INTEGRATED TECHNOLOGY UNIT PLAN
Technology as Main Focus

Technological Area: Materials **Date:** Term 2 2009 **Number of Weeks Intended:** 10

Year level: 5-6
Focus Technology level for teaching: Level 2

Context for Learning in Technology: We feel unsafe walking to and from school on our rural road.

Background: This unit is being developed as a result of a whanau meeting where the safety of the children walking on the rural road was a concern. Whanau members discussed that boy racers and locals were so au fait with the road, they took little notice of children and others walking on the road and were concerned a child would be killed if the community were not made aware of the dangers. There are no footpaths on the road and most of the students walk to and from school. The school is a small rural school with 100% Maori students.

Previous Experiences: In their previous Technology unit, these students focused on developing a plan that identified the key stages and the resources required to complete an outcome. The students were given a brief at the beginning of the unit and the teaching then focused on how to plan for practice. The teacher brought in the aspects of brief development when required but did not focus the teaching on that aspect. By the end of the unit, the students were all able to identify the key stages and the resources required, however not all completed the outcome. Only Technological Practice has been undertaken thus far.

Broad Understanding/s: (Teacher Directed)

- That the students can play a part in learning to be an innovative developer of products and systems.
- That the students can explain how the use of technology can help in keeping them safe on the roads when walking home.

Learning Question/s: (This was negotiated with the students)
How might we make ourselves more visible when walking to and from school on our rural, dusty road?

Key Competencies: (This is an opportunity to link the key competencies to the students' learning in Technology – this is not for assessment purposes.) The students had been exposed to the key competencies in the past and had input into this planning. The teacher and the students revisited the concepts often to make sure that we were on track.

Thinking:

- *Thinking about how we will gather the information required to answer our learning question.*
- *Being curious about technology used in road safety, such as signs already in use, regulations, etc.*
- *Thinking about how to solve problems associated with walking on a dusty rural road, ie, knowing how to keep ourselves safe on our road.*

Using language, symbols and texts:

- *Discuss the use of symbols on our road signs and look at universal signs.*
- *Understand how effective these signs are and what the colour mean on the signage.*
- *Use the language of technology to enhance understanding in technology.*

Managing self:

- *Utilise the time given to this unit of work effectively.*
- *Work independently when required.*
- *Understand the constraints of the work and how to be economic with resources.*

Relating to others:

- *Work collaboratively and co-operatively in groups when required.*
- *Brainstorming of ideas together.*
- *Learning through experts – police, sign-writers, Doug the Digger visit.*
- *Use the internet to gain information from others, eg, land transport communication.*

Participating and contributing:

- *Students understand how they can help community members, particularly younger children to keep safe on the roads.*
- *Students understand that they can make a difference developing a solution that will help to make them more visible on the road.*

Values: (This is an opportunity to link the values to the students' learning in Technology – this is not for assessment purposes. Not all of the values may be relevant.)

- *Through their learning experiences the students will have the opportunity to develop their ability to discuss disagreements that arise from differences in values and negotiate solutions.*
- *Through learning about the local area, the students have the opportunity to explore solutions that would not harm the environment and aesthetics of their community.*
- *The students will have the opportunity to explore the concepts of honesty, responsibility, accountability and being ethical when discussing with community the ways they drive on their road.*

Strategies & tools for learning and thinking:

- *Brainstorming of ideas – pre and post.*
- *Using strategies such as SCAMPER to look at already existing solutions to the problem.*
- *Mind-mapping to look at information gained from research ideas.*
- *Use of ICT to seek information and research answers to wonderings.*
- *PMI to look at materials already used in the making of safety equipment.*
- *Six thinking hats to**:** look at problems, decisions, and opportunities systematically; stimulate innovation by generating more ideas and better ideas quickly; see opportunities where others see only problems; view problems from new and unusual angles; see all sides of a situation*
- *Six action shoes to allow students to think about an issue in order to choose or design a course of action.*

Technology Strands and Intended Achievement Objectives (contextualised):

TECHNOLOGICAL PRACTICE	TEACHING FOCUS (contextualised)	NATURE OF TECHNOLOGY	TEACHING FOCUS	TECHNOLOGICAL KNOWLEDGE	TEACHING FOCUS (contextualised)
Planning for Practice Brief Development Outcome Development and Evaluation	The students will describe the safety device they are developing and identify the attributes it should have, taking account of the need and the resources available.	Characteristics of technology Characteristics of technological outcomes		Technological modelling Technological products Technological systems	The students will understand that there is a relationship between a material used and its performance properties in a technological product used in road safety.

Opportunities for Engaging Maori Students:

- Students understand the symbols used on signs in their community and what significance they have and explore Maori signs and symbols
- Use the knowledge of the whanau to discuss the problems surrounding the traffic on the roads
- Students explore the history of the area and how precious it is to the whanau
- Students use local Te Reo and iconography on signage if appropriate and consult with community as to the appropriateness
- Display student work on the classroom walls and use feed-forward and constructive feed-back to move the students on
- Allow the students to use their own identity and style when developing their technological product

Links to Learning Areas

Learning Area (focus)	Strand	Achievement Objectives
English	Listening, Reading and Viewing	Recognise and begin to understand how language features are used for effect within and across levels. (L1)
The Arts	Drama	Demonstrate an awareness that drama serves a variety of purposes in their lives and in their communities. (L2)
Mathematics and Statistics	Measurement	Create and use appropriate units and devices to measure length. (L2)
Social Sciences	Listening, Reading and Viewing	Understand how time and change affect people's lives – the introduction of vehicles.

Key Stages	**As a result of my teaching the students will learn (big picture):**	**Learning Experiences**	**Resources/Teaching points**	**Assessment/Indicator** **The students can**
Developing a background of understanding to have the ability to develop a brief: To take account of the need or opportunity. (BD) www.techlink.org.nz/curriculum-support/indicators/practice/level2.htm Understand that there is a relationship between a material used and its performance properties in a technological product. (TK) Provide students with an overview of the resources available and guide them to take this into account when identifying the attributes for the outcome. (BD)	How to gather information to address the need. How to use a variety of sources to find accurate information. That technology has a great influence in our everyday lives and that people can have differing points of view. That symbols can be used worldwide and areas such as road safety have their own unique text. How to formulate questions that add value to our learning. How the design process is used in technology as opposed to a social process. That products are made for a purpose and the materials	**Cross-curricular background:** Read newspaper articles relating to rural roads including NIE page spread.	Newspaper with articles relating to rural road statistics. NIE page spread: www.nieonline.co.nz/archive.cfm?x=181.	
		Use Google maps to look at the road and identify potential hazards.	maps.google.co.nz/	
		Source TV news items.	Source internet news items.	
		Analyse statistics from Land Transport NZ website around accidents involving pedestrians.	Source information from the Land Transport NZ site – www.ltnz.co.nz.	
		Walk the road and identify hazards and road signs - look at the materials they are made from and discuss why (beginning to look at TK).	Look at: • EOTC policies • RAMs (risk assessment and management systems) Discuss measurements of signs, commonalities, laws regarding signage.	
		Survey parents, community members and whanau to establish whether what is already in place is sufficient and if not, why not.	Teach how to take a survey.	
		Journal articles regarding road safety.	Source journal articles.	

	they are made from are of vital importance. That to make a product, a process needs to happen. That to make a product takes a lot of time and planning to make it fit for the purpose it was intended for.	Pamphlets showing road signs and clothing (students identify how the technologies help in road safety).	Language, texts and symbols.	
		Dramatise situations that are already happening to the students when they are walking to and from school.	Relate to The Arts curriculum.	
		From readings and immersion above, establish wondering questions from the students.	Search internet sites: • Land Transport NZ – safety information for pedestrians • walkIT • Feet First • Cyberglow: Site about students designing products to make them more visible on the roads • Learn how to use the internet for research • Learn how to extract relevant information.	
		Discuss how to go about finding the answers.	• Visit from local Police Education officer • Learn how to ask questions.	
		Technology background: Learn how the design process works.	Use photos of a process the students are familiar with (such as making a cup of tea) – students put these in the order they know and discuss the process. www.techlink.org.nz/curriculum-support/strategies/tp-planning/level1.htm	
		Explore technological products and discuss the materials they are made from. (TK)	Have a range of products for the students to explore, including some that are waterproof and some that are not. Visit from Kerikeri Fire Station officer – look at safety equipment, materials used, etc.	

		Introduce properties of materials and the correct terminology. www.techlink.org.nz/curriculum-support/strategies/tk-Products/level2.htm	www.technologystudent.com/joints/matprop1.htm	
		Discuss the need or opportunity with the students and develop a conceptual statement in negotiation with them then together write a brief that consists of: • a 'conceptual statement' that says what they are making and why they are making it • the attributes that are needed for their product.	Teach what a conceptual statement is. Show the materials available. Teach brief concepts such as: • What am I making and why? • Who will need to use it? • Where can my product be most useful? • Will my product do what I need it to do? • Who will be impacted by my product?	Describe the attributes for an outcome that take account of the need or opportunity being addressed and the resources available. (BD). Explain the outcome to be produced (BD).
		Students go through the steps of developing their product - agreed either a device to use or wear while walking on the road or a sign that will have an impact.	Students need a template to practice their design and need to be taught how to design a product using their prior knowledge.	
		Students present their ideas to the BOT and parents for feedback and feed forward. Revisit ideas and make the product with expert help if needed.	Arrange BOT meetings and feedback sheet for whanau.	

Terms that may be focused on: Brief development; Conceptual statement; Waterproof; Durability; Attributes; Resources; Materials; Product; Impact; Need; Fit for Purpose; Product; Performance.