they are likely to be more engaging?
- Test whether the product meets the level of quality that will be suitable for your needs.
- Are the products robust, versatile, open-ended and able to be used to solve authentic problems rather than narrowly focused on particular functionality?

### Test

- How do the products measure against your criteria?
- Purchase test products for piloting / trialling

## Procurement considerations



### Focus on purpose

Be clear about the intended vision and desired approaches to learning. Ensure you are able to justify your procurement in terms of how it will support and improve learning for your students.

### Involve others

Take a team approach to procurement. The risks and complexities are too great for one person to be able to determine

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and manage effectively. Consult with staff and students about what they think their needs and preferences are.

### **Overall cost includes time**

The purchase cost of digital technologies are just part of the overall cost. Integrating digital technologies takes a lot of time. The time costs include:

- Time to get the technologies set up and working
- Time for maintenance
- Time for professional learning
- Time for the end-user as they learn how to use the technology.

The various costs in people's time are usually greater than the initial purchase cost.

### **Local versus international suppliers**

We now have easy access to overseas online marketplaces such as aliexpress.com. These sites can provide cheaper alternatives to procuring from a local reseller. The Commerce Commission offers the following quick tips for buying online:

**Be savvy:** if you have any doubts or the offer seems too good to be true, don't proceed.

**Know who you're dealing with:** search the seller online, look at their online auction feedback, check review sites, social media, [Scamwatch](#) and similar to see what other customers have experienced. Check where the business is based and that it provides its name, street address, phone and email details.

**Know what you're buying:** read the description of the goods or services closely, especially any fine print. Read the terms and conditions, including what happens if there's a problem.

**Work out what it will cost:** factor in shipping, exchange rates, insurance or any applicable extra charges, such as customs duty.

**Shop around:** search online and compare prices, terms and conditions.

**Protect yourself:** only buy if you are comfortable with the payment method and keep a record of the transaction details. Purchasing by credit card or a secure payment system like PayPal should give you more protection than a cash transfer.

Before purchasing from an international supplier, consider:

Finding out from others if they have used or know about the online provider and what their experiences are

How easy will it be to return faulty products in future or get other kinds of after-sales service?

How can you be sure the quality of the products is good enough?

How easy will the overall transaction be?

#### **Price versus value**

The overall costs during the lifetime of the technology need to be determined. Technology that costs more up-front but lasts longer because it is more robust may give better value than something that has a lower initial cost but has a shorter lifetime. Similarly, something may cost more up-front but will have lower running costs, such as consumables like batteries. Also, consider the longevity of your product - how long will it be until the product becomes too out of date to be useful?

#### **Further Support and Useful Links**



[Digital Technologies and the national curriculum](#) - Enabling eLearning's resources

[Technology Online - Strengthening Digital Technologies](#) - For schools who are moving to implement the DT & HM curriculum, a range of resources, case studies, and innovative ideas are now being developed for you to access and use

[Coding](#) - Enabling eLearning's resources

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[Robotics](#) - Enabling eLearning's resources

[DTTA](#) - Digital Teachers' Association of Aotearoa

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This guide has been produced in response to a number of specific queries about choosing products to support the DT & HM curricula from schools. It should not be read as a recommendation or endorsement of any specific product. The Connected Learning Advisory is a Ministry of Education supported service that provides schools with technology information relevant to their queries and does not recommend one product over another.



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