Technology Curriculum Review

Term 1, 2016

2016 Review Focus

The New Zealand National Curriculum outlines the following around Technology:

What is technology about?

Kaua e rangiruatia te hāpai o te hoe;

e kore tō tātou waka e ū ki uta.

Technology is intervention by design: the use of practical and intellectual resources to develop products and systems (technological outcomes) that expand human possibilities by addressing needs and realising opportunities. Adaptation and innovation are at the heart of technological practice. Quality outcomes result from thinking and practices that are informed, critical, and creative.

Technology makes enterprising use of its own particular knowledge and skills, together with those of other disciplines. Graphics and other forms of visual representation offer important tools for exploration and communication.

Technology is never static. It is influenced by and in turn impacts on the cultural, ethical, environmental, political, and economic conditions of the day.

Why study technology?

The aim is for students to develop a broad technological literacy that will equip them to participate in society as informed citizens and give them access to technology-related careers. They learn practical skills as they develop models, products, and systems. They also learn about technology as a field of human activity, experiencing and/or exploring historical and contemporary examples of technology from a variety of contexts.

Technology is associated with the transformation of energy, information, and materials. Technological areas include structural, control, food, and information and communications technology and biotechnology. Relevant contexts can be as varied as computer game software, food products, worm farming, security systems, costumes and stage props, signage, and taonga.

Learning area structure

The learning area comprises three strands: Technological Practice, Technological Knowledge, and Nature of Technology. Teaching and learning programmes will integrate all three, though a particular unit of work may focus on just one or two.

Knowledge and skills are learned in context. By offering a variety of contexts, teachers help their students to recognise links and develop generic understandings. Students should be encouraged to access relevant knowledge and skills from other learning areas.

In the technological practice strand, students examine the practice of others and undertake their own. They develop a range of outcomes, including concepts, plans, briefs, technological models, and fully realised products or systems. Students investigate issues and existing outcomes and use the understandings gained, together with design principles and approaches, to inform their own practice. They also learn to consider ethics, legal requirements, protocols, codes of practice, and the needs of and potential impacts on stakeholders and the environment.

Through the technological knowledge strand, students develop knowledge particular to technological enterprises and environments and understandings of how and why things work. Students learn how functional modelling is used to evaluate design ideas and how prototyping is used to evaluate the fitness for purpose of systems and products as they are developed. An understanding of material properties, uses, and development is essential to understanding how and why products work the way they do. Similarly, an understanding of the constituent parts of systems and how these work together is essential to understanding how and why systems operate in the way they do.

Through the nature of technology strand, students develop an understanding of technology as a discipline and of how it differs from other disciplines. They learn to critique the impact of technology on

societies and the environment and to explore how developments and outcomes are valued by different peoples in different times. As they do so, they come to appreciate the socially embedded nature of technology and become increasingly able to engage with current and historical issues and to explore future scenarios.

In years 11–13, students work with fewer contexts in greater depth. This requires them to continue to draw fully on learning from other disciplines. For example, students working with materials and/or food technology will need to refer to chemistry, and students working on an architectural project will find that an understanding of art history is invaluable. Some schools may offer courses such as electronics and horticulture as technology specialisations.

Learning for senior students opens up pathways that can lead to technology-related careers. Students may access the workplace learning opportunities available in a range of industries or move on to further specialised tertiary study.

Technology - Essence Statement:

The Wakari School Curriculum Plan states:

Technology
Students learn to use practical and other resources to develop products and systems that expand human possibilities by addressing needs and realising opportunities.
- Technological practice
- Technological knowledge
- Nature of Technology

Our Goals are;

In technology education, the focus of learning is on the use of practical approaches to develop products and systems to meet needs and explore opportunities.
1. Show and explain how and why things work, their uses, limitations, suitability **(technological practice)**
2. Make and evaluate plans, models, products and systems for particular purposes **(technological knowledge)**
3. Investigate and consider the impact of technology on people and environments – past, present and future **(nature of technology)**

The technological areas of learning: structural, control, food, biotechnology, and information and communication technologies

Contents

- Community Consultation
- Staff Consultation
- Student Consultation
- Recommendations

COMMUNITY Consultation

As part of the review process a random sample of 70 families were sent questionnaires by email.

The community goals from our Curriculum Plan formed the basis for the questionnaire.

We received 8 responses. A return rate of 8.75%

QUESTIONNAIRE:

How do you think we are going in the teaching of the following?;

FOR GOAL 1,2 AND 3 Rate how well do we achieve the goals for Technology at Wakari School	Poor	Fair	Good	Very Good	Great
Goal 1. Show and explain how and why things work, their uses, limitations, suitability (technological practice)	1 (12.5%)	1 (12.5%)	2 (25%)	4 (50%)	
Goal 2. Make and evaluate plans, models, products and systems for particular purposes (technological knowledge)	1 (12.5%)	1 (12.5%)	1 (12.5%)	4 (50%)	1 (12.5%)
Goal 3. Investigate and consider the impact of technology on people and environments – past, present and future (nature of technology)	1 (12.5%)	2 (25%)	1 (12.5%)	3 (37.5%)	1 (12.5%)

Q 4.Do you think that the above objectives are still appropriate?	**Yes (3)**
	Yes absolutely
	Absolutely, I think they always will be.
	Absolutely
	Yes - basically it is mainly practical problem solving!
Q 5. Do you wish to suggest any changes/additions/deletions?	**No (3)**
	Do more, make it more detailed...practical learning and applied.
	Possibly show some more comparative inventions of how things were once manually done that are now all done via computer/technology? ...the advancement of technology in everyday life. **Admittedly in hindsight this idea would be almost as much a history lesson as well as technology!**
	Possibly more creative high tech stuff - robotics, code intro etc?
Q 6.Do you have any other comments you wish to make about the Wakari Technology programme?	**No (2)**
	I love the ways and range of methods used to do this.
	Keep up the good work!

Summary of COMMUNITY responses

There was a low return to this survey (8 responses returned of the 70 surveys sent out).
The responses were mainly positive - with 75% rating the teaching of technology at Wakari as being good to great.
The parents thought that absolutely the goals are still appropriate.
One parent thought that we should do more and be more detailed.
One parent thought that possibly the advancement of technology in everyday life could be looked at and compared to how things were once done. Also one parent thought we could possibly look at "high tech stuff" such as robotics.
Overall parents were positive about the Wakari Technology programme.

STAFF Consultation

All teaching staff were invited to comment on Wakari's Curriculum Plan Goals for Technology and to answer six questions about this from the perspective of their own teaching in the areas of Technology. There were **9 responses** to the survey.

QUESTIONNAIRE:

"How well do we achieve the goals for Technology at Wakari School?"

FOR GOAL 1,2 AND 3 Rate how well do we achieve the goals for Technology at Wakari School	Poor	Fair	Good	Very Good	Great
Goal 1. *TECHNOLOGICAL PRACTICE – the emphasis is on knowing how. Students are given opportunities to engage in their own technological practice and to reflect on the practice of others. Students gain a sense of what they may be able to achieve as they undertake their own technological practice to find solutions to identified needs and/or realise opportunities.*			22%	56%	22%
Goal 2. *TECHNOLOGICAL KNOWLEDGE - The emphasis is on knowing what. Understanding technology – what is needed to create something – eg materials, models, plans, prior knowledge*			11%	55%	44%
Goal 3. *NATURE OF TECHNOLOGY - The emphasis is on knowing why. Understanding purpose, design and outcomes of objects, systems etc, things are created with design, plan and purpose)*			11%	55%	44%
Q 4. *Do you think that the above objectives are still appropriate?*	Yes - All No - 0				
Q 5. *Do you wish to suggest any changes/additions/deletions?*	Yes - 0 No - All				
Q 6. *Do you have any other comments you wish to make about the Wakari Technology programme?*	Yes - 9 No - N/A -				

Individual Staff Comments

Do you have any other comments you wish to make about the Wakari Arts programme?

The children love technology topics we have done. They love the hands on focus and often have some very imaginative and fun ideas.

Time constraints make it much more efficient to tie technology into other units in a more integrated way.

Children are exposed to a range of experiences.

It is great to see Technology incorporated into our Topic teaching, to allow depth to the learning.

Following our Staff PD in 2014 I think it has been good to include more experiences of technology that sit outside the teaching of a unit of work eg doing BP technology challenges, opportunities for design and make, deconstruction of existing products, mystery object and using the SCUMPS tool when teaching eg Size, Colour, Use, Materials, Parts, Style/Shape as these give the children deeper understanding that products and solutions are created. Technology is enjoyed by the students in particular when it has hands on experiences.

I and students have thoroughly enjoyed all technology units - we've all learnt a lot.

This may come about with the Friday programme but do children have opportunities to work with a variety of materials to increase their skills. For example this could involve small groups working on woodwork type skills with 'experts' (grandparents, parents) in the community.

I think that we offer a wide range of experiences but it can be hard to differentiate between different areas such as Science/Art etc

Summary of STAFF comments

- Staff clearly think that children are exposed to a range of experiences in Technology.
- An integrated approach to teaching Technology within topics and through specific technology activities is allowing for more coverage than when taught only in Technology Units of Work.
- Staff are aware that children love the hands on experiences of Technology.
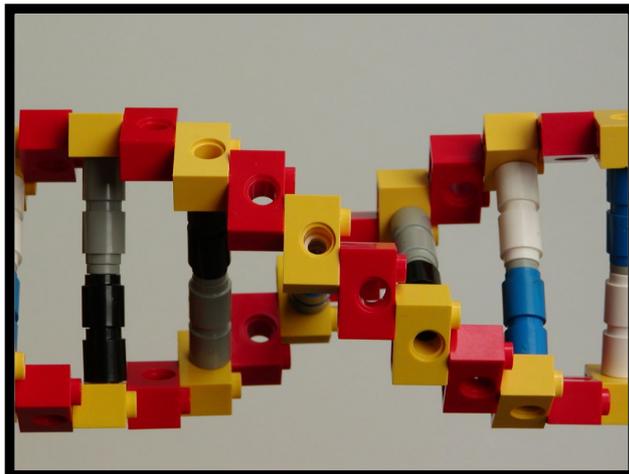
STUDENT Consultation

A random sample of 60 Year 0-6 children were asked to respond to a questionnaire about what they thought about the teaching of Technology at Wakari School.

	Not much/ Not good at it	OK/ a bit	Like/ Good/ Often	Really like/ Really good at it/ Always
1. How much do you like Technology at school?	2% (1)	6% (4)	27% (16)	65% (39)
2. How good do you think you are at Technology?	3% (2)	12% (7)	42% (25)	43% (26)

The following questions were filled in by the teacher with the whole class contributing.

1) What do you want to tell us about Technology at Wakari School?

It's really fun. (x3)
We get to make stuff like decorations.
I love/like it. (x4)
You make boats out of stuff.
I've ridden on a boat in real life.
I've been to Australia.
'Discovery' is lots of fun.
I like looking at the machines.
Making things in Discovery is fun.
It is making stuff.
Good for learning. (x2)
We have technology in the classroom (iPads, computers)
In Room 15 we built a giant minion.
It's fun making things.
We used bottle tops to make something new.
We really like designing and making things.
It's fun learning.
You get to use the computers to look up other examples to design.
Making driftwood sculptures.
You can think a lot in Technology.
It teaches you stuff you haven't done before.
They're interesting topics.
Using 3D printer.
Doing school fair stuff.
Designing our lanterns for selling at fair.
It's not a writing You get creative with it.
We like solving problems with making stuff.
We have lots of devices.
It's fun because you do some new things.
You can do it in groups or by yourself.
It's fun because you don't just sit at your desk.
There is a huge variety of things to do.
It is interesting being creative.
Finding out things is fun.
Making stuff you haven't made before is fun.

2) What things in Technology have you enjoyed and why?

Taking things apart at 'Discovery' time.
Building new things because we got to make our own design.
I like making things with glitter. (x2)
I like making Christmas stuff. (x4)
Painting murals.
Making puppets (X3)
Working in teams.
The garden group – eating the food.
I like making things at Christmas for the tree.
Designing/making sherbert to sell at the school fair.
Bird feeders.
School garden work.
Cooking last year for 'Clubs'.
Cooking – it was interesting learning about the ingredients.
Making lanterns from tin cans was fun.

School fair.
Sharing our learning on the blog.
Discovery time – deconstructing electronic things.
Enviroschools – looking after our school environment.
Having our own Google accounts.
3D printer – was fun and I liked being the expert/in charge of teaching the others what to do.
Class blog is interesting and it's cool to see what's happening at school and showing people at home.
Everyone gets to be included when you're working with Technology.
Parents can use technology to see what's happening.
Deconstruction – I like taking things apart.
I liked the different options in 'Clubs'.
Anything connected with building – because Dad is a builder.
Caring for the school.
Making puppets because you get to be creative and your puppets can show lots of moods.
Cooking – so we can learn for home.
Making the models about war.
Construction with straws and marbles.
Making the model soccer pitch.

3) What types of activities in Technology do you like to do in your own time?

Rock pools – looking at crabs.
Pulling things apart.
Making things out of recycled stuff like monsters and cars.
Getting things from the dump, ripping them apart then making new things.
I made a remote control car.
Making huts and and forts.
Making spaceships.
Me and Mum made a house.
I made presents with paper and a batman box.
I made a love heart that glows.
I made a lantern.
Daddy has a workshop and we made an Optimus Prime pushing car. It has lights.
I make things out of cardboard boxes.
I made a light-up lamp.
I made boats and planes out of wood and nails and I used a hammer. (x3)
I made a snowball thing that you shake.
Riding a boat.
Build and make huts at home.
Use tools at home for fixing things.
Lots use computer, iPads, tablets at home.
Make catapults like our school one.
Think about our goals at home.
Making our own X-Box.
Help Dad with building.
Lots use computer iPads tablets at home.
Making puppets.
I know how to make decorations at Christmas time (x3 responses) – we made some at the art gallery.
Playing with toys – they are plastic.
Building boats out of wood.
Looking at class blogs.
Cooking
Cooking with my mum
Making photo frames
Making books
Building things out of things from outside.
Bows/envelopes

Guns
Cards
Soft toys.
Paper folding.
Duplo/Bionicle/Meccano/Lego
Cooking tea.
Minecraft
Gaming (X-Box/PSP/Paystation/Wii/tablets/iPads)
Using computers/laptops fro homework and gaming.
Emails
Snapchat
Building with wood/hammering/nailing.
Playing with and learning about car parts.
Beading.
Homework.
E-reading.
Cooking.
Building.
Art based activities.
Different types of recycling.
Photography.
Different crafts, eg. Sewing.
Making models.
Building tracks for my model cars.
Making movies.

4) What other activities in Technology would you like to learn about at school?
   (Teacher feedback from this question was that it was a difficult question for children to respond to accurately especially seeing Technology as a 'stand-alone' curriculum area)
   Playing camping
   Fishing
   Making stuff out of straws.
   Making stuff out of rubbish.
   Machines or car things.
   Make boats. (x5)
   Make snacks.
   Make pizza.
   Make food.
   More Christmas stuff.
   More presents.
   Dinosaurs.
   Electronic stuff.
   Do more cooking at school.
   Do sewing or making stuff.
   Do BP Challenges to do more creative stuff.
   Do some building at school.
   Do BP challenges more often.
   Making new classroom board games.
   Cooking yummy food.
   Making a video about something at school.
   We'd like some more time and choice in what we get to create.
   Minecraft.
   Gaming
   To have a room just for going to create stuff in.
   Computer lab.
   Crafting Room.

Hard Material Room.
Reading room.
Board games.
More gardening.
A dedicated Technology room.
More opportunities to cook.
Technology based 'Clubs'.
Extension group.
Cooking room.

Summary Of Children's Responses

- Most children (92%) really enjoyed their experiences with Technology at school.
- 85% of children felt that they were 'good' or 'really good' at Technology.
- Teacher feedback was that children found it difficult to see Technology as a 'stand-alone' curriculum area as it is often integrated with other learning (something that can happen with all curriculum areas)

Overall Recommendations

Professional Development

- Continue to provide PD opportunities for staff
- Encourage sharing of ideas/resources - Snapshots to staff by teachers in charge of Technology of any new resources, websites or opportunities etc
- Utilise expertise within the school

Teaching Practice

- Ensure adequate and equitable time is allocated to Technology whether taught as stand alone or integrated units of work.
- Consideration of budgets for resourcing - more practical work would require some specialist tools and resources.
- Consideration to extension groups for Technology for children with identified strengths and interests.

- Recognise the importance of and enjoyment children experience with hands on activities in technology.

Community

- Use our school website, blogs, facebook to allow a window into Technology.
- Use parent/community expertise in our programmes.