



EPISODE 1: CRUMBS

JIWI'S MACHINES



FUN WITH KNOTS

TO TEACHERS AND PARENTS

A large focus in teaching science is around encouraging both curiosity and the skills and dispositions to be able to find out or test things for yourself. This includes developing an understanding about how science itself works. The New Zealand Curriculum calls this the Nature of Science.

Tips about how to encourage these aspects are given in a



Use these to get your children talking, discussing, testing and thinking about the science involved in Jiwi's Machines. Have fun! The science content involved in Jiwi's Machines relates to the Physical World Achievement Aims of the New Zealand Curriculum.

<http://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum/Learning-areas/Science/Achievement-objectives>

FUN WITH KNOTS

Knots are used to join rope or hold objects together. They rely on friction to hold themselves together as they are tightened. Knots are incredibly useful to know about and to be able to tie as Jiwi and Luke show in this clip.

UNDERSTANDING ABOUT SCIENCE

Children understand that scientists persevere and work hard to gain the skills necessary for doing their work.



Can your children tie a bow? A reef knot?



Watch JIWI'S FUN WITH KNOTS clip and learn along with him.



What are the purposes for each of those knots? When are they best to be used?



Get the children practicing with small lengths of rope or shoe laces.



ACTIVITY 1: KNOT TYING GAME (20 MINS)

After you've taught the reef knot or bow, give everyone a counter and a piece of string or rope. The children pair up and race to see who can tie the knot the fastest. The fastest child claims the other child's counter. Children with two counters re-pair and race again. The one who ties fastest claims the opposition's two counters so now has four counters. They find someone else with four counters to compete with and so on. For those who lose, they collect another counter and start again so could end up catching up over several races and continue to get practice tying the knot in the meantime.

ACTIVITY 2: ELEPHANTS' TAILS (20 MINS)

You need to have hidden 20 – 30 pieces of string around the room before starting this activity. Divide the class into 4 or 5 teams. One person in each team is the elephant and holds a length of string. On "go" the other team members start searching for a piece of string. When they find one, they race back to their elephant, tie their length of string on with a reef knot and then go searching for more. When all the strings are found the team with the longest elephant's tail wins.



JIWI WONDERS

ARE THERE LOTS OF DIFFERENT KNOTS? WHO USES THEM AND WHY?

-  What sort of knot does a trucker need to tie? Why? Can I tie this?
-  What sort of knot does a surgeon need to tie? Why? Can I tie this?
-  What sort of knot does a rescue professional need to tie? Why? Can I tie this?
-  What knot does a fisherman or woman need to tie? Why? Can I tie this?

EXTENSION: Design a way of testing how reliable a reef knot is compared to a granny knot. There are lots of websites online that give step by step videos or animations of how to tie a variety of knots. Explore and have fun.

MATERIALS

Activity 1
String or shoe laces for knot tying
Counters

NZ CURRICULUM PLANNING SUMMARY

Contextual Achievement Objective: PHYSICAL WORLD; Explore and investigate physical phenomena in everyday situations.	Nature of Science Achievement Objective: INVESTIGATING IN SCIENCE; Science learning can be improved by encouraging appropriate attitudes.
Big Science Idea: Knots can have different purposes	Big Nature of Science Idea: Scientists are persistent in their work.
Weblinks: http://scienceonline.tki.org.nz/Nature-of-science/What-is-the-Nature-of-Science/Teacher-suggestions-Investigating-in-science/Improving-learning-by-encouraging-appropriate-attitudes	Capability focus: